EXHIBIT E

QUALITY SYSTEMS

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Exhibit E - Quality Systems

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1.0 QUALITY SYSTEM

1.1 Overview

Since the purpose of this analytical service is to provide analytical data for the 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), the Contractor is responsible for developing and implementing a Quality System to enforce the requirements of the EPA CIO 2105.0 "*Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs*". This will require the implementation of a quality system that meets the EPA's goal of providing data of documented quality.

1.1.1 The quality system provides the framework for planning, implementing, assessing, and improving work performed by the Contractor while conducting quality assurance (QA) and quality control (QC) activities. Effective implementation of the quality system leads to several benefits, including:

- Scientific Data Integrity – The Contractor will produce and submit data of known and documented quality;
- Effective Management of Internal and External Activities – The quality system requires documentation of activities and oversight, for evaluation purposes, which will reduce the potential for waste and abuse; and
- Continual Improvement – The continual improvement component of the quality system leads to the development of a better, more responsive quality system and technical system, which should result in better products and services.

1.1.2 Overall, successful implementation of the quality system will reduce the EPA's vulnerabilities in decision-making and increase the Agency's credibility, by providing the ability to make reliable, timely, cost effective, and defensible decisions. The consequences of not having a successfully implemented quality system include the potential to waste time, money, and resources, which increase uncertainty in the EPA's decision.

1.1.3 Under this program, the EPA requires two forms of documentation for the quality system:

- A Quality Management Plan (QMP) which documents the organization quality system; and
- A Quality Assurance Project Plan (QAPP) which documents the application of quality-related activities to an activity-specific effort.

NOTE: The Contractor may combine these two documents into a single document that describes the organization's quality system and the application of this system to the work performed under this program.

2.0 QUALITY MANAGEMENT PLAN

During the contract solicitation process, the Contractor is required to submit the QMP or equivalent to the EPA Contracting Officer (CO). The QMP documents how an organization structures its quality system and describes its quality policies and procedures; criteria for and areas of application; and roles, responsibilities, and authorities. It also describes an organization's policies and procedures for implementing and assessing the effectiveness of the quality system. The Contractor shall follow the EPA Requirements for Quality Management Plans (QA/R-2) EPA/240/B-01/002 (or subsequent version) for guidance.

2.1 The QMP shall describe the quality system that is designed to support the objectives of the organization in providing the analytical services required in this document.

2.2 The QMP shall be sufficiently inclusive, explicit, and readable to enable both management and staff to understand the priority that management places on QA and QC activities, established quality policies and procedures, and their respective quality-related roles and responsibilities.

2.3 The QMP shall document management practices, including QA and QC activities, used to ensure that the results of technical work are of the type and quality needed for their intended use.

2.4 The QMP shall document the following: the mission and quality policy of the organization; the specific roles, authorities, and responsibilities of management and staff with respect to QA and QC activities; the means by which effective communications with personnel actually performing the work are assured; the processes used to plan, implement, and assess the work performed; the process by which measures of effectiveness for QA and QC activities will be established and how frequently effectiveness will be measured; and the continual improvement based on lessons learned from previous experience.

2.5 The elements to be addressed in a QMP include: management and organization; quality system description; personnel qualifications and training; procurement of items and services; documentation and records; computer hardware and software; planning; implementation of work processes; assessment and response; and quality improvement.

NOTE: It is not necessary for the Contractor to present the information in the same order as outlined above, as long as each item is adequately addressed in the plan.

3.0 QUALITY ASSURANCE PROJECT PLAN

3.1 Introduction

The EPA requires that all environmental data used in decision-making be supported by an approved QAPP. The QAPP integrates all technical and quality aspects of a project including planning, implementation, and assessment. The purpose of the QAPP is to document how QA and QC are applied to an environmental data operation to ensure that the results obtained are of the type and quality needed and expected for this program. The Contractor shall follow the EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5 (EPA/240/B-01/003) (or subsequent version) for guidance.

3.1.1 The Contractor shall prepare a written QAPP that describes the procedures that are implemented to:

- Maintain data integrity, validity, and usability;
- Ensure that analytical measurement systems are maintained in an acceptable state of stability and reproducibility;
- Detect problems through data assessment and establish corrective action procedures which keep the analytical process reliable; and
- Document all aspects of the measurement process to provide data that are technically sound and legally defensible.

3.1.2 The QAPP shall present, in specific terms, the policies, organization, objectives, functional guidelines, and specific QA and QC activities designed to achieve the data quality requirements in this contract. Where applicable, Standard Operating Procedures (SOPs) pertaining to each element shall be included or referenced as part of the QAPP.

3.1.3 The QAPP shall be available during on-site laboratory evaluations.

3.1.4 The QAPP shall be submitted within 7 days of a written request by the EPA Analytical Services Branch Contract Laboratory Program Contracting Officer’s Representative (ASB CLP COR).

3.2 Required Elements of a Quality Assurance Project Plan

The QAPP shall be paginated consecutively in ascending order. The required elements of a laboratory’s QAPP are outlined in this section. This outline should be used as a framework for developing the QAPP.

A. Organization and Personnel

1. QA Policy and Objectives (the mission and quality policy of the organization)
2. QA Management (the specific roles, authorities, and responsibilities of management and staff with respect to QA and QC activities)
    a. Organization
    b. Assignment of QA/QC Responsibilities
    c. Reporting Relationships (the means by which effective communication with personnel actually performing the work are ensured)
    d. QA Document Control Procedures
    e. QA Program Assessment Procedures (the process used to plan, implement, and assess the work performed)

3. Key Personnel (laboratory personnel involved in QA and QC activities)
    a. Resumes
    b. Education and Experience Relevant to this Contract
    c. Training Records and Progress

B. Facilities and Equipment
1. Instrumentation and Backup Alternatives
2. Maintenance Activities and Schedules

C. Document Control
1. Laboratory Notebook Policy
2. Sample Tracking/Custody Procedures
3. Logbook Maintenance and Archiving Procedures
4. Complete Sample Delivery Group (SDG) File (CSF) Organization, Preparation, and Review Procedures
5. Procedures for Preparation, Approval, Review, Revision, and Distribution of SOPs
6. Process for Revision of Technical or Documentation Procedures

D. Analytical Methodology
1. Calibration Procedures and Frequency
2. Sample Preparation/Extraction Procedures
3. Sample Analysis Procedures
4. Standards Preparation Procedures
5. Decision Processes, Procedures, and Responsibility for Initiation of Corrective Action

E. Data Generation
1. Data Collection Procedures
2. Data Reduction Procedures
3. Data Validation Procedures
4. Data Reporting and Authorization Procedures

F. QA (an integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the EPA)
1. Data QA
2. Systems/Internal Audits
3. Performance/External Audits
4. Corrective Action Procedures (the continual improvement based on lessons learned from previous experience)
5. QA Reporting Procedures
6. Responsibility Designation

G. QC (the overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the EPA; operational techniques and activities that are used to fulfill requirements for quality)

1. Solvent, Reagent, and Adsorbent Check Analysis
2. Reference Material Analysis
3. Internal QC Checks
4. Corrective Action and Determination of QC Limit Procedures
5. Responsibility Designation

3.3 Submission of the Quality Assurance Project Plan

3.3.1 Initial Submission

The Contractor is required to submit their QAPP to the EPA CO within the number of days provided in the associated laboratory contract document. The Contractor shall maintain a QAPP (fully compliant with the requirements of this contract) on file at their facility for the term of the contract.

3.3.2 Revision Submissions

The revised QAPP will become the official QAPP under the contract and may be used during legal proceedings.

3.3.2.1 During the term of the contract, the Contractor shall amend the QAPP when the following circumstances occur:

- The EPA modifies technical requirements of the Statement of Work (SOW) or the contract;
- The EPA notifies the Contractor of deficiencies in the QAPP document;
- The EPA notifies the Contractor of deficiencies resulting from the EPA’s review of the Contractor’s performance;
- The Contractor identifies changes in organization, personnel, facility, equipment, policy, or procedures; or
- The Contractor identifies deficiencies resulting from the internal review of their organization, personnel, facility, equipment, policy, procedure, or QAPP document.

3.3.2.2 The Contractor shall submit the amended QAPP to the recipient(s) identified in Exhibit B – Reporting and Deliverables Requirements, Table 1 – Deliverable Schedule, within 14 days of the time when any one of the circumstances listed above occurs.

3.3.2.2.1 All changes in the QAPP shall be clearly marked (e.g., using a bar in the margin to indicate where the change is located in the document, highlighting the change by underlining the change, bold printing the change, or using a different print font) and the amended section pages must have the date on which the changes were implemented.

3.3.2.2.2 The Contractor shall archive all amendments to the QAPP document for future reference by the Government.

3.3.2.3 The Contractor shall send a copy of the latest version of the QAPP document within 7 days of a written request by the ASB CLP COR, as directed. The EPA requestor will designate the recipients.

4.0 STANDARD OPERATING PROCEDURES

4.1 Introduction

To obtain reliable results, adherence to prescribed analytical methodology is imperative. In any operation that is performed on a repetitive basis, reproducibility is best accomplished through the use of SOPs. As defined by the EPA, an SOP is a written document which provides directions for the step-by-step execution of an operation, analysis, or action which is commonly accepted as the method for performing certain routine or repetitive tasks. The Contractor shall follow the EPA Guidance for Preparing Standard Operating Procedures (SOPs), EPA QA/G-6 (EPA/600/B-07/001) (or subsequent version) for guidance.

4.1.1 SOPs prepared by the Contractor shall be functional (i.e., clear, comprehensive, up to date, and sufficiently detailed to permit duplication of results by qualified analysts).

4.1.2 All SOPs shall reflect activities as they are currently performed in the laboratory. In addition, all SOPs shall be:

- Consistent with current EPA regulations, guidelines, and CLP contract’s requirements;
- Consistent with instrument(s) manufacturer’s specific instruction manuals;
- Available to the Government during an on-site laboratory evaluation. A complete set of SOPs shall be available for inspection at such evaluations. During on-site laboratory evaluations, laboratory personnel may be asked to demonstrate the application of the SOPs;
- Available to designated recipients within 7 days, upon request by the ASB CLP COR;
- Capable of providing for the development of documentation that is sufficiently complete to record the performance of all tasks required by the protocol;
- Capable of demonstrating the validity of data reported by the Contractor and explaining the cause of missing or inconsistent results;
- Capable of describing the corrective measures and feedback mechanism utilized when analytical results do not meet protocol requirements;
- Reviewed regularly and updated as necessary when contract, facility, or Contractor procedural modifications are made;
- Archived for future reference in usability or evidentiary situations;
- Available at specific workstations, as appropriate;
- Reviewed and signed by all Contractor personnel performing actions identified in the SOP; and

- Subject to a document control procedure which precludes the use of outdated or inappropriate SOPs.

4.2 Format

The format for SOPs may vary depending upon the type of activity for which they are prepared. The SOPs shall be paginated consecutively in ascending order. At a minimum, the following sections shall be included:

- Title Page;
- Document Control;
- Scope and Applicability;
- Summary of Method;
- Definitions (acronyms, abbreviations, and specialized forms used in the SOP);
- Health and Safety;
- Personnel Qualifications;
- Interferences;
- Apparatus and Materials (list or specify; also note designated locations where found);
- Handling and Preservation;
- Instrument or Method Calibration;
- Sample Preparation and Analysis;
- Data Calculations;
- Procedures;
- QC limits;
- Corrective action procedures, including procedures for secondary review of information being generated;
- Documentation description and example forms;
- Data Management and Records Management;
- Miscellaneous notes and precautions; and
- References.

4.3 Required Standard Operating Procedures

The Contractor shall maintain the following SOPs:

4.3.1 Evidentiary SOPs for required chain of custody and document control.

4.3.2 Sample receipt and storage:

- Sample receipt and identification logbooks;
- Refrigerator temperature logbooks;
- Extract storage logbooks; and
- Security precautions.

4.3.3 Sample preparation:

- Reagent purity check procedures and documentation;
- Preparation and/or handling procedures;
- Preparation and/or handling bench sheets; and
- Preparation and/or handling logbook maintenance.

4.3.4 Glassware cleaning

4.3.5 Calibration (balances, pipettes, etc.):

- Procedures;
- Frequency requirements;
- Preventative maintenance schedule and procedures;
- Acceptance criteria and corrective actions; and
- Logbook maintenance authorization.

4.3.6 Analytical procedures (for each analytical system):

- Instrument performance specifications;
- Instrument operating procedures;
- Data acquisition system operation;
- Procedures used when automatic quantitation algorithms are overridden (e.g., manual integration, etc.);
- QC-required parameters;
- Analytical sequence/injection logbooks; and
- Instrument error and editing flag descriptions and resulting corrective actions.

4.3.7 Maintenance activities (for each analytical system):

- Preventative maintenance schedule and procedures;
- Corrective maintenance determinants and procedures; and
- Maintenance authorization.

4.3.8 Analytical standards:

- Standard coding/identification and inventory system;
- Standards preparation logbook(s);
- Standard preparation procedures;
- Procedures for equivalency/traceability analyses and documentation;
- Purity logbook (primary standards and solvents);
- Storage, replacement, and labeling requirements; and
- QC and corrective action measures.

4.3.9 Data reduction procedures:

- Data processing systems operation;
- Outlier identification methods;
- Identification of data requiring corrective action; and
- Procedures for format and/or forms for each operation.

4.3.10 Documentation policy/procedures:

- Contractor/analyst's notebook policy, including review policy;
- CSF contents;
- CSF organization and assembly procedures, including review policy; and
- Document inventory procedures, including review policy.

4.3.11 Data validation/self-inspection procedures:

- Data flow and chain of command for data review;
- Procedures for measuring precision and accuracy;
- Evaluation parameters for identifying systematic errors;
- Procedures to ensure that deliverables are complete and compliant with the requirements in Exhibit B – Reporting and Deliverables Requirements and Exhibit H – Format for Electronic Data Deliverables;
- Demonstration of internal QA inspection procedure [demonstrated by supervisory sign-off on personal notebooks, internal Performance Evaluation (PE) samples, etc.];
- Frequency and type of internal audits (e.g., random, quarterly, spot checks, perceived trouble areas);
- Demonstration of problem identification, corrective actions, and resumption of analytical processing. Sequence resulting from internal audit (i.e., QA feedback); and
- Documentation of audit reports (internal and external), response, corrective action, etc.

4.3.12 Data management and handling:

- Procedures for controlling and estimating data entry errors;
- Procedures for reviewing changes to data and deliverables and ensuring traceability of updates;
- Lifecycle management procedures for testing, modifying, and implementing changes to existing computing systems to include hardware, software, and documentation or installation of new systems;
- Database security, backup, and archival procedures including recovery from system failures;
- System maintenance procedures and response time;
- Individual(s) responsible for system operation, maintenance, data integrity, and security;
- Specifications for staff training procedures;

- Virus protection procedures for software and electronic data deliverables; and
- Storage, retrieval, and verification of the completeness and readability of instrument files transferred to electronic media.

4.4 Submission of the Standard Operating Procedures

4.4.1 Initial Submission

The Contractor is required to submit their SOPs to the EPA CO within 60 days after contract award. The Contractor shall maintain on file a complete set of SOPs, fully compliant with the requirements of this contract for the term of the contract.

4.4.2 Revision Submissions

The revised SOPs will become the official SOPs under the contract and may be used during legal proceedings.

4.4.2.1 During the term of the contract, the Contractor shall amend the existing SOPs or develop new ones when the following circumstances occur:

- The EPA modifies the technical requirements of the SOW or the contract;
- The EPA notifies the Contractor of deficiencies in their SOP documentation;
- The EPA notifies the Contractor of deficiencies resulting from the EPA's review of the Contractor's performance;
- The Contractor's procedures change;
- The Contractor identifies deficiencies resulting from the internal review of SOP documentation; or
- The Contractor identifies deficiencies resulting from the internal review of procedures.

4.4.2.2 The Contractor shall submit the amended or new SOPs to the recipient(s) identified in Exhibit B – Reporting and Deliverables Requirements, Table 1 – Deliverable Schedule, within 14 days of the time when any one of the circumstances listed above occurs.

4.4.2.2.1 All changes in the SOPs must be clearly marked (e.g., using a bar in the margin to indicate where the change is located in the document, highlighting the change by underlining the change, bold printing the change, or using a different print font) and the amended/new SOPs must have the date on which the changes were implemented.

4.4.2.2.2 The Contractor shall document the reasons for the changes and archive all amended SOPs for future reference by the Government. Documentation of the reason(s) for changes to the SOPs shall also be submitted along with the SOPs.

4.4.2.3 The Contractor shall send a copy of the latest version of the SOPs within 7 days of a written request by the ASB CLP COR, as directed. The EPA requestor will designate the recipients.

5.0 CHAIN OF CUSTODY

5.1 Introduction

A sample is physical evidence collected from a facility or the environment. Controlling evidence is an essential part of the hazardous waste investigation effort. To ensure that the EPA's sample data and records supporting sample-related activities are admissible as evidence in litigation, Contractors are required to maintain EPA furnished samples under chain of custody and to account for all samples and supporting records of sample handling, preparation, and analysis.

The Contractor shall develop and implement the following SOPs for sample chain of custody under this contract. The Contractor shall provide the following SOPs: sample receiving, sample identification, sample security, sample storage, sample tracking and document control, electronic sample data control, and CSF organization and assembly, to ensure accountability of sample chain of custody, as well as control of all sample-related records.

5.2 Sample Receiving

5.2.1 The Contractor shall designate a sample custodian responsible for receiving Government-furnished samples.

5.2.2 The Contractor shall designate a representative to receive Government-furnished samples in the event that the sample custodian is not available.

5.2.3 The sample custodian or a designated representative shall verify and record on Form DC-1 the agreement or disagreement of information recorded on all documents received with samples and information recorded on sample containers.

5.2.4 The sample custodian or a designated representative shall verify and record the following information on Form DC-1 as samples are received and inspected:

- Presence or absence and condition of custody seals on shipping and/or sample containers;
- Custody seal numbers, when present;
- Presence or absence of Traffic Report/Chain of Custody (TR/COC) Records;
- Presence or absence of airbills or airbill stickers;
- Airbill or airbill sticker numbers;
- Shipping container ID number associated with airbill number;
- Presence or absence of shipping container temperature indicator bottle;
- Shipping container temperature;
- Condition of the sample bottles;
- Presence or absence of sample tags. If sample tags are present, the tag numbers shall not be recorded on Form DC-1 or the information on the tags verified against the TR/COC Records unless requested;
- Date of receipt;

- Time of receipt;
- EPA Sample Numbers;
- Assigned laboratory numbers;
- Remarks regarding condition of sample shipment;
- Samples delivered by hand; and
- Problems and discrepancies.

5.2.5 The sample custodian or a designated representative shall sign, date, and record the time on all accompanying forms, when applicable, at the time of sample receipt (e.g., TR/COC Records and airbills).

NOTE: Initials are not acceptable.

5.2.6 The Contractor shall contact the Sample Management Office (SMO) to resolve problems and discrepancies including, but not limited to: absent documents, conflicting information, and absent or broken custody seals.

5.2.7 The Contractor shall record resolution of all problems and discrepancies communicated through SMO in the SDG Narrative (see Exhibit B – Reporting and Deliverables Requirements, Section 2.4) and/or in the communication logs.

5.3 Sample Identification

5.3.1 The Contractor shall maintain the identity of Government-furnished samples and prepared samples (including extracts, digested samples, and distilled samples) throughout the laboratory.

5.3.2 Each sample and sample preparation container shall be labeled with the EPA Sample Number or a unique laboratory sample identification number.

5.4 Sample Security

5.4.1 The Contractor shall demonstrate that sample custody is maintained from receiving through retention or disposal. A sample is in custody if:

- It is in the Contractor’s possession; or
- It is in the Contractor’s view after being in possession; or
- It is locked in a secure area after being in the Contractor’s possession; or
- It is in a designated secure area, accessible only to authorized personnel.

5.4.2 The Contractor shall demonstrate security of designated secure areas.

5.5 Sample Storage

The Contractor shall designate storage areas for Government-furnished samples and prepared samples.

5.6 Sample Tracking and Document Control

5.6.1 The Contractor shall record all activities performed on Government-furnished samples.

5.6.2 Titles which identify the activities recorded shall be printed on each page of all laboratory documents (activities include, but are not limited to: sample receipt, sample storage, sample preparation, sample analysis, CSF organization and assembly, and sample retention or disposal). When a document is a record of analysis, the instrument type and parameter group shall be included in the title.

5.6.3 When columns are used to organize information recorded on laboratory documents, the information recorded in the columns shall be identified in a column heading.

5.6.4 Reviewers' signatures shall be identified on laboratory documents when reviews are conducted.

NOTE: Individuals recording review comments on computer-generated raw data shall sign (or initial) and date the written comments. The Laboratory Name shall be identified on pre-printed laboratory documents.

5.6.5 Each laboratory document entry shall be dated in the format MM/DD/YYYY (e.g., 01/01/2030) and signed (or initialed) by the individual(s) responsible for performing the recorded activity at the time the activity is recorded.

5.6.6 Notations on laboratory documents shall be recorded in ink.

5.6.7 Corrections to laboratory hardcopy and raw data shall be made by drawing single lines 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.

5.6.8 Unused portions of laboratory documents shall be lined out, signed (or initialed), and dated.

5.6.9 Pages in bound and unbound logbooks shall be sequentially numbered.

5.6.10 Each page in bound and unbound logbooks shall be dated (MM/DD/YYYY) and signed (no initials) at the bottom by the individual recording the activity (if a single entry is made on a page) or by the last individual recording information on the page (if multiple entries are on the same page).

5.6.11 Instrument-specific analytical sequence logs shall be maintained to enable the reconstruction of analytical sequences.

5.6.12 Logbook entries must be in chronological order.

5.6.13 Information inserted into laboratory documents shall be affixed permanently in place. The individual responsible for inserting information shall sign and date across the insert and logbook page at the time information is inserted.

5.6.14 The Contractor shall document disposal or retention of Government-furnished samples, remaining portions of samples, and prepared samples.

5.6.15 All original documents containing handwritten entries for later transcription or entry to electronic systems shall be retained.

5.7 Electronic Sample Data Control

5.7.1 Contractor personnel responsible for original data entry shall be identified at the time of data input.

5.7.2 The Contractor shall make changes to electronic data in a manner which ensures that the original data entry is preserved, the editor is identified, and the revision date is recorded.

5.7.3 The Contractor shall routinely verify the accuracy of data entered manually, electronically, and acquired from instruments.

5.7.4 The Contractor shall routinely verify documents produced by the electronic data collection system to ensure accuracy of the information reported.

5.7.5 The Contractor shall ensure that the electronic data collection system is secure.

5.7.5.1 The electronic data collection system shall be maintained in a secure location.

5.7.5.2 Access to the electronic data collection system functions shall be limited to authorized personnel through utilization of software security techniques (e.g., log-ons or restricted passwords).

5.7.5.3 Electronic data collection systems shall be protected from the introduction of external programs or software (e.g., viruses).

5.7.6 The Contractor shall designate archive storage areas for electronic data and the software required to access the data.

5.7.7 The Contractor shall designate an individual responsible for maintaining archives of electronic data, including the software.

5.7.8 The Contractor shall maintain the archives of electronic data and necessary software in a secure location that shall be accessible only to authorized personnel.

5.8 Complete Sample Delivery Group File Organization and Assembly

5.8.1 The Contractor shall designate a Document Control Officer responsible for the organization and assembly of the CSF.

5.8.2 The Contractor shall designate a representative responsible for the organization and assembly of the CSF in the event that the Document Control Officer is not available.

5.8.3 The Contractor shall maintain documents relating to the CSF in a secure location.

5.8.4 All original laboratory forms and copies of SDG-related logbook pages shall be included in the CSF.

5.8.5 Copies of laboratory documents in the CSF shall be copied in a manner to provide complete and legible replicates.

5.8.6 Documents relevant to each SDG including, but not limited to, the following shall be included in the CSF:

- Logbook pages;
- Bench sheets;
- Screening records;
- Preparation records;

- Repreparation records;
- PE sample instructions;
- Chromatograms;
- Analytical records;
- Reanalysis/Re-extraction records;
- TR/COC Records;
- Sample tracking records;
- Raw data summaries;
- Computer printouts;
- Records of failed or attempted analysis;
- Correspondence;
- FAX originals; and
- Other.

5.8.7 The Document Control Officer or a designated representative shall ensure that sample tags (if present) are encased in clear plastic bags before placing them in the CSF.

5.8.8 CSF documents shall be organized and assembled on an SDG-specific basis.

5.8.9 Original documents which include information relating to more than one SDG (e.g., TR/COC Records, calibration logs) shall be filed in the CSF with the lowest SDG Number, and copies of these originals shall be placed in the other CSF(s). The Document Control Officer or a designated representative shall record the following statement on the copies in (indelible) dark *ink*:

COPY
ORIGINAL DOCUMENTS ARE INCLUDED IN CSF

_____
Signature

_____
Date

5.8.10 All CSFs shall be submitted with a completed Form DC-2. All resubmitted CSFs shall be submitted with a new or revised Form DC-2.

5.8.11 Each item in the CSF and resubmitted CSFs shall be inventoried and assembled in the order specified on Form DC-2. Each page of the CSF shall be sequentially numbered. Page number ranges shall be recorded in the columns provided on Form DC-2. Intentional gaps in the page numbering sequence shall be recorded in the "Comments" section on Form DC-2. When inserting new or inadvertently omitted documents, the Contractor shall identify them with unique accountable numbers. The unique accountable numbers and the locations of the documents shall be recorded in the "Other Records and related Communication Logs" section on Form DC-2.

5.8.12 Before shipping each CSF, the Document Control Officer or a designated representative shall verify the agreement of information recorded on all documentation and ensure that the information is consistent and the CSF is complete.

5.8.13 The Document Control Officer or a designated representative shall document the shipment of deliverable packages, including what was sent, the recipients, the date, and the carrier used.

5.8.14 Shipments of deliverable packages, including resubmissions, shall be sealed with custody seals by the Document Control Officer or a designated representative in a manner such that opening the packages would break the seals.

5.8.15 Custody seals shall be signed and dated by the Document Control Officer or a designated representative when sealing deliverable packages.

EXHIBIT F

PROGRAMMATIC QUALITY ASSURANCE/QUALITY CONTROL ELEMENTS

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Exhibit F – Programmatic Quality Assurance/Quality Control Elements

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1.0 OVERVIEW

Quality Assurance (QA) and Quality Control (QC) are integral parts of the U.S. Environmental Protection Agency's (EPA's) Contract Laboratory Program (CLP). This integrated program is required to generate data of known and documented quality. The QA process consists of management reviews and oversight at the planning, implementation, and completion stages of the environmental data collection activity, and ensures that data provided are of the quality required. The QC process includes those activities required during data collection to produce the data quality desired and to document the quality of the collected data.

During the planning of an environmental data collection program, the activities focus on defining data quality criteria and designing a QC system to measure the quality of the data being generated. During the implementation of the data collection effort, the QA activities ensure that the QC system is functioning effectively, and the deficiencies uncovered by the QC system are corrected. After the environmental data are collected, QA activities focus on assessing the quality of data obtained to determine its suitability to support enforcement or remedial decisions.

2.0 INTRODUCTION

Appropriate use of data generated under the large range of analytical conditions encountered in environmental analyses requires reliance on the QC procedures and criteria incorporated into the methods. The data acquired from QC procedures are used to estimate and evaluate the information content of analytical results and to determine the necessity for, or the effects of, corrective action procedures. The parameters used to estimate information content include precision, accuracy, and other quantitative and qualitative indicators.

This Exhibit describes the overall programmatic QA/QC operations and the minimum QC operations necessary to satisfy the analytical requirements associated with the determination of the different method analytes. These QC operations are designed to facilitate laboratory comparison by providing the EPA with comparable data from all Contractors. These requirements do not release the analytical Contractor from maintaining their own QC checks on method and instrument performance.

3.0 GENERAL QUALITY ASSURANCE/QUALITY CONTROL PRACTICES

The necessary components of a complete QA/QC program include internal QC criteria that demonstrate compliant levels of performance, as determined by the Contractors' QA review, and external QC review of data and procedures that is accomplished by the monitoring activities of the EPA.

Each external review accomplishes a different purpose. External reviews may include: Proficiency Testing, data assessment, on-site laboratory audits, data package audits, electronic data audits, and EPA Regional data review. A feedback loop provides the results of these various review functions to the Contractor through communications with the EPA.

4.0 PROFICIENCY TESTING PROGRAM

As a means of measuring and evaluating both the Contractor's and the method's analytical performance, the Contractor shall participate in the EPA's Proficiency Testing (PT) Program. The EPA's PT Program involves the analysis of Case-specific Performance Evaluation (PE) samples and PT audits. The Contractor's PE and PT audit sample results will be used by the EPA to assess and verify the Contractor's continuing ability to produce acceptable analytical data in accordance with the contractual requirements. The Contractor must receive a passing score of 75 to be in compliance with the contract.

4.1 Performance Evaluation Samples

4.1.1 PE sample(s) may be scheduled with the Contractor as frequently as on a Sample Delivery Group (SDG)-by-SDG basis.

4.1.2 PE samples will be provided as either single-blinds (recognizable as a PE sample, but of unknown composition) or as double-blinds (not recognizable as a PE sample and of unknown composition). The Contractor will not be informed of either the analytes or the concentrations in the PE samples.

4.1.3 The Contractor may receive the PE samples as either full volume samples or ampulated/bottled concentrates from the EPA or a designated EPA Contractor. The PE samples will come with instructions concerning the unique preparation procedures, if any, required to reconstitute the PE samples (i.e., the required dilution of the PE sample concentrate). PE samples are to be prepared and analyzed with the rest of the routine samples in the SDG. The Contractor shall prepare and analyze the PE sample using the procedures described in the sample preparation and method analysis sections of Exhibit D – Analytical Methods. All contract required QC shall also be met.

4.1.4 The PE sample results are to be submitted in the SDG deliverable package per the normal reporting procedures detailed in Exhibit B – Reporting and Deliverables Requirements. If these requirements are not met, the EPA Region may reject all the data associated with the SDG.

4.1.5 The Contractor shall be responsible for correctly identifying and quantitating the analytes included in each PE sample. When PE sample results are received by the EPA, the PE sample results will be evaluated for correct analytical identification and quantitation. The results of the PE sample evaluation will be provided to the Contractor via coded evaluation sheets, by analyte. The EPA will notify the Contractor of unacceptable performance.

4.2 Proficiency Testing Audits

4.2.1 A PT audit is a unique analytical Case containing only PT audit samples. The PT audit samples will be scheduled by the EPA Analytical Services Branch (ASB) through the Sample Management Office (SMO). PT audit samples assist the EPA in monitoring Contractor performance.

4.2.2 PT audit samples will be provided as single-blinds (recognizable as a PT audit sample, but of unknown composition). The Contractor will not be informed of either the analytes or the concentrations in the PT audit samples.

4.2.3 The Contractor may receive the PT audit samples as either full volume samples or ampulated/bottled concentrates from the EPA or a designated EPA Contractor. The PT audit samples will come with instructions concerning the unique preparation procedures, if any, required to reconstitute the PT audit samples (i.e., the required dilution of the PT audit sample concentrate). The Contractor shall prepare and analyze the PT audit samples using the procedures described in the sample preparation and method analysis sections of Exhibit D – Analytical Methods. All contract required QC shall be met, including matrix spike, matrix spike duplicate, and laboratory duplicate as applicable.

4.2.4 The PT audit sample results are to be submitted in the SDG deliverable package per the normal reporting procedures detailed in Exhibit B - Reporting and Deliverables Requirements.

4.2.5 The Contractor shall be responsible for correctly identifying and quantitating the analytes included in each PT audit sample. When PT audit sample results are received by the EPA, the PT audit sample results will be scored for correct analytical identification, quantitation, and timeliness. The PT audit sample scoring will be provided to the Contractor via coded evaluation sheets, by analyte.

4.2.6 The EPA will notify the Contractor of unacceptable performance. The Contractor’s overall and method-specific PT audit sample performance will be assessed into one of the following three categories:

4.2.6.1 Acceptable, No Response Required: Score greater than or equal to 90. The data meets most or all of the scoring criteria. No response is required.

4.2.6.2 Acceptable, Response Explaining Deficiencies Required: Score greater than or equal to 75, but less than 90. Deficiencies exist in the Contractor’s performance. Corrective action response required.

4.2.6.3 Unacceptable Performance, Response Explaining Deficiencies Required: Score less than 75. Corrective action response required.

4.2.7 In the case of Section 4.2.6.2 or 4.2.6.3, the Contractor shall describe the deficiency(ies) and the action(s) taken in a corrective action letter to the EPA Contracting Officer (CO) and the EPA ASB CLP Contracting Officer’s Representative (ASB CLP COR) within 14 days of receipt of notification from the EPA.

4.2.8 A remedial PT audit is a unique analytical Case containing only PT audit samples. A remedial PT audit may be scheduled by EPA ASB with the Contractor(s) for any of the following reasons: unacceptable PE sample performance and/or major change in the laboratory (e.g., relocation, new owner, or high turnover of key personnel). The Contractor may not receive samples under this contract until acceptable performance of a remedial PT audit sample is achieved. Sections 4.2.2 through 4.2.7 apply to the remedial PT audit process.

4.2.9 The Contractor shall be notified by the EPA CO concerning agreement or disagreement with the proposed remedy for unacceptable performance.

5.0 DATA ASSESSMENT

5.1 Overview

5.1.1 Data assessment is one aspect of the Government's contractual right of inspection of analytical data. Data assessment examines the Contractor's adherence to the contract requirements based on the data in the Portable Document Format (PDF) file of the Complete SDG File (CSF) and the Electronic Data Deliverable (EDD) delivered to the EPA.

5.1.2 To ensure uniform assessment, a set of standardized procedures has been developed to evaluate the data submitted by a Contractor against the technical and completeness requirements of the Statement of Work (SOW), the criteria in the National Functional Guidelines for Data Review (NFG), and contract. Data assessment is performed by SMO at the direction of the EPA, and consists of Contract Compliance Screening (CCS) and review based on the NFG criteria. The EPA reserves the right to add and/or delete individual checks/tests performed as part of data assessment.

5.2 Data Assessment Results

CCS results are used in conjunction with other information to measure overall Contractor performance and to take appropriate actions to correct deficiencies in performance. These results are distributed to the Contractor and all other data recipients. The Contractor shall correct deficiencies found as part of the CCS review and submit corrections within 6 business days. The Contractor shall send all corrections to the EPA Regional CLP COR and SMO. The results of the review based on the NFG criteria are used to establish data usability, and are distributed to the EPA Regions only. EPA Regions may request additional information or resubmission of data based on these findings through SMO.

5.3 Contract Compliance Screening Trend Report

The EPA will periodically generate a CCS Trend Report which summarizes CCS results over a given period of time. The Government may send the CCS Trend Report to the Contractor, or discuss the CCS Trend Report during an on-site laboratory audit. The Contractor shall address the deficiencies and the subsequent corrective actions implemented by the Contractor to correct the deficiencies in a detailed letter to the ASB CLP COR and the EPA CO, within 14 days of receipt of the report.

6.0 ON-SITE LABORATORY AUDITS

6.1 Overview

The EPA Regional CLP COR, the ASB CLP COR, or the EPA CO's authorized representative will conduct an on-site laboratory audit. On-site laboratory audits are performed to monitor the Contractor's ability to meet selected terms and conditions specified in the contract.

6.2 On-Site Audit

QA evaluators inspect the Contractor's facilities to verify the adequacy and maintenance of instrumentation; the continuity, experience, and education of personnel; and the acceptable performance of analytical and QC procedures. Auditors conduct on-site laboratory audits to evaluate if laboratory policies and procedures are in place to satisfy evidence handling requirements.

6.2.1 The items monitored during an on-site audit may include, but not be limited to, the following:

- Size and appearance (e.g., cleanliness, organization) of the facility;
- Quantity, age, availability, scheduled maintenance, and performance of instrumentation;
- Quantity and condition of sample preparation, extraction, and cleanup equipment;
- Availability, review, appropriateness, and utilization of the Quality Assurance Project Plan (QAPP) and Standard Operating Procedures (SOPs);
- Staff qualifications, experience, and personnel training programs;
- Analysis of PE samples (may be in the presence of the EPA-designated team);
- Method Detection Limit (MDL) and Interelement Correction Factors (IEC) studies;
- Reagents, standards, and sample storage facilities;
- All logbooks (e.g., standards and reagent preparation logs, analysis logs, instrument maintenance logs);
- All raw analytical data; and
- Review of the Contractor's sample analysis, data package assembly, inspection, completion, and data management procedures.

6.2.2 Prior to an on-site audit, various documentation pertaining to the Contractor's performance is reviewed by the audit team and may be discussed during the audit. Items that may be discussed include, but not be limited to, the following:

- Previous on-site audit reports;
- PE or PT audit sample scores;
- EPA Regional review of data;
- Contractor performance information;
- Data and electronic audit reports;

- Results of CCS; and
- Data trend reports.

6.3 Discussion of the On-Site Audit Findings

The auditors will present their findings and recommendations for corrective actions necessary to Contractor personnel during a debriefing meeting at the conclusion of the audit. A report which discusses deficiencies found during the on-site audit will be sent to the Contractor to provide further clarification of the findings.

6.3.1 The Contractor shall discuss the deficiencies and the subsequent corrective actions implemented by the Contractor to resolve the deficiencies in a detailed letter to the EPA Regional CLP COR, the ASB CLP COR, and the EPA CO, within 14 days of receipt of the report.

7.0 DATA PACKAGE AUDITS

7.1 Overview

Audits provide the EPA with an in-depth inspection and evaluation of the Case data package with regard to achieving QA/QC acceptability. Data package audits enable the EPA to evaluate the implementation, precision, and accuracy of the analytical methods. The audits are performed by the EPA to support the following activities:

- Program overview;
- Contractual requirements and data consistency;
- Identification/Investigation of data quality problems;
- Support for on-site laboratory audits; and
- Specific EPA Regional requests.

7.2 Required Information

Data packages are periodically selected from recently received Cases and evaluated for the technical quality of raw data, QA, and the adherence to contractual requirements. A thorough review of the raw data, including all instrument readouts used for the sample results, instrument printouts, and other documentation, is completed to identify deviations from the contractual requirements. In addition, a check for transcription and calculation errors, a review of the qualifications of the laboratory personnel involved with the Case, and a review of the latest version of all SOPs on file are performed. This function provides external monitoring of the Contractor’s compliance with program QA/QC requirements. Data package audits are used to assess the technical quality of the data and evaluate overall laboratory performance.

7.3 Submission Request

The data package from a recent Case, a specific Case, or a PE sample may be requested. Upon request from the EPA Regional CLP COR, the ASB CLP COR, or the EPA CO, the Contractor shall send the required data package and all necessary documentation to the EPA designated recipient within 7 days of notification in accordance with Exhibit B - Reporting and Deliverables Requirements, Table 1 – Deliverable Schedule.

7.4 Response to the Data Package Audit Report

After completing the data package audit, the EPA will make the data package audit report available to the Contractor. The Contractor shall discuss the corrective actions implemented to resolve the deficiencies listed in the data package audit report in a detailed letter to the designated recipients, within 14 days of receipt of the report.

8.0 ELECTRONIC DATA AUDITS

8.1 Overview

Audits provide the EPA with an in-depth inspection and evaluation of the electronic data with regard to achieving QA/QC acceptability. Electronic data audits enable the EPA to evaluate the implementation, precision, and accuracy of the analytical methods. The audits are performed by the EPA to support the following activities:

- Program overview;
- Contractual requirements and data consistency;
- Identification/Investigation of data quality problems;
- Support for on-site laboratory audits; and
- Specific EPA Regional requests.

8.2 Required Information

Data packages are periodically selected from recently received Cases and evaluated for the technical quality of raw data, QA, and the adherence to contractual requirements. A thorough review of the raw data, including all instrument readouts used for the sample results, instrument printouts, and other documentation, is completed to identify deviations from the contractual requirements. In addition, a check for transcription and calculation errors, a review of the qualifications of the laboratory personnel involved with the Case, and a review of the latest version of all SOPs on file are performed. This function provides external monitoring of the Contractor’s compliance with program QA/QC requirements. Electronic data audits are used to assess the technical quality of the data and evaluate overall laboratory performance.

8.2.1 The Contractor shall store all raw and processed analytical data in appropriate instrument manufacturer’s proprietary software format, uncompressed, and with no security codes. This data shall include all the data files necessary for a complete reconstruction of the previously submitted PDF file and electronic deliverable data package. The Contractor is required to retain the instrument electronic data for 3 years after submission of the reconciled CSF.

8.2.2 All associated raw data files in the instrument manufacturer proprietary software format shall be submitted if those files contain data or instrumental parameters regarding any analysis and or correction applied to an instrument or analytical result. This electronic data shall include all appropriate analyses for the method. The data shall include, but is not limited to: all samples, blanks, Laboratory Control Samples (LCSs), matrix spikes, post-digestion/distillation spikes, matrix spike duplicates, laboratory duplicates, serial dilutions, Interference Check Samples, tunes, initial calibrations/verifications, and continuing calibration verifications.

8.2.3 The Contractor shall maintain a written reference logbook of data files of the EPA Sample Number, calibration data, standards, blanks, spikes, duplicates, and LCSs. The logbook shall include the EPA Sample Numbers, and standard and blank IDs, identified by Case.

8.2.4 The Contractor shall supply, upon request, raw data for the MDL studies which are used to set the MDL values for the SDG.

8.2.5 Electronic data provided to the EPA-designated recipient must be fully usable by the recipient. When submitting instrument electronic data to the EPA, the following materials shall be delivered in response to the request:

8.2.5.1 All associated raw data files for all analytical samples, calibration, and QC data.

8.2.5.2 All processed data files and quantitation output files associated with the raw data files described in Section 8.2.5.1.

8.2.5.3 All associated identification and calculation files used to generate the data submitted in the data package. This includes, but is not limited to: result files, acquisition files, calibration files, and method files.

8.2.5.4 References relating data files to EPA Sample Numbers, calibration data, standards, blanks, spikes, duplicates, and LCSs. The logbook shall include the EPA Sample Numbers and Lab File Identifiers for all samples, blanks, and standards, identified by Case and SDG.

8.2.5.5 A printout of the directory of all files in each directory, including all subdirectories and the files contained therein.

8.2.5.6 A copy of the CSF, if an audit request is made within the period during which the Contractor must retain a copy.

8.2.5.7 A statement attesting to the completeness of the instrument electronic data submission, signed and dated by the Contractor’s Laboratory Manager or Manager’s designee. The Contractor shall also provide a statement attesting that the data reported have not been altered in any way. These statements shall be part of a cover sheet that includes the following information relevant to the data file submission:

- Contractor name;
- Date of submission;
- Case Number;
- SDG Number;
- Instrument manufacturer and model number;
- Instrument operating software and version number;
- Data system computer;
- System operating software;
- Data system network;
- Data backup software/service;
- Data analysis software;
- Media type and volume of data (in MB) backed up; and

- Names and telephone numbers of two Contractor contacts for further information regarding the submission.

8.3 Submission of Request

The instrument electronic data from a recent Case, a specific Case, or a PE sample may be requested. Upon request from the EPA Regional CLP COR, the ASB CLP COR, or the EPA CO, the Contractor shall send the required instrument electronic data and all necessary documentation to the EPA's designated recipient within 7 days of notification in accordance with Exhibit B - Reporting and Deliverables Requirements, Table 1 – Deliverable Schedule.

8.4 Response to the Electronic Data Audit Report

After completion of the electronic data audit, the EPA will make the electronic data audit report available to the Contractor. The Contractor shall discuss the corrective actions implemented to resolve the deficiencies listed in the electronic data audit report in a detailed letter to the designated recipients, within 14 days of receipt of the report.

9.0 REGIONAL DATA REVIEW

9.1 Overview

Contractor data are generated to meet the specific needs of the EPA Regions. In order to verify the usability of data for the intended purpose, each EPA Region reviews data from the perspective of the end user, based on the guidelines in the NFG documents which have been developed jointly by the EPA Regions and EPA ASB. Each EPA Region uses the guidelines as the basis for data evaluation. Individual EPA Regions may augment the basic guideline review process with additional review based on the EPA Region-specific or site-specific concerns. The EPA Regional reviews, like the sites under investigation, vary based on the nature of the problem under investigation and the EPA Regional response appropriate to the specific circumstances.

The EPA Regional data reviews, which relate usability of the data to a specific site, are part of the collective assessment process. They use reports generated by the Electronic Data Exchange and Evaluation System (EXES) to establish laboratory data deliverables compliance with the SOW, contract, and the NFG as an aide in their data validation process.

9.2 Submission Request

As part of the CLP contractual requirements, CLP laboratories shall deliver the hardcopy CSF for each SDG, if requested by the EPA Region at the time of scheduling, to the EPA Region where the samples have been collected. The EPA Regional recipients are also identified at the time of scheduling. The data shall be shipped in accordance to the procedures described in Exhibit B - Reporting and Deliverables Requirements of this SOW. The EPA Regions use the data that the laboratories upload via EXES, EXES reports and spreadsheets, as well as the hardcopy CSF to perform their data review. The EPA Regions may contact the laboratory after they initiate or complete their review requesting additional information or clarification, and will include the EPA Regional CLP COR and SMO in all communication. The Contractor shall respond to the request within 3 business days.

10.0 TABLES

TABLE 1. CONTRACT LABORATORY PROGRAM QUALITY ASSURANCE MONITORING PLAN

SOW Reference	Performance Requirements	Performance Standards	QA Monitoring Plan
Exhibit A: Summary of Requirements	Summary of Program Requirements	Performance standards are summarized in Exhibit A, Section 4.0.	QA monitoring plan is outlined in Exhibit F.
Exhibit B: Reporting and Deliverables Requirements	Reporting and Deliverable Requirements	Performance standards are outlined in Exhibit B.	Data Assessment in Exhibit F, Section 5.0, and SMO data review will be used to monitor laboratory compliance with the contract and SOW requirements by assessing the EDD and PDF file deliverables.
Exhibit C: Target Analyte List and Contract Required Quantitation Limits	Target Analyte List and Contract Required Quantitation Limits	Performance standards are outlined in Exhibit C.	QA monitoring plan is outlined in Exhibit F.
Exhibit D: Analytical Methods	Introduction to Analytical Methods	Performance standards for stock standards are outlined in Exhibit D - Introduction, Section 4.0, and shall be performed as stated.	Randomly, the EPA will review analytical standards verification and preparation documentation, as deemed appropriate.
	General Analyses requirements are outlined in Exhibit D, Sections 1.0 through 8.0, 14.0, and 15.0.	Performance standards are outlined in Exhibit D, Sections 9.0 through 12.0.	QA monitoring plan is outlined in Exhibit D, Section 12.0, and Exhibit F.
	Method requirements are outlined in Exhibit D, Sections 1.0 through 8.0, 14.0, and 15.0.	Performance standards are outlined in Exhibit D, Sections 9.0 through 12.0.	QA monitoring plan is outlined in Exhibit D, Section 12.0, and Exhibit F.

SOW Reference	Performance Requirements	Performance Standards	QA Monitoring Plan
Exhibit E: Quality Systems	General QA/QC Requirements	As outlined in each Exhibit D, Section 12.0.	The Quality Management Plan (QMP) is outlined in Exhibit E, Section 2.0.
	Quality Assurance Project Plan	As outlined in Exhibit E, Section 3.0, a written QAPP shall be used to ensure acceptable data production of known and documented quality.	The EPA will review and approve the QAPP after contract award and throughout the contract term as needed. *(The QMP will be reviewed and approved by the EPA prior to contract award.)*
	Standard Operating Procedures	Performance standards are outlined in Exhibit E, Section 4.0, and shall be performed as stated.	SOPs will be reviewed by the EPA during on-site audits, after modifications are made, and randomly, as deemed appropriate.
	Data Management	Performance standards are outlined in Exhibit E, Section 4.3.12.	The EPA will monitor data management practices during QA and evidentiary on-site audits.
Exhibit F: Programmatic Quality Assurance/ Quality Control Elements	Proficiency Testing Audits	Performance standards are outlined in Exhibit F, Section 4.2, and shall be performed as stated.	Acceptable PT audit scores will assist in monitoring Contractor performance as defined in Exhibit F, Section 4.2.6.
	Data Assessment: Contract Compliance Screening and National Functional Guidelines Data Review	Performance standards are outlined in the contract and shall be performed as stated.	EDD and PDF file of the CSF for each SDG will be evaluated to establish compliance with the technical and completeness requirements of the contract, SOW, and NFG.
	On-Site Laboratory Audits	Performance standards are outlined in Exhibit F, Section 6.2.	The EPA will evaluate the results from QA and evidentiary on-site audits as defined in Exhibit F, Section 6.3, to assist in monitoring the Contractor.
	Data Package Audits	Performance standards are outlined in Exhibit F, Section 7.0.	Data package audits are performed by the EPA to evaluate technical quality of the raw data, QA, and adherence to contractual requirements.
	Electronic Data Evaluation and Audits	Performance standards are outlined in Exhibit F, Section 8.0.	The EPA uses Exhibit F, Section 8.0, to monitor laboratory electronic deliverables.

SOW Reference	Performance Requirements	Performance Standards	QA Monitoring Plan
Exhibit F: Programmatic Quality Assurance/ Quality Control Elements (Cont'd)	Regional Data Review	Analytical data is reviewed by each EPA Region from the perspective of the end user to determine the usability of the data, as outlined in Exhibit F, Section 9.0.	The EPA Regional validation and/or SMO data review reports are generated for all data packages.
Exhibit G: List of Abbreviations & Acronyms, Glossary of Terms, and Equations	Glossary of Terms and Equations	Contractors shall adhere to interpretation of SOW terms and equations as defined within Exhibit G.	N/A
Exhibit H: Format for Electronic Data Deliverables	Data Element Dictionary and Format	Performance standards are outlined in Exhibit H.	Data Assessment in Exhibit F, Section 5.0, will be used to monitor electronic deliverables compliance to SOW and NFG reporting specifications.

EXHIBIT G

LIST OF ABBREVIATIONS & ACRONYMS, GLOSSARY OF TERMS, AND EQUATIONS

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Exhibit G – List of Abbreviations & Acronyms, Glossary of Terms, and Equations

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1.0 LIST OF ABBREVIATIONS & ACRONYMS

LIST of ABBREVIATIONS & ACRONYMS	
ABBREVIATION/ACRONYM	DEFINITION
AA	Atomic Absorption
ASB	Analytical Services Branch
ASB CLP COR	Analytical Services Branch Contract Laboratory Program Contracting Officer’s Representative
ASE	Accelerated Solvent Extractor
BFB	4-bromofluorobenzene
BNA	Base Neutral Acid
%Breakdown	Percent Breakdown
°C	Degrees Celsius (unit of measurement)
CAS	Chemical Abstracts Service
CCB	Continuing Calibration Blank
CCS	Contract Compliance Screening
CCV	Continuing Calibration Verification
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CF	Calibration Factor
$\overline{CF}$	Mean Calibration Factor
CFR	Code of Federal Regulations
CLP	EPA Contract Laboratory Program
cm	Centimeter (unit of measurement)
CO	Contracting Officer
COC	Chain of Custody
COR	Contracting Officer’s Representative
Cr(VI)	Hexavalent Chromium
CRQL	Contract Required Quantitation Limit
CSF	Complete SDG File
CSV	Comma-Separated Values
CVAA	Cold Vapor Atomic Absorption Spectroscopy
%D	Percent Difference
DF	Dilution Factor
DFTPP	Decafluorotriphenylphosphine
DMC	Deuterated Monitoring Compound
DRD	Data Receipt Date
DTD	Document Type Definition
Dup	Duplicate Sample
EDD	Electronic Data Deliverable
EI	Electron Ionization
EICP	Extracted Ion Current Profile
EPA	United States Environmental Protection Agency
EXES	Electronic Data Exchange and Evaluation System
FCC	Federal Communications Commission
FEP	Fluorinated Ethylene Propylene
g	Gram (unit of measurement)
GC	Gas Chromatography
GC/ECD	Gas Chromatograph/Electron Capture Detector
GC/MS	Gas Chromatograph/Mass Spectrometer
GPC	Gel Permeation Chromatography
HPLC	High Performance Liquid Chromatography
HRS	Hazard Ranking System
IC	Ion Chromatography
ICAL	Initial Calibration

LIST of ABBREVIATIONS & ACRONYMS	
ABBREVIATION/ACRONYM	DEFINITION
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICP-AES	Inductively Coupled Plasma - Atomic Emission Spectroscopy
ICP-MS	Inductively Coupled Plasma - Mass Spectrometry
ICS	Interference Check Sample
ICSA	Interference Check Sample Solution A
ICSAB	Interference Check Sample Solution AB
ID	Identifier
IEC	Interelement Correction
ICV	Initial Calibration Verification
IPC	Instrument Performance Check
IR	Infrared
IUPAC	International Union of Pure and Applied Chemistry
K-D	Kuderna-Danish
kg	Kilogram (unit of measurement)
L	Liter (unit of measurement)
Lab	Laboratory
lb	Pound (unit of measurement)
LCS	Laboratory Control Sample
LEB	Leachate Extraction Blank
LRD	Laboratory Receipt Date
MA	Modified Analysis
MDL	Method Detection Limit
mg	Milligram (unit of measurement)
mL	Milliliter (unit of measurement)
mm	Millimeter (unit of measurement)
mM	Millimolar
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MSDS	Material Safety Data Sheet
MTBE	Methyl tert-butyl ether
µg	Microgram (unit of measurement)
µL	Microliter (unit of measurement)
µm	Micrometer (unit of measurement)
ng	Nanogram (unit of measurement)
nm	Nanometer (unit of measurement)
NCS	Non-Client Sample
NERL	National Exposure Research Laboratory
NIST	National Institute of Standards and Technology
NSCEP	National Service Center for Environmental Publications
OSHA	Occupational Safety and Health Administration
OSRTI	EPA Office of Superfund Remediation and Technology Innovation
PAH	Polynuclear Aromatic Hydrocarbon
PB	Preparation Blank
PCP	Pentachlorophenol
PDF	Portable Document Format
PDS	Post-Digestion/Distillation Spike
PE	Performance Evaluation
PEM	Performance Evaluation Mixture
Pest	Pesticides
PFE	Pressurized Fluid Extraction
PFK	Perfluorokerosene
PRPs	Potentially Responsible Parties

LIST of ABBREVIATIONS & ACRONYMS	
ABBREVIATION/ACRONYM	DEFINITION
Psi	Pounds Per Square Inch (unit of measurement)
P/T	Purge-and-trap
PT	Proficiency Testing
PTFE	Polytetrafluoroethylene
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QATS	Quality Assurance Technical Support
QC	Quality Control
QMP	Quality Management Plan
%R	Percent Recovery
RESC	Resolution Check Standard
RIC	Reconstructed Ion Chromatogram
RPD	Relative Percent Difference
RPM	Revolutions Per Minute (unit of measurement)
RRF	Relative Response Factor
$\overline{RRF}$	Mean Relative Response Factor
RRT	Relative Retention Time
%RSD	Percent Relative Standard Deviation
RT	Retention Time
%S	Percent Solids
SA	Spike Added
SARA	Superfund Amendments and Reauthorization Act of 1986
SD	Serial Dilution
SD	Standard Deviation
SDG	Sample Delivery Group
SEDD	Staged Electronic Data Deliverable
SIM	Selected Ion Monitoring
SMO	Sample Management Office
SOP	Standard Operating Procedure
SOW	Statement of Work
SPLP	Synthetic Precipitation Leaching Procedure
SR	Sample Result
SSR	Spiked Sample Result
SVOA	Semivolatile Organic Analyte
TAL	Target Analyte List
TBA	Tetrabutylammonium
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TOC	Total Organic Carbon
TR	Traffic Report
TR/COC	Traffic Report/Chain of Custody
UTF-8	Unicode Transformation Format - 8 bit
UV	Ultraviolet
VOA	Volatile Organic Analyte
VOC	Volatile Organic Compound
VTSR	Validated Time of Sample Receipt
W3C	World Wide Web Consortium
XML	eXtensible Markup Language
ZHE	Zero Headspace Extraction

2.0 GLOSSARY OF TERMS

ABSORBANCE - A measure of the decrease in incident light passing through a sample into a detector. It is defined mathematically as:

$$A = -\log \frac{I}{I_0}$$

WHERE, I = Radiation intensity of a sample.
I_0 = Radiation intensity of a blank.

ALIQUOT - A measured portion of a field sample, standard, or solution taken for sample preparation and/or analysis.

ALKANE - Any hydrocarbon with the generic formula C_nH_{2n+2} (straight-chain or branched) or C_nH_{2n} (cyclic) that contains only C-H and C-C single bonds.

ANALYSIS DATE/TIME - The date and military time (24-hour clock) of the introduction of the sample, standard, or blank into the analysis system.

ANALYTE - The specific compound, mixture, element, or ion an analysis seeks to determine.

ANALYTICAL METHOD - Specifies the procedures for sample preparation, instrument calibration, sample analysis, and result calculations.

ANALYTICAL REFERENCE STANDARD - Standards purchased from private chemical supply companies used to prepare calibration standards, Initial Calibration Verification (ICV) standards, Continuing Calibration Verification (CCV) standards, and Interference Check Sample (ICS) solutions.

ANALYTICAL SAMPLE - Any solution or media introduced into an instrument on which an analysis is performed, excluding instrument calibration, Initial Calibration Verification (ICV), Initial Calibration Blank (ICB), Continuing Calibration Verification (CCV), Continuing Calibration Blank (CCB), and tunes. Note the following are all defined as analytical samples: undiluted and diluted samples (EPA and non-EPA); matrix spike samples; matrix spike duplicate samples; laboratory duplicate samples; serial dilution samples; post-digestion spike samples; Interference Check Samples (ICSs); Laboratory Control Samples (LCSs); Performance Evaluation (PE) samples; Preparation or Method Blanks; and storage, cleanup, and method instrument blanks.

ANALYTICAL SEQUENCE - The order of actual instrumental analysis of the samples, from the time of instrument calibration through the analysis of the final Continuing Calibration Verification (CCV) [and Continuing Calibration Blank (CCB) as applicable]. All sample analyses during the analytical sequence are subject to the Quality Control (QC) protocols set forth in Exhibit D – Analytical Methods and Exhibit F – Programmatic Quality Assurance/Quality Control Elements of the contract, unless otherwise specified in the individual methods.

ANALYTICAL SERVICES BRANCH (ASB) - The division of the United States Environmental Protection Agency’s (EPA’s) Office of Superfund Remediation and Technology Innovation (OSRTI) responsible for the overall management of the Contract Laboratory Program (CLP).

ASTM/ASTM INTERNATIONAL – A developer and provider of voluntary consensus standards.

BACKGROUND CORRECTION - A technique to compensate for variable background contribution to the instrument signal in the determination of trace elements.

BAR GRAPH SPECTRUM - A plot of the mass-to-charge ratio (m/e) versus relative intensity of the ion current.

BATCH - A group of samples prepared at the same time in the same location using the same method.

BLANK - An analytical sample that has negligible or unmeasurable amounts of a substance of interest. The blank is designed to assess specific sources of contamination. Types of blanks may include calibration blanks, instrument blanks, preparation or method blanks, and field blanks. See the individual definitions for types of blanks.

BREAKDOWN - A measure of the decomposition of certain analytes (DDT and Endrin) into by-products.

4-BROMOFLUOROBENZENE (BFB) - The compound chosen to establish mass spectral instrument performance check for Volatile Organic Analyses (VOA).

CALIBRATED MASS - 1) A mass whose apparent mass has been adjusted from the uncalibrated mass by the instrumental mass calibration software routine. 2) An analyte mass whose intensity counts have been calibrated against standards of known analyte concentration.

CALIBRATION - A set of operations that establish under specific conditions the relationship between values indicated by a measuring instrument and the corresponding known values.

CALIBRATION BLANK - A blank solution containing all of the reagents and in the same concentration as those used in the analytical sample preparation. This blank is not subjected to the preparation method for Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP-AES) and Inductively Coupled Plasma - Mass Spectrometry (ICP-MS), but is digested/distilled for mercury and cyanide. Calibration blanks are used to verify that the instrument baseline is stable and the instrument is free of contamination.

CALIBRATION STANDARDS - A series of known standard solutions used by the analyst for calibration of the instrument (i.e., preparation of the calibration curve). The solutions may or may not be subjected to the preparation method and may or may not contain the same matrix (i.e., the same amount of reagents and/or preservatives) as the sample preparations to be analyzed.

CASE - A finite, usually predetermined number of samples collected over a given time period from a particular site. Case Numbers are assigned by the Sample Management Office (SMO). A Case consists of one or more Sample Delivery Groups (SDGs).

CHARACTERIZATION - A determination of the approximate concentration range of analytes of interest used to choose the appropriate analytical protocol.

CLASS A GLASSWARE – Defined by ASTM standards as glassware used in measurement with the smallest degree of uncertainty or tolerance associated with a measurement of volume.

CLOSING CONTINUING CALIBRATION VERIFICATION – For organic methods, the last analytical standard analyzed every 12 hours to verify the initial calibration accuracy of the system.

CONCENTRATION LEVEL (trace, low, or medium) – For Gas Chromatography/Mass Spectrometry (GC/MS) methods, the characterization of samples as trace concentration, low concentration, or medium concentration is made on the basis of the laboratory's preliminary screen, not on the basis of information entered on the Traffic Report/Chain-of-Custody (TR/COC) Record by the sampler.

CONTAMINATION - A component of a sample or an extract that is not representative of the environmental source of the sample. Contamination may stem from other samples, sampling equipment, while in transit, from laboratory reagents, laboratory environment, or analytical instruments.

CONTINUING CALIBRATION VERIFICATION (CCV) - A single parameter or multi-parameter standard solution prepared by the analyst and used to verify the stability of the instrument calibration with time, and the instrument performance during the analysis of samples. The CCV can be one of the calibration standards. For inorganic methods, all parameters being measured by the particular system must be represented in this standard and the standard must have the same matrix (i.e., the same amount of reagents and/or preservatives) as the samples. The CCV should have a concentration in the middle of the calibration range.

CONTINUOUS LIQUID-LIQUID EXTRACTION (CLLE) - Used herein synonymously with the terms continuous extraction, continuous liquid extraction, and liquid extraction. This extraction technique involves boiling the extraction solvent in a flask and condensing the solvent above the aqueous sample. The condensed solvent drips through the sample, extracting the compounds of interest from the aqueous phase. CLLE may involve the use of a hydrophobic membrane to improve extraction efficiency.

CONTRACT COMPLIANCE SCREENING (CCS) - A screening of electronic data deliverables for completeness and compliance with the contract. This screening is performed under EPA direction by the Sample Management Office (SMO) Contractor.

CONTRACT LABORATORY PROGRAM (CLP) - Supports the EPA's Superfund effort by providing a range of state-of-the-art chemical analytical services of known and documented quality. This program is directed by the Analytical Services Branch (ASB) of the Office of Superfund Remediation and Technology Innovation (OSRTI) of the EPA.

CONTRACT REQUIRED QUANTITATION LIMIT (CRQL) - Minimum level of quantitation acceptable under the contract Statement of Work (SOW), and supported by the analysis of standards.

CONTROL LIMITS - A range within which specified measurement results must fall to be compliant. Control limits may be mandatory, requiring corrective action if exceeded, or advisory, requiring that noncompliant data be flagged.

CYANIDE (Total) - Cyanide ion and complex cyanides converted to hydrocyanic acid (HCN) by reaction in a reflux system of a mineral acid in the presence of magnesium ion.

DATE - The date format for raw data is MM/DD/YYYY - Where MM = 01 for January, 02 for February, ... 12 for December; DD = 01 to 31; YYYY = 2018, 2019, etc.

DAY - Unless otherwise specified, day shall mean calendar day.

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP) - Compound chosen to establish mass spectral instrument performance check for semivolatile analysis.

DEUTERATED MONITORING COMPOUNDS (DMCs) - Compounds added to every Gas Chromatograph/Mass Spectrometer (GC/MS) calibration standard, blank, and sample to evaluate the efficiency of the extraction/purge-and-trap procedures, and the performance of the GC/MS systems. DMCs are isotopically labeled (deuterated) analogs of native target compounds. DMCs are not expected to be naturally detected in the environmental media.

DISSOLVED METALS - Analyte elements in an aqueous/water sample which will pass through a 0.45 micrometer (µm) filter.

DRY WEIGHT - The weight of a sample based on percent solids. The weight after drying in an oven.

DUPLICATE - A second aliquot of a sample that is treated the same as the original sample in order to evaluate the precision.

EPA ASB CLP CONTRACTING OFFICER'S REPRESENTATIVE (ASB CLP COR) - The EPA ASB official(s) who manages the CLP Program.

EPA CLP CONTRACTING OFFICER (CLP CO) – The EPA official who has the authority to enter into, administer, terminate contracts, and/or make related determinations and findings.

EPA REGIONAL CLP CONTRACTING OFFICER'S REPRESENTATIVE (REGIONAL CLP COR) – An EPA COR appointed by the EPA CLP Contracting Officer (CLP CO), who is responsible for Regional data deliverable receipt and review, and invoice approval. The EPA Regional CLP COR may participate in on-site laboratory audits.

EPA SAMPLE NUMBER - A unique identification number designated by the EPA for each sample. The EPA Sample Number appears on the Sample Traffic Report/Chain of Custody Record which documents information on that sample.

EXTRACTABLE - A compound that can be partitioned into an organic solvent from the sample matrix and is amenable to Gas Chromatography. Extractables include Semivolatile (SVOA), Pesticide (PEST), and Aroclor (ARO) compounds.

EXTRACTED ION CURRENT PROFILE (EICP) - A plot of ion abundance versus time (or scan number) for ion(s) of specified mass(es).

FIELD BLANK - Any sample that is submitted from the field and identified as a blank. A field blank is used to check for cross-contamination during sample collection, sample shipment, and in the laboratory. A field blank includes trip blanks, rinsate blanks, bottle blanks, equipment blanks, preservative blanks, decontamination blanks, etc.

FIELD QC - Any Quality Control (QC) samples submitted from the field to the laboratory. Examples include, but are not limited to, field blanks, field duplicates, and field spikes.

FIELD SAMPLE - A portion of material received to be analyzed that is contained in single or multiple containers and identified by a unique EPA Sample Number.

FORM – A hardcopy and/or electronic information/data entry sheet with locked preformatted structure that guides and/or controls user entry/input.

GAS CHROMATOGRAPH (GC) - The instrument used to separate analytes on a stationary phase within a chromatographic column. The analytes are volatized directly from the sample (VOA water and low-soil), volatized from the sample extract (VOA medium soil), or injected as extracts (SVOA, PEST, and ARO). In volatile and semivolatile analyses, the analytes are detected by a Mass Spectrometer (MS). In pesticide and Aroclor analyses, the analytes are detected by an Electron Capture Detector (ECD).

GAS CHROMATOGRAPH/ELECTRON CAPTURE DETECTOR - A Gas Chromatograph (GC) equipped with an Electron Capture Detector (ECD). This is one of the most sensitive gas chromatographic detectors for halogen-containing compounds such as organochlorine pesticides and polychlorinated biphenyls.

GAS CHROMATOGRAPH/MASS SPECTROMETER - A specialized form of Gas Chromatography (GC) used in conjunction with Mass Spectrometry (MS). GC/MS is considered the method of choice for the unequivocal identification of many volatile and semivolatile organic compounds.

GEL PERMEATION CHROMATOGRAPHY (GPC) - A size-exclusion chromatographic technique that is used as a cleanup procedure for removing large organic molecules, particularly naturally occurring macro-molecules such as lipids, polymers, viruses, etc.

HARDNESS (TOTAL) – Total hardness is defined as the sum of calcium and magnesium concentrations, both expressed as calcium carbonate in milligrams/Liter (mg/L). Total hardness is calculated according to the Standard Method 2340B.

HOLDING TIME - Contractual holding time is the elapsed time expressed in days from the date of receipt of the sample by the Contractor until the date of its extraction or analysis.

Holding time = (sample extraction or analysis date - sample receipt date)

HYDROMATRIX™ - Diatomaceous earth-based material that is capable of adsorbing and retaining up to twice its weight of an aqueous media.

INDEPENDENT STANDARD - A Contractor-prepared standard solution that is composed of analytes from a different source than those used in the standards for the calibration.

INDUCTIVELY COUPLED PLASMA - ATOMIC EMISSION SPECTROSCOPY (ICP-AES) – A technique for the simultaneous or sequential multi-element determination of elements in solution. The basis of the method is the measurement of atomic emission by an optical spectroscopic technique. Characteristic atomic line emission spectra are produced by excitation of the sample in a radio frequency inductively coupled plasma.

INDUCTIVELY COUPLED PLASMA - MASS SPECTROMETRY (ICP-MS) - A technique for the multi-element determination of elements in solution. The basis of the technique is the detection of atomic ions produced by an ICP and sorted by mass-to-charge (m/z) ratio.

IN-HOUSE - At the Contractor's facility.

INITIAL CALIBRATION - Analysis of analytical standards for a series of different concentrations; used to define the quantitative response, linearity, and dynamic range of the instrument to target analytes.

INITIAL CALIBRATION VERIFICATION (ICV) - Solution(s) prepared from stock standard solutions, metals, or salts obtained from a source separate from that utilized to prepare the calibration standards. The ICV is used to verify the concentration of the calibration standards and the adequacy of the instrument calibration. The ICV should be traceable to National Institute of Standards and Technology (NIST) or other certified standard sources when the EPA ICV solutions are not available.

INJECTION – Introduction of the analytical samples into the Gas Chromatograph (GC) or Gas Chromatography/Mass Spectrometry (GC/MS) instrument system to measure concentration of an analyte.

INSTRUMENT BLANK - A blank designed to determine the level of contamination associated with the analytical instruments.

INSUFFICIENT QUANTITY - When there is not enough volume (aqueous/water sample) or weight (soil/sediment) to perform any of the required operations: sample analysis or extraction, Percent Solids (%Solids), Matrix Spike and Matrix Spike Duplicate (MS/MSD), etc. Exhibit A – Summary of Requirements provides guidance for addressing this situation.

INTEGRATION SCAN RANGE - The chromatography scan number of the scan at the beginning of the area of integration to the scan number at the end of the area of integration.

INTEGRATION TIME RANGE - The chromatography Retention Time (RT) at the beginning of the area of integration to the RT at the end of the area of integration.

INTERFERENCE CHECK SAMPLE (ICS) - A solution containing both interfering and analyte elements of known concentration that can be used to verify background and interelement correction factors.

INTERFERENTS - Substances which affect the analysis for the analyte of interest.

INTERNAL STANDARD (IS) - A non-target element or compound added to every sample, blank, laboratory Quality Control (QC), and standard at a known concentration after preparation but prior to analysis. Gas Chromatography/Mass Spectroscopy (GC/MS) instrument responses to internal standards are used as the basis for quantitation of the target compounds. Inductively Coupled Plasma - Mass Spectrometry (ICP-MS) instrument responses to internal standards are monitored as a means of assessing overall instrument performance.

ION CHROMATOGRAPHY (IC) - A technique for the separation and determination of ions in solution. The basis of the method is the separation of the ions by a chromatography column with conductometric or spectrophotometric detection.

K-D – Kuderna-Danish concentrator; a device used to concentrate the analytes in a solvent.

LABORATORY - Synonymous with Contractor, as used herein.

LABORATORY CONTROL SAMPLE (LCS) - A reference matrix spiked with target analytes at known concentrations. LCSs are analyzed using the same sample preparation, reagents, and analytical methods employed for the EPA samples received.

LABORATORY RECEIPT DATE - The date on which a sample is received at the Contractor's facility, as recorded on the shipper's delivery receipt and Sample Traffic Report/Chain of Custody Record. Also referred to as the Validated Time of Sample Receipt (VTSR).

MATRIX - The predominant material of which the sample to be analyzed is composed. For the purpose of this Statement of Work (SOW), a sample matrix is either aqueous/water, soil/sediment, waste, or a wipe. Matrix is not synonymous with phase (liquid or solid).

MATRIX EFFECT – In general, the effect of a particular matrix on the constituents under study. The enhancement or suppression of minor element spectral lines due to a particular matrix constituent. For organic methods, matrix effects are particularly pronounced for clay particles which may adsorb chemicals and catalyze reactions. Matrix effects may affect the purge and extraction efficiencies and consequently cause interference for the sample analyses.

MATRIX SPIKE (MS) - Aliquot of a sample (aqueous/water, soil/sediment, or waste) fortified (spiked) with known quantities of specific compounds and subjected to the entire analytical procedure to indicate the appropriateness of the method for the matrix by measuring recovery.

MATRIX SPIKE DUPLICATE (MSD) - A second aliquot of the same sample as the Matrix Spike (above) that is spiked in order to determine the precision of the method.

METHOD BLANK - An aliquot of reagent water or silica sand that is treated exactly as a sample including exposure to all glassware, equipment, solvents, reagents, internal standards, and surrogates that are used with samples. The method blank is used to determine if analytes or interferences are present in the laboratory environment, the reagents, or the apparatus and is typically used for organic analyses.

METHOD DETECTION LIMIT (MDL) - The concentration of a target parameter that, when a sample is processed through the complete method, produces a signal with 99 percent probability that it is different from the blank.

MONITORED MASS - A mass that counts are collected from during analysis that may be subsequently used in isobaric correction equations or for the interpretation of possible interferences in analyte mass results.

m/z - Mass to charge ratio; synonymous with "m/e".

OPENING CONTINUING CALIBRATION VERIFICATION - First analytical standard analyzed every 12 hours to verify the stability of the initial calibration of the system.

PERCENT DIFFERENCE (%D) - The difference between the two values divided by one of the values multiplied by 100.

PERCENT RECOVERY (%R) – The percentage of an analyte/Deuterated Monitoring Compound (DMC)/Surrogate added to a sample that is recovered. For Matrix Spikes, it is the difference between the concentration detected in the spiked sample and that detected in the original (unspiked) sample, divided by the concentration added to the spiked sample multiplied by 100. For Laboratory Control Samples (LCSs), Inorganic Initial Calibration Verification (ICV) and Continuing Calibration Verification (CCV) standards, and Organic DMCs or Surrogates, it is the concentration or amount determined in the sample aliquot or Quality Control (QC) sample divided by the concentration or the amount added multiplied by 100.

PERCENT SOLIDS (%S) - The proportion of solid in a soil/sediment sample determined by drying an aliquot of the sample.

PERFORMANCE EVALUATION MIXTURE (PEM) - A calibration solution of specific analytes and concentrations used to evaluate both recovery and Percent Breakdown (%Breakdown) for pesticides as a measure of performance.

PERFORMANCE EVALUATION (PE) SAMPLE - A sample of known composition to the EPA; however, unknown to the Contractor that is provided to evaluate Contractor performance.

POST-DIGESTION SPIKE/POST-DISTILLATION SPIKE – The addition of a known amount of standard after digestion or distillation (also identified as an analytical spike).

PREPARATION BLANK - An analyte-free sample to which all reagents are added in the same volume or proportions as used in sample processing. The preparation blank must be carried through the entire sample preparation and analytical procedures. It is used to assess contamination resulting from the analytical process for inorganic analyses.

PREPARATION LOG - An official record of the sample preparation (extraction, digestion, or distillation).

PRIMARY QUANTITATION ION - A contract specified ion used to quantitate a target analyte, Deuterated Monitoring Compound (DMC), or Internal Standard (IS) compound.

PROFICIENCY TESTING (PT) AUDIT SAMPLE – A sample of known composition provided by the EPA for Contractor analysis. Used by the EPA to evaluate Contractor performance on a program-wide basis.

PURGE-AND-TRAP (DEVICE) - Analytical technique (device) used to isolate volatile (purgeable) organics by stripping the compounds from water or soil by a stream of inert gas, trapping the compounds on an adsorbent such as a porous polymer trap, and thermally desorbing the trapped compounds onto the gas chromatographic column.

PURGEABLES - Volatile compounds.

QUALITY ASSURANCE TECHNICAL SUPPORT (QATS) LABORATORY - A Contractor-operated facility operated under the QATS contract, awarded and administered by the EPA.

RAW DATA - The originally recorded and unprocessed measurements from any measuring device such as analytical instruments, balances, pipettes, thermometers, etc.

REAGENT WATER - The purity of this water must be equivalent to ASTM Type II reagent water of Specification D1193-06, "Standard Specification for Reagent Water".

RECONSTRUCTED ION CHROMATOGRAM (RIC) - A mass spectral graphical representation of the separation achieved by a Gas Chromatograph (GC); a plot of total ion current versus Retention Time (RT).

REFERENCE MATERIAL - Standards, typically provided by the EPA, used to verify method and instrument performance. Examples include Initial Calibration Verification (ICV) standards and Interference Check Solution (ICS) standards.

RELATIVE PERCENT DIFFERENCE (RPD) - The relative percent difference is based on the mean of the two values, and is reported as an absolute value (i.e., always expressed as a positive number or zero).

RELATIVE RESPONSE FACTOR (RRF) - The ratio of the response of a given compound to its corresponding internal standard. Response factors are determined using the area responses of the quantitation ion or alternatively both the primary and alternate secondary quantitation ions at the exact m/z for each compound in each calibration standard.

RELATIVE RETENTION TIME (RRT) - The ratio of the retention time of a compound to that of a standard (such as an internal standard).

REPORTED DATA - Reported data are processed from the raw measurement values that may have been reformatted from the original measurement to meet specific reporting requirements, such as significant figures and decimal precision.

RESOLUTION - Also termed Separation or Percent Resolution, the separation between peaks on a chromatogram, calculated by dividing the depth of the valley between the peaks by the peak height of the smaller peak being resolved, multiplied by 100.

RESOLUTION CHECK MIXTURE - A solution of specific analytes used to determine resolution of adjacent peaks; used to assess instrumental performance.

RESPONSE (Instrumental Response) - A measurement of the output of the Mass Spectrometer (MS) detector, Electron Capture Detector (ECD), or photometric detector in which the intensity of the signal is proportionate to the amount (or concentration) detected. Measured by peak area, peak height, intensity, or absorbance.

RETENTION TIME (RT) - The time a target analyte is retained on a Gas Chromatograph (GC) column before elution. The identification of a target analyte is dependent on a target analyte’s retention time falling within the specified retention time window established for that analyte. The RT is dependent on the nature of the column’s stationary phase, column diameter, temperature, flow rate, and other parameters.

ROUNDING RULES - If the figure following those to be retained is greater than or equal to 5, round up; otherwise, round down. As an example, 11.443 is rounded down to 11, and 11.545 is rounded up to 12. If a series of multiple operations is to be performed (add, subtract, divide, multiply), all figures are carried through the calculations. Then the final answer is rounded to the proper number of significant figures.

SAMPLE - A portion of material to be analyzed that is contained in single or multiple containers and identified by a unique sample number.

SAMPLE DELIVERY GROUP (SDG) - A unit within a sample Case that is used to identify a group of samples for delivery. An SDG is defined by the following, whichever is most frequent:

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

Samples may be assigned to SDGs by matrix (i.e., all soil/sediment samples in one SDG, all aqueous/water samples in another) at the discretion of the laboratory. Laboratories shall take all precautions to meet the 20 sample per SDG criteria.

SAMPLE MANAGEMENT OFFICE (SMO) - A Contractor-operated facility operated under the SMO contract, awarded and administered by the EPA.

SDG NARRATIVE - Portion of the data package which includes laboratory, contract, Case, Sample Number identification, and descriptive documentation of any problems encountered in processing the samples, along with corrective action taken and problem resolution. Complete Sample Delivery Group (SDG) Narrative specifications are included in Exhibit B – Reporting and Deliverables Requirements.

SECONDARY QUANTITATION ION - Contract specified ion(s) to be used in quantitation of target analytes when interferences prevent the use of the primary quantitation ion.

SELECTED ION MONITORING (SIM) – A mode of Mass Spectrometry (MS) operation in which specific m/z ratios are monitored, as opposed to scanning the entire mass range.

SEMIVOLATILE COMPOUNDS - Compounds amenable to analysis by extraction of the sample with an organic solvent. Used synonymously with Base/Neutral and Acid (BNA) compounds.

SENSITIVITY – The slope of the analytical curve (i.e., functional relationship between instrument response and concentration).

SERIAL DILUTION - The dilution of a sample by a factor of five. When corrected by the dilution factor, the diluted sample must agree with the original undiluted sample within specified limits. Serial dilution may reflect the influence of interferents.

SOIL - Synonymous with soil/sediment as used herein.

STANDARD ANALYSIS - An analytical determination made with known quantities of target compounds; used to determine response factors.

STOCK SOLUTION - A standard solution which can be diluted to derive other standards.

STORAGE BLANK - Reagent water or inert sand (40.0 mL or 5 g aliquot) stored with volatile samples in an SDG. It is analyzed after all samples have been analyzed in the SDG and is used to determine the level of contamination acquired during storage.

SULFUR BLANK - A modified method blank that is prepared only when some of the samples in a batch are subjected to sulfur cleanup. It is used to determine the level of contamination associated with the sulfur cleanup procedure. When all of the samples are subjected to sulfur cleanup, then the method blank serves this purpose. When none of the samples are subjected to sulfur cleanup, no sulfur blank is required.

SUPPORTING DATA – Any data that substantiates the Reported Data (see definition above), including initial instrument measurements, instrument result calculations, standards concentrations, standard concentration calculations, sample preparation data (e.g., initial/final sample volume measurements, reagent quantities, etc.), Method Detection Limits (MDLs), and Interelement Corrections (IECs). Supporting data include standard preparation logs, sample preparation logs, instrument analysis logs, MDL and IEC studies, balance logs, pipette logs, percent solids logs, etc.

SURROGATES (Surrogate Standard) - For pesticides and Aroclors, compounds added to every blank, sample [including Laboratory Control Sample (LCS)], Matrix Spike and Matrix Spike Duplicates (MS/MSDs), and standard. Surrogates are used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in environmental media.

TARGET ANALYTE LIST - A list of Analytes as designated by the Statement of Work (SOW) in Exhibit C – Target Analyte List and Contract Required Quantitation Limits.

TENTATIVELY IDENTIFIED COMPOUNDS (TIC) - Compounds detected in samples that are not target compounds, internal standards, Deuterated Monitoring Compounds (DMCs), or surrogates. Up to 30 peaks, not including those identified as alkanes (those greater than 10% of the peak area or height of the nearest internal standard) are subjected to mass spectral library searches for tentative identification.

TIME - hh:mm:ss - When required to record time on any deliverable item, time shall be expressed as Military Time [i.e., a 24-hour clock (0000-2359)].

TOTAL ORGANIC CARBON (TOC) - The portion of the carbon present in a sample due to the presence of organic compounds. The organic compounds are oxidized to carbon dioxide and this process is detected by a conductivity detector or a nondispersive Infrared detector.

TRAFFIC REPORT/CHAIN OF CUSTODY RECORD (TR/COC) - An EPA sample identification form completed by the sampler, which accompanies the sample during shipment to the laboratory and is used to document sample identity, sample chain of custody, sample condition, and sample receipt by the laboratory.

TUNE CHECK - A solution containing a range of isotope masses of the inorganic elements to establish Inductively Coupled Plasma - Mass Spectrometry (ICP-MS) accuracy, resolution, and precision prior to calibration. For organic Gas Chromatography/Mass Spectrometry (GC/MS) methods, a solution of the tune compound (BFB or DFTPP) is injected prior to calibration to verify the instrument resolution and the mass/ion abundance ratio to the specified criteria. May also be called Instrument Performance Check sample (IPC).

TWELVE-HOUR TIME PERIOD – For trace volatile, low/medium volatile, and semivolatile analyses, the 12-hour time period for sample, blank, Laboratory Control Sample (LCS) (as applicable), and Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis begins with injection of the initial calibration verification or opening continuing calibration verification standard that meets the stated criteria in the appropriate Exhibit D. The time period ends after 12 hours have elapsed according to the system clock. For pesticide and Aroclor analyses performed by Gas Chromatography/Electron Capture Detection (GC/ECD), the 12-hour time period in the analytical sequence begins at the moment of injection of the instrument blank that precedes sample analyses, and ends after 12 hours have elapsed according to the system clock.

ULTRASONIC CELL DISRUPTOR (SONICATOR) - A device that uses the energy from controlled ultrasound applications to mix, disperse, and dissolve organic materials from a given matrix.

VALIDATED TIME OF SAMPLE RECEIPT (VTSR) - The date on which a sample is received at the Contractor’s facility, as recorded on the shipper’s delivery receipt and sample Traffic Report/Chain of Custody Record.

3.0 EQUATIONS

3.1 Statistical Calculations

EQ. 1 Mean Value

$$\bar{X} = \frac{\sum_{i=1}^{n} X_i}{n}$$

WHERE,

$\bar{X}$ = Mean Value, Peak/MeanRRF, or Peak/MeanCF under the AnalysisGroup node.

X_i = Relative Response Factor from EQ. 8, Calibration Factor from EQ. 12, or PeakReplicate/Response where the reported Analyte/Inclusion is "Yes".

n = Number of reported Relative Response Factors, Calibration Factors, or PeakReplicate nodes under Peak where the reported Analyte/Inclusion is "Yes".

EQ. 2 Standard Deviation

$$SD = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{(n - 1)}}$$

WHERE,

X_i = Relative Response Factor from EQ. 8, Calibration Factor from EQ. 12, or PeakReplicate/Response where the reported Analyte/Inclusion is "Yes".

$\bar{X}$ = Mean Value, Mean Relative Response Factor, Mean Calibration Factor, or mean replicate response from EQ. 1 where the reported Analyte/Inclusion is "Yes".

n = Number of reported Relative Response Factors, Calibration Factors, or PeakReplicate nodes under Peak where the reported Analyte/Inclusion is "Yes".

EQ. 3 Percent Relative Standard Deviation

$$\%RSD = \frac{SD}{\bar{X}} \times 100$$

WHERE,

%RSD = Peak/PercentRSD under the AnalysisGroup node.

SD = Standard Deviation from EQ. 2.

$\bar{X}$ = Mean value from EQ. 1.

3.2 Sample Result Calculations

EQ. 4A Aqueous/Water and TCLP/SPLP Concentration for Volatiles GC/MS

$$\text{Concentration } (\mu g/L) = \frac{(A_x)(I_{is})(DF)}{(A_{is})(\overline{RRF})(V_o)}$$

WHERE,

Concentration = Analyte/Result (µg/L).

A_x = Reported Peak/Response.

A_{is} = Reported Peak/Response of the associated internal standard that is referenced in the PeakComparison node.

I_{is} = Expected Result of the associated internal standard that is referenced in the PeakComparison node from EQ. 9A (ng).

$\overline{RRF}$ = Mean Relative Response Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor. Default to 1 for Deuterated Monitoring Compounds and matrix spiking analytes for non-TCLP analysis. Default to 10 for all analytes in the method blank, storage blank, and method instrument blank associated with the TCLP analyses that have not undergone TCLP leaching process.

V_o = Reported Analysis/InjectionVolume (mL).

EQ. 4B Aqueous/Water and TCLP/SPLP Leachate Sample Concentration for Semivolatiles GC/MS

$$\text{Concentration } (\mu g/L) = \left(\frac{A_x \times I_{is}}{A_{is} \times \overline{RRF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{V_o}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Concentration	=	Analyte/Result (µg/L).
A_x	=	Reported Peak/Response.
A_{is}	=	Reported Peak/Response of the associated internal standard that is referenced in the PeakComparison node.
I_{is}	=	Expected Result of the associated internal standard that is referenced in the PeakComparison node from EQ. 9C (ng).
$\overline{RRF}$	=	Mean Relative Response Factor from EQ. 1.
DF	=	Reported Analysis/DilutionFactor. Default to 10 for the method blank, cleanup blank, and LCS associated with the TCLP analyses that have not undergone TCLP leaching process.
V_o	=	Reported PreparationPlusCleanup/AliquotAmount (mL).
V_t	=	Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).
V_i	=	Reported Analysis/InjectionVolume (µL).
CV_{out}	=	Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).
CV_{in}	=	Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).
E	=	Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 4C Aqueous/Water and TCLP/SPLP Leachate Sample Concentration for Dual-Column GC Pesticides

$$\text{Concentration } (\mu g/L) = \left(\frac{A_x}{\overline{CF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{V_o}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Concentration = Analyte/Result (µg/L). For Toxaphene, individual peak results shall be averaged to yield the final analyte result.

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor. Default to 10 for all analytes in the method blank, cleanup blank, and LCS associated with the TCLP analyses that have not undergone TCLP leaching process.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL). Default to 10,000 for instrument blanks and 1000 for Florisil cartridge performance checks.

V_o = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL). Default to 1000 for instrument and sulfur blanks.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 4C-a On-Column Concentration

$$\text{On-Column Concentration } (ng/\mu L) = \frac{(A_x)}{(\overline{CF})(V_i)}$$

WHERE,

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

V_i = Reported Analysis/InjectionVolume (µL).

EQ. 4D Aqueous/Water Concentration for Dual-Column GC Aroclors

$$\text{Concentration}\ (\mu g/L) = \left(\frac{A_x}{\overline{CF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{V_o}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Concentration = Analyte/Result (µg/L). Individual peak results shall be averaged to yield the final analyte result.

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL). Default to 10,000 for instrument blanks.

V_o = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL). Default to 1000 for instrument blanks.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 4E Aqueous/Water and TCLP/SPLP Leachate Sample Concentration for ICP-AES, ICP-MS, and Spectrophotometry

$$\text{Concentration}\ (\mu g/L) = C \times \frac{V_f}{V} \times DF$$

WHERE,

Concentration = Analyte/Result (µg/L).

C = Reported Analyte/IntermediateResult (µg/L).

V_f = Reported PreparationPlusCleanup/FinalAmount from the preparation node (mL).

V = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL).

DF = Reported Analysis/DilutionFactor.

EQ. 4F Calculation of Hardness (Total) in Aqueous/Water Samples for ICP-AES

$$\text{Hardness}\ (mg/L) = [\text{Conc. Ca}\ (mg/L) \times 2.497] + [\text{Conc. Mg}\ (mg/L) \times 4.118]$$

WHERE,

Hardness = ReportedResult/Result for Hardness (mg/L).

Conc. Ca (mg/L) = ReportedResult/Result for Calcium (µg/L) ÷ 1000.

Conc. Mg (mg/L) = ReportedResult/Result for Magnesium (µg/L) ÷ 1000.

EQ. 4G Aqueous/Water and TCLP/SPLP Leachate Sample Concentration for CVAA

$$\text{Hg Concentration}\,(\mu g/L) = C \times DF$$

WHERE,

Hg Concentration = Analyte/Result (µg/L).

C = Reported Analyte/IntermediateResult (µg/L).

DF = Reported Analysis/DilutionFactor.

EQ. 4H Aqueous/Water Sample Concentration for Anions, Hexavalent Chromium, and TOC

$$\text{Concentration}\,(\mu g/L \text{ or } mg/L) = C \times DF$$

WHERE,

Concentration = Analyte/Result (µg/L or mg/L).

C = Analyte Result from analysis (µg/L or mg/L).

DF = Analysis/DilutionFactor.

EQ. 5A Low-Level Soil/Sediment/Waste Concentration for Volatiles GC/MS

$$\text{Concentration}\,(\mu g/kg) = \frac{(A_x)(I_{is})}{(A_{is})(\overline{RRF})(W_s)(S)}$$

WHERE,

Concentration = Analyte/Result (µg/kg).

A_x = Reported Peak/Response.

A_{is} = Reported Peak/Response of the associated internal standard that is referenced in the PeakComparison node.

I_{is} = Expected Result of the associated internal standard that is referenced in the PeakComparison node from EQ. 9A (ng).

$\overline{RRF}$ = Mean Relative Response Factor from EQ. 1.

W_s = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

EQ. 5B Medium-Level Soil/Sediment/Waste Concentration for Volatiles GC/MS

$$\text{Concentration } (\mu g/kg) = \frac{(A_x)(I_{is})(AV_t)(DF)}{(A_{is})(\overline{RRF})(V_a)(W_s)(S)}$$

WHERE,

Concentration = Analyte/Result (µg/kg).

A_x = Reported Peak/Response.

A_{is} = Reported Peak/Response of the associated internal standard that is referenced in the PeakComparison node.

I_{is} = Expected Result of the associated internal standard that is referenced in the PeakComparison node from EQ. 9B (ng).

$\overline{RRF}$ = Mean Relative Response Factor from EQ. 1.

AV_t = Adjusted Total Volume from EQ. 5B-a (µL).

V_a = Reported Analysis/AnalyzedAmount (µL).

DF = Reported Analysis/DilutionFactor. Default to 1 for Deuterated Monitoring Compounds.

W_s = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

EQ. 5B-a Adjusted Total Volume

$$AV_t \ (\mu L) = V_t + [W_s - (W_s \times S)] \frac{(1000)}{(D_w)}$$

WHERE,

AV_t = Adjusted Total Volume (µL).

V_t = Reported PreparationPlusCleanup/InitialAmount from the preparation node (µL).

W_s = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

D_w = Water density, assumed to be 1.0 g/mL.

EQ. 5C Soil/Sediment/Waste Concentration for Semivolatiles GC/MS

$$\text{Concentration}\ (\mu g/kg) = \left(\frac{A_x \times I_{is}}{A_{is} \times \overline{RRF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{W_t \times S}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Concentration = Analyte/Result (µg/kg).

A_x = Reported Peak/Response.

A_{is} = Reported Peak/Response of the associated internal standard that is referenced in the PeakComparison node.

I_{is} = Expected Result of the associated internal standard that is referenced in the PeakComparison node from EQ. 9C (ng).

$\overline{RRF}$ = Mean Relative Response Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

W_t = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 5D Soil/Sediment/Waste Concentration for Dual-Column GC Pesticides

$$\text{Concentration } (\mu g/kg) = \left(\frac{A_x}{\overline{CF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{W_t \times S}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots\left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Concentration = Analyte/Result (µg/kg). For Toxaphene, individual peak results shall be averaged to yield the final analyte result.

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

W_t = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 5E Wipe Amount for Dual-Column GC Pesticides

$$\text{Amount } (\mu g) = \left(\frac{A_x}{\overline{CF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{1000}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots\left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Amount = Analyte/Result (µg). For Toxaphene, individual peak results shall be averaged to yield the final analyte result.

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 5E-a Wipe Concentration for Dual-Column GC Pesticides

$$\text{Concentration } (\mu g/cm^2) = \left(\frac{A_x}{\overline{CF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{A_w \times 1000}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Concentration = Analyte/Result (µg/cm²). For Toxaphene, individual peak results shall be averaged to yield the final analyte result.

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

A_w = Characteristic/CharacteristicValue (cm²) from the Characteristic node with Characteristic/CharacteristicType = "Area".

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 5F Soil/Sediment/Waste Concentration for Dual-Column GC Aroclors

$$\text{Concentration } (\mu g/kg) = \left(\frac{A_x}{\overline{CF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{W_t \times S}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Concentration = Analyte/Result (µg/kg). Individual peak results shall be averaged to yield the final analyte result.

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

W_t = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 5G Wipe Amount for Dual-Column GC Aroclors

$$\text{Amount } (\mu g) = \left(\frac{A_x}{\overline{CF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{1000}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Amount = Analyte/Result (µg). Individual peak results shall be averaged to yield the final analyte result.

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 5G-a Wipe Concentration for Dual-Column GC Aroclors

$$\text{Concentration } (\mu g/cm^2) = \left(\frac{A_x}{\overline{CF}}\right)\left(\frac{DF}{V_i}\right)\left(\frac{V_t}{A_w \times 1000}\right)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Concentration = Analyte/Result (µg/cm²). Individual peak results shall be averaged to yield the final analyte result.

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

DF = Reported Analysis/DilutionFactor.

V_i = Reported Analysis/InjectionVolume (µL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

A_w = Characteristic/CharacteristicValue (cm²) from the Characteristic node with Characteristic/CharacteristicType = "Area".

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 5H Soil/Sediment/Waste Sample Concentration for ICP-AES, ICP-MS, CVAA, and Spectrophotometry

$$\text{Concentration (mg/kg)} = C \times \frac{V_f}{W \times S} \times DF/1000$$

WHERE,

Concentration = Analyte/Result (mg/kg).

C = Reported Analyte/IntermediateResult (µg/L).

V_f = Reported PreparationPlusCleanup/FinalAmount from the preparation node (mL).

W = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

DF = Reported Analysis/DilutionFactor.

EQ. 5I Wipe Amount for ICP-AES

$$\text{Amount (µg)} = C \times V_f \times DF/1000$$

WHERE,

Amount = Analyte/Result (µg).

C = Reported Analyte/IntermediateResult (µg/L).

V_f = Reported PreparationPlusCleanup/FinalAmount from the preparation node (mL).

DF = Reported Analysis/DilutionFactor.

EQ. 5J Soil/Sediment Sample Concentration for Anions and TOC

$$\text{Concentration(mg/kg)} = C \times \frac{V_f}{W \times S} \times DF$$

WHERE,

Concentration = Analyte/Result (mg/kg).

C = Analyte Result from analysis (mg/L).

V_f = Reported PreparationPlusCleanup/FinalAmount from the preparation node (mL).

W = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

DF = Reported Analysis/DilutionFactor.

3.3 Adjusted CRQLs

EQ. 6A Aqueous/Water and TCLP/SPLP Leachate Sample Adjusted CRQL for Volatiles GC/MS

$$\text{Adjusted CRQL } (\mu g/L) = \text{Contract CRQL} \times \frac{V_c}{V_o} \times DF$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/L).

Contract CRQL = CRQL value (µg/L) reported in Exhibit C, Table 1 – Trace and Low/Medium Volatiles Target Analyte List and Contract Required Quantitation Limits or as modified.

V_c = Method required purge volume (25 mL).

V_o = Reported Analysis/InjectionVolume (mL).

DF = Reported Analysis/DilutionFactor. Default to 10 for the method blank, storage blank, and method instrument blank associated with the TCLP analyses that have not undergone TCLP leaching process.

EQ. 6B Aqueous/Water and TCLP/SPLP Leachate Sample Adjusted CRQL for Semivolatiles GC/MS

$$\text{Adjusted CRQL } (\mu g/L) = (\text{Contract CRQL})\left(\frac{V_x}{V_o}\right)\left(\frac{V_t}{V_y}\right)(DF)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/L).

Contract CRQL = CRQL value (µg/L) reported in Exhibit C, Table 2 – Semivolatiles Target Analyte List and Contract Required Quantitation Limits or as modified.

V_x = Method required sample volume (1000 mL).

V_o = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL).

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

V_y = Method required concentrated extract volume (1000 µL).

DF = Reported Analysis/DilutionFactor. Default to 10 for the method blank, cleanup blank, and LCS associated with the TCLP analyses that have not undergone TCLP leaching process.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 6C Aqueous/Water and TCLP/SPLP Leachate Sample Adjusted CRQL for Dual-Column GC Pesticides

$$\text{Adjusted CRQL } (\mu g/L) = (\text{Contract CRQL})\left(\frac{V_x}{V_o}\right)\left(\frac{V_t}{V_y}\right)(DF)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/L).

Contract CRQL = CRQL value (µg/L) reported in Exhibit C, Table 3 – Pesticides Target Analyte List and Contract Required Quantitation Limits or as modified.

V_x = Method required sample volume (1000 mL).

V_o = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL). Default to 1000 for instrument blanks.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL). Default to 10,000 for instrument and sulfur blanks.

V_y = Method required concentrated extract volume (10,000 µL).

DF = Reported Analysis/DilutionFactor. Default to 10 for the method blank, cleanup blank, and LCS associated with the TCLP analyses that have not undergone TCLP leaching process.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 6D Aqueous/Water Adjusted CRQL for Dual-Column GC Aroclors

$$\text{Adjusted CRQL } (\mu g/L) = (\text{Contract CRQL})\left(\frac{V_x}{V_o}\right)\left(\frac{V_t}{V_y}\right)(DF)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/L).

Contract CRQL = CRQL value (µg/L) reported in Exhibit C, Table 4 – Aroclors Target Analyte List and Contract Required Quantitation Limits or as modified.

V_x = Method required sample volume (1000 mL).

V_o = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL). Default to 1000 for instrument blanks.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL). Default to 10,000 for instrument and sulfur blanks.

V_y = Method required concentrated extract volume (10,000 µL).

DF = Reported Analysis/DilutionFactor.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 6E Adjusted Aqueous/Water and TCLP/SPLP Leachate Sample CRQL for ICP-AES, ICP-MS, and Spectrophotometry

$$\text{Adjusted CRQL } (\mu g/L) = \text{Contract CRQL} \times \frac{V_f}{V} \times DF$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/L).

Contract CRQL = CRQL value (µg/L) reported in Exhibit C, Table 5 – ICP-AES and ICP-MS Target Analyte List and Contract Required Quantitation Limits or Table 7 – Cyanide by Spectrophotometry Target Analyte List and Contract Required Quantitation Limits or as modified.

V_f = Reported PreparationPlusCleanup/FinalAmount from the preparation node (mL).

V = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL).

DF = Reported Analysis/DilutionFactor.

EQ. 6F Adjusted Aqueous/Water and TCLP/SPLP Leachate Sample CRQL for CVAA

$$\text{Adjusted CRQL } (\mu g/L) = \text{Contract CRQL} \times DF$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/L).

Contract CRQL = CRQL value (µg/L) reported in Exhibit C, Table 6 - Mercury by Cold Vapor Atomic Absorption Target Analyte List and Contract Required Quantitation Limits or as modified.

DF = Reported Analysis/DilutionFactor.

EQ. 6G Adjusted Aqueous/Water CRQL for Anions, Hexavalent Chromium, and TOC

$$\text{Adjusted CRQL } (\mu g/L \text{ or } mg/L) = \text{Contract CRQL} \times DF$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/L or mg/L).

Contract CRQL = CRQL value (µg/L or mg/L) reported in Exhibit C, Table 8 – Anions 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 Limit, or Table 10 - Total Organic Carbon Analysis Target Analyte List and Contract Required Quantitation Limits or as modified.

DF = Reported Analysis/DilutionFactor.

EQ. 7A Low-Level Soil/Sediment/Waste Adjusted CRQL for Volatiles GC/MS

$$\text{Adjusted CRQL } (\mu g/kg) = \text{Contract CRQL} \times \frac{(W_c)}{(W_s)(S)}$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/kg).

Contract CRQL = CRQL value (µg/kg) reported in Exhibit C, Table 1 – Trace and Low/Medium Volatiles Target Analyte List and Contract Required Quantitation Limits or as modified.

W_c = Method required sample weight (5.0 g).

W_s = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

EQ. 7B Medium-Level Soil/Sediment/Waste Adjusted CRQL for Volatiles GC/MS

$$\text{Adjusted CRQL}\,(\mu g/kg) = \text{Contract CRQL} \times \frac{(W_x)(AV_t)(V_y)(DF)}{(W_s)(V_c)(V_a)(S)}$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/kg).

Contract CRQL = CRQL value (µg/kg) reported in Exhibit C, Table 1 – Trace and Low/Medium Volatiles Target Analyte List and Contract Required Quantitation Limits or as modified.

W_x = Method required sample weight (5.0 g).

W_s = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

AV_t = Adjusted Total Volume from EQ. 5B-a (µL).

V_c = Method required soil methanol extract volume (5000 µL).

V_y = Method required soil aliquot volume (100 µL).

V_a = Reported Analysis/AnalyzedAmount (µL).

DF = Reported Analysis/DilutionFactor.

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

EQ. 7C Soil/Sediment/Waste Adjusted CRQL for Semivolatiles GC/MS

$$\text{Adjusted CRQL}\,(\mu g/kg) = (\text{Contract CRQL})\left(\frac{W_x}{W_t \times S}\right)\left(\frac{V_t}{V_y}\right)(DF)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/kg).

Contract CRQL = CRQL value (µg/kg) reported in Exhibit C, Table 2 – Semivolatiles Target Analyte List and Contract Required Quantitation Limits or as modified.

W_x = Method required sample weight (30 g for low-level soil/sediment/non-oily waste samples, 1.0 g for medium-level soil/sediment/non-oily waste samples, and 0.20 g for oily waste samples by waste dilution method).

W_t = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

V_y = Contract concentrated extract volume (1000 µL for soil/sediment/waste samples; 10,000 µL for waste samples by waste dilution method).

DF = Reported Analysis/DilutionFactor.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 7D Soil/Sediment/Waste Adjusted CRQL for Dual-Column GC Pesticides

$$\text{Adjusted CRQL}\,(\mu g/kg) = (\text{Contract CRQL})\left(\frac{W_x}{W_t \times S}\right)\left(\frac{V_t}{V_y}\right)(DF)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/kg).

Contract CRQL = CRQL value (µg/kg) reported in Exhibit C, Table 3 – Pesticides Target Analyte List and Contract Required Quantitation Limits or as modified.

W_x = Method required sample weight (30 g for soil/sediment/non-oily waste samples and 0.20 g for oily waste samples by waste dilution method).

W_t = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

V_y = Method required concentrated extract volume (10,000 µL).

DF = Reported Analysis/DilutionFactor.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 7E Wipe Adjusted CRQL for Dual-Column GC Pesticides

$$\text{Adjusted CRQL } (\mu g) = (\text{Contract CRQL})\left(\frac{V_t}{V_y}\right)(DF)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg).

Contract CRQL = CRQL value (µg) reported in Exhibit C, Table 3 – Pesticides Target Analyte List and Contract Required Quantitation Limits or as modified.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

V_y = Method required concentrated extract volume (10,000 µL).

DF = Reported Analysis/DilutionFactor.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 7E-a Wipe Adjusted Area CRQL for Dual-Column GC Pesticides

$$\text{Adjusted CRQL } (\mu g/cm^2) = (\text{Contract CRQL})\left(\frac{V_t}{V_y}\right)\left(\frac{A_v}{A_w}\right)(DF)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/cm²).

Contract CRQL = CRQL value (µg/cm²) reported in Exhibit C, Table 3 – Pesticides Target Analyte List and Contract Required Quantitation Limits or as modified.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

V_y = Method required concentrated extract volume (10,000 µL).

A_w = Characteristic/CharacteristicValue (cm²) from the Characteristic node with Characteristic/CharacteristicType = "Area".

A_v = Method required wipe area (100 cm²).

DF = Reported Analysis/DilutionFactor.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 7F Soil/Sediment/Waste Adjusted CRQL for Dual-Column GC Aroclors

$$\text{Adjusted CRQL}\,(\mu g/kg) = (\text{Contract CRQL})\left(\frac{W_x}{W_t \times S}\right)\left(\frac{V_t}{V_y}\right)(DF)\left(\frac{CV_{in} \times E}{CV_{out}}\right)_1\left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/kg).

Contract CRQL = CRQL value (µg/kg) reported in Exhibit C, Table 4 – Aroclors Target Analyte List and Contract Required Quantitation Limits or as modified.

W_x = Method required sample weight (30 g for soil/sediment/non-oily waste samples and 0.20 g for oily waste samples by waste dilution method).

W_t = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

V_y = Method required concentrated extract volume (10,000 µL).

DF = Reported Analysis/DilutionFactor.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 7G Wipe Adjusted CRQL for Dual-Column GC Aroclors

$$\text{Adjusted CRQL}\,(\mu g) = (\text{Contract CRQL})\left(\frac{V_t}{V_y}\right)(DF)\left(\frac{CV_{in}\times E}{CV_{out}}\right)_1\left(\frac{CV_{in}\times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in}\times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg).

Contract CRQL = CRQL value (µg) reported in Exhibit C, Table 4 – Aroclors Target Analyte List and Contract Required Quantitation Limits or as modified.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

V_y = Method required concentrated extract volume (10,000 µL).

DF = Reported Analysis/DilutionFactor.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 7G-a Wipe Adjusted Area CRQL for Dual-Column GC Aroclors

$$\text{Adjusted CRQL}\,(\mu g/cm^2) = (\text{Contract CRQL})\left(\frac{V_t}{V_y}\right)\left(\frac{A_v}{A_w}\right)(DF)\left(\frac{CV_{in}\times E}{CV_{out}}\right)_1\left(\frac{CV_{in}\times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in}\times E}{CV_{out}}\right)_n$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (µg/cm²).

Contract CRQL = CRQL value (µg/cm²) reported in Exhibit C, Table 4 – Aroclors Target Analyte List and Contract Required Quantitation Limits or as modified.

V_t = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL).

V_y = Method required concentrated extract volume (10,000 µL).

A_w = Characteristic/CharacteristicValue (cm²) from the Characteristic node with Characteristic/CharacteristicType = "Area".

A_v = Method required wipe area (100 cm²).

DF = Reported Analysis/DilutionFactor.

CV_{out} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

EQ. 7H Adjusted Soil/Sediment/Waste CRQL for ICP-AES and ICP-MS

$$\text{Adjusted CRQL (mg/kg)} = \text{Contract CRQL} \times \frac{W_M}{W \times S} \times \frac{V_f}{V_M} \times DF$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (mg/kg).

Contract CRQL = CRQL value (mg/kg) reported in Exhibit C, Table 5 – ICP-AES and ICP-MS Target Analyte List and Contract Required Quantitation Limits or as modified.

W_M = Minimum method required aliquot amount (1.00 g).

W = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

V_f = Reported PreparationPlusCleanup/FinalAmount from the preparation node (mL).

V_M = Method required final sample digestion volume (100 mL or 500 mL).

DF = Reported Analysis/DilutionFactor.

EQ. 7I Adjusted Soil/Sediment/Waste CRQL for CVAA and Spectrophotometry

$$\text{Adjusted CRQL (mg/kg)} = \text{Contract CRQL} \times \frac{W_M}{W \times S} \times DF$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (mg/kg).

Contract CRQL = CRQL value (mg/kg) reported in Exhibit C, Table 6 - Mercury by Cold Vapor Atomic Absorption Target Analyte List and Contract Required Quantitation Limits or Table 7 – Cyanide by Spectrophotometry Target Analyte List and Contract Required Quantitation Limits or as modified.

W_M = Minimum method required aliquot amount (0.50 g for Hg; 1.0 g for CN).

W = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

DF = Reported Analysis/DilutionFactor.

EQ. 7J Adjusted Soil/Sediment CRQL for Anions and TOC

$$\text{Adjusted CRQL(mg/kg)} = \text{Contract CRQL} \times \frac{W_M}{W \times S} \times DF$$

WHERE,

Adjusted CRQL = ReportedResult/QuantitationLimit (mg/kg).

Contract CRQL = CRQL value (mg/kg) reported in Exhibit C, Table 8- Anions 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 Limit, or Table 10 - Total Organic Carbon Analysis Target Analyte List and Contract Required Quantitation Limits or as modified.

W_M = Minimum method required aliquot amount (g).

W = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

DF = Reported Analysis/DilutionFactor.

3.4 Specific Calibration Calculations

EQ. 8 Relative Response Factor for GC/MS

$$RRF = \frac{A_X}{A_{is}} \times \frac{C_{is}}{C_X}$$

WHERE,

RRF = Peak/RRF.

A_x = Reported Peak/Response.

A_{is} = Reported Peak/Response of the associated internal standard that is referenced in the PeakComparison node.

C_{is} = Expected Result of the associated internal standard that is referenced in the PeakComparison node from EQ. 9A or 9C (ng).

C_x = Expected Result from EQ. 9A or 9C (ng).

EQ. 9A Expected Result for Trace Volatiles and Low/Medium Volatiles GC/MS

$$\text{Expected Result (ng)} = \frac{(\text{Standard Concentration} \times \text{Amount Added})}{1000}$$

WHERE,

Expected Result = Analyte/ExpectedResult (ng).

Standard Concentration = Reported Analyte/StandardConcentration (µg/L).

Amount Added = Reported Analyte/AmountAdded (µL).

EQ. 9B-a Expected Concentration for Trace Volatiles, Aqueous/Water and Low-Level Soil/Sediment/Waste Low/Medium Volatiles GC/MS

$$\text{Expected Concentration (µg/L or µg/kg)} = \frac{(\text{Standard Concentration} \times \text{Amount Added})}{(1000 \times \text{Aliquot Amount} \times \text{Solids Factor})}$$

WHERE,

Standard Concentration = Reported Analyte/StandardConcentration (µg/L).

Amount Added = Reported Analyte/AmountAdded (µL).

Aliquot Amount = Reported PreparationPlusCleanup/AliquotAmount from the preparation node for soil/sediment samples, or Analysis/InjectionVolume for water samples (g or mL).

Solids Factor = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation and water samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

EQ. 9B-b Expected Concentration for Medium-Level Soil/Sediment/Waste Low/Medium Volatiles GC/MS

$$\text{Expected Concentration (µg/kg)} = \frac{(\text{Standard Concentration} \times \text{Amount Added}) \times AV_t}{(1000 \times \text{Aliquot Amount} \times V_a \times \text{Solids Factor})}$$

WHERE,

Standard Concentration	=	Reported Analyte/StandardConcentration (µg/L).
Amount Added	=	Reported Analyte/AmountAdded (µL).
AV_t	=	Adjusted Total Volume from EQ. 5B-a (µL).
Aliquot Amount	=	Reported PreparationPlusCleanup/AliquotAmount from the preparation node for soil/sediment samples, or Analysis/InjectionVolume for water samples (g).
V_a	=	Analysis/AnalyzedAmount (µL).
Solids Factor	=	(Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation and water samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

EQ. 9C Expected Result for Semivolatiles GC/MS

$$\text{Expected Result (ng)} = \frac{(\text{Standard Concentration} \times \text{Amount Added}) \times \text{Injection Volume}}{1000 \times \text{Analyzed Amount}}$$

WHERE,

Expected Result	=	Analyte/ExpectedResult (ng).
Standard Concentration	=	Reported Analyte/StandardConcentration (µg/L).
Injection Volume	=	Analysis/InjectionVolume (µL).
Amount Added	=	Reported Analyte/AmountAdded (µL).
Analyzed Amount	=	Analysis/AnalyzedAmount (µL).

EQ. 9D Expected Concentration for Semivolatiles GC/MS, and Pesticides and Aroclors GC

$$\text{Expected Concentration (µg/L or µg/kg)} = \frac{(\text{Standard Concentration} \times \text{Amount Added})}{(1000 \times \text{Aliquot Amount} \times \text{Solids Factor})}$$

WHERE,

Expected Concentration	=	Analyte/ExpectedResult (µg/L or µg/kg).
Standard Concentration	=	Reported Analyte/StandardConcentration (µg/L).
Amount Added	=	Reported Analyte/AmountAdded (µL).
Aliquot Amount	=	Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL or g).
Solids Factor	=	(Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for water samples and Performance Evaluation samples and any sample with MatrixMedium of "Solid" and without a reported value for Percent Solids.

EQ. 10 Percent Resolution for Dual-Column GC Pesticides

$$\%\text{Resolution} = \frac{V}{H} \times 100$$

WHERE,

V = Depth of the valley between the two peaks. The depth of the valley is measured along a vertical line from the level of the apex of the shorter peak to the floor of the valley between the two peaks.

H = Height of the shorter of the adjacent peaks.

The calculated %Resolution is reported in the element Peak/Resolution and the V and H terms are not required to be reported in the Electronic Data Deliverable (EDD).

EQ. 11 Mean Retention Time for Dual-Column GC

$$\overline{RT} = \frac{\sum_{i=1}^{n} RT_i}{n}$$

WHERE,

$\overline{RT}$ = Peak/MeanRetentionTime under the AnalysisGroup node.

RT_i = Reported Peak/RetentionTime where the reported Analyte/Inclusion is "Yes".

n = Number of reported RetentionTime values where the reported Analyte/Inclusion is "Yes".

EQ. 12 Calibration Factor for Dual-Column GC

$$CF = \frac{\text{Peak area (or peak height) of the standard}}{\text{Mass Injected (ng)}}$$

WHERE,

CF	=	Peak/CalibrationFactor.
Peak area (or peak height) of the standard	=	Reported Peak/Response.
Mass Injected (ng)	=	Expected Intermediate Result from EQ. 12-a (ng).

EQ. 12-a Mass Injected for Dual-Column GC (Expected Intermediate Result)

$$\text{Expected Intermediate Result (ng)} = \frac{(\text{Standard Concentration} \times \text{Amount Added} \times \text{Injection Volume})}{(\text{Analyzed Amount} \times 1000)}$$

WHERE,

Standard Concentration	=	Reported Analyte/StandardConcentration (µg/L).
Injection Volume	=	Reported Analysis/InjectionVolume (µL).
Amount Added	=	Reported Analyte/AmountAdded (µL).
Analyzed Amount	=	Reported Analysis/AnalyzedAmount (µL).

EQ. 13 Pesticide PEM Amount Found

$$\text{Amount found (ng)} = \frac{\text{Peak area (or peak height) of compound in PEM}}{\overline{CF}}$$

WHERE,

Amount found	=	Peak/IntermediateResult (ng).
Peak area (or peak height) of compound in PEM	=	Reported Peak/Response.
$\overline{CF}$	=	Mean Calibration Factor from EQ. 1.

EQ. 14A Pesticide Percent Breakdown of DDT

$$\%\text{Breakdown DDT} = \frac{\text{Amount found (ng)(DDD+DDE)}}{\text{Amount (ng) of DDT injected}} \times 100$$

WHERE,

%Breakdown DDT	=	Analyte/PercentBreakdown.
Amount found (ng) (DDD + DDE)	=	(Amount Found of DDD + Amount Found of DDE) from EQ. 13 (ng).
Amount (ng) of DDT injected	=	Expected Intermediate Result of DDT from EQ. 20-a (ng).

EQ. 14B Pesticide Percent Breakdown of Endrin

$$\%\text{Breakdown Endrin} = \frac{\text{Amount found (ng)(Endrin Aldehyde + Endrin Ketone)}}{\text{Amount (ng) of Endrin injected}} \times 100$$

WHERE,

%Breakdown Endrin	=	Analyte/PercentBreakdown.
Amount found (ng) (Endrin Aldehyde + Eldrin Ketone)	=	Amount Found of Endrin Aldehyde + Endrin Ketone from EQ. 13 (ng).
Amount (ng) of Endrin injected	=	Expected Intermediate Result of Endrin from EQ. 20-a (ng).

EQ. 14C Pesticide Combined Percent Breakdown of DDT and Endrin

$$\text{Combined \%Breakdown} = \%\text{Breakdown DDT} + \%\text{Breakdown Endrin}$$

WHERE,

%Breakdown DDT	=	Percent Breakdown of DDT from EQ. 14A.
%Breakdown Endrin	=	Percent Breakdown of Endrin from EQ. 14B.

EQ. 15 ICAL Percent Difference for ICP-AES, ICP-MS, CVAA, Spectrophotometry, IC, and TOC

$$\%D = \frac{\text{Found(ICAL)} - \text{True(ICAL)}}{\text{True(ICAL)}} \times 100$$

WHERE,

%D	=	Analyte/PercentDifference.
Found (ICAL)	=	Reported Analyte/Result (µg/L or mg/L).
True (ICAL)	=	Reported Analyte/ExpectedResult (µg/L or mg/L).

EQ. 16 Percent Recovery for ICV, CCV, ICSA, and ICSAB

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

WHERE,

%R	=	Analyte/PercentRecovery.
Found	=	Reported Analyte/Result (µg/L or mg/L) for ICV, CCV, ICSA, and ICSAB.
True	=	Reported Analyte/ExpectedResult (µg/L or mg/L) for ICV, CCV, ICSA, and ICSAB.

3.5 Quality Control Calculations

EQ. 17 GC/MS Relative Response Factor Percent Difference

$$\%D = \frac{RRF_c - \overline{RRF_i}}{\overline{RRF_i}} \times 100$$

WHERE,

%D = Peak/PercentDifference.

RRF_c = Relative Response Factor from EQ. 8 from the initial calibration verification or continuing calibration verification.

$\overline{RRF_i}$ = Mean Relative Response Factor from EQ. 1.

EQ. 18 Percent Difference Between the Calculated and Nominal Amount

$$\%D = \frac{C_{calc} - C_{nom}}{C_{nom}} \times 100$$

WHERE,

%D = Peak/PercentDifference.

C_{calc} = Amount Found from EQ. 13 (ng).

C_{nom} = Expected Intermediate Result from EQ. 20-a (ng).

EQ. 19 GC Calibration Factor Percent Difference

$$\%D = \frac{CF - \overline{CF}}{\overline{CF}} \times 100$$

WHERE,

%D = Peak/PercentDifference.

CF = Calibration Factor from EQ. 12.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

EQ. 20 Percent Recovery for GPC and Florisil Analyses

$$\%R = \frac{Q_d}{Q_a} \times 100$$

WHERE,

%R = Analyte/PercentRecovery.

Q_d = Intermediate Result from EQ. 20a (ng).

Q_a = Theoretical IntermediateResult from EQ. 20-b (ng) or Expected Intermediate Result from EQ. 20-c.

EQ. 20-a Intermediate Result

$$\text{Intermediate Result} = \frac{A_x}{\overline{CF}}$$

WHERE,

Intermediate Result = Analyte/IntermediateResult (ng).

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

EQ. 20-b Theoretical Intermediate Result for GPC

$$\text{Theoretical Intermediate Result (ng)} = \frac{(\text{Standard Concentration} \times \text{Amount Added} \times E \times \text{Injection Volume})}{(\text{Cleanup Final Amount} \times 1000)}$$

WHERE,

Standard Concentration = Reported Analyte/StandardConcentration (µg/L).

Amount Added = Reported Analyte/AmountAdded (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node.

Injection Volume = Reported Analysis/InjectionVolume (µL).

Cleanup Final Amount = Reported PreparationPlusCleanup/FinalAmount from the cleanup node for GPC Calibration Checks (µL).

EQ. 20-c Expected Intermediate Result for Florisil

$$\text{Expected Intermediate Result (ng)} = \frac{(\text{Standard Concentration} \times \text{Amount Added} \times \text{Injection Volume})}{(\text{Analyzed Amount} \times 1000)}$$

WHERE,

Standard Concentration = Reported Analyte/StandardConcentration (µg/L).

Amount Added = Reported Analyte/AmountAdded (µL).

Injection Volume = Reported Analysis/InjectionVolume (µL).

Analyzed Amount = Reported Analysis/AnalyzedAmount (µL).

EQ. 21 Cleanup Factor

$$\text{Cleanup Factor} = \left(\frac{CV_{in} \times E}{CV_{out}}\right)_1 \left(\frac{CV_{in} \times E}{CV_{out}}\right)_2 \ldots \left(\frac{CV_{in} \times E}{CV_{out}}\right)_n$$

WHERE,

CV_{in} = Reported PreparationPlusCleanup/InitialAmount from each cleanup node (µL).

CV_{in} = Reported PreparationPlusCleanup/FinalAmount from each cleanup node (µL).

E = Reported PreparationPlusCleanup/Efficiency from each cleanup node. Reported as a value of less than 1.0 when CV_{out} is less than CV_{in} for the GPC process so that (CV_{in} X E/CV_{out}) is equal to 1.

EQ. 22 DMC/Surrogate Percent Recovery

$$\%R = \frac{Q_d}{Q_a} \times 100$$

WHERE,

$\%R$ = Analyte/PercentRecovery.

Q_d = The IntermediateResult from EQs. 22A, 22B, and 22C (ng).

Q_a = The ExpectedResult from EQ. 22D (ng) or Theoretical Intermediate Result from EQ. 22E (ng).

EQ. 22A DMC Intermediate Result for Trace Volatiles and Low/Medium Volatiles

$$\text{Intermediate Result (ng)} = \left(\frac{A_x \times I_{is}}{A_{is} \times \overline{RRF}}\right)$$

WHERE,

Intermediate Result = Analyte/IntermediateResult (ng).

A_x = Reported Peak/Response.

A_{is} = Reported Peak/Response of the associated internal standard that is referenced in the PeakComparison node.

I_{is} = Expected Result of the associated internal standard that is referenced in the PeakComparison node from EQ. 9A (ng).

$\overline{RRF}$ = Mean Relative Response Factor from EQ. 1.

EQ. 22B DMC Intermediate Result for Semivolatiles

$$\text{Intermediate Result (ng)} = \left(\frac{A_x \times I_{is}}{A_{is} \times \overline{RRF}}\right)$$

WHERE,

Intermediate Result = Analyte/IntermediateResult (ng).

A_x = Reported Peak/Response.

A_{is} = Reported Peak/Response of the associated internal standard that is referenced in the PeakComparison node.

I_{is} = Expected Result of the associated internal standard that is referenced in the PeakComparison node from EQ. 9C (ng).

$\overline{RRF}$ = Mean Relative Response Factor from EQ. 1.

EQ. 22C Surrogate Intermediate Result for Pesticides and Aroclors

$$\text{Intermediate Result (ng)} = \frac{A_x}{\overline{CF}}$$

WHERE,

Intermediate Result = Analyte/IntermediateResult (ng).

A_x = Reported Peak/Response.

$\overline{CF}$ = Mean Calibration Factor from EQ. 1.

EQ. 22D DMC Expected Result

$$\text{Expected Result (ng)} = \frac{(\text{Standard Concentration} \times \text{Amount Added})}{1000}$$

WHERE,

Expected Result = Analyte/ExpectedResult (ng).

Standard Concentration = Reported Analyte/StandardConcentration (µg/L).

Amount Added = Reported Analyte/AmountAdded (µL).

EQ. 22E DMC/Surrogate Theoretical Intermediate Result for Semivolatiles, Pesticides, and Aroclors

$$\text{Theoretical Intermediate Result (ng)} = \frac{(\text{Expected Result} \times \text{Cleanup Factor} \times \text{Injection Volume})}{(\text{Prep Final Amount} \times \text{Dilution Factor})}$$

WHERE,

Expected Result = Expected Result from EQ. 22D (ng).

Cleanup Factor = Cleanup Factor from EQ. 21. Default to 1 for instrument blanks or if cleanup is not performed.

Injection Volume = Reported Analysis/InjectionVolume (µL).

Prep Final Amount = Reported PreparationPlusCleanup/FinalAmount from the preparation node (µL). Default to 10,000 for instrument blanks and 1 for GPC Calibration Checks and Cleanup Blanks.

EQ. 23 Matrix Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

WHERE,

%R = ReportedResult/PercentRecovery.

SSR = The Concentration value from EQs. 4A, 4B, 4C, 4D, 4E, 4G, 4H, 5A, 5B, 5C, 5D, 5F, 5H, or 5J from the spike sample (µg/L, mg/L, µg/kg, or mg/kg).

SR = The Concentration value from EQs. 4A, 4B, 4C, 4D, 4E, 4G, 4H, 5A, 5B, 5C, 5D, 5F, 5H, or 5J from the original sample (µg/L, mg/L, µg/kg, or mg/kg).

SA = Expected Concentration from EQs. 9B-a, 9B-b, 9D, 23-a, or 23-b from the spike sample (µg/L, mg/L, µg/kg or mg/kg).

NOTE: Use a value of 0 (zero) in the calculation when the ReportedResult/ResultType for the SSR or SR result is "Not_Detected".

EQ. 23-a Expected Concentration for Aqueous/Water Samples for ICP-AES, ICP-MS, CVAA, and Spectrophotometry

$$\text{Expected Concentration } (\mu g/L) = C \times \frac{V_f}{V \times 1000}$$

WHERE,

Expected Concentration = ReportedResult/ExpectedResult (µg/L).

C = Analyte/StandardConcentration (µg/L).

V_f = Analyte/AmountAdded (µL).

V = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL).

EQ. 23-b Expected Concentration for Soil/Sediment Samples for ICP-AES, ICP-MS, CVAA, and Spectrophotometry

$$\text{Expected Concentration } (mg/kg) = C \times \frac{V_f}{W \times S \times 1{,}000{,}000}$$

WHERE,

Expected Concentration = ReportedResult/ExpectedResult (mg/kg).

C = Reported Analyte/StandardConcentration (µg/L).

V_f = Reported Analyte/AmountAdded (µL).

W = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (g).

S = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples.

EQ. 24A Relative Percent Difference for MS/MSD

$$RPD = \frac{|MSR - MSDR|}{(MSR + MSDR)/2} \times 100$$

WHERE,

RPD = ReportedResult/RPD.

MSR = Matrix Spike result from EQs. 4A, 4B, 4C, 4D, 5A, 5B, 5C, 5D, or 5F from the MS sample.

MSDR = Matrix Spike result from EQs. 4A, 4B, 4C, 4D, 5A, 5B, 5C, 5D, or 5F from the MSD sample.

EQ. 24B Duplicate Sample Relative Percent Difference

$$RPD = \frac{|S - D|}{(S + D)/2} \times 100$$

WHERE,

RPD = ReportedResult/RPD. If the ReportedResult/ResultType for both the S and D results is "Not_Detected", the RPD is not required to be calculated.

S = Original Sample Result from EQ. 4E, 4G, 4H, 5H, or 5J.

D = Duplicate Sample Result from EQ. 4E, 4G, 4H, 5H, or 5J.

NOTE: Use a value of 0 (zero) in the calculation when the ReportedResult/ResultType for the S or D result is "Not_Detected".

EQ. 25 Percent Difference Between Concentrations on Both GC Columns

$$\%D = \frac{Conc_H - Conc_L}{Conc_L} \times 100$$

WHERE,

%D = ReportedResult/PercentDifference.

$Conc_H$ = The greater of the Concentration values from EQs. 4C, 4D, 5D, 5E, 5E-a, 5F, 5G, or 5G-a from the two Analysis nodes where the analyte is detected on both GC columns (µg/L, µg/kg, µg, or µg/cm^2).

$Conc_L$ = The lesser of the Concentration values from EQs. 4C, 4D, 5D, 5E, 5E-a, 5F, 5G, or 5G-a from the two Analysis nodes where the analyte is detected on both GC columns (µg/L, µg/kg, µg, or µg/cm^2).

EQ. 26A LCS Percent Recovery for Semivolatiles GC/MS, and Pesticides and Aroclors GC

$$\%R = \frac{Q_d}{Q_a} \times 100$$

WHERE,

%R = Analyte/PercentRecovery.

Q_d = The Concentration value from EQs. 4C, 4D, 5D, 5E, 5E-a, 5F, 5G, or 5G-a (µg/L, µg/kg, µg, or µg/cm^2). Use a value of 0 (zero) in the calculation when the ReportedResult/ResultType for the result is "Not_Detected".

Q_a = The Expected Concentration from EQ. 26A-a (µg/L, µg/kg, µg, or µg/cm^2).

EQ. 26A-a Expected LCS Spiking Analyte Concentration for Semivolatiles GC/MS, and Pesticides and Aroclors GC

$$\text{Expected Concentration } (\mu g/L, \mu g/kg, \mu g, \mu g/cm^2) = \frac{(\text{Standard Concentration} \times \text{Amount Added})}{(1000 \times \text{Aliquot Amount or Wipe Area} \times \text{Solids Factor})}$$

WHERE,

Standard Concentration = Reported Analyte/StandardConcentration (µg/L).

Amount Added = Reported Analyte/AmountAdded (µL).

Aliquot Amount = Reported PreparationPlusCleanup/AliquotAmount from the preparation node (mL or g). Default to 1 for wipes.

Wipe Area = Characteristic/CharacteristicValue (cm^2) from the Characteristic node with Characteristic/CharacteristicType = "Area". Default to 1 if not wipes, or if wipe area is not provided by the samplers.

Solids Factor = (Characteristic/CharacteristicValue ÷ 100) from the Characteristic node with Characteristic/CharacteristicType = "Percent_Solids". Default to 1 for Performance Evaluation samples and water samples.

NOTE: Convert units to µg or $\mu g/cm^2$ for wipe LCSs by dividing the final calculated expected concentration by 1000.

EQ. 26B LCS Percent Recovery for ICP-AES, ICP-MS, Anions, Hexavalent Chromium, and TOC

$$\%R = \frac{\text{Found (LCS)}}{\text{True (LCS)}} \times 100$$

WHERE,

%R = ReportedResult/PercentRecovery.

Found (LCS) = Sample Concentration from EQ. 4E, 4H, 5H, 5I, or 5J (µg/L, mg/L, mg/kg, or µg). If the ReportedResult/ResultType for the result is "Not_Detected", Found (LCS) = 0.

True (LCS) = (Adjusted CRQL from EQ. 6E, 6G, 7H, or 7J, or ReportedResult/ClientQuantitationLimit for wipes) × 2 (µg/L, mg/kg, or µg).

EQ. 27 Serial Dilution Percent Difference for ICP-AES and ICP-MS

$$\%\text{Difference} = \frac{|I - S|}{I} \times 100$$

WHERE,

%Difference = ReportedResult/PercentDifference. If the ReportedResult/ResultType for the Initial Sample Result is "Not_Detected", the %Difference value is not required to be calculated.

I = Initial Sample Result from EQ. 4E or 5H.

S = Serial Dilution Result from EQ. 4E or 5H. If the ReportedResult/ResultType for this result is "Not_Detected", S=0.

EQ. 28 Percent Relative Intensity for ICP-MS Internal Standards

$$\%RI = \frac{I_n}{I_0} \times 100$$

WHERE,

%RI = Peak/PercentRatio.

I_n = Reported Peak/Response of the internal standard in the sample.

I_0 = Reported Peak/Response of the internal standard in the calibration blank (S0).

3.6 Calculations for Percent Solids and TCLP/SPLP Extractions

EQ. 29 Percent Solids

$$\%\,\text{Solids} = \frac{\text{Sample Dry Weight}}{\text{Sample Wet Weight}} \times 100$$

EQ. 30 Required Sample Weight for Low Percent Solid Samples

$$\text{Required Weight} = \frac{\text{Minimal Method Weight}}{\%\,\text{Solids}/100}$$

EQ. 31 Extraction Percent Solids

$$\%\,\text{Solids} = \frac{\text{Weight of Solid}}{\text{Total Weight of Sample}} \times 100$$

EQ. 32 Percent Dry Solids

$$\text{Percent Dry Solids} = \frac{(\text{Wt. of Dry Waste and Filter}) - \text{Tared Wt. of Filter}}{\text{Initial Wt. of Waste}} \times 100$$

EQ. 33 Weight of Extraction Fluid

$$\text{Weight of Extraction Fluid} = \frac{20 \times \text{Percent Solids} \times \text{Weight of Sample Filtered}}{100}$$

EQ. 34 ZHE Sample Size

$$\text{Weight} = \frac{25}{\%\,\text{Solids}} \times 100$$

EQ. 35 Final Concentration for Multi-Phasic Samples

$$\text{Final Concentration (mg/L)} = \frac{(V_1)(C_1) + (V_2)(C_2)}{V_1 + V_2}$$

WHERE,

V_1 = The volume of the first phases (L).

C_1 = The concentration of the analyte of concern in the first phase (mg/L).

V_2 = The volume of the second phase (L).

C_2 = The concentration of the analyte of concern in the second phase (mg/L).

3.7 Calculation for Standards Prepared from Neat High-Purity Bulk Material

EQ. 36 Weight of Impure Compound or Element

$$\text{Weight of Impure Chemical} = \frac{\text{Weight of Pure Chemical}}{(\text{Percent Purity}/100)}$$

WHERE,

Weight of Pure Chemical = That required to prepare a specific volume of a solution standard of a specified concentration.

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EXHIBIT H

FORMAT FOR ELECTRONIC DATA DELIVERABLES

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Table of Contents

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1.0 INTRODUCTION

The analytical service provides 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). The electronic data deliverable (EDD) requirements in this section are designed to allow the EPA and other federal agencies or programs to rapidly assess the accuracy, completeness, and usefulness of the analytical results and the data. Depending on the stage chosen, the data user will receive results, support quality control (QC), and verification of the calculated results and quality measures.

2.0 FORMAT CHARACTERISTICS

2.1 This constitutes an implementation of the Staged Electronic Data Deliverable (SEDD) based on analytical results and other associated information required by the contract. Because this implementation is specific to the contract, not all data elements listed in the cross-program Document Type Definition (DTD) are required. This implementation is based on SEDD Specification 5.2 that can be found at:

https://www.epa.gov/clp/staged-electronic-data-deliverable-sedd

2.1.1 The SEDD deliverable consists of an eXtensible Markup Language (XML) file(s) compliant with the XML specification 1.0 of the World Wide Web Consortium (W3C). The deliverable must be well-formed based on the W3C XML specification and must be valid based on the DTD.

2.1.2 The Contractor shall create the deliverable using the UTF-8 (Unicode Transformation Format - 8 bit) character set.

2.1.3 The EDD SEDD stage delivery level (2a, 2b, or 3) must match the EPA requested/scheduled EDD SEDD level.

2.1.4 The initial line of the deliverable shall be: <?xml version="1.0" encoding="UTF-8"?>.

2.1.5 The second line of the deliverable shall be a DOCTYPE line that contains the filename of the DTD. The DOCTYPE line shall be <!DOCTYPE Header SYSTEM "SEDD_5-2_GENERAL_3_3.dtd">, <!DOCTYPE Header SYSTEM "SEDD_5-2_GENERAL_2b_3.dtd">, or <!DOCTYPE Header SYSTEM "SEDD_5-2_GENERAL_2a_2.dtd">, where "Header" denotes the name of the root element, and "SEDD_5-2_GENERAL_3_3.dtd" (for a Level 3 deliverable), "SEDD_5-2_GENERAL_2b_3.dtd" (for a Level 2b deliverable), or "SEDD_5-2_GENERAL_2a_2.dtd" (for a Level 2a deliverable) denotes the filename of the DTD.

2.1.6 The use of XML comment lines is permitted at any position in the file after the first two lines.

2.2 This implementation includes detailed specifications for the required format of the content of each data element for each analytical method. The content of each data element is specified as either literal (contained in quotes) which must appear exactly as shown (without quotes), or as a variable for which descriptions and formats are listed. Exhibit H, Section 3.0 describes the requirements for each data element.

2.2.1 For this implementation, numeric data elements may contain numeric digits, a decimal place, and a leading minus sign. Values without a leading minus sign are assumed to be positive. Values must be reported to the specified precision or significance.

2.2.2 The values reported by the Contractor are used for data assessment. No raw data values in the SEDD files shall be rounded. The Contractor shall not use rounded intermediate values in calculating the final result, and no rounding shall be performed until reaching the final result.

2.2.2.1 Rounding Rules

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 absolute value of the result is to be rounded up; otherwise the absolute value of the result is rounded down. For example, -0.4365 rounds to -0.44, and -2.3464 rounds to -2.3 when reported to two significant figures. Also see "Rounding Rules" in Exhibit G – List of Abbreviation & Acronyms, Glossary of Terms, and Equations.

2.2.2.2 Before evaluating a number for being in control or out of control of a certain limit, the number evaluated shall be rounded using the above rounding rules to the significance reported for that limit. For example, the control limit for an Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP-AES) Initial Calibration Verification (ICV) is plus or minus 10% of the true value. Then a calculated percent recovery (%R) of 110.46 shall be reported as 110, which is within the control limits of 90-110. On the other hand, a calculated %R of 110.50 shall be reported as 111, which is not within the 90-110 percent control limits.

2.2.2.3 The unadjusted Method Detection Limit (MDL) value reported shall always be rounded up from the value calculated from the MDL study data. For example, a calculated MDL value of 22.43 would be reported as 23. This requirement is to prevent values less than the actual MDL being reported as detects.

2.2.3 Significant Figures

All final results calculated from the instrument raw data shall be reported to two significant figures. 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.

2.2.4 The completeness of analytical data provided in the EDD will be verified against the analytical data requested on the Traffic Report/Chain of Custody (TR/COC) Record. The Laboratory Code, Case Number, Contract Number, Sample Delivery Group (SDG) Number, Modified Analysis (MA) Number (if applicable), sample number, and analytical method shall be identical in the EDD and the TR/COC Record and the SDG Cover Page submitted by the Contractor for the SDG.

2.2.5 The following data elements and content shall be present where required and correct: EDD Implementation Identifier (ID); Lab ID; Lab Receipt Date; Analysis Date and Time; Collected Date; Matrix ID; Client Method ID; Client Method Type; QC Type; Instrument ID; Relative Response Factor (RRF) or Calibration Factor (CF); mean RRF ($\overline{RRF}$) or mean CF ($\overline{CF}$) (level 2b and 3 only); Correlation Coefficient (level 2b and 3 only); Method ID; Run Batch (level 2b and 3 only); Analysis Batch (level 2b and 3 only); Analysis Group ID; Client Analysis ID; Client Analyte ID; Analyte Group ID; Preparation Batch; Percent Recovery (%R); Relative Percent Difference (RPD); Percent Difference (%D) (level 2b and 3 for Organic methods [Trace Volatiles (TVOA) including Selected Ion Monitoring (SIM), Low/Medium Volatiles (L/M VOA), Semivolatiles (SVOA) including SIM, Pesticides, Aroclors] only, and all levels for Inorganic methods); and Percent Relative Standard Deviation (%RSD) [level 2b and 3 for Organic methods only, and all levels for Inorganic methods (ICP-AES, ICP-MS, Hg, CN) and Classical methods (Anions, Hexavalent Chromium (Cr(VI)), Total Organic Carbon (TOC))].

3.0 DATA ELEMENTS

3.1 The SEDD consists of data elements arranged hierarchically by data nodes (parent elements). Figures 1, 2, and 3 depict the data node hierarchy. Each data element consists of a start tag, content, and an end tag. An element may contain other elements (child elements).

NOTE: There shall be no more than one occurrence of each child element within a node, unless the child element also behaves as a parent element. For example, in each SamplePlusMethod node, there may be only one occurrence of the element ClientSampleID, but there may be more than one occurrence of the element Analysis.

The tags, nodes, and hierarchy are specified in the DTD against which the deliverable will be validated (see Exhibit H, Section 6.0). The frequency requirements for each of the data nodes applicable to this implementation are described below.

3.1.1 Header Node (Required for All Deliverable Levels)

One Header node must be reported for each file submitted for each Sample Delivery Group (SDG).

3.1.2 SamplePlusMethod Node (Required for All Deliverable Levels)

Each Header node must contain one SamplePlusMethod node for each field sample, field blank (including rinse, equipment, and trip blanks), Performance Evaluation (PE) sample, Proficiency Testing (PT) audit sample, Matrix Spike (MS) sample, Matrix Spike Duplicate (MSD) sample, Post-Digestion Spike (PDS) sample (if applicable), Duplicate (Dup) sample, Serial Dilution (SD) sample, Method (MB) or Preparation Blank (PB), Leachate Extraction Blank (LEB), Instrument Blank (IB), Storage Blank (SB) for Volatiles only, Cleanup Blank (CB) for gas chromatography methods only, Laboratory Control Sample (LCS), and Non-Client Sample (NCS) by every analytical method reported in the file.

3.1.3 ReportedResult Node (Required for All Deliverables Levels)

Each SamplePlusMethod node must contain one and only one ReportedResult node for each target analyte for each analytical method in the file. For Gas Chromatography/Mass Spectrometry (GC/MS) methods, each SamplePlusMethod node must contain a ReportedResult node for each Tentatively Identified Compound (TIC).

3.1.4 ContactInformation Node (Required for All Deliverable Levels)

Each Header node must contain one ContactInformation node.

3.1.5 InstrumentQC Node (Required for Levels 2b and 3 Deliverables Only)

Each Header node must contain one InstrumentQC node for each Instrument Performance Check (IPC), initial calibration (ICAL) sequence, ICV, Continuing Calibration Verification (CCV), Initial Calibration Blank (ICB), Continuing Calibration Blank (CCB), Florisil Cartridge Check (FLO), Gel Permeation Chromatography (GPC) Calibration Check, and Interference Check Samples (ICSA and ICSAB) by every analytical method reported in the SDG as applicable.

NOTE: GC/MS Tunes shall be reported as separate InstrumentQC nodes with the specified QCType information, even when they are injected together with an ICAL or a CCV standard.

3.1.6 AnalysisGroup Node (Required for All Deliverable Levels)

Each initial calibration InstrumentQC node for multi-point calibration must contain one AnalysisGroup node containing summary data for the initial calibration. Each of these AnalysisGroup nodes must contain one Analyte node for each target analyte, DMC, and surrogate. For each derived result that is summed by combining results from separate analyses (e.g., at least one component from a different dilution), the SamplePlusMethod node must contain one AnalysisGroup node with the summed data for that (those) derived analyte(s). Each of these AnalysisGroup nodes must contain one AnalyteGroup node for each derived target analyte.

3.1.7 Analysis Node (Required for All Deliverable Levels)

Each SamplePlusMethod node must contain at least one Analysis node, or at least two Analysis nodes for dual-column methods (at least one for each column). A separate Analysis node is required for each dilution, re-extraction, or reanalysis. Any reanalysis for an analyte must be preceded by an initial analysis for that analyte. Any analysis reported as a dilution for an analyte must also have a less-diluted analysis reported as initial for that analyte. The initial analysis does not have to precede the diluted analysis. Each InstrumentQC node (other than Initial Calibration) must contain one Analysis node or must contain two Analysis nodes for dual column methods (one for each column). Each InstrumentQC node for Initial Calibration must contain one Analysis node for each calibration level and for each column.

3.1.8 Analyte Node (Required for All Deliverable Levels)

Each Analysis node under a SamplePlusMethod node must contain one Analyte node for each target analyte (excluding derived analytes), monitored interferent, Deuterated Monitoring Compound (DMC) or surrogate, TIC, and internal standard. Each Analysis node under an InstrumentQC node must contain one Analyte node for each target analyte (excluding derived analytes), monitored interferent, DMC or surrogate, and internal standard. Each Analysis node under an InstrumentQC node for tune must contain one Analyte node for each tune analyte. Each AnalysisGroup node for Initial Calibration must contain one Analyte node for each target analyte and DMC or surrogate.

3.1.9 PreparationPlusCleanup Node (Required for All Deliverable Levels)

Each Analysis node under a SamplePlusMethod node must contain one PreparationPlusCleanup node with a PreparationPlusCleanupType equal to "Preparation" and one PreparationPlusCleanup node with a PreparationPlusCleanupType equal to "Cleanup" for each applicable cleanup technique performed. For Serial Dilution and Post-Digestion Spike samples, the associated PreparationPlusCleanup node shall contain data for the preparation of the original sample. Each Analysis node under an InstrumentQC node with a QCType equal to "Florisil_Cartridge_Check" or "GPC_Calibration_Check" must contain one PreparationPlusCleanup node with a PreparationPlusCleanupType equal to "Cleanup". For those methods requiring digested QC, each InstrumentQC node must contain one PreparationPlusCleanup node with a PreparationPlusCleanupType equal to "Preparation". No more than one PreparationPlusCleanupnode with a PreparationPlusCleanupType equal to "Preparation" shall be present for each analysis.

3.1.10 Peak Node (Required for Levels 2b and 3 Deliverables Only)

Each Analyte node must contain at least one Peak node. For Level 2b, only the Analyte nodes under InstrumentQC must contain a Peak node. Within a RunBatch, a peak must be consistently identified. For an Inductively Coupled Plasma – Mass Spectrometer (ICP-MS) using collision or reaction cells on an analyte-by-analyte basis, internal standards reported from collision/reaction cell mode shall be reported with a "-Gas" suffix. If an internal standard applies to both the collision/reaction cell path and the normal path target analytes, report the internal standard results as separate peaks, using the "-Gas" suffix in PeakID to distinguish the collision/reaction cell results from the normal path results.

3.1.11 PeakComparison Node (Required for Levels 2b and 3 Deliverables Only)

For GC/MS and ICP-MS, each Peak node must contain a PeakComparison node for each applicable internal standard.

3.1.12 PeakReplicate Node (Required for Level 3 Deliverables only)

For ICP-AES and ICP-MS, each Peak node must contain a PeakReplicate node for each replicate exposure or integration collected, and shall contain at least the number of PeakReplicate nodes necessary to report the required minimum number of exposures or integrations.

3.1.13 Characteristic Node (Required for All Deliverable Levels)

Each SamplePlusMethod, PreparationPlusCleanup, and Handling node may contain one or more Characteristic nodes, one for each sample characteristic that must be reported for a sample at time of receipt, after preparation, or after handling as applicable. If sample pH was adjusted at the time of sample receipt and verified prior to preparation, the pH at time of receipt shall be reported in a Characteristic node under the SamplePlusMethod node, and the pH prior to preparation shall be reported in a Characteristic node under the PreparationPlusCleanup node.

3.1.14 Handling Node (required for Level 3 Deliverables only)

Each SamplePlusMethod node shall contain one or more Handling nodes when Toxicity Characteristic Leaching Procedure (TCLP) extraction, Synthetic Precipitation Leaching Procedure (SPLP) extraction, decanting, or transfer of samples from field core sampling storage devices to gas-tight vials has been performed. For TCLP and SPLP, the following laboratory QC samples analyzed with the TCLP or SPLP samples shall also have a Handling node with the applicable HandlingType: MB; PB; IB; SB; and LCS.

3.1.15 AnalyteComparison Node (For Level 3 Deliverables only)

For ICP-AES, each Analyte node must contain one AnalyteComparison node for each applicable Interelement Correction Factor.

3.1.16 AnalyteGroup Node (Required for All Deliverable Levels)

Each Analysis node under a SamplePlusMethod node must contain one AnalyteGroup node for each derived analyte calculated from that analysis only (not combining results across analyses) (i.e., Hardness) when required.

3.2 Detailed instructions for the content of each data element are provided in Tables 1, 2, and 3 of Section 7.0. The following is an explanation of the data fields contained in each table.

3.2.1 Node and Data Elements

This field reports each node in bold text, followed by its data elements. If an entire node is not required, then none of its data elements are listed.

3.2.2 Applicability

This field reports the samples, blanks, and standards for which each node and data element is required. An "X" in a column indicates that the node or element is required. Sample refers to field samples, field blanks, and PE/PT samples unless otherwise noted. Abbreviations used in this field are defined in Section 7.0, Table 4 - Abbreviations.

3.2.3 Instructions

This field describes the required format and content of each data element. The content of each data element is specified as either literal (contained in quotes), or as a variable for which description and format is listed. Abbreviations used in this field are defined in Section 7.0, Table 4 - Abbreviations.

Figure 1: Data Node Hierarchy for
Level 2a Deliverable

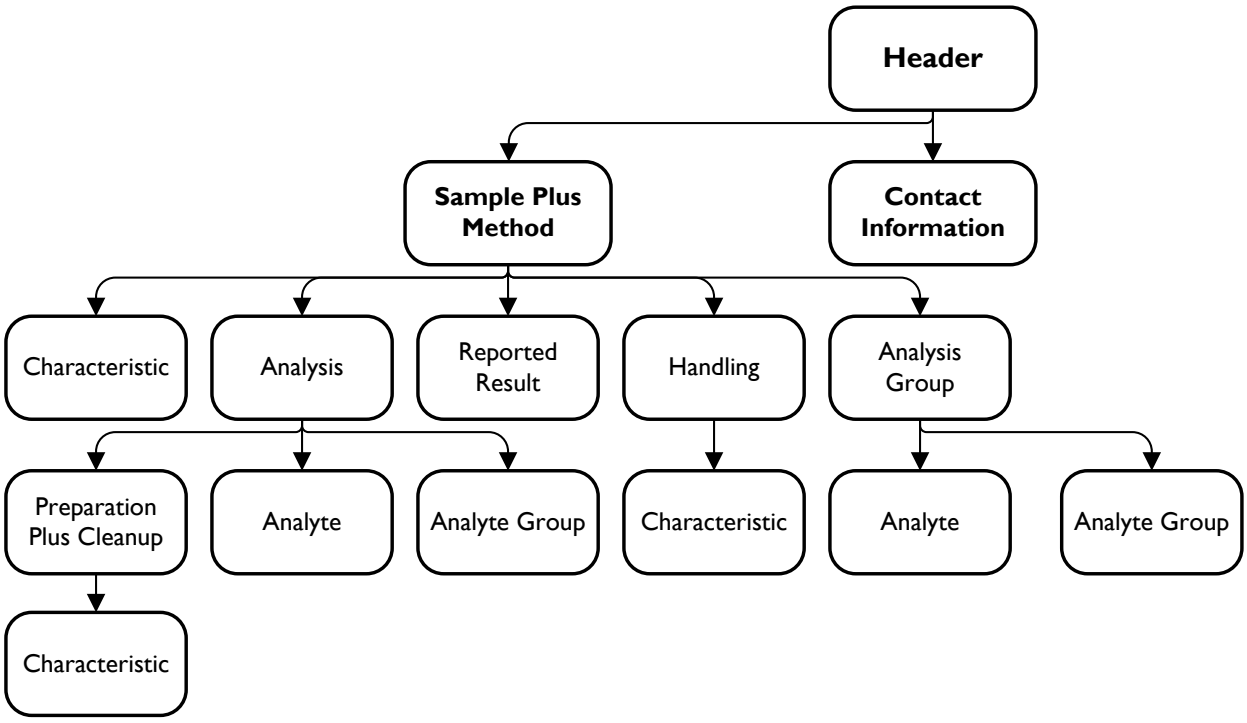


Figure 2: Data Node Hierarchy for
Level 2b Deliverable

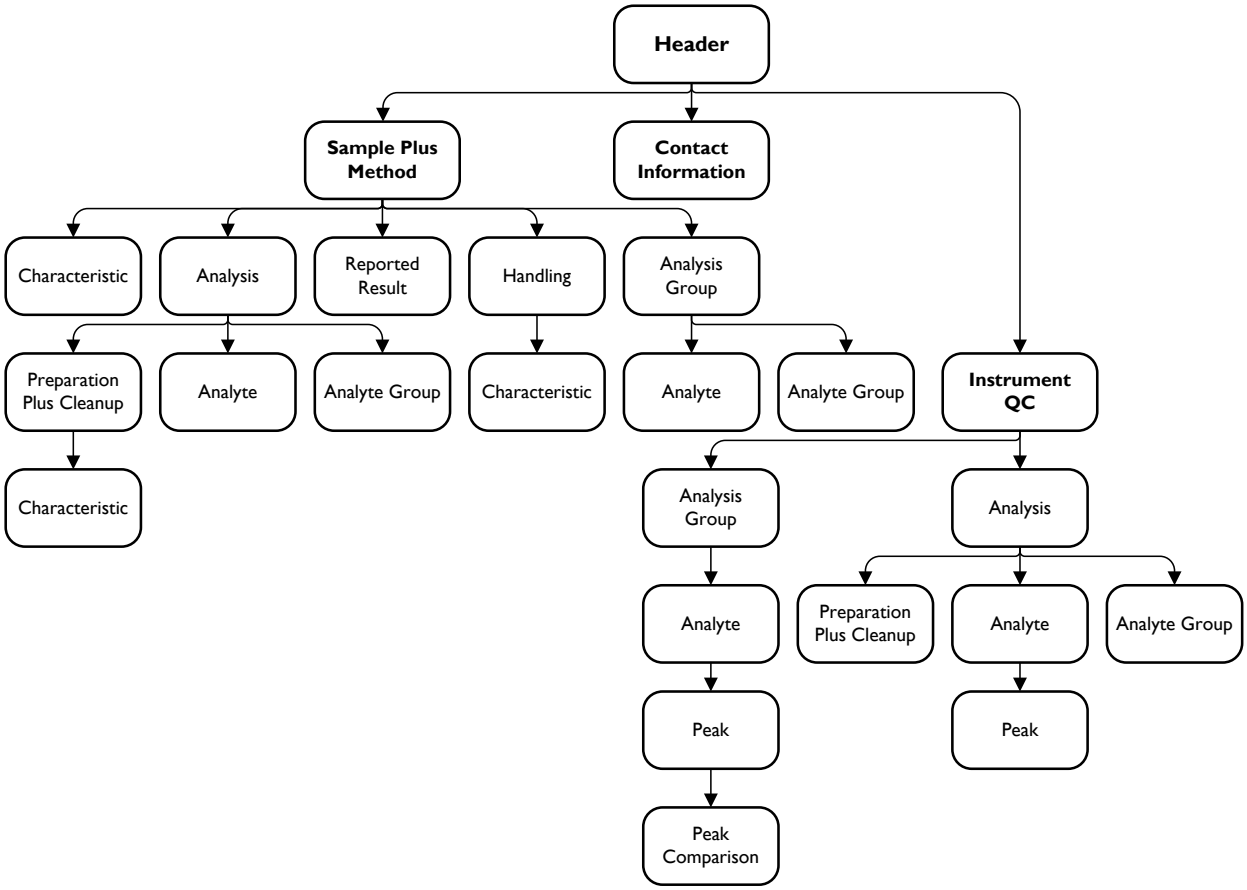
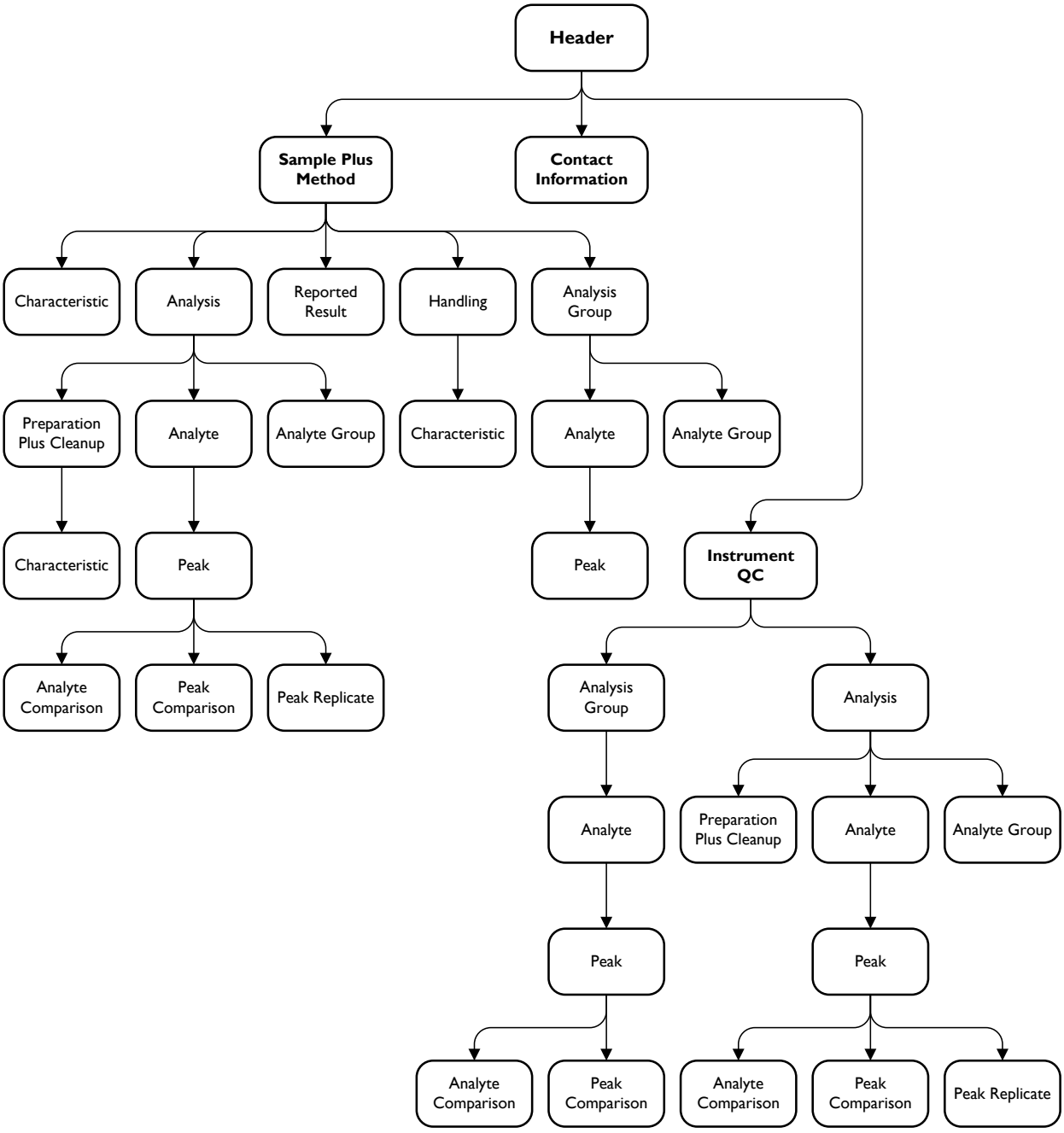


Figure 3: Data Node Hierarchy for
Level 3 Deliverable



4.0 BATCHES

4.1 This implementation requires the use of the following batches from the SEDD Specification: "LabReportingBatch"; "RunBatch"; "AnalysisBatch"; "PreparationBatch"; "CleanupBatch"; and "StorageBatch". "HandlingBatch" is required when TCLP or SPLP extraction is performed.

4.1.1 The "LabReportingBatch" links all samples reported in the same SDG. Report the SDG Number.

4.1.2 The "RunBatch" links all analyses performed under the same initial calibration. All analyses performed under an initial calibration must have the same content for the "RunBatch" element as the initial calibration from which their results are calculated.

4.1.3 The "AnalysisBatch" and "AnalysisBatchEnd" link all analyses performed within the same RunBatch that have the same opening and closing continuing QC (Standard, ICV, or opening CCV; and closing CCV) in an analytical sequence (1, 2, or 12-hour period). Multiple Analysis Batches may occur within a RunBatch. All analyses performed within the same AnalysisBatch must have the same content for the "AnalysisBatch" element as the opening tune, instrument blanks, or standard(s) that began the batch, and the same content for the "AnalysisBatchEnd" as the standard(s) that ends the analytical sequence.

4.1.4 The "PreparationBatch" links all samples of the same matrix prepared at the same time by the same preparation method. All samples analyzed, including Method or Preparation Blanks, Matrix Spikes, Matrix Spike Duplicates or Duplicates, and Laboratory Control Samples that are prepared together must have the same content for the "PreparationBatch" element. Laboratory QC samples derived from previously prepared samples (e.g., Serial Dilutions and Post-Digestion/Distillation Spikes) shall have the same content for the "PreparationBatch" element as the base sample they are derived from. For those methods using digested/distilled Instrument QC or QC associated with sample cleanup, all QC that are prepared or cleaned up together must have the same content for the "PreparationBatch" element.

4.1.5 The "HandlingBatch" links all samples subjected to TCLP or SPLP extraction at the same time by the same method, and all samples transferred from field core sampling storage devices to gas-tight vials. All samples extracted, including the LEB, that are extracted together must have the same content for the "HandlingBatch" element.

4.1.6 The "StorageBatch" links all samples stored together with a storage blank. All samples that are stored together must have the same content for the "StorageBatch" element as the storage blank sample.

4.1.7 The "CleanupBatch" links all samples processed by the same cleanup method. All samples analyzed, including method blanks and LCS, that are cleaned up together must have the same content for the "CleanupBatch".

5.0 DELIVERABLE

5.1 Each SDG shall be submitted separately. The Contractor may choose to deliver the SDG as a single file, or as multiple files up to one file per scheduled analytical method. The Contractor shall not submit more than one file for any scheduled analytical method. The Contractor may choose to deliver the file(s) as a ZIP of an XML file. All analytical methods within an SDG shall be submitted at the same time, regardless of the number of files used to submit the data.

5.2 The Contractor shall utilize the Electronic Data Exchange and Evaluation System (EXES) at https://www.smoclpss.com to electronically submit the EDD(s) to the Sample Management Office (SMO). The EPA may approve alternative electronic means of file delivery. Written permission must be obtained from the EPA Analytical Services Branch (ASB) prior to the use of any alternative means.

5.3 The Contractor must follow the delivery instructions in Exhibit B – Reporting and Deliverables Requirements, of this Statement of Work (SOW), and deliver the EDD and Portable Document Format (PDF) of the Complete SDG File (CSF) to SMO concurrently. If one of these items is delivered on a later date, the Data Receipt Date (DRD) for the SDG will be the later of the two dates.

5.4 Information in the electronic deliverable must correspond to information submitted in the PDF and hardcopy CSF (if requested at the time of sample scheduling). If information in any of these deliverables is updated, the information in the other deliverables shall be updated accordingly.

5.5 The format for the file name shall be Case number_SDG number_contract number_submission number_DTD used. For example, the first submission from SDG number ABC12, Case number 12345, contract EP-W-00-000 would be named 12345_ABC12_EP-W-00000_1_SEDD_5-2_GENERAL_3_3.zip.

6.0 DOCUMENT TYPE DEFINITION

6.1 Introduction

The deliverable will be validated against DTD SEDD_5-2_GENERAL_3_3, DTD SEDD_5-2_GENERAL_2b_3 or DTD SEDD_5-2_GENERAL_2a_2. The deliverable must not contain any tags not included in the DTD and must conform to the hierarchical structure modeled in the DTD.

6.2 General Stage 3 DTD

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- SEDD_5-2_GENERAL_3_3.dtd 10/22/2009 -->
<!-- Acronym Description -->
<!-- Coeff - Coefficient -->
<!-- EDD   - Electronic Data Deliverable -->
<!-- ID    - Identity -->
<!-- Lab   - Laboratory -->
<!-- QC    - Quality Control -->
<!-- RPD   - Relative Percent Difference -->
<!-- RRF   - Relative Response Factor -->
<!-- RSD   - Relative Standard Deviation -->
<!ELEMENT Header (
                ClientID|
                ClientName|
                Comment|
                DateFormat|
                EDDID|
                EDDImplementationID|
                EDDImplementationVersion|
                EDDVersion|
                GeneratingSystemID|
                GeneratingSystemVersion|
                LabContract|
                LabContractModificationDescription|
                LabContractModificationID|
                LabDataPackageID|
                LabDataPackageName|
                LabDataPackageVersion|
                LabID|
                LabName|
                LabNarrative|
                LabQualifiersDefinition|
                LabReportedDate|
                ProjectID|
                ProjectName|
                SiteID|
                SiteName|
                ContactInformation|
                SamplePlusMethod|
                InstrumentQC
                        )*>
<!ELEMENT Analysis (
                AliquotAmount|
                AliquotAmountUnits|
                AnalysisBatch|
                AnalysisBatchEnd|
                AnalysisDuration|
```

AnalysisDurationUnits|
AnalysisGroupID|
AnalysisType|
Analyst|
AnalyzedAmount|
AnalyzedAmountUnits|
AnalyzedDate|
BackgroundCorrection|
BackgroundRawData|
BackgroundType|
BottleID|
ClientAnalysisID|
ClientMethodCode|
ClientMethodID|
ClientMethodModificationDescription|
ClientMethodModificationID|
ClientMethodName|
ClientMethodSource|
ClientMethodVersion|
Column|
ColumnInternalDiameter|
ColumnInternalDiameterUnits|
ColumnLength|
ColumnLengthUnits|
Comment|
ConfirmationAnalysisID|
Counts|
CountsUncertainty|
CountsUncertaintyConfidenceLevel|
CountsUncertaintyDetermination|
CountsUncertaintyIntervalType|
CountsUncertaintyLimitHigh|
CountsUncertaintyLimitLow|
CountsUncertaintyType|
CountsUnits|
DetectorID|
DetectorType|
DilutionFactor|
Efficiency|
HeatedPurge|
Inclusion|
InjectionVolume|
InjectionVolumeUnits|
InstrumentID|
InterelementCorrection|
LabAnalysisID|
LabFileID|
LabID|
LabMethodID|
LabMethodName|
LabName|
MethodCode|
MethodID|
MethodModificationDescription|
MethodModificationID|
MethodName|
MethodSource|
MethodVersion|
OriginalLabAnalysisID|

```
                PreparationBatch|
                ProcedureID|
                ProcedureName|
                ReferenceDate|
                ResultBasis|
                RunBatch|
                SampleAmount|
                SampleAmountUnits|
                Temperature|
                TemperatureUnits|
                Wavelength|
                WavelengthUnits|
                Yield|
                PreparationPlusCleanup|
                Analyte|
                AnalyteGroup
                         )*>
<!ELEMENT AnalysisGroup (
                AnalysisGroupID|
                AnalysisType|
                Comment|
                Analyte|
                AnalyteGroup
                         )*>
<!ELEMENT Analyte (
                AmountAdded|
                AmountAddedUnits|
                AmountAddedLocation|
                AnalyteGroupID|
                AnalyteName|
                AnalyteNameContext|
                AnalyteType|
                BiasErrorRatio|
                CalibrationBasis|
                CalibrationFactor|
                CalibrationFactorUnits|
                CalibrationType|
                CASRegistryNumber|
                ClientAnalyteID|
                ClientAnalyteName|
                Coeffa0|
                Coeffa1|
                Coeffa2|
                Coeffa3|
                CoeffOfDetermination|
                CoeffOfDeterminationLimitLow|
                CoeffOfDeterminationLimitType|
                Comment|
                CorrelationCoeff|
                CorrelationCoeffLimitLow|
                CorrelationCoeffLimitType|
                Counts|
                CountsUncertainty|
                CountsUncertaintyConfidenceLevel|
                CountsUncertaintyDetermination|
                CountsUncertaintyIntervalType|
                CountsUncertaintyLimitHigh|
                CountsUncertaintyLimitLow|
                CountsUncertaintyType|
                CountsUnits|
```

DetectionLimit|
DetectionLimitType|
DetectionLimitUnits|
DifferenceErrorRatio|
Efficiency|
ExpectedResult|
ExpectedResultUncertainty|
ExpectedResultUncertaintyConfidenceLevel|
ExpectedResultUncertaintyDetermination|
ExpectedResultUncertaintyIntervalType|
ExpectedResultUncertaintyLimitHigh|
ExpectedResultUncertaintyLimitLow|
ExpectedResultUncertaintyType|
ExpectedResultUncertaintyUnits|
ExpectedResultUnits|
Inclusion|
IntermediateResult|
IntermediateResultLimitHigh|
IntermediateResultLimitLow|
IntermediateResultLimitType|
IntermediateResultUnits|
LabAnalyteID|
LabQualifiers|
LotNumber|
Mass|
MassLimitHigh|
MassLimitLow|
MassLimitType|
MassUnits|
MeanCalibrationFactor|
MeanCalibrationFactorUnits|
MeanRRF|
MeanRRFLimitLow|
MeanRRFLimitType|
PeakID|
PercentBreakdown|
PercentBreakdownLimitHigh|
PercentBreakdownLimitType|
PercentDifference|
PercentDifferenceLimitHigh|
PercentDifferenceLimitLow|
PercentDifferenceLimitType|
PercentMatch|
PercentRecovery|
PercentRecoveryLimitHigh|
PercentRecoveryLimitLow|
PercentRecoveryLimitType|
PercentRecoveryType|
PercentRSD|
PercentRSDLimitHigh|
PercentRSDLimitLow|
PercentRSDLimitType|
QuantitationBasis|
QuantitationLimit|
QuantitationLimitType|
QuantitationLimitUnits|
ReportingLimit|
ReportingLimitType|
ReportingLimitUnits|

```
                Response|
                ResponseLimitHigh|
                ResponseLimitLow|
                ResponseLimitType|
                ResponseUnits|
                Result|
                ResultLimitHigh|
                ResultLimitLow|
                ResultLimitType|
                ResultType|
                ResultUncertainty|
                ResultUncertaintyConfidenceLevel|
                ResultUncertaintyDetermination|
                ResultUncertaintyIntervalType|
                ResultUncertaintyLimitHigh|
                ResultUncertaintyLimitLow|
                ResultUncertaintyType|
                ResultUncertaintyUnits|
                ResultUnits|
                RPD|
                RPDLimitHigh|
                RPDLimitType|
                RPDType|
                RRF|
                RRFLimitLow|
                RRFLimitType|
                StandardConcentration|
                StandardConcentrationUnits|
                StandardDeviation|
                StandardDeviationUnits|
                StandardFinalAmount|
                StandardFinalAmountUnits|
                StandardID|
                StandardSource|
                TailingFactor|
                TailingFactorLimitHigh|
                TailingFactorLimitType|
                Wavelength|
                WavelengthUnits|
                WeightingFactor|
                Peak
                        )*>
<!ELEMENT AnalyteComparison (
                AnalyteName|
                AnalyteNameContext|
                CASRegistryNumber|
                ClientAnalyteID|
                ClientAnalyteName|
                Comment|
                CorrectionFactor|
                LabAnalyteID
                        )*>
<!ELEMENT Characteristic (
                CharacteristicType|
                CharacteristicValue|
                CharacteristicUnits|
                Comment
                        )*>
```

```
<!ELEMENT AnalyteGroup (
                AnalyteGroupID|
                AnalyteName|
                AnalyteNameContext|
                AnalyteType|
                CASRegistryNumber|
                ClientAnalyteID|
                ClientAnalyteName|
                Comment|
                LabAnalyteID|
                LabQualifiers|
                Result|
                ResultType|
                ResultUncertainty|
                ResultUnits
                        )*>
<!ELEMENT ContactInformation (
                LabAddress1|
                LabAddress2|
                LabCity|
                LabCountry|
                LabID|
                LabName|
                LabPointOfContact|
                LabPointOfContactElectronicAddress|
                LabPointOfContactTitle|
                LabPointOfContactType|
                LabState|
                LabTelephoneNumber|
                LabType|
                LabZipCode
                        )*>
<!ELEMENT Handling (
                Analyst|
                BottleID|
                ClientMethodCode|
                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodVersion|
                Comment|
                HandledDate|
                HandlingBatch|
                HandlingType|
                InitialAmount|
                InitialAmountUnits|
                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                ProcedureID|
                ProcedureName|
```

```
                SampleAmount|
                SampleAmountUnits|
                Characteristic
                        )*>
<!ELEMENT InstrumentQC (
                ClientInstrumentQCType|
                ClientMethodCode|
                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodVersion|
                Comment|
                LabID|
                LabInstrumentQCID|
                LabMethodID|
                LabMethodName|
                LabName|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                QCLinkage|
                QCType|
                AnalysisGroup|
                Analysis
                        )*>
<!ELEMENT Peak (
                CalibrationFactor|
                CalibrationFactorUnits|
                CalibrationType|
                Coeffa0|
                Coeffa1|
                Coeffa2|
                Coeffa3|
                CoeffOfDetermination|
                CoeffOfDeterminationLimitLow|
                CoeffOfDeterminationLimitType|
                Comment|
                CorrelationCoeff|
                CorrelationCoeffLimitLow|
                CorrelationCoeffLimitType|
                DetectionLimit|
                DetectionLimitType|
                DetectionLimitUnits|
                DifferenceErrorRatio|
                Efficiency|
                Inclusion|
                IntermediateResult|
                IntermediateResultLimitHigh|
                IntermediateResultLimitLow|
                IntermediateResultLimitType|
                IntermediateResultUnits|
                LabQualifiers|
                ManualIntegration|
```

Mass|
MassLimitHigh|
MassLimitLow|
MassLimitType|
MassUnits|
MeanCalibrationFactor|
MeanCalibrationFactorUnits|
MeanRetentionTime|
MeanRetentionTimeLimitHigh|
MeanRetentionTimeLimitLow|
MeanRetentionTimeLimitType|
MeanRetentionTimeUnits|
MeanRRF|
MeanRRFLimitLow|
MeanRRFLimitType|
PeakID|
PeakRatio|
PeakRatioLimitHigh|
PeakRatioLimitLow|
PeakRatioLimitType|
PercentDifference|
PercentDifferenceLimitHigh|
PercentDifferenceLimitLow|
PercentDifferenceLimitType|
PercentRatio|
PercentRatioLimitHigh|
PercentRatioLimitLow|
PercentRatioLimitType|
PercentRecovery|
PercentRecoveryLimitHigh|
PercentRecoveryLimitLow|
PercentRecoveryLimitType|
PercentRecoveryType|
PercentRSD|
PercentRSDLimitHigh|
PercentRSDLimitLow|
PercentRSDLimitType|
QuantitationLimit|
QuantitationLimitType|
QuantitationLimitUnits|
ReportingLimit|
ReportingLimitType|
ReportingLimitUnits|
Resolution|
ResolutionLimitHigh|
ResolutionLimitLow|
ResolutionLimitType|
ResolutionType|
ResolutionUnits|
Response|
ResponseLimitHigh|
ResponseLimitLow|
ResponseLimitType|
ResponseType|
ResponseUnits|
Result|
ResultLimitHigh|
ResultLimitLow|

```
                ResultLimitType|
                ResultType|
                ResultUncertainty|
                ResultUnits|
                RetentionTime|
                RetentionTimeLimitHigh|
                RetentionTimeLimitLow|
                RetentionTimeLimitType|
                RetentionTimeUnits|
                RRF|
                RRFLimitLow|
                RRFLimitType|
                StandardDeviation|
                StandardDeviationUnits|
                TailingFactor|
                TailingFactorLimitHigh|
                TailingFactorLimitType|
                Wavelength|
                WavelengthUnits|
                WeightingFactor|
                AnalyteComparison|
                PeakComparison|
                PeakReplicate
                         )*>
<!ELEMENT PeakComparison (
                AnalyteName|
                AnalyteNameContext|
                CASRegistryNumber|
                ClientAnalyteID|
                ClientAnalyteName|
                Comment|
                LabAnalyteID|
                PeakID|
                PeakRatio|
                PeakRatioLimitHigh|
                PeakRatioLimitLow|
                PeakRatioLimitType|
                PercentRatio|
                PercentRatioLimitHigh|
                PercentRatioLimitLow|
                PercentRatioLimitType
                         )*>
<!ELEMENT PeakReplicate (
                Comment|
                IntermediateResult|
                IntermediateResultLimitHigh|
                IntermediateResultLimitLow|
                IntermediateResultLimitType|
                IntermediateResultUnits|
                Mass|
                MassLimitHigh|
                MassLimitLow|
                MassLimitType|
                MassUnits|
                PeakReplicateID|
                Resolution|
                ResolutionLimitHigh|
                ResolutionLimitLow|
                ResolutionLimitType|
```

```
                ResolutionType|
                ResolutionUnits|
                Response|
                ResponseLimitHigh|
                ResponseLimitLow|
                ResponseLimitType|
                ResponseType|
                ResponseUnits
                        )*>
<!ELEMENT PreparationPlusCleanup (
                AliquotAmount|
                AliquotAmountUnits|
                Analyst|
                BottleID|
                CleanedUpDate|
                CleanupBatch|
                CleanupType|
                ClientMethodCode|
                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodVersion|
                Comment|
                Efficiency|
                FinalAmount|
                FinalAmountUnits|
                InitialAmount|
                InitialAmountUnits|
                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                LotNumber|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                PreparationBatch|
                PreparationPlusCleanupType|
                PreparationType|
                PreparedDate|
                ProcedureID|
                ProcedureName|
                SampleAmount|
                SampleAmountUnits|
                Solvent|
                Characteristic
                        )*>
<!ELEMENT ReportedResult (
                AnalysisGroupID|
                AnalyteGroupID|
                AnalyteName|
                AnalyteNameContext|
                AnalyteType|
```

BiasErrorRatio|
CASRegistryNumber|
ClientAnalyteID|
ClientAnalyteName|
ClientDetectionLimit|
ClientDetectionLimitUnits|
ClientQuantitationLimit|
ClientQuantitationLimitUnits|
Comment|
DetectionLimit|
DetectionLimitType|
DetectionLimitUnits|
DifferenceErrorRatio|
ExpectedResult|
ExpectedResultUncertainty|
ExpectedResultUncertaintyConfidenceLevel|
ExpectedResultUncertaintyDetermination|
ExpectedResultUncertaintyIntervalType|
ExpectedResultUncertaintyLimitHigh|
ExpectedResultUncertaintyLimitLow|
ExpectedResultUncertaintyType|
ExpectedResultUncertaintyUnits|
ExpectedResultUnits|
LabAnalysisID|
LabAnalyteID|
LabQualifiers|
LabResultStatus|
PeakID|
PercentDifference|
PercentDifferenceLimitHigh|
PercentDifferenceLimitLow|
PercentDifferenceLimitType|
PercentRecovery|
PercentRecoveryLimitHigh|
PercentRecoveryLimitLow|
PercentRecoveryLimitType|
PercentRecoveryType|
QuantitationLimit|
QuantitationLimitType|
QuantitationLimitUnits|
ReportingLimit|
ReportingLimitType|
ReportingLimitUnits|
Result|
ResultLimitHigh|
ResultLimitLow|
ResultLimitType|
ResultType|
ResultUncertainty|
ResultUncertaintyConfidenceLevel|
ResultUncertaintyDetermination|
ResultUncertaintyIntervalType|
ResultUncertaintyLimitHigh|
ResultUncertaintyLimitLow|
ResultUncertaintyType|
ResultUncertaintyUnits|
ResultUnits|
RetentionTime|
RetentionTimeUnits|

```
                RPD|
                RPDLimitHigh|
                RPDLimitType|
                RPDType
                        )*>
<!ELEMENT SamplePlusMethod (
                Bottles|
                BottleType|
                ClientID|
                ClientMethodCategory|
                ClientMethodCode|
                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodType|
                ClientMethodVersion|
                ClientName|
                ClientSampleID|
                CollectedDate|
                CollectedEndDate|
                Comment|
                Composite|
                CoolerID|
                CustodyID|
                EquipmentBatch|
                Filtered|
                LabContract|
                LabContractModificationID|
                LabContractModificationDescription|
                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                LabReceiptDate|
                LabReportingBatch|
                LabSampleID|
                LocationID|
                LocationName|
                MatrixID|
                MatrixMedium|
                MethodBatch|
                MethodCategory|
                MethodCode|
                MethodID|
                MethodLevel|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodType|
                MethodVersion|
                OriginalClientSampleID|
                OriginalLabSampleID|
                PhaseAnalyzed|
                Preservative|
                ProjectID|
                ProjectName|
                QCCategory|
```

```
                QCLinkage|
                QCType|
                Quarantine|
                SamplingBatch|
                ShippingBatch|
                SiteID|
                SiteName|
                StorageBatch|
                Analysis|
                ReportedResult|
                Handling|
                AnalysisGroup|
                Characteristic
                          )*>
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<!ELEMENT AliquotAmountUnits (#PCDATA)>
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<!ELEMENT AnalyzedAmountUnits (#PCDATA)>
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<!ELEMENT CalibrationFactor (#PCDATA)>
<!ELEMENT CalibrationFactorUnits (#PCDATA)>
<!ELEMENT CalibrationType (#PCDATA)>
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<!ELEMENT ClientAnalyteID (#PCDATA)>
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<!ELEMENT ClientInstrumentQCType (#PCDATA)>
<!ELEMENT ClientMethodCategory (#PCDATA)>
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<!ELEMENT Coeffa1 (#PCDATA)>
<!ELEMENT Coeffa2 (#PCDATA)>
<!ELEMENT Coeffa3 (#PCDATA)>
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<!ELEMENT CoeffOfDeterminationLimitType (#PCDATA)>
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<!ELEMENT CoolerID (#PCDATA)>
<!ELEMENT CorrectionFactor (#PCDATA)>
<!ELEMENT CorrelationCoeff (#PCDATA)>
<!ELEMENT CorrelationCoeffLimitLow (#PCDATA)>
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<!ELEMENT DilutionFactor (#PCDATA)>
<!ELEMENT EDDID (#PCDATA)>
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<!ELEMENT GeneratingSystemVersion (#PCDATA)>
<!ELEMENT HandledDate (#PCDATA)>
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<!ELEMENT HeatedPurge (#PCDATA)>
<!ELEMENT Inclusion (#PCDATA)>
<!ELEMENT InitialAmount (#PCDATA)>
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<!ELEMENT InjectionVolumeUnits (#PCDATA)>
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<!ELEMENT InterelementCorrection (#PCDATA)>
<!ELEMENT IntermediateResult (#PCDATA)>
<!ELEMENT IntermediateResultLimitHigh (#PCDATA)>
<!ELEMENT IntermediateResultLimitLow (#PCDATA)>
<!ELEMENT IntermediateResultLimitType (#PCDATA)>
<!ELEMENT IntermediateResultUnits (#PCDATA)>
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<!ELEMENT LabAddress2 (#PCDATA)>
<!ELEMENT LabAnalysisID (#PCDATA)>
<!ELEMENT LabAnalyteID (#PCDATA)>
<!ELEMENT LabCity (#PCDATA)>
<!ELEMENT LabContract (#PCDATA)>
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<!ELEMENT LabContractModificationID (#PCDATA)>
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<!ELEMENT LabDataPackageID (#PCDATA)>
<!ELEMENT LabDataPackageName (#PCDATA)>
<!ELEMENT LabDataPackageVersion (#PCDATA)>
<!ELEMENT LabFileID (#PCDATA)>
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<!ELEMENT LabInstrumentQCID (#PCDATA)>
<!ELEMENT LabMethodID (#PCDATA)>
<!ELEMENT LabMethodName (#PCDATA)>
<!ELEMENT LabName (#PCDATA)>
<!ELEMENT LabNarrative (#PCDATA)>
<!ELEMENT LabPointOfContact (#PCDATA)>
<!ELEMENT LabPointOfContactElectronicAddress (#PCDATA)>
<!ELEMENT LabPointOfContactTitle (#PCDATA)>
<!ELEMENT LabPointOfContactType (#PCDATA)>
<!ELEMENT LabQualifiers (#PCDATA)>
<!ELEMENT LabQualifiersDefinition (#PCDATA)>
<!ELEMENT LabReceiptDate (#PCDATA)>
<!ELEMENT LabReportedDate (#PCDATA)>
<!ELEMENT LabReportingBatch (#PCDATA)>
<!ELEMENT LabResultStatus (#PCDATA)>
```

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<!ELEMENT LabTelephoneNumber (#PCDATA)>
<!ELEMENT LabType (#PCDATA)>
<!ELEMENT LabZipCode (#PCDATA)>
<!ELEMENT LocationID (#PCDATA)>
<!ELEMENT LocationName (#PCDATA)>
<!ELEMENT LotNumber (#PCDATA)>
<!ELEMENT ManualIntegration (#PCDATA)>
<!ELEMENT Mass (#PCDATA)>
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<!ELEMENT MassLimitLow (#PCDATA)>
<!ELEMENT MassLimitType (#PCDATA)>
<!ELEMENT MassUnits (#PCDATA)>
<!ELEMENT MatrixID (#PCDATA)>
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<!ELEMENT MeanRetentionTimeLimitType (#PCDATA)>
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<!ELEMENT MethodModificationID (#PCDATA)>
<!ELEMENT MethodName (#PCDATA)>
<!ELEMENT MethodSource (#PCDATA)>
<!ELEMENT MethodType (#PCDATA)>
<!ELEMENT MethodVersion (#PCDATA)>
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<!ELEMENT OriginalLabAnalysisID (#PCDATA)>
<!ELEMENT OriginalLabSampleID (#PCDATA)>
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<!ELEMENT PeakReplicateID (#PCDATA)>
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<!ELEMENT PeakRatioLimitHigh (#PCDATA)>
<!ELEMENT PeakRatioLimitLow (#PCDATA)>
<!ELEMENT PeakRatioLimitType (#PCDATA)>
<!ELEMENT PercentBreakdown (#PCDATA)>
<!ELEMENT PercentBreakdownLimitHigh (#PCDATA)>
<!ELEMENT PercentBreakdownLimitType (#PCDATA)>
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<!ELEMENT PercentDifferenceLimitHigh (#PCDATA)>
<!ELEMENT PercentDifferenceLimitLow (#PCDATA)>
<!ELEMENT PercentDifferenceLimitType (#PCDATA)>
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<!ELEMENT PercentRatio (#PCDATA)>
<!ELEMENT PercentRatioLimitHigh (#PCDATA)>
<!ELEMENT PercentRatioLimitLow (#PCDATA)>
<!ELEMENT PercentRatioLimitType (#PCDATA)>
<!ELEMENT PercentRecovery (#PCDATA)>
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<!ELEMENT PercentRecoveryLimitHigh (#PCDATA)>
<!ELEMENT PercentRecoveryLimitLow (#PCDATA)>
<!ELEMENT PercentRecoveryLimitType (#PCDATA)>
<!ELEMENT PercentRecoveryType (#PCDATA)>
<!ELEMENT PercentRSD (#PCDATA)>
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<!ELEMENT PercentRSDLimitLow (#PCDATA)>
<!ELEMENT PercentRSDLimitType (#PCDATA)>
<!ELEMENT PhaseAnalyzed (#PCDATA)>
<!ELEMENT PreparationBatch (#PCDATA)>
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6.3 General Stage 2b DTD

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<?xml version="1.0" encoding="UTF_8"?>
<!—SEDD_5-2_GENERAL_2b_3.dtd 10/22/2009 Based on SEDD Specification 5.2 -->
<!-- Acronym Description -->
<!-- Coeff - Coefficient -->
<!-- EDD   - Electronic Data Deliverable -->
<!-- ID    - Identity -->
<!-- Lab   - Laboratory -->
<!-- QC    - Quality Control -->
<!-- RPD   - Relative Percent Difference -->
<!-- RRF   - Relative Response Factor -->
<!-- RSD   - Relative Standard Deviation -->
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                ClientID|
                ClientName|
                Comment|
                DateFormat|
                EDDID|
                EDDImplementationID|
                EDDImplementationVersion|
                EDDVersion|
                GeneratingSystemID|
                GeneratingSystemVersion|
                LabContract|
                LabContractModificationDescription|
                LabContractModificationID|
                LabDataPackageID|
                LabDataPackageName|
                LabDataPackageVersion|
                LabID|
                LabName|
                LabNarrative|
                LabQualifiersDefinition|
                LabReportedDate|
                ProjectID|
                ProjectName|
                SiteID|
                SiteName|
                ContactInformation|
                SamplePlusMethod|
                InstrumentQC
                        )*>
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                AnalysisGroupID|
                AnalysisType|
                Analyst|
                AnalyzedAmount|
                AnalyzedAmountUnits|
                AnalyzedDate|
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                ClientMethodID|
                ClientMethodModificationDescription|
```

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                ClientMethodVersion|
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                ColumnLength|
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                Comment|
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                CountsUncertaintyDetermination|
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                CountsUncertaintyLimitLow|
                CountsUncertaintyType|
                CountsUnits|
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                DilutionFactor|
                Efficiency|
                HeatedPurge|
                Inclusion|
                InjectionVolume|
                InjectionVolumeUnits|
                InstrumentID|
                LabAnalysisID|
                LabFileID|
                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                PreparationBatch|
                ProcedureID|
                ProcedureName|
                ReferenceDate|
                ResultBasis|
                RunBatch|
                Temperature|
                TemperatureUnits|
                Wavelength|
                WavelengthUnits|
                Yield|
                PreparationPlusCleanup|
                Analyte|
                AnalyteGroup
                         )*>
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                AnalysisType|
                Comment|
```

```
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                AnalyteGroup
                          )*>
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                AnalyteType|
                BiasErrorRatio|
                CalibrationBasis|
                CalibrationFactor|
                CalibrationFactorUnits|
                CalibrationType|
                CASRegistryNumber|
                ClientAnalyteID|
                ClientAnalyteName|
                Coeffa0|
                Coeffa1|
                Coeffa2|
                Coeffa3|
                CoeffOfDetermination|
                CoeffOfDeterminationLimitLow|
                CoeffOfDeterminationLimitType|
                Comment|
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                CorrelationCoeffLimitLow|
                CorrelationCoeffLimitType|
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                CountsUncertaintyConfidenceLevel|
                CountsUncertaintyDetermination|
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                CountsUncertaintyLimitLow|
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                Efficiency|
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                ExpectedResultUncertaintyLimitLow|
                ExpectedResultUncertaintyType|
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                MeanCalibrationFactorUnits|
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                MeanRRFLimitLow|
```

```
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                PercentBreakdownLimitType|
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                PercentDifferenceLimitHigh|
                PercentDifferenceLimitLow|
                PercentDifferenceLimitType|
                PercentRecovery|
                PercentRecoveryLimitHigh|
                PercentRecoveryLimitLow|
                PercentRecoveryLimitType|
                PercentRecoveryType|
                PercentRSD|
                PercentRSDLimitHigh|
                PercentRSDLimitLow|
                PercentRSDLimitType|
                QuantitationBasis|
                QuantitationLimit|
                QuantitationLimitType|
                QuantitationLimitUnits|
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                ResultLimitLow|
                ResultLimitType|
                ResultType|
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                ResultUncertaintyConfidenceLevel|
                ResultUncertaintyDetermination|
                ResultUncertaintyIntervalType|
                ResultUncertaintyLimitHigh|
                ResultUncertaintyLimitLow|
                ResultUncertaintyType|
                ResultUncertaintyUnits|
                ResultUnits|
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                RPDLimitHigh|
                RPDLimitType|
                RPDType|
                RRF|
                RRFLimitLow|
                RRFLimitType|
                StandardSource|
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                TailingFactorLimitType|
                Wavelength|
                WavelengthUnits|
                WeightingFactor|
                Peak
                        )*>
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                AnalyteType|
                CASRegistryNumber|
```

```
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                ClientAnalyteName|
                Comment|
                LabAnalyteID|
                LabQualifiers|
                Result|
                ResultType|
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                ResultUnits
                        )*>
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                CharacteristicUnits|
                Comment
                        )*>
<!ELEMENT ContactInformation (
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                LabAddress2|
                LabCity|
                LabCountry|
                LabID|
                LabName|
                LabPointOfContact|
                LabPointOfContactElectronicAddress|
                LabPointOfContactTitle|
                LabPointOfContactType|
                LabState|
                LabTelephoneNumber|
                LabType|
                LabZipCode
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                ClientMethodName|
                ClientMethodSource|
                ClientMethodVersion|
                Comment|
                HandledDate|
                HandlingBatch|
                HandlingType|
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                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                ProcedureID|
                ProcedureName|
                SampleAmount|
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```
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                Characteristic
                        )*>
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                ClientMethodSource|
                ClientMethodVersion|
                Comment|
                LabID|
                LabInstrumentQCID|
                LabMethodID|
                LabMethodName|
                LabName|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                QCLinkage|
                QCType|
                AnalysisGroup|
                Analysis
                        )*>
<!ELEMENT Peak (
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                CalibrationType|
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                Coeffa1|
                Coeffa2|
                Coeffa3|
                CoeffOfDetermination|
                CoeffOfDeterminationLimitLow|
                CoeffOfDeterminationLimitType|
                Comment|
                CorrelationCoeff|
                CorrelationCoeffLimitLow|
                CorrelationCoeffLimitType|
                DifferenceErrorRatio|
                Efficiency|
                Inclusion|
                LabQualifiers|
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                MassLimitLow|
                MassLimitType|
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                MeanRetentionTime|
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                MeanRetentionTimeLimitLow|
                MeanRetentionTimeLimitType|
                MeanRetentionTimeUnits|
```

```
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                PercentDifferenceLimitType|
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                PercentRecoveryLimitHigh|
                PercentRecoveryLimitLow|
                PercentRecoveryLimitType|
                PercentRecoveryType|
                PercentRSD|
                PercentRSDLimitHigh|
                PercentRSDLimitLow|
                PercentRSDLimitType|
                Resolution|
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                ResolutionLimitLow|
                ResolutionLimitType|
                ResolutionType|
                ResolutionUnits|
                Result|
                ResultLimitHigh|
                ResultLimitLow|
                ResultLimitType|
                ResultType|
                ResultUncertainty|
                ResultUnits|
                RRF|
                RRFLimitLow|
                RRFLimitType|
                TailingFactor|
                TailingFactorLimitHigh|
                TailingFactorLimitType|
                Wavelength|
                WavelengthUnits|
                WeightingFactor|
                PeakComparison
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                PercentRatioLimitLow|
                PercentRatioLimitType
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                AliquotAmountUnits|
                Analyst|
                CleanedUpDate|
                CleanupBatch|
                CleanupType|
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                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
```

```
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                InitialAmount|
                InitialAmountUnits|
                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                LotNumber|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                PreparationBatch|
                PreparationPlusCleanupType|
                PreparationType|
                PreparedDate|
                ProcedureID|
                ProcedureName|
                Solvent|
                Characteristic
                        )*>
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                CASRegistryNumber|
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                ClientAnalyteName|
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                ExpectedResultUncertaintyType
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                LabResultStatus|
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                PercentRecoveryLimitLow|
                PercentRecoveryLimitType|
                PercentRecoveryType|
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                QuantitationLimitType|
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                ReportingLimitType|
                ReportingLimitUnits|
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                ResultLimitType|
                ResultType|
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                ResultUncertaintyType|
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                RPDType
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                ClientMethodCode|
                ClientMethodID|
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                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodType|
                ClientMethodVersion|
                ClientName|
                ClientSampleID|
                CollectedDate|
                CollectedEndDate|
                Comment|
                Composite|
                CoolerID|
                CustodyID|
                EquipmentBatch|
                Filtered|
                LabContract|
                LabContractModificationDescription|
                LabContractModificationID|
```

```
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                LabMethodID|
                LabMethodName|
                LabName|
                LabReceiptDate|
                LabReportingBatch|
                LabSampleID|
                LocationID|
                LocationName|
                MatrixID|
                MatrixMedium|
                MethodBatch|
                MethodCategory|
                MethodCode|
                MethodID|
                MethodLevel|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodType|
                MethodVersion|
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                OriginalLabSampleID|
                PhaseAnalyzed|
                Preservative|
                ProjectID|
                ProjectName|
                QCCategory|
                QCLinkage|
                QCType|
                Quarantine|
                SamplingBatch|
                ShippingBatch|
                SiteID|
                SiteName|
                StorageBatch|
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                ReportedResult|
                Handling|
                AnalysisGroup
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<!ELEMENT PercentRatioLimitType (#PCDATA)>
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<!ELEMENT PreparationPlusCleanupType (#PCDATA)>
<!ELEMENT PreparationType (#PCDATA)>
<!ELEMENT PreparedDate (#PCDATA)>
<!ELEMENT Preservative (#PCDATA)>
<!ELEMENT ProcedureID (#PCDATA)>
<!ELEMENT ProcedureName (#PCDATA)>
<!ELEMENT ProjectID (#PCDATA)>
<!ELEMENT ProjectName (#PCDATA)>
<!ELEMENT QCCategory (#PCDATA)>
<!ELEMENT QCLinkage (#PCDATA)>
<!ELEMENT QCType (#PCDATA)>
<!ELEMENT QuantitationBasis (#PCDATA)>
<!ELEMENT QuantitationLimit (#PCDATA)>
<!ELEMENT QuantitationLimitType (#PCDATA)>
<!ELEMENT QuantitationLimitUnits (#PCDATA)>
<!ELEMENT Quarantine (#PCDATA)>
<!ELEMENT ReferenceDate (#PCDATA)>
<!ELEMENT ReportingLimit (#PCDATA)>
<!ELEMENT ReportingLimitType (#PCDATA)>
<!ELEMENT ReportingLimitUnits (#PCDATA)>
<!ELEMENT Resolution (#PCDATA)>
<!ELEMENT ResolutionLimitHigh (#PCDATA)>
<!ELEMENT ResolutionLimitLow (#PCDATA)>
<!ELEMENT ResolutionLimitType (#PCDATA)>
<!ELEMENT ResolutionType (#PCDATA)>
<!ELEMENT ResolutionUnits (#PCDATA)>
<!ELEMENT Result (#PCDATA)>
<!ELEMENT ResultBasis (#PCDATA)>
<!ELEMENT ResultLimitHigh (#PCDATA)>
<!ELEMENT ResultLimitLow (#PCDATA)>
<!ELEMENT ResultLimitType (#PCDATA)>
<!ELEMENT ResultType (#PCDATA)>
<!ELEMENT ResultUncertainty (#PCDATA)>
<!ELEMENT ResultUncertaintyConfidenceLevel (#PCDATA)>
<!ELEMENT ResultUncertaintyDetermination (#PCDATA)>
<!ELEMENT ResultUncertaintyIntervalType (#PCDATA)>
<!ELEMENT ResultUncertaintyLimitHigh (#PCDATA)>
<!ELEMENT ResultUncertaintyLimitLow (#PCDATA)>
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<!ELEMENT ResultUncertaintyUnits (#PCDATA)>
<!ELEMENT ResultUnits (#PCDATA)>
<!ELEMENT RetentionTime (#PCDATA)>
<!ELEMENT RetentionTimeUnits (#PCDATA)>
<!ELEMENT RPD (#PCDATA)>
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<!ELEMENT RPDLimitType (#PCDATA)>
<!ELEMENT RPDType (#PCDATA)>
<!ELEMENT RRF (#PCDATA)>
<!ELEMENT RRFLimitLow (#PCDATA)>
```

```
<!ELEMENT RRFLimitType (#PCDATA)>
<!ELEMENT RunBatch (#PCDATA)>
<!ELEMENT SampleAmount (#PCDATA)>
<!ELEMENT SampleAmountUnits (#PCDATA)>
<!ELEMENT SamplingBatch (#PCDATA)>
<!ELEMENT ShippingBatch (#PCDATA)>
<!ELEMENT SiteID (#PCDATA)>
<!ELEMENT SiteName (#PCDATA)>
<!ELEMENT Solvent (#PCDATA)>
<!ELEMENT StandardSource (#PCDATA)>
<!ELEMENT StorageBatch (#PCDATA)>
<!ELEMENT TailingFactor (#PCDATA)>
<!ELEMENT TailingFactorLimitHigh (#PCDATA)>
<!ELEMENT TailingFactorLimitType (#PCDATA)>
<!ELEMENT Temperature (#PCDATA)>
<!ELEMENT TemperatureUnits (#PCDATA)>
<!ELEMENT Wavelength (#PCDATA)>
<!ELEMENT WavelengthUnits (#PCDATA)>
<!ELEMENT WeightingFactor (#PCDATA)>
<!ELEMENT Yield (#PCDATA)>
```

6.4 General Stage 2a DTD

```
<?xml version="1.0" encoding="UTF-8"?>
<!—SEDD_5-2_GENERAL_2a_2.dtd 07/21/2008 Based on SEDD Specification 5.2 -->
<!-- Acronym Description -->
<!-- EDD   - Electronic Data Deliverable -->
<!-- ID    - Identity -->
<!-- Lab   - Laboratory -->
<!-- QC    - Quality Control -->
<!-- RPD   - Relative Percent Difference -->
<!ELEMENT Header (
                ClientID|
                ClientName|
                Comment|
                DateFormat|
                EDDID|
                EDDImplementationID|
                EDDImplementationVersion|
                EDDVersion|
                GeneratingSystemID|
                GeneratingSystemVersion|
                LabContract|
                LabContractModificationDescription|
                LabContractModificationID|
                LabDataPackageID|
                LabDataPackageName|
                LabDataPackageVersion|
                LabID|
                LabName|
                LabNarrative|
                LabQualifiersDefinition|
                LabReportedDate|
                ProjectID|
                ProjectName|
                SiteID|
                SiteName|
                ContactInformation|
                SamplePlusMethod
                        )*>
<!ELEMENT Analysis (
                AliquotAmount|
                AliquotAmountUnits|
                AnalysisDuration|
                AnalysisDurationUnits|
                AnalysisGroupID|
                AnalysisType|
                Analyst|
                AnalyzedAmount|
                AnalyzedAmountUnits|
                AnalyzedDate|
                ClientAnalysisID|
                ClientMethodCode|
                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodVersion|
                Column|
                ColumnInternalDiameter|
```

```
                ColumnInternalDiameterUnits|
                ColumnLength|
                ColumnLengthUnits|
                Comment|
                ConfirmationAnalysisID|
                Counts|
                CountsUncertainty|
                CountsUncertaintyConfidenceLevel|
                CountsUncertaintyDetermination|
                CountsUncertaintyIntervalType|
                CountsUncertaintyLimitHigh|
                CountsUncertaintyLimitLow|
                CountsUncertaintyType|
                CountsUnits|
                DetectorID|
                DetectorType|
                DilutionFactor|
                Efficiency|
                HeatedPurge|
                Inclusion|
                InjectionVolume|
                InjectionVolumeUnits|
                InstrumentID|
                LabAnalysisID|
                LabFileID|
                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                PreparationBatch|
                ProcedureID|
                ProcedureName|
                ReferenceDate|
                ResultBasis|
                Temperature|
                TemperatureUnits|
                Wavelength|
                WavelengthUnits|
                Yield|
                PreparationPlusCleanup|
                Analyte|
                AnalyteGroup
                         )*>
<!ELEMENT AnalysisGroup (
                AnalysisGroupID|
                AnalysisType|
                Comment|
                Analyte|
                AnalyteGroup
                         )*>
```

```
<!ELEMENT Analyte (
                AnalyteGroupID|
                AnalyteName|
                AnalyteNameContext|
                AnalyteType|
                CASRegistryNumber|
                ClientAnalyteID|
                ClientAnalyteName|
                Comment|
                Counts|
                CountsUncertainty|
                CountsUncertaintyConfidenceLevel|
                CountsUncertaintyDetermination|
                CountsUncertaintyIntervalType|
                CountsUncertaintyLimitHigh|
                CountsUncertaintyLimitLow|
                CountsUncertaintyType|
                CountsUnits|
                DetectionLimit|
                DetectionLimitType|
                DetectionLimitUnits|
                DifferenceErrorRatio|
                Efficiency|
                ExpectedResult|
                ExpectedResultUncertainty|
                ExpectedResultUncertaintyConfidenceLevel|
                ExpectedResultUncertaintyDetermination|
                ExpectedResultUncertaintyIntervalType|
                ExpectedResultUncertaintyLimitHigh|
                ExpectedResultUncertaintyLimitLow|
                ExpectedResultUncertaintyType|
                ExpectedResultUncertaintyUnits|
                ExpectedResultUnits|
                Inclusion|
                LabAnalyteID|
                LabQualifiers|
                LotNumber|
                PeakID|
                PercentRecovery|
                PercentRecoveryLimitHigh|
                PercentRecoveryLimitLow|
                PercentRecoveryLimitType|
                PercentRecoveryType|
                QuantitationLimit|
                QuantitationLimitType|
                QuantitationLimitUnits|
                ReportingLimit|
                ReportingLimitType|
                ReportingLimitUnits|
                Result|
                ResultLimitHigh|
                ResultLimitLow|
                ResultLimitType|
                ResultType|
                ResultUncertainty|
                ResultUncertaintyConfidenceLevel|
                ResultUncertaintyDetermination|
                ResultUncertaintyIntervalType|
                ResultUncertaintyLimitHigh|
                ResultUncertaintyLimitLow|
                ResultUncertaintyType|
```

```
                ResultUncertaintyUnits|
                ResultUnits|
                StandardSource|
                Wavelength|
                WavelengthUnits
                        )*>
<!ELEMENT AnalyteGroup (
                AnalyteGroupID|
                AnalyteName|
                AnalyteNameContext|
                AnalyteType|
                CASRegistryNumber|
                ClientAnalyteID|
                ClientAnalyteName|
                Comment|
                LabAnalyteID|
                LabQualifiers|
                Result|
                ResultType|
                ResultUncertainty|
                ResultUnits
                        )*>
<!ELEMENT Characteristic (
                CharacteristicType|
                CharacteristicValue|
                CharacteristicUnits|
                Comment
                        )*>
<!ELEMENT ContactInformation (
                LabAddress1|
                LabAddress2|
                LabCity|
                LabCountry|
                LabID|
                LabName|
                LabPointOfContact|
                LabPointOfContactElectronicAddress|
                LabPointOfContactTitle|
                LabPointOfContactType|
                LabState|
                LabTelephoneNumber|
                LabType|
                LabZipCode
                        )*>
<!ELEMENT Handling (
                Analyst|
                ClientMethodCode|
                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodVersion|
                Comment|
                HandledDate|
                HandlingBatch|
                HandlingType|
                InitialAmount|
                InitialAmountUnits|
                LabID|
```

```
                LabMethodID|
                LabMethodName|
                LabName|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                ProcedureID|
                ProcedureName|
                SampleAmount|
                SampleAmountUnits|
                Characteristic
                        )*>
<!ELEMENT PreparationPlusCleanup (
                AliquotAmount|
                AliquotAmountUnits|
                Analyst|
                CleanedUpDate|
                CleanupBatch|
                CleanupType|
                ClientMethodCode|
                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodVersion|
                Comment|
                FinalAmount|
                FinalAmountUnits|
                InitialAmount|
                InitialAmountUnits|
                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                LotNumber|
                MethodCode|
                MethodID|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodVersion|
                PreparationBatch|
                PreparationPlusCleanupType|
                PreparationType|
                PreparedDate|
                ProcedureID|
                ProcedureName|
                Solvent|
                Characteristic
                        )*>
<!ELEMENT ReportedResult (
                AnalysisGroupID|
                AnalyteGroupID|
                AnalyteName|
```

AnalyteNameContext|
AnalyteType|
BiasErrorRatio|
CASRegistryNumber|
ClientAnalyteID|
ClientAnalyteName|
ClientDetectionLimit|
ClientDetectionLimitUnits|
ClientQuantitationLimit|
ClientQuantitationLimitUnits|
Comment|
DetectionLimit|
DetectionLimitType|
DetectionLimitUnits|
DifferenceErrorRatio|
ExpectedResult|
ExpectedResultUncertainty|
ExpectedResultUncertaintyConfidenceLevel|
ExpectedResultUncertaintyDetermination|
ExpectedResultUncertaintyIntervalType|
ExpectedResultUncertaintyLimitHigh|
ExpectedResultUncertaintyLimitLow|
ExpectedResultUncertaintyType|
ExpectedResultUncertaintyUnits|
ExpectedResultUnits|
LabAnalysisID|
LabAnalyteID|
LabQualifiers|
LabResultStatus|
PeakID|
PercentDifference|
PercentDifferenceLimitHigh|
PercentDifferenceLimitLow|
PercentDifferenceLimitType|
PercentRecovery|
PercentRecoveryLimitHigh|
PercentRecoveryLimitLow|
PercentRecoveryLimitType|
PercentRecoveryType|
QuantitationLimit|
QuantitationLimitType|
QuantitationLimitUnits|
ReportingLimit|
ReportingLimitType|
ReportingLimitUnits|
Result|
ResultLimitHigh|
ResultLimitLow|
ResultLimitType|
ResultType|
ResultUncertainty|
ResultUncertaintyConfidenceLevel|
ResultUncertaintyDetermination|
ResultUncertaintyIntervalType|
ResultUncertaintyLimitHigh|
ResultUncertaintyLimitLow|
ResultUncertaintyType|
ResultUncertaintyUnits|

```
                ResultUnits|
                RetentionTime|
                RetentionTimeUnits|
                RPD|
                RPDLimitHigh|
                RPDLimitType|
                RPDType
                        )*>
<!ELEMENT SamplePlusMethod (
                ClientID|
                ClientMethodCategory|
                ClientMethodCode|
                ClientMethodID|
                ClientMethodModificationDescription|
                ClientMethodModificationID|
                ClientMethodName|
                ClientMethodSource|
                ClientMethodType|
                ClientMethodVersion|
                ClientName|
                ClientSampleID|
                CollectedDate|
                CollectedEndDate|
                Comment|
                Composite|
                CoolerID|
                CustodyID|
                EquipmentBatch|
                Filtered|
                LabContract|
                LabContractModificationDescription|
                LabContractModificationID|
                LabID|
                LabMethodID|
                LabMethodName|
                LabName|
                LabReceiptDate|
                LabReportingBatch|
                LabSampleID|
                LocationID|
                LocationName|
                MatrixID|
                MatrixMedium|
                MethodBatch|
                MethodCategory|
                MethodCode|
                MethodID|
                MethodLevel|
                MethodModificationDescription|
                MethodModificationID|
                MethodName|
                MethodSource|
                MethodType|
                MethodVersion|
                OriginalClientSampleID|
                OriginalLabSampleID|
                PhaseAnalyzed|
                Preservative|
                ProjectID|
```

```
                ProjectName|
                QCCategory|
                QCLinkage|
                QCType|
                Quarantine|
                SamplingBatch|
                ShippingBatch|
                SiteID|
                SiteName|
                StorageBatch|
                Analysis|
                Characteristic|
                ReportedResult|
                Handling|
                AnalysisGroup
                          )*>
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<!ELEMENT AliquotAmountUnits (#PCDATA)>
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<!ELEMENT AnalysisType (#PCDATA)>
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<!ELEMENT AnalyzedAmountUnits (#PCDATA)>
<!ELEMENT AnalyzedDate (#PCDATA)>
<!ELEMENT BiasErrorRatio (#PCDATA)>
<!ELEMENT CASRegistryNumber (#PCDATA)>
<!ELEMENT CharacteristicType (#PCDATA)>
<!ELEMENT CharacteristicUnits (#PCDATA)>
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<!ELEMENT CleanupBatch (#PCDATA)>
<!ELEMENT CleanupType (#PCDATA)>
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<!ELEMENT ClientDetectionLimit (#PCDATA)>
<!ELEMENT ClientDetectionLimitUnits (#PCDATA)>
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<!ELEMENT ClientQuantitationLimitUnits (#PCDATA)>
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```

```
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<!ELEMENT ColumnInternalDiameterUnits (#PCDATA)>
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<!ELEMENT ColumnLengthUnits (#PCDATA)>
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<!ELEMENT CoolerID (#PCDATA)>
<!ELEMENT Counts (#PCDATA)>
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<!ELEMENT CountsUncertaintyDetermination (#PCDATA)>
<!ELEMENT CountsUncertaintyIntervalType (#PCDATA)>
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<!ELEMENT CountsUncertaintyLimitLow (#PCDATA)>
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<!ELEMENT DetectionLimitUnits (#PCDATA)>
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<!ELEMENT DetectorType (#PCDATA)>
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<!ELEMENT DilutionFactor (#PCDATA)>
<!ELEMENT EDDID (#PCDATA)>
<!ELEMENT EDDImplementationID (#PCDATA)>
<!ELEMENT EDDImplementationVersion (#PCDATA)>
<!ELEMENT EDDVersion (#PCDATA)>
<!ELEMENT Efficiency (#PCDATA)>
<!ELEMENT EquipmentBatch (#PCDATA)>
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<!ELEMENT ExpectedResultUncertaintyConfidenceLevel (#PCDATA)>
<!ELEMENT ExpectedResultUncertaintyDetermination (#PCDATA)>
<!ELEMENT ExpectedResultUncertaintyIntervalType (#PCDATA)>
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<!ELEMENT FinalAmountUnits (#PCDATA)>
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<!ELEMENT GeneratingSystemVersion (#PCDATA)>
<!ELEMENT HandledDate (#PCDATA)>
<!ELEMENT HandlingBatch (#PCDATA)>
<!ELEMENT HandlingType (#PCDATA)>
<!ELEMENT HeatedPurge (#PCDATA)>
<!ELEMENT Inclusion (#PCDATA)>
<!ELEMENT InitialAmount (#PCDATA)>
<!ELEMENT InitialAmountUnits (#PCDATA)>
<!ELEMENT InjectionVolume (#PCDATA)>
<!ELEMENT InjectionVolumeUnits (#PCDATA)>
<!ELEMENT InstrumentID (#PCDATA)>
<!ELEMENT LabAddress1 (#PCDATA)>
```

```
<!ELEMENT LabAddress2 (#PCDATA)>
<!ELEMENT LabAnalysisID (#PCDATA)>
<!ELEMENT LabAnalyteID (#PCDATA)>
<!ELEMENT LabCity (#PCDATA)>
<!ELEMENT LabContract (#PCDATA)>
<!ELEMENT LabContractModificationDescription (#PCDATA)>
<!ELEMENT LabContractModificationID (#PCDATA)>
<!ELEMENT LabCountry (#PCDATA)>
<!ELEMENT LabDataPackageID (#PCDATA)>
<!ELEMENT LabDataPackageName (#PCDATA)>
<!ELEMENT LabDataPackageVersion (#PCDATA)>
<!ELEMENT LabFileID (#PCDATA)>
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<!ELEMENT LabMethodID (#PCDATA)>
<!ELEMENT LabMethodName (#PCDATA)>
<!ELEMENT LabName (#PCDATA)>
<!ELEMENT LabNarrative (#PCDATA)>
<!ELEMENT LabPointOfContact (#PCDATA)>
<!ELEMENT LabPointOfContactElectronicAddress (#PCDATA)>
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<!ELEMENT LabPointOfContactType (#PCDATA)>
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<!ELEMENT LabQualifiersDefinition (#PCDATA)>
<!ELEMENT LabReceiptDate (#PCDATA)>
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<!ELEMENT LabReportingBatch (#PCDATA)>
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<!ELEMENT LabTelephoneNumber (#PCDATA)>
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<!ELEMENT LocationName (#PCDATA)>
<!ELEMENT LotNumber (#PCDATA)>
<!ELEMENT MatrixID (#PCDATA)>
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<!ELEMENT MethodModificationID (#PCDATA)>
<!ELEMENT MethodName (#PCDATA)>
<!ELEMENT MethodSource (#PCDATA)>
<!ELEMENT MethodType (#PCDATA)>
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<!ELEMENT PercentDifferenceLimitLow (#PCDATA)>
<!ELEMENT PercentDifferenceLimitType (#PCDATA)>
<!ELEMENT PercentRecovery (#PCDATA)>
<!ELEMENT PercentRecoveryLimitHigh (#PCDATA)>
<!ELEMENT PercentRecoveryLimitLow (#PCDATA)>
<!ELEMENT PercentRecoveryLimitType (#PCDATA)>
```

```
<!ELEMENT PercentRecoveryType (#PCDATA)>
<!ELEMENT PhaseAnalyzed (#PCDATA)>
<!ELEMENT PreparationBatch (#PCDATA)>
<!ELEMENT PreparationPlusCleanupType (#PCDATA)>
<!ELEMENT PreparationType (#PCDATA)>
<!ELEMENT PreparedDate (#PCDATA)>
<!ELEMENT Preservative (#PCDATA)>
<!ELEMENT ProcedureID (#PCDATA)>
<!ELEMENT ProcedureName (#PCDATA)>
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<!ELEMENT ProjectName (#PCDATA)>
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<!ELEMENT QCLinkage (#PCDATA)>
<!ELEMENT QCType (#PCDATA)>
<!ELEMENT QuantitationLimit (#PCDATA)>
<!ELEMENT QuantitationLimitType (#PCDATA)>
<!ELEMENT QuantitationLimitUnits (#PCDATA)>
<!ELEMENT Quarantine (#PCDATA)>
<!ELEMENT ReferenceDate (#PCDATA)>
<!ELEMENT ReportingLimit (#PCDATA)>
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<!ELEMENT ReportingLimitUnits (#PCDATA)>
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<!ELEMENT ResultLimitHigh (#PCDATA)>
<!ELEMENT ResultLimitLow (#PCDATA)>
<!ELEMENT ResultLimitType (#PCDATA)>
<!ELEMENT ResultType (#PCDATA)>
<!ELEMENT ResultUncertainty (#PCDATA)>
<!ELEMENT ResultUncertaintyConfidenceLevel (#PCDATA)>
<!ELEMENT ResultUncertaintyDetermination (#PCDATA)>
<!ELEMENT ResultUncertaintyIntervalType (#PCDATA)>
<!ELEMENT ResultUncertaintyLimitHigh (#PCDATA)>
<!ELEMENT ResultUncertaintyLimitLow (#PCDATA)>
<!ELEMENT ResultUncertaintyType (#PCDATA)>
<!ELEMENT ResultUncertaintyUnits (#PCDATA)>
<!ELEMENT ResultUnits (#PCDATA)>
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<!ELEMENT RetentionTimeUnits (#PCDATA)>
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<!ELEMENT RPDLimitHigh (#PCDATA)>
<!ELEMENT RPDLimitType (#PCDATA)>
<!ELEMENT RPDType (#PCDATA)>
<!ELEMENT SampleAmount (#PCDATA)>
<!ELEMENT SampleAmountUnits (#PCDATA)>
<!ELEMENT SamplingBatch (#PCDATA)>
<!ELEMENT ShippingBatch (#PCDATA)>
<!ELEMENT SiteID (#PCDATA)>
<!ELEMENT SiteName (#PCDATA)>
<!ELEMENT Solvent (#PCDATA)>
<!ELEMENT StandardSource (#PCDATA)>
<!ELEMENT StorageBatch (#PCDATA)>
<!ELEMENT Temperature (#PCDATA)>
<!ELEMENT TemperatureUnits (#PCDATA)>
<!ELEMENT Wavelength (#PCDATA)>
<!ELEMENT WavelengthUnits (#PCDATA)>
<!ELEMENT Yield (#PCDATA)>
```

7.0 DATA ELEMENT INSTRUCTION TABLES

Column abbreviations: Matrix Spike (MS), Matrix Spike Duplicate (MSD), Duplicate Sample (Dup), Laboratory Control Sample (LCS), Preparation Blank (PB), Leachate Extraction Blank (LEB), Method Blank (MB), Storage Blank (SB), Instrument Blank (IB), Cleanup Blank (CB), Post-Digestion/Distillation Spike (PDS), Serial Dilution (SD), Non-Client Sample (NCS), Instrument Performance Check (IPC), Initial Calibration (ICAL), Initial Calibration Verification (ICV), Continuing Calibration Verification (CCV), Initial Calibration Blank (ICB), Continuing Calibration Blank (CCB), Interference Check Sample (ICS), Florisil Cartridge Check (FLO), and Gel Permeation Chromatography Calibration Verification (GPC).

7.1 Stage 3

TABLE 1. DATA ELEMENT INSTRUCTIONS

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
Header	X	X	X	X	X	X	X	X	
ClientID	X	X	X	X	X	X	X	X	Report "1" for Region 1, "2" for Region 2, etc. For samples received from QATS, report "91". For other programs, report as directed by program.
ClientName									Not required.
Comment									Not required.
DateFormat	X	X	X	X	X	X	X	X	Report MMDDYYYYThh:mm:ss. All dates and times reported in the EDD must follow this format. If any part of the time is unknown, report "00" for the unknown hours, minutes, and seconds.
EDDID	X	X	X	X	X	X	X	X	Report "SEDD".
EDDImplementationID	X	X	X	X	X	X	X	X	Report "SEDD_5-2_GENERAL_3_3" (This is the DTD used).
EDDImplementationVersion	X	X	X	X	X	X	X	X	Report "SFAM01".
EDDVersion	X	X	X	X	X	X	X	X	Report "5.2".
GeneratingSystemID	X	X	X	X	X	X	X	X	Report the name of generating software or vendor.
GeneratingSystemVersion	X	X	X	X	X	X	X	X	Report the software version number.
LabContract	X	X	X	X	X	X	X	X	Report the Contract Number.
LabContractModificationDescription									Not required.
LabContractModificationID									Not required.
LabDataPackageID	X	X	X	X	X	X	X	X	Report the SDG Number.
LabDataPackageName									Not required.
LabDataPackageVersion	X	X	X	X	X	X	X	X	Report "1", then increment with each resubmission.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	X	X	X	Report the Laboratory Name.
LabNarrative									Not required.
LabQualifiersDefinition	X	X	X	X	X	X	X	X	Use the format 'Qualifier:Definition' to report each qualifier used. Use a ';' to separate the definitions of multiple qualifiers.
LabReportedDate	X	X	X	X	X	X	X	X	Report the date this data was reported to the client in the specified date format.
ProjectID	X	X	X	X	X	X	X	X	Report the Agency-assigned Case Number.
ProjectName									Not required.
SiteID									Not required.
SiteName									Not required.
SamplePlusMethod	X	X	X	X	X	X	X	X	
Bottles									Not required.
BottleType									Not required.
ClientID	X	X	X						Report "1" for Region 1, "2" for Region 2, etc. For samples received from QATS, report "91". For other programs, report as directed by program.
ClientMethodCategory	X	X		X	X				Report "PAH", "PAH_SIM", or "Dioxane" for analyte subset where applicable.
ClientMethodCode	X	X	X	X	X	X	X	X	Report "TCLP", "SPLP", "Dioxane", or "PAH" when applicable. Otherwise leave blank.
ClientMethodID	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID	X	X	X	X	X	X	X		Report the Modified Analysis Number, if applicable.
ClientMethodName	X	X	X	X	X	X	X		Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodSource	X	X	X	X	X	X	X	X	Report "SFAM01.0".
ClientMethodType	X	X	X	X	X	X	X	X	Report "ICP-AES", "ICP-MS", "CVAA", "Spectrophotometry", "GCECD_External_Standard", or "GCMS_Internal_Standard" as applicable.
ClientMethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
ClientName									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ClientSampleID	X	X	X	X	X	X	X	X	Report the EPA Sample Number.
CollectedDate	X	X	X						Report the date and time the sample was collected in the specified date format.
CollectedEndDate									Not required.
Comment									Not required.
Composite									Not required.
CoolerID									Not required.
CustodyID	X								Report the Traffic Report/Chain of Custody Record Form number.
EquipmentBatch									Not required.
Filtered	X	X	X				X		Report "Yes" for dissolved metals, or "No" for total metals.
LabContract	X	X	X	X	X	X	X		Report the Contract Number.
LabContractModificationDescription									Not required.
LabContractModificationID									Not required.
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabMethodID									Not required.
LabMethodName									Not required.
LabName	X	X	X	X	X	X	X	X	Report the Laboratory Name.
LabReceiptDate	X	X	X						Report the date and time the sample was received in the specified date format.
LabReportingBatch	X	X	X	X	X	X	X	X	Links all samples analyzed to this deliverable. Report the SDG Number.
LabSampleID	X	X	X	X	X	X	X	X	Report the Lab Sample ID as assigned by the laboratory.
LocationID									Not required.
LocationName									Not required.
MatrixID	X	X	X	X	X	X	X	X	Report "Water", "Soil", "Sediment", "Wipe", "Filter", "Tissue", or "Waste" as applicable.
MatrixMedium	X	X	X	X	X	X	X	X	Report "Aqueous", "Solid", "Non-aqueous_Liquid", or "Biological_Tissue" as applicable. Use "Solid" for soils, sediments, wipes, filters, and solid wastes. Use "Biological_Tissue" for tissues. Use "Non-aqueous_Liquid" for liquid non-aqueous wastes.
MethodBatch									Not required.
MethodCategory									Not required.
MethodCode									Not required.
MethodID									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
MethodLevel	X	X			X				For GC/MS methods, report "Trace", "Low", or "Medium" as applicable.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X	X	Report "EPA_CLP".
MethodType	X	X	X	X	X	X	X	X	Report "ICP/AES", "ICP/MS", "CVAA", "Spectrophotometry", "GC", or "GC/MS" as applicable.
MethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
OriginalClientSampleID	X	X	X			X	X		Required for medium-level samples that have a low-level sample analysis. Report the low-level EPA Sample Number as applicable.
OriginalLabSampleID									Not required.
PhaseAnalyzed									Not required.
Preservative	X	X	X						Report any chemical or physical preservative used. Possible values include: "HNO3", "HCl", or "H2SO4" for acid-preserved samples; "NaHSO4" for low VOA soil; "CH3OH" for medium VOA soil; "Ice" for solid samples without acid as applicable. Report "None" if sample was not preserved.
ProjectID	X	X	X	X	X	X	X		Report the Agency-assigned Case Number.
ProjectName									Not required.
QCCategory		X	X	X	X	X	X		Report "Blank" for MB, IB, SB, PB, CB, or LEB; "Spike" for MS and post-digestion spike; "Blank_Spike" for LCS; "Duplicate" for duplicate; "Spike_Duplicate" for MSD; or "Serial_Dilution" for SD.
QCLinkage		X	X	X	X	X	X		Report "LabReportingBatch" for MS/MSD, post-digestion spike, Dup, and SD; "PreparationBatch" for PB, MB and LCS; "HandlingBatch" for LEB; "CleanupBatch" for CB; "StorageBatch" for SB; or "AnalysisBatch" for IB.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
QCType	X	X	X	X	X	X	X	X	Report "Field_Sample" for field samples; "Field_Blank" for field, equipment, rinse, or trip blanks; "Storage_Blank" for SB; "Method_Instrument_Blank" (GC/MS) or "Instrument Blank" (GC) for IB; "PT_Sample" for Performance Evaluation samples or Proficiency Testing audit samples; "Method_Blank" for PB or MB; "Leachate_Extraction_Blank" for LEB; "Cleanup_Blank" for CB; "Matrix_Spike" for MS; "Matrix_Spike_Duplicate" for MSD; "Duplicate" for Dup; "Laboratory_Control_Sample" for LCS; "Post_Digestion_Spike" for post-digestion spikes; "Serial_Dilution" for SD; or "Non_Client_Sample" for NCS.
Quarantine	X								Report "Yes" or "No" based on sampling information.
SamplingBatch									Not required.
ShippingBatch									Not required.
SiteID									Not required.
SiteName									Not required.
StorageBatch	X	X			X				Required for Volatile GC/MS analysis. Links all samples stored together with the Storage Blank. Report Lab Analysis ID of the Storage Blank. Not required for MB or IB.
InstrumentQC									Not required.
Characteristic	X	X	X	X	X	X	X		
CharacteristicType	X	X	X	X	X	X	X		Report "Percent_Solids" for aqueous/water and soil/sediment samples, including QC samples, under the SamplePlusMethod node. Report "pH" for aqueous/water samples (and for soil/sediment samples as requested), and "Temperature" for all samples (except wipes) received at the laboratory under each SamplePlusMethod node. For samples with pH adjusted after receipt, also report "pH" under the PreparationPlusCleanup node. Report "pH" and "Temperature" for TCLP or SPLP leachates under the Handling node. Report "Temperature" for stored field core VOA soil samples not analyzed immediately after transfer to gas-tight vials under the Handling node. Report "Area" for wipes if sampling area was provided by the sampler. Report "Percent_Moisture" if requested. Tissue samples do not require "Percent_Solids" or "pH". Wipe samples do not require "Percent_Solids", "pH", or "Temperature".

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
CharacteristicValue	X	X	X	X	X	X	X		For "Percent_Solids", report "0.0" for aqueous/water samples including QC samples; report the percent solids to two significant figures for soil/sediment samples including QC samples. Report "100" for waste samples when percent solids determination is not required. For "pH", report the pH to the nearest tenth for aqueous/water samples (and for soil/sediment samples as requested) and TCLP/SPLP leachates. For "Temperature", report the temperature at receipt to the nearest degree for all samples (except wipes), TCLP or SPLP leachates, and stored field core VOA soil samples not analyzed immediately after transfer to gas-tight vials. For "Area", report the area in cm^2, converted as necessary.
CharacteristicUnits	X	X	X	X	X	X	X		Report "C" for "Temperature"; "pH_Units" for pH; "Percent" for percent solids or percent moisture; and "cm2" for area.
Comment									Not required.
ContactInformation	X	X	X	X	X	X	X	X	
LabAddress1	X	X	X	X	X	X	X	X	Report the street address of the laboratory.
LabAddress2	X	X	X	X	X	X	X	X	If applicable, report any additional address information (e.g., suite, maildrop). Otherwise leave blank.
LabCity	X	X	X	X	X	X	X	X	Report the city in which the laboratory is located.
LabCountry	X	X	X	X	X	X	X	X	Report the country in which the laboratory is located.
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	X	X	X	Report the Laboratory Name.
LabPointOfContact	X	X	X	X	X	X	X	X	Report the name of the person at the laboratory serving as the point of contact.
LabPointOfContactElectronicAddress	X	X	X	X	X	X	X	X	Report the Email address of the point of contact.
LabPointOfContactTitle	X	X	X	X	X	X	X	X	Report the title of the point of contact.
LabPointOfContactType									Not required.
LabState	X	X	X	X	X	X	X	X	Report the state or province in which the laboratory is located.
LabTelephoneNumber	X	X	X	X	X	X	X	X	Report the 10-digit phone number for the laboratory.
LabType									Not required.
LabZipCode	X	X	X	X	X	X	X	X	Report the ZIP or postal code.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
Analysis	X	X	X	X	X	X	X	X	
AliquotAmount									Not required.
AliquotAmountUnits									Not required.
AnalysisBatch	X	X	X	X	X	X	X	X	Links this analysis to the instrument QC standard(s) that begins this sequence. Report an identifier for all samples in the analysis batch; each analysis batch shall have a unique identifier within the analytical method.
AnalysisBatchEnd	X	X	X	X	X	X	X	X	Links this analysis to the instrument QC standard(s) that ends this sequence. Report an identifier that links all samples in the analysis batch to the CCV that ends this sequence.
AnalysisDuration									Not required.
AnalysisDurationUnits									Not required.
AnalysisGroupID	X								Links a group of analyses that are used to report a derived result in instances where multiple analyses were performed. Report the AnalysisGroupID of the AnalysisGroup of which this analysis is a member.
AnalysisType	X	X	X	X	X	X	X		For VOA_Trace and VOA_Low_Med, report "Initial", "Dilution-01", "Reinjection-01", or "Reanalysis-01"; then increment as necessary. For SVOA, report "Initial", "Dilution-01", "Reinjection-01" for extracts with added internal standards that are analyzed a second time without alteration, or "Reanalysis-01" for re-extracted samples or extracts analyzed with fresh internal standards added; then increment as necessary. For Pesticides and Aroclors, report "Initial", "Dilution-01", "Reinjection-01" for extracts analyzed a second time without alteration, or "Reanalysis-01" for re-extracted samples; then increment as necessary. For ICP-AES, ICP-MS, Hg, and CN, report "Initial", "Dilution-01", or "Reanalysis-01" for redigested/redistilled samples and for ICP-MS reanalyzed due to internal standard Percent Relative Intensity (%RI) outside limits; then increment as necessary. For TCLP leachates for organic analyses, report "Initial" for the extract which has a base dilution of 10. Report "Dilution-01" for a subsequently diluted analysis; then increment as necessary.
Analyst	X	X	X	X	X	X	X	X	Report the Analyst's initials.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
AnalyzedAmount	X	X		X	X				For VOA medium soil/sediment/waste analyses, report the Soil Aliquot Volume in microliters to at least two significant figures. For SVOA, Pesticide, and Aroclor analyses, report the volume of extract added to the vial for analysis. This is the same volume to which the internal standards are added prior to analysis for SVOA.
AnalyzedAmountUnits	X	X		X	X				Report "uL".
AnalyzedDate	X	X	X	X	X	X	X	X	Report the date and time the sample was analyzed in the specified date format.
BackgroundCorrection	X	X	X	X	X	X	X		For ICP-AES and ICP-MS, enter "Yes" if background correction were applied; otherwise enter "No".
BackgroundRawData	X	X	X	X	X	X	X		For ICP-AES and ICP-MS, enter "Yes" if background corrections applied before raw data generated. Otherwise enter "No".
BackgroundType									Not required.
BottleID									Not required.
ClientAnalysisID	X	X		X	X				For Organic methods, report the full EPA Sample Number with applicable suffixes per the requirements in Appendix B – Codes for Labeling Data.
ClientMethodCode	X	X			X				For GC/MS analysis, report "Full_Scan" for the full scan method and "SIM" for the SIM technique. Report "Full_Scan_PAH" for the SVOA PAH and PCP full scan analysis; "Full_Scan_Dioxane" for the SVOA full scan analysis for 1,4-Dioxane only (either separate injections of the same extract or 1,4-Dioxane analysis only); "SIM_PAH" for the SVOA PAH and PCP SIM analysis; and "SIM_Dioxane" for the SVOA 1,4-Dioxane only SIM analysis as applicable.
ClientMethodID	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID									Not required.
ClientMethodName	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodSource	X	X	X	X	X	X	X	X	Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
Column	X	X		X	X				For GC/MS and GC methods, report the column used, as applicable.
ColumnInternalDiameter	X	X		X	X				Report the column Internal Diameter in mm.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ColumnInternalDiameterUnits	X	X		X	X				Report "mm".
ColumnLength	X	X		X	X				Report the column length in meters.
ColumnLengthUnits	X	X		X	X				Report "m".
Comment									Not required.
ConfirmationAnalysisID	X	X		X	X				Required for GC analysis. Links an analysis to a confirmation analysis. Report the Lab File ID of the confirmation analysis.
Counts									Not required.
CountsUncertainty									Not required.
CountsUncertaintyConfidenceLevel									Not required.
CountsUncertaintyDetermination									Not required.
CountsUncertaintyIntervalType									Not required.
CountsUncertaintyLimitHigh									Not required.
CountsUncertaintyLimitLow									Not required.
CountsUncertaintyType									Not required.
CountsUnits									Not required.
DetectorID									Not required.
DetectorType	X	X		X	X				Required for Organic methods. Report "ECD" for GC or "MS" for GC/MS.
DilutionFactor	X	X	X	X	X	X	X		Report the Dilution Factor used to the nearest tenth. Report "1.0" when no dilutions are used. Report "10" for the initial analysis of the TCLP leachate extract including LEB when no further dilution is required for the extract analysis. Otherwise, report the incremented dilution factor (e.g., if the dilution factor for a leachate extract analysis is 5, then report 50 as the dilution factor taking into the account of the dilution prior to extraction).
Efficiency									Not required.
HeatedPurge	X	X		X	X				For VOA, report "Yes" if heated purge was used; otherwise report "No".
Inclusion									Not required.
InjectionVolume	X	X		X	X				For GC analyses and SVOA analysis, report the volume injected in microliters. For VOA analysis, report the purge volume in milliliters. Report the volume to at least two significant figures.
InjectionVolumeUnits	X	X		X	X				Report "uL" or "mL" as applicable.
InstrumentID	X	X	X	X	X	X	X	X	Report the laboratory identifier for the instrument used for this analysis.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
InterelementCorrection	X	X	X	X	X	X	X		For ICP-AES and ICP-MS, enter "Yes" if interelement corrections were applied; otherwise enter "No".
LabAnalysisID	X	X	X	X	X	X	X	X	Report a unique identifier.
LabFileID	X	X	X	X	X	X	X	X	Report the Lab File ID.
LabID									Not required.
LabMethodID									Not required.
LabMethodName									Not required.
LabName									Not required.
MethodCode									Not required.
MethodID									Not required.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X	X	Report "EPA_CLP".
MethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
OriginalLabAnalysisID	X	X	X			X	X		If a dilution or reanalysis of a previously analyzed sample is performed (with added internal standards for SVOA for example), report the Lab Analysis ID of the original sample extract that was used for the dilution or reanalysis.
PreparationBatch									Not required.
ProcedureID									Not required.
ProcedureName									Not required.
ReferenceDate									Not required.
ResultBasis	X	X	X	X	X	X	X		Report "Dry" for soil/sediment samples. For Inorganic aqueous/water samples, report "Dissolved" if sample is field-filtered; otherwise report "Total". Report "Wet" for tissue samples or for any other matrices (other than aqueous/water) for which the results are not corrected for percent solids.
RunBatch	X	X	X	X	X	X	X	X	Links this analysis to an initial calibration. Report the Lab Analysis ID of the standard (Tune or ICAL standard) that started the ICAL sequence.
SampleAmount									Not required.
SampleAmountUnits									Not required.
Temperature									Not required.
TemperatureUnits									Not required.
Wavelength									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
WavelengthUnits									Not required.
Yield									Not required.
AnalysisGroup	X	X	X		X	X	X		
AnalysisGroupID	X								Report a unique identifier for the AnalysisGroup if derived result is obtained from multiple analyses.
AnalysisType	X				X				Report "Sum".
Comment									Not required.
Handling	X	X	X	X	X	X	X		
Analyst									Not required.
BottleID									Not required.
ClientMethodCode									Not required.
ClientMethodID	X	X	X	X	X	X	X		Report "TCLP", "SPLP", or "Decant" for decantation, or "Field_Core" for samples received in air tight field core sampling/storage devices and transferred to VOA vials.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID									Not required.
ClientMethodName									Not required.
ClientMethodSource	X	X	X	X	X	X	X		Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	X	X		Report the month and year the SOW was issued.
Comment									Not required.
HandledDate	X	X	X		X				Enter the date and time TCLP or SPLP extraction began, decanting was performed, or core was transferred to VOA vial, in the specified date format.
HandlingBatch	X	X	X		X				Links all samples that were TCLP or SPLP extracted together, decanted together, or transferred together. Report a unique identifier for each batch.
HandlingType	X	X	X	X	X	X	X		Report "TCLP" or "SPLP" for extractions. For TCLP or SPLP samples with less than 0.5% solids that are only filtered and not otherwise extracted, report "Filtered_Only_TCLP" or "Filtered_Only_SPLP" as appropriate. For Organic analyses, report "Decanted" if water was decanted from soil/sediment/waste samples; otherwise report "Not_decanted". For samples received in air tight field core sampling/storage devices and transferred to VOA vials, report "Field_Core".
InitialAmount									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
InitialAmountUnits									Not required.
LabID									Not required.
LabMethodID									Not required.
LabMethodName									Not required.
LabName									Not required.
MethodCode									Not required.
MethodID									Not required.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X		X				Report "EPA_CLP".
MethodVersion	X	X	X		X				Report month and year the SOW was issued.
ProcedureID									Not required.
ProcedureName									Not required.
SampleAmount									Not required.
SampleAmountUnits									Not required.
ReportedResult	X	X	X	X	X	X	X		
AnalysisGroupID	X								For derived analyte results summed from multiple analyses, report the unique identifier from the AnalysisGroup from which the result is reported.
AnalyteGroupID	X	X	X	X	X	X	X		For derived analyte results summed from a single analysis, report the unique identifier from the AnalyteGroup from which the result is reported.
AnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS" (Chemical Abstracts Service).
AnalyteType	X	X	X	X	X	X	X		Report "Target" for all target analytes except Hardness; "Spike" for all target analytes designated as spike analytes for MS/MSD, Post-Digestion Spike, and LCS analyses; or "TIC" for all TICs. Report "Derived" for Hardness.
BiasErrorRatio									Not required.
CASRegistryNumber	X	X	X	X	X	X	X		Report the CAS Number as it appears in the SOW, and for TICs if known.
ClientAnalyteID	X	X	X	X	X	X	X		Report CAS number. For TICs with no CAS number, report TIC name or as "Unknown-01", then increment with each TIC.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ClientAnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
ClientDetectionLimit	X	X	X	X	X	X	X		For a target or spike analyte, report the unadjusted MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, from which the sample result is reported. Report the unadjusted MDL value in the appropriate units to two significant figures and rounded up from the calculated value.
ClientDetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" for wipe samples.
ClientQuantitationLimit	X	X	X	X	X	X	X		Report the unadjusted CRQL.
ClientQuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; "mg/L" for Hardness; or "ug" for wipe samples.
Comment									Not required.
DetectionLimit	X	X	X	X	X	X	X		For a detected target or spike analyte, report the MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, from which the sample result is reported. Report the MDL value adjusted by the same factors (sample weight/volume, percent solids, and dilution) used to obtain the final calculated sample result in appropriate units to two significant figures. For a non-detected target or spike analyte, report the adjusted MDL (or adjusted DL for Aroclors other than 1016 or 1260) from the same analysis as the reported adjusted CRQL. Not required for Hardness or TICs.
DetectionLimitType	X	X	X	X	X	X	X		Report "MDL_sa" (MDL sample adjusted) or "DL_sa" for Aroclors without a specific MDL.
DetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" or "ug/cm2" for wipe samples.
DifferenceErrorRatio									Not required.
ExpectedResult		X		X		X			Report the theoretical final calculated concentration (the spike added) for the spiked analytes or the true value for LCS to at least two significant figures. (Not required for dual-column GC analysis.)

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ExpectedResultUncertainty									Not required.
ExpectedResultUncertaintyConfidenceLevel									Not required.
ExpectedResultUncertaintyDetermination									Not required.
ExpectedResultUncertaintyIntervalType									Not required.
ExpectedResultUncertaintyLimitHigh									Not required.
ExpectedResultUncertaintyLimitLow									Not required.
ExpectedResultUncertaintyType									Not required.
ExpectedResultUncertaintyUnits									Not required.
ExpectedResultUnits		X		X		X			Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" for wipe samples.
LabAnalysisID	X	X	X	X	X	X	X		Report the unique identifier from the analysis this reported result was derived from. Not required for Hardness.
LabAnalyteID									Not required.
LabQualifiers	X	X	X	X	X	X	X		Report flags and concentration qualifiers: "X" for values estimated due to interference. "*" for QC analyses outside control limits. "D" for values reported from a dilution and any organic TCLP leachate or leachate extract analyzed with a dilution factor greater than 10. "J" for reported values less than the reported adjusted CRQL but greater than or equal to the reported adjusted MDL. "U" for values less than the reported adjusted MDL. For Organic methods, report "B" if the same analyte is found in an associated blank; report "H" if the analyte is quantitated using peak heights rather than peak areas. For GC methods, report "C" if the identification of the analyte is confirmed by GC/MS; report "P" if the percent difference between the results on each column exceeds 25% for detects. For GC/MS TICs, report "A" if the TIC is a suspected Aldol-condensation product; report "N" if the TIC has a ≥85% match. For Hardness, report "U" if both values are less than the adjusted MDL. For Inorganic PB/LEB, report "J" if the absolute value of the result is less than the adjusted CRQL but greater than or equal to the adjusted MDL, and report "U" if the absolute value of the result is less than the adjusted MDL.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabResultStatus	X	X	X						Report "Preliminary" or "Final" as applicable.
PeakID									Not required.
PercentDifference	X	X		X	X		X		Report the serial dilution Percent Difference to the nearest whole percent. For GC analyses (excluding IBs), report the Percent Difference between the final Reported Result and the second column result to the nearest whole percent. (Not required for GC/MS analysis.)
PercentDifferenceLimitHigh	X	X		X	X		X		Report the upper limit for the Percent Difference to the nearest whole percent. (Excluding IB in GC analyses.) (Not required for GC/MS analysis.)
PercentDifferenceLimitLow									Not required.
PercentDifferenceLimitType	X	X		X	X		X		Report "Method". (Excluding IB in GC analysis.) (Not required for GC/MS analysis.)
PercentRecovery		X		X		X			For GC/MS and Inorganic methods, report the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitHigh		X		X					Report the upper limit for the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitLow		X		X					Report the lower limit for the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitType		X		X					Report "Method".
PercentRecoveryType									Not required.
QuantitationLimit	X	X	X	X	X	X	X		For a detected target, derived, or spike analyte, report the CRQL adjusted by the same factors (sample weight/volume, percent solids, and dilution) used to obtain the final calculated result in the "Result" field to two significant figures. For a non-detected target, derived, or spike analyte, report the adjusted CRQL from the most compliant of the analyses (initial, reanalysis, and re-extraction) performed for the analyte. Report the adjusted CRQL from the initial analysis if no further dilution is intended for the analyte. Not required for TICs.
QuantitationLimitType	X	X	X	X	X	X	X		Report "CRQL_sa" (CRQL sample adjusted).
QuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or Leachate; "mg/L" for Hardness; or "ug" or "ug/cm2" for wipe samples.
ReportingLimit									Not required.
ReportingLimitType									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ReportingLimitUnits									Not required.
Result	X	X	X	X	X	X	X		Report the final calculated result for detects to two significant figures. When dilution and/or reanalysis/re-extraction have been performed for a sample, report the most compliant result from the applicable analysis per the requirements in the applicable Exhibit D Section 11.0 technical acceptance criteria. Leave blank if the analyte is not detected. When multiple dilutions have been performed for a sample, report the compliant result from the least diluted analysis. If the result of the required dilution and/or reanalysis/re-extraction is non-compliant, report the result from the initial analysis. For GC methods, report the lower of the two column results from the most compliant analysis. For PB or inorganic LEB results less than the negative MDL (-MDL), report a leading "-".
ResultLimitHigh									Not required.
ResultLimitLow									Not required.
ResultLimitType									Not required.
ResultType	X	X	X	X	X	X	X		Report "=" for all detected analytes greater than or equal to the adjusted MDL or DL. Report "Not_Detected" for non-detects less than the adjusted MDL or DL. Report "Negative" for PB or Inorganic LEB results less than the negative MDL (-MDL).
ResultUncertainty									Not required.
ResultUncertaintyConfidenceLevel									Not required.
ResultUncertaintyDetermination									Not required.
ResultUncertaintyIntervalType									Not required.
ResultUncertaintyLimitHigh									Not required.
ResultUncertaintyLimitLow									Not required.
ResultUncertaintyType									Not required.
ResultUncertaintyUnits									Not required.
ResultUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; "mg/L" for Hardness; or "ug" or "ug/cm2" for wipe samples.
RetentionTime	X	X			X				For GC/MS, report the retention time for all TICs in decimal minutes.
RetentionTimeUnits	X	X			X				Report "minutes".

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
RPD		X	X						Report the RPD for GC/MS MS/MSD and Inorganic Duplicates to the nearest whole percent. (Not required for GC analysis.)
RPDLimitHigh		X	X						Report the upper limit for the RPD to the nearest whole percent. (Not required for GC analysis.)
RPDLimitType		X	X						Report "Method". (Not required for GC analysis.)
RPDType									Not required.
PreparationPlusCleanup	X	X	X	X	X	X	X		
AliquotAmount	X	X	X	X	X	X	X		Report the sample amount in grams for soil/sediment/waste or mL for aqueous/water and leachates to at least three significant figures. Not required for wipes.
AliquotAmountUnits	X	X	X	X	X	X	X		Report "g" for soil/sediment/waste or "mL" for aqueous/water and leachates. Not required for wipes.
Analyst	X	X	X	X	X	X	X		Report the Analyst's initials.
BottleID									Not required.
CleanedUpDate	X	X		X	X				Required for SVOA and GC methods as applicable. Report the date and time the sample was cleaned up in the specified date format.
CleanupBatch	X	X		X	X				Required for SVOA and GC methods as applicable. Links all samples that were cleaned up together. Report the Lab File ID of the associated blank or other unique identifier.
CleanupType	X	X		X	X				Required for SVOA and GC methods as applicable. Report "GPC", "Florisil", "Sulfur", or "Sulfuric_Acid" as applicable.
ClientMethodCode									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ClientMethodID	X	X	X	X	X	X	X		Report the sample preparation ID. Report "200.7" for aqueous/water and leachate ICP-AES; "3050B" for soil/sediment/waste and wipes ICP-AES; "200.8" for aqueous/water and soil/sediment/waste ICP-MS; "7470A" for aqueous/water and leachate mercury; "7471B" for soil/sediment/waste mercury; "Midi-distillation_Aqueous" for midi-distilled aqueous/water and leachate cyanide; "Midi-distillation_Soil" for midi-distilled soil/sediment/waste cyanide; "Micro-distillation_Aqueous" for micro-distilled aqueous/water and leachate cyanide; "Micro-distillation_Soil" for micro-distilled soil/sediment/waste cyanide; "PT" for purge-and-trap; "SEPF" for aqueous/water and leachate separatory funnel extraction; "CLLE" for aqueous/water and leachate continuous liquid-liquid extraction without hydrophobic membrane; "CONH" for aqueous/water and leachate continuous liquid-liquid extraction with hydrophobic membrane; "SONC" for soil/sediment/waste sonication extraction; "SOXH" for soil/sediment/waste Soxhlet extraction; "PFEX" for soil/sediment/waste pressurized fluid extraction; "SPE" for solid-phase extraction; "WD" for waste dilution; or "MW" for soil/sediment/waste microwave extraction.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID									Not required.
ClientMethodName									Not required.
ClientMethodSource	X	X	X	X	X	X	X		Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	X	X		Report the month and year the SOW was issued.
Comment									Not required.
Efficiency	X	X		X	X				Report the Efficiency Factor of a cleanup procedure expressed as a fraction of the material that passes (is not lost) through the procedure. For example, 50% efficiency for GPC cleanup is reported as 0.50.
FinalAmount	X	X	X	X	X	X	X		Report the volume of digestate/distillate produced by the preparation method in mL (for Inorganic methods) or the volume of extract upon completion in uL (for GC and SVOA analyses) to at least three significant figures.
FinalAmountUnits	X	X	X	X	X	X	X		Report "mL" or "uL" as applicable.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
InitialAmount	X	X		X	X				Required for medium VOA, SVOA, Pesticide, and Aroclor soil/sediment/waste analyses. Report the initial amount of extracted sample used for this preparation or cleanup, or the volume of methanol added to the medium VOA sample, to at least three significant figures.
InitialAmountUnits	X	X		X	X				Required for medium VOA, SVOA, Pesticide, and Aroclor soil/sediment/waste analyses. Report "uL".
LabID									Not required.
LabMethodID									Not required.
LabMethodName									Not required.
LabName									Not required.
LotNumber	X	X		X	X				Required for Pesticide analysis. Report the manufacturer's lot number for the Florisil cartridges used.
MethodCode									Not required.
MethodID									Not required.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X		Report "EPA_CLP".
MethodVersion	X	X	X	X	X	X	X		Report month and year the SOW was issued.
PreparationBatch	X	X	X	X	X	X	X		Links all samples that were prepared together. Also applicable to VOA_Trace, TVOA_SIM, and VOA Low/Medium samples that were analyzed in the same analytical sequence. Report a unique identifier (for Inorganic analysis) or the Lab File ID of the associated Method Blank (for Organic analyses) for each batch.
PreparationPlusCleanupType	X	X	X	X	X	X	X		Report "Preparation" or "Cleanup" as applicable.
PreparationType	X	X	X	X	X	X	X		Report "Automated" or "Manual" for Inorganic analyses. For Organic analyses, report "Sonication", "Soxhlet", "Pressurized_Fluid", or "Microwave" for soil/sediment/waste. Report "Sep_Funnel", "Liq_Liq", "Liq_Membrane", or "SPE" for aqueous/water and leachates. Report "Purge_and_Trap" for VOA_Trace, TVOA_SIM, and VOA Low/Medium. Report "Waste_Dilution" for waste dilution.
PreparedDate	X	X	X	X	X	X	X		Report the date and time the sample was prepared or purged as applicable. Report in the specified date format.
ProcedureID									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ProcedureName									Not required.
SampleAmount									Not required.
SampleAmountUnits									Not required.
Solvent									Not required.
Analyte	X	X	X	X	X	X	X		
AmountAdded		X		X		X			Volume of internal standard, DMC, surrogate, or target compound spiking solution added in uL to at least three significant figures.
AmountAddedUnits		X		X		X			Report "uL".
AmountAddedLocation		X		X		X			For sample, MB, LEB, SB, CB, or MS/MSD report "Aliquot"; for LCS or IB report "Standard"; for PDS report "Extracted_Aliquot".
AnalyteGroupID	X	X	X	X	X	X	X		For ICP-AES analysis as applicable. Report the identifier that links the Ca or Mg result to the AnalyteGroup Hardness result.
AnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment with each TIC.
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS" as applicable.
AnalyteType	X	X	X	X	X	X	X		Report "Target" for all target analytes except Hardness; "Spike" for all target analytes designated as spike analytes for MS/MSD, Post-Digestion Spike, and LCS; "Internal_Standard" for internal standards; "Surrogate" for DMCs and surrogates; "TIC" for all TICs; or "Monitor" for non-target interferences and masses requiring monitoring.
BiasErrorRatio									Not required.
CalibrationBasis									Not required.
CalibrationFactor									Not required.
CalibrationFactorUnits									Not required.
CalibrationType									Not required.
CASRegistryNumber	X	X	X	X	X	X	X		Report CAS Number as it appears in the SOW, and for TICs if known.
ClientAnalyteID	X	X	X	X	X	X	X		Report CAS number. For TICs with no CAS number, report TIC name or as "Unknown-01", then increment with each TIC.
ClientAnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment with each TIC.
Coeffa0									Not required.
Coeffa1									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
Coeffa2									Not required.
Coeffa3									Not required.
CoeffOfDetermination									Not required.
CoeffOfDeterminationLimitLow									Not required.
CoeffOfDeterminationLimitType									Not required.
Comment									Not required.
CorrelationCoeff									Not required.
CorrelationCoeffLimitLow									Not required.
CorrelationCoeffLimitType									Not required.
Counts									Not required.
CountsUncertainty									Not required.
CountsUncertaintyConfidenceLevel									Not required.
CountsUncertaintyDetermination									Not required.
CountsUncertaintyIntervalType									Not required.
CountsUncertaintyLimitHigh									Not required.
CountsUncertaintyLimitLow									Not required.
CountsUncertaintyType									Not required.
CountsUnits									Not required.
DetectionLimit	X	X	X	X	X	X	X		For target or spike analytes, report the MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, used for analysis, adjusted for sample weight/volume, percent solids, and dilution factor in the appropriate units to two significant figures.
DetectionLimitType	X	X	X	X	X	X	X		Report "MDL_sa" (MDL sample adjusted) or "DL_sa" for Aroclors without a specific MDL.
DetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" or "ug/cm2" for wipe samples.
DifferenceErrorRatio									Not required.
Efficiency									Not required.
ExpectedResult	X	X		X	X				For Organic analyses, for DMCs, internal standards, and surrogates, report the final amount added in nanograms. For GC methods, report the theoretical final calculated spike concentration for MS/MSD and LCS.
ExpectedResultUncertainty									Not required.
ExpectedResultUncertaintyConfidenceLevel									Not required.
ExpectedResultUncertaintyDetermination									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ExpectedResultUncertaintyIntervalType									Not required.
ExpectedResultUncertaintyLimitHigh									Not required.
ExpectedResultUncertaintyLimitLow									Not required.
ExpectedResultUncertaintyType									Not required.
ExpectedResultUncertaintyUnits									Not required.
ExpectedResultUnits	X	X		X	X				Report "ng" for DMCs, surrogates, and GC/MS internal standards. For GC MS/MSD and LCS, report "ug/kg" for soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" for wipe samples.
Inclusion	X	X	X	X	X	X	X		Report "Yes" if result of the analysis is to be reported as the final Reported Result for the sample; otherwise report "No".
IntermediateResult	X	X	X	X	X	X	X		For Inorganic targets, spikes, and interferents, report the raw concentration output of the instrument unadjusted for sample weight/volume, percent solids, or dilution factor. For Organic analyses, report the on-column amount, unadjusted for sample weight/volume, percent solids, or dilution factor, in nanograms from the raw data. Leave blank if the analyte is not detected.
IntermediateResultLimitHigh									Not required.
IntermediateResultLimitLow									Not required.
IntermediateResultLimitType									Not required.
IntermediateResultUnits	X	X	X	X	X	X	X		Report "ug/L" for Inorganic analyses. Report "ng" for Organic analyses.
LabAnalyteID									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabQualifiers	X	X	X	X	X	X	X		Report flags and concentration qualifiers: "X" for values estimated due to interference. "*" for QC analyses outside control limits. "D" for values reported from a dilution and any organic TCLP leachate or leachate extract with a dilution factor greater than 10. "J" for values less than the CRQL but greater than or equal to the MDL. "U" for values less than the MDL. "E" if the analyte concentration exceeds the upper limit of the calibration range of the instrument established by the ICAL. For Organic methods, report "B" if the same analyte is found in an associated blank; report "H" if the analyte is quantitated using peak heights rather than peak areas. For GC methods, report "C" if the identification of the analyte is confirmed by GC/MS; report "P" if the percent difference between the results on each column exceeds 25% for detects; report "S" if the reported value is determined using a single-point ICAL. For GC/MS TICs, report "A" if the TIC is a suspected Aldol-condensation product; report "N" if the TIC has a ≥85% match. For Inorganic PB/LEB, report "J" if the absolute value of the result is less than the adjusted CRQL but greater than or equal to the adjusted MDL, and report "U" if the absolute value of the result is less than the adjusted MDL.
LotNumber	X	X	X	X	X	X	X		Report the vendor/manufacturer-assigned lot number for this standard (DMCs, surrogates, Internal Standards, and spiking analytes only).
Mass									Not required.
MassLimitHigh									Not required.
MassLimitLow									Not required.
MassLimitType									Not required.
MassUnits									Not required.
MeanCalibrationFactor									Not required.
MeanCalibrationFactorUnits									Not required.
MeanRRF									Not required.
MeanRRFLimitLow									Not required.
MeanRRFLimitType									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PeakID	X	X	X	X	X	X	X		If response from a single peak is used for quantitation, report the ID of that peak. For unknown TICs, report the unique identifiers as applicable. For alkanes, report "Total alkanes" as the identifier. Leave blank for multi-component analytes.
PercentBreakdown									Not required.
PercentBreakdownLimitHigh									Not required.
PercentBreakdownLimitType									Not required.
PercentDifference	X	X		X	X				For GC analyses (excluding IB), report the Percent Difference (to the nearest whole percent) between the Analyte Result on the primary column and the Analyte Result on the confirmation column from the corresponding analysis.
PercentDifferenceLimitHigh	X	X		X	X				For GC analyses (excluding IB), report the upper limit for the Percent Difference to the nearest whole percent.
PercentDifferenceLimitLow									Not required.
PercentDifferenceLimitType	X	X		X	X				For GC analyses (excluding IB), report "Method".
PercentMatch	X				X				Required for GC/MS methods. Report the percent match for TICs only.
PercentRecovery	X	X		X	X				Required for Organic analyses. Report the final calculated percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.
PercentRecoveryLimitHigh	X	X		X	X				Required for Organic analyses. Report the upper limit for the percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.
PercentRecoveryLimitLow	X	X		X	X				Required for Organic analyses. Report the lower limit for the percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.
PercentRecoveryLimitType	X	X		X	X				Required for Organic analyses. Report "Method".
PercentRecoveryType									Not required.
PercentRSD									Not required.
PercentRSDLimitHigh									Not required.
PercentRSDLimitLow									Not required.
PercentRSDLimitType									Not required.
QuantitationBasis									Not required.
QuantitationLimit	X	X	X	X	X	X	X		Report the CRQL adjusted for sample weight/volume, percent solids, and dilution factor to two significant figures.
QuantitationLimitType	X	X	X	X	X	X	X		Report "CRQL_sa" (CRQL sample adjusted).

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
QuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" or "ug/cm2" for wipe samples.
ReportingLimit									Not required.
ReportingLimitType									Not required.
ReportingLimitUnits									Not required.
Response									Not required.
ResponseLimitHigh									Not required.
ResponseLimitLow									Not required.
ResponseLimitType									Not required.
ResponseUnits									Not required.
Result	X	X	X	X	X	X	X		For detected target or spike analytes, and for monitored masses, report the final calculated result to two significant figures. Leave blank if the analyte or compound is not detected. For PB and Inorganic LEB less than the negative MDL (-MDL), report a leading "-".
ResultLimitHigh									Not required.
ResultLimitLow									Not required.
ResultLimitType									Not required.
ResultType	X	X	X	X	X	X	X		Report "=" for all detected analytes with results greater than or equal to adjusted MDL or DL. Report "Not_Detected" for non-detects less than the adjusted MDL or DL. Report "Negative" for PB or Inorganic LEB results less than the negative MDL (-MDL).
ResultUncertainty									Not required.
ResultUncertaintyConfidenceLevel									Not required.
ResultUncertaintyDetermination									Not required.
ResultUncertaintyIntervalType									Not required.
ResultUncertaintyLimitHigh									Not required.
ResultUncertaintyLimitLow									Not required.
ResultUncertaintyType									Not required.
ResultUncertaintyUnits									Not required.
ResultUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" or "ug/cm2" for wipe samples.
RPD		X							Required for GC methods. Report the MS/MSD per-column RPD to the nearest whole percent.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
RPDLimitHigh		X							Required for GC methods. Report the upper limit for the RPD to the nearest whole percent.
RPDLimitType		X							Required for GC methods. Report "Method".
RPDType									Not required.
RRF									Not required.
RRFLimitLow									Not required.
RRFLimitType									Not required.
StandardConcentration	X	X	X	X	X	X	X		Report the concentration of the internal standard, DMC or surrogate, or spike analyte added to the sample in ug/L.
StandardConcentrationUnits	X	X	X	X	X	X	X		Report "ug/L".
StandardDeviation									Not required.
StandardDeviationUnits									Not required.
StandardFinalAmount									Not required.
StandardFinalAmountUnits									Not required.
StandardID									Not required.
StandardSource	X	X	X	X	X	X	X		Report the vendor/manufacturer for this standard.
TailingFactor									Not required.
TailingFactorLimitHigh									Not required.
TailingFactorLimitType									Not required.
Wavelength									Not required.
WavelengthUnits									Not required.
WeightingFactor									Not required.
AnalyteComparison									Not required
AnalyteGroup	X	X	X	X	X	X	X		Not Required for Organic methods.
AnalyteGroupID	X	X	X	X	X	X	X		Report a unique identifier.
AnalyteName	X	X	X	X	X	X	X		Report "Hardness".
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS".
AnalyteType	X	X	X	X	X	X	X		Report "Derived".
CASRegistryNumber	X	X	X	X	X	X	X		Report "Hardness".
ClientAnalyteID	X	X	X	X	X	X	X		Report "Hardness".
ClientAnalyteName	X	X	X	X	X	X	X		Report "Hardness".
Comment									Not required.
LabAnalyteID									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabQualifiers	X	X	X	X	X	X	X		Report "J" for values less than the adjusted CRQL but greater than or equal to the adjusted MDL. Report "U" for when both Ca and Mg values less than the adjusted MDL.
Result	X	X	X	X	X	X	X		Report the final calculated for detects to two significant figures.
ResultType	X	X	X	X	X	X	X		Report "=" for detects. Report "Not_Detected" for non-detects (where both Ca and Mg are not detected).
ResultUncertainty									Not required.
ResultUnits	X	X	X	X	X	X	X		Report "mg/L".
Peak	X	X	X	X	X	X	X		
CalibrationFactor									Not required.
CalibrationFactorUnits									Not required.
CalibrationType									Not required.
Coeffa0									Not required.
Coeffa1									Not required.
Coeffa2									Not required.
Coeffa3									Not required.
CoeffOfDetermination									Not required.
CoeffOfDeterminationLimitLow									Not required.
CoeffOfDeterminationLimitType									Not required.
Comment									Not required.
CorrelationCoeff									Not required.
CorrelationCoeffLimitLow									Not required.
CorrelationCoeffLimitType									Not required.
DetectionLimit									Not required.
DetectionLimitType									Not required.
DetectionLimitUnits									Not required.
DifferenceErrorRatio									Not required.
Efficiency									Not required.
Inclusion									Not required.
IntermediateResult	X	X	X	X	X	X	X		For Inorganic methods, if calibrated, report the raw concentration output of the instrument in ug/L or mg/L for the peak uncorrected for dilution. For Organic methods, report the on-column amount in nanograms from the raw data. Leave blank if the analyte is not detected.
IntermediateResultLimitHigh									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
IntermediateResultLimitLow									Not required.
IntermediateResultLimitType									Not required.
IntermediateResultUnits	X	X	X	X	X	X	X		Report "ug/L" "mg/L", or "ng" as applicable.
LabQualifiers									Not required.
ManualIntegration	X	X		X	X				Required for Organic methods. Report "Yes" if this peak was manually integrated; otherwise report "No".
Mass	X	X	X	X	X	X	X		Not required for Organic analyses. For ICP-MS, report the isotope mass.
MassLimitHigh									Not required.
MassLimitLow									Not required.
MassLimitType									Not required.
MassUnits	X	X	X	X	X	X	X		Not required for Organic analyses. Report "u" for ICP-MS.
MeanCalibrationFactor									Not required.
MeanCalibrationFactorUnits									Not required.
MeanRetentionTime									Not required.
MeanRetentionTimeLimitHigh									Not required.
MeanRetentionTimeLimitLow									Not required.
MeanRetentionTimeLimitType									Not required.
MeanRetentionTimeUnits									Not required.
MeanRRF									Not required.
MeanRRFLimitLow									Not required.
MeanRRFLimitType									Not required.
PeakID	X	X	X	X	X	X	X		For Inorganic Analysis, report a unique identifier. This identifier must be consistent throughout an analytical sequence. For ICP-MS analysis using collision or reaction cell, a "-Gas" suffix must be applied to the PeakID. For GC/MS analysis, report the primary quantitation ion used or "Total" if all ions were used. For GC analysis, report the peak identifier as used by the laboratory to uniquely identify this peak.
PeakRatio									Not required.
PeakRatioLimitHigh									Not required.
PeakRatioLimitLow									Not required.
PeakRatioLimitType									Not required.
PercentDifference									Not required.
PercentDifferenceLimitHigh									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PercentDifferenceLimitLow									Not required.
PercentDifferenceLimitType									Not required.
PercentRatio	X	X	X	X	X	X	X		For ICP-MS internal standards, report the %RI (Percent Relative Intensity). Not required for Organic methods.
PercentRatioLimitHigh	X	X	X	X	X	X	X		For ICP-MS internal standards, report the upper limit for the %RI to the nearest whole percent. Not required for Organic methods.
PercentRatioLimitLow	X	X	X	X	X	X	X		For ICP-MS internal standards, report the lower limit for the %RI to the nearest whole percent. Not required for Organic methods.
PercentRatioLimitType	X	X	X	X	X	X	X		Report "Method". Not required for Organic methods.
PercentRecovery									Not required.
PercentRecoveryLimitHigh									Not required.
PercentRecoveryLimitLow									Not required.
PercentRecoveryLimitType									Not required.
PercentRecoveryType									Not required.
PercentRSD	X	X	X	X	X	X	X		For ICP-AES and ICP-MS, report the %RSD of the replicates to the nearest whole percent. Not required for Organic methods.
PercentRSDLimitHigh	X	X	X	X	X	X	X		Report the upper limit for the %RSD to the nearest whole percent. Not required for Organic methods.
PercentRSDLimitLow									Not required.
PercentRSDLimitType	X	X	X	X	X	X	X		Report "Method". Not required for Organic methods.
QuantitationLimit									Not required.
QuantitationLimitType									Not required.
QuantitationLimitUnits									Not required.
ReportingLimit									Not required.
ReportingLimitType									Not required.
ReportingLimitUnits									Not required.
Resolution									Not required.
ResolutionLimitHigh									Not required.
ResolutionLimitLow									Not required.
ResolutionLimitType									Not required.
ResolutionType									Not required.
ResolutionUnits									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
Response	X	X	X	X	X	X	X		For Inorganic methods, report the mean instrument response output. For internal standards, report the uncorrected intensity. For GC methods, report the actual peak area or peak height from the raw data. For GC/MS methods, report the actual peak response from the raw data.
ResponseLimitHigh	X	X			X				Required for GC/MS methods. Report the upper limit for the response for the internal standards only.
ResponseLimitLow	X	X			X				Required for GC/MS methods. Report the lower limit for the response for the internal standards only.
ResponseLimitType	X	X			X				Required for GC/MS methods. Report "Method".
ResponseType									Not required.
ResponseUnits	X	X	X	X	X	X	X		Report "Abundance", "Peak_Height", "Peak_Area", "Counts", or "Absorbance" as appropriate.
Result									Not required.
ResultLimitHigh									Not required.
ResultLimitLow									Not required.
ResultLimitType									Not required.
ResultType									Not required.
ResultUncertainty									Not required.
ResultUnits									Not required.
RetentionTime	X	X		X	X				For GC/MS and GC methods, report the actual retention time in decimal minutes from the raw data for this peak.
RetentionTimeLimitHigh	X	X		X	X				For GC/MS and GC methods, report the upper limit for the retention time in decimal minutes.
RetentionTimeLimitLow	X	X		X	X				For GC/MS and GC methods, report the lower limit for the retention time in decimal minutes.
RetentionTimeLimitType	X	X	X	X	X				For GC/MS and GC methods, report "Method".
RetentionTimeUnits	X	X	X	X	X				For GC/MS and GC methods, report "minutes".
RRF									Not required.
RRFLimitLow									Not required.
RRFLimitType									Not required.
StandardDeviation									Not required.
StandardDeviationUnits									Not required.
TailingFactor									Not required.
TailingFactorLimitHigh									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
TailingFactorLimitType									Not required.
Wavelength	X	X	X	X	X	X	X		For ICP-AES, Hg, and CN, report the wavelength of the peak in nm. Not required for Organic methods.
WavelengthUnits	X	X	X	X	X	X	X		Report "nm". Not required for Organic methods.
WeightingFactor									Not required.
PeakComparison	X	X	X	X	X	X	X		Not required for ICP-AES, Hg, CN, or GC analysis.
AnalyteName	X	X	X	X	X	X	X		For ICP-MS and GC/MS analysis, report the name of the associated internal standard as it appears in the SOW.
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS".
CASRegistryNumber	X	X	X	X	X	X	X		Report the CAS number of the associated internal standard.
ClientAnalyteID	X	X	X	X	X	X	X		Report the CAS number of the associated internal standard.
ClientAnalyteName									Not required.
Comment									Not required.
LabAnalyteID									Not required.
PeakID	X	X	X	X	X	X	X		Report the unique peak identifier for the associated internal standard (ICP-MS) or the specified primary quantitation ion used for the internal standard for GC/MS methods.
PeakRatio									Not required.
PeakRatioLimitHigh									Not required.
PeakRatioLimitLow									Not required.
PeakRatioLimitType									Not required.
PercentRatio									Not required.
PercentRatioLimitHigh									Not required.
PercentRatioLimitLow									Not required.
PercentRatioLimitType									Not required.
PeakReplicate	X	X	X	X	X	X	X		Not required for Organic methods.
Comment									Not required.
IntermediateResult									Not required.
IntermediateResultLimitHigh									Not required.
IntermediateResultLimitLow									Not required.
IntermediateResultLimitType									Not required.
IntermediateResultUnits									Not required.
Mass									Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
MassLimitHigh									Not required.
MassLimitLow									Not required.
MassLimitType									Not required.
MassUnits									Not required.
PeakReplicateID	X	X	X	X	X	X	X		Report a unique identifier for each replicate.
Resolution									Not required.
ResolutionLimitHigh									Not required.
ResolutionLimitLow									Not required.
ResolutionLimitType									Not required.
ResolutionType									Not required.
ResolutionUnits									Not required.
Response	X	X	X	X	X	X	X		For ICP-AES and ICP-MS methods, report the mean instrument response output. For internal standards, report the uncorrected intensity.
ResponseLimitHigh									Not required.
ResponseLimitLow									Not required.
ResponseLimitType									Not required.
ResponseType									Not required.
ResponseUnits	X	X	X	X	X	X	X		Report "Abundance", "Peak_Height", "Peak_Area", "Counts", or "Absorbance" as appropriate.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
Header	X	X	X	X	X	
ClientID	X	X	X	X	X	Report "1" for Region 1, "2" for Region 2, etc. For samples received from QATS, report "91". For other programs, report as directed by program.
ClientName						Not required.
Comment						Not required.
DateFormat	X	X	X	X	X	Report MMDDYYYYThh:mm:ss. All dates and times reported in the EDD must follow this format. If any part of the time is unknown, report "00" for the unknown hours, minutes, and seconds.
EDDID	X	X	X	X	X	Report "SEDD".
EDDImplementationID	X	X	X	X	X	Report "SEDD_5-2_GENERAL_3_3" (This is the DTD used).
EDDImplementationVersion	X	X	X	X	X	Report "SFAM01".
EDDVersion	X	X	X	X	X	Report "5.2".
GeneratingSystemID	X	X	X	X	X	Report the name of generating software or vendor.
GeneratingSystemVersion	X	X	X	X	X	Report the software version number.
LabContract	X	X	X	X	X	Report the Contract Number.
LabContractModificationDescription						Not required.
LabContractModificationID						Not required.
LabDataPackageID	X	X	X	X	X	Report the SDG Number.
LabDataPackageName						Not required.
LabDataPackageVersion	X	X	X	X	X	Report "1", then increment with each resubmission.
LabID	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	Report the Laboratory Name.
LabNarrative						Not required.
LabQualifiersDefinition	X	X	X	X	X	Use the format 'Qualifier:Definition' to report each qualifier used. Use a ';' to separate the definitions of multiple qualifiers.
LabReportedDate	X	X	X	X	X	Report the date this data was reported to the client in the specified date format.
ProjectID	X	X	X	X	X	Report the Agency-assigned Case Number.
ProjectName						Not required.
SiteID						Not required.
SiteName						Not required.
SamplePlusMethod						Not required.
InstrumentQC	X	X	X	X	X	
ClientInstrumentQCType		X	X			For Pesticides, for RESC and standards, report "1' if using a single mixture to calibrate instrument. Report "2" if using two mixtures to calibrate instrument.
ClientMethodCode	X	X	X	X	X	Report "TCLP", "SPLP", "PAH", or "Dioxane" as applicable. Otherwise leave blank.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
ClientMethodID	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodModificationDescription						Not required.
ClientMethodModificationID	X	X	X	X	X	Report the Modified Analysis Number, if applicable.
ClientMethodName	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodSource	X	X	X	X	X	Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	Report the month and year the SOW was issued.
Comment						Not required.
LabID	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabInstrumentQCID	X	X	X	X	X	Report the EPA Sample number or a unique ID for each QC. For Organic ICAL, report the EPA Sample Number of the first standard.
LabMethodID						Not required.
LabMethodName						Not required.
LabName	X	X	X	X	X	Report the Laboratory Name.
MethodCode						Not required.
MethodID						Not required.
MethodModificationDescription						Not required.
MethodModificationID						Not required.
MethodName						Not required.
MethodSource	X	X	X	X	X	Report "EPA_CLP".
MethodVersion	X	X	X	X	X	Report the month and year the SOW was issued.
QCLinkage	X	X	X	X	X	Report "RunBatch" for IPC, RESC, calibration, ICV, ICB, and ICS. Report "AnalysisBatch" for CCV and CCB. Report "CleanupBatch" for FLO and GPC.
QCType	X	X	X	X	X	Report "Instrument_Performance_Check_Tune" for Tune and RESC; "Initial_Performance_Check_PEM" for the PEM standards that are part of the ICAL; "Initial_Calibration" for calibration; "Initial_Calibration_Verification" for ICV; "Initial_Calibration_Blank" for ICB; "Continuing_Calibration_Verification" for CCV; "Continuing_Calibration_Blank" for CCB; "Interference_Check_Standard_A" for ICSA; "Interference_Check_Standard_A/B" for ICSAB; "Florisil_Cartridge_Check" for the Florisil cartridge; or "GPC_Calibration_Check" for the GPC Calibration Check.
ContactInformation	**X**	**X**	**X**	**X**	**X**	
LabAddress1	X	X	X	X	X	Report the street address of the laboratory.
LabAddress2	X	X	X	X	X	If applicable, report any additional address information (e.g., suite, maildrop). Otherwise leave blank.
LabCity	X	X	X	X	X	Report the city in which the laboratory is located.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
LabCountry	X	X	X	X	X	Report the country in which the laboratory is located.
LabID	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	Report the Laboratory Name.
LabPointOfContact	X	X	X	X	X	Report the name of person at the laboratory serving as the point of contact.
LabPointOfContactElectronicAddress	X	X	X	X	X	Report the Email address of the point of contact.
LabPointOfContactTitle	X	X	X	X	X	Report the title of the point of contact.
LabPointOfContactType						Not required.
LabState	X	X	X	X	X	Report the state or province in which the laboratory is located.
LabTelephoneNumber	X	X	X	X	X	Report the 10-digit phone number for the laboratory.
LabType						Not required.
LabZipCode	X	X	X	X	X	Report the ZIP or postal code.
Analysis	X	X	X	X	X	
AliquotAmount						Not required.
AliquotAmountUnits						Not required.
AnalysisBatch			X	X		Links this analysis to the instrument QC standard that begins this sequence. Report an identifier for all samples in the analysis batch; each analysis batch shall have a unique identifier within the analytical method.
AnalysisBatchEnd			X	X		Links this analysis to the instrument QC standard that ends this sequence. Report an identifier that links all samples in the analysis batch to the CCV that ends this sequence.
AnalysisDuration						Not required.
AnalysisDurationUnits						Not required.
AnalysisGroupID		X				Links a group of analyses that are used for the initial calibration. Report the Lab Analysis ID of the standard that starts this calibration sequence.
AnalysisType	X	X	X	X	X	Report "Initial" or "Dilution-01"; then increment as necessary. For Tune, IPC, FLO, and GPC, report "Initial." For Organic ICAL/ICV/CCV, report the Calibration level used.
Analyst	X	X	X	X	X	Report the Analyst's initials.
AnalyzedAmount	X	X	X	X	X	Report the volume of the standard placed on the instrument for SVOA, SVOA_SIM, Pesticides, and Aroclors in microliters.
AnalyzedAmountUnits	X	X	X	X	X	Report "uL" for the applicable methods.
AnalyzedDate	X	X	X	X	X	Report the date and time the sample was analyzed in the specified date format.
BackgroundCorrection	X	X	X	X	X	For ICP-AES and ICP-MS, report "Yes" if background corrections applied; otherwise report "No".
BackgroundRawData	X	X	X	X	X	For ICP-AES and ICP-MS, report "Yes" if background corrections applied before raw data generated. Otherwise report "No".

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
BackgroundType						Not required.
BottleID						Not required.
ClientAnalysisID	X	X	X	X	X	For Organic methods, report the full EPA Sample Number with applicable suffixes per the requirements in Appendix B – Codes for Labeling Data.
ClientMethodCode	X	X	X	X	X	For GC/MS analysis, report "Full_Scan" for the full scan method and "SIM" for the SIM technique. Report "Full_Scan_PAH" for the SVOA PAH and PCP full scan analysis; "Full_Scan_Dioxane" for the SVOA full scan analysis for 1,4-Dioxane only (either separate injections of the same extract or 1,4-Dioxane analysis only); "SIM_PAH" for the SVOA PAH and PCP SIM analysis; and "SIM_Dioxane" for the SVOA 1,4-Dioxane only SIM analysis as applicable.
ClientMethodID	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodModificationDescription						Not required.
ClientMethodModificationID						Not required.
ClientMethodName	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodSource	X	X	X	X	X	Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	Report the month and year the SOW was issued.
Column	X	X	X	X		For GC/MS and GC methods, report the Column used as applicable.
ColumnInternalDiameter	X	X	X	X		Report the Column Internal Diameter in mm.
ColumnInternalDiameterUnits	X	X	X	X		Report "mm".
ColumnLength	X	X	X	X		Report the Column Length in meters.
ColumnLengthUnits	X	X	X	X		Report "m".
Comment						Not required.
ConfirmationAnalysisID						Not required.
Counts						Not required.
CountsUncertainty						Not required.
CountsUncertaintyConfidenceLevel						Not required.
CountsUncertaintyDetermination						Not required.
CountsUncertaintyIntervalType						Not required.
CountsUncertaintyLimitHigh						Not required.
CountsUncertaintyLimitLow						Not required.
CountsUncertaintyType						Not required.
CountsUnits						Not required.
DetectorID						Not required.
DetectorType	X	X	X	X		Required for Organic methods. Report "ECD" for GC or "MS" for GC/MS.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
DilutionFactor	X	X	X	X	X	Report the Dilution Factor used to the nearest tenth. Report "1.0" when no dilutions are used.
Efficiency						Not required.
HeatedPurge	X	X	X	X		For VOA, report "Yes" if heated purge was used; otherwise report "No".
Inclusion		X				Report "Yes" if this standard is to be included in the calibration curve; otherwise report "No".
InjectionVolume		X	X	X		For GC analyses and SVOA analysis, report the volume injected in microliters. For VOA analysis, report the purge volume in milliliters. Report the volume to at least two significant figures.
InjectionVolumeUnits		X	X	X		Report "mL" or "uL" as applicable.
InstrumentID	X	X	X	X	X	Report the laboratory identifier for the instrument used for this analysis.
InterelementCorrection		X	X	X	X	For ICP-AES and ICP-MS, report "Yes" if interelement corrections were applied; otherwise report "No".
LabAnalysisID	X	X	X	X	X	Report a unique identifier.
LabFileID	X	X	X	X	X	Report the Lab File ID.
LabID						Not required.
LabMethodID						Not required.
LabMethodName						Not required.
LabName						Not required.
MethodCode						Not required.
MethodID						Not required.
MethodModificationDescription						Not required.
MethodModificationID						Not required.
MethodName						Not required.
MethodSource	X	X	X	X	X	Report "EPA_CLP".
MethodVersion	X	X	X	X	X	Report month and year the SOW was issued.
OriginalLabAnalysisID						Not required.
PreparationBatch						Not required.
ProcedureID						Not required.
ProcedureName						Not required.
ReferenceDate						Not required.
ResultBasis						Not required.
RunBatch	X	X	X	X	X	Links this analysis to an initial calibration. Report the Lab Analysis ID of the standard (Tune or ICAL standard) that started the ICAL sequence.
SampleAmount						Not required.
SampleAmountUnits						Not required.
Temperature						Not required.
TemperatureUnits						Not required.
Wavelength						Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
WavelengthUnits						Not required.
Yield						Not required.
AnalysisGroup		X				
AnalysisGroupID		X				Links a group of analyses that are used for the initial calibration. Report the lab analysis ID of the Tune or ICAL standard that starts this ICAL sequence.
AnalysisType		X				Report "Initial_Calibration".
Comment						Not required.
Handling						Not required.
ReportedResult						Not required.
PreparationPlusCleanup		X	X	X		
AliquotAmount		X	X	X		Report the actual amount of standard digested/distilled in mL to at least three significant figures.
AliquotAmountUnits		X	X	X		Report "mL".
Analyst		X	X	X		Report the Analyst's initials.
BottleID						Not required.
CleanedUpDate					X	Required for SVOA and for GC methods as applicable. Report the date and time the sample was cleaned up in the specified date format.
CleanupBatch					X	Required for SVOA and GC methods as applicable. Links all samples that were cleaned up together. Report the Lab File ID of the associated cleanup blank.
CleanupType					X	Required for SVOA and GC methods as applicable. Report "GPC", "Florisil", "Sulfur", or "Sulfuric_Acid" as applicable.
ClientMethodCode						Not required.
ClientMethodID		X	X	X	X	Report the sample preparation ID. Report "7470A" for aqueous/water and leachate mercury, "7471B" for soil/sediment/waste mercury, "Midi-distillation_Aqueous" for midi-distilled aqueous/water cyanide, "Midi-distillation_Soil" for midi-distilled soil/sediment/waste cyanide, "Micro-distillation_Aqueous" for micro-distilled aqueous/water cyanide, or "Micro-distillation_Soil" for micro-distilled soil/sediment/waste cyanide. For GPC cleanup, report "3640A". For Florisil cleanup, report "3620C". For Sulfur cleanup, report "3660B". For Sulfuric Acid cleanup, report "3665A".
ClientMethodModificationDescription						Not required.
ClientMethodModificationID						Not required.
ClientMethodName						Not required.
ClientMethodSource		X	X	X		Report "SFAM01.0".
ClientMethodVersion		X	X	X		Report month and year the SOW was issued.
Comment						Not required.
Efficiency						Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
FinalAmount		X	X	X	X	Report the volume of digestate or distillate produced by the preparation method in mL to at least three significant figures.
FinalAmountUnits		X	X	X	X	Report "mL".
InitialAmount						Report the initial amount of QC sample used for this cleanup method in microliters.
InitialAmountUnits						Report "uL".
LabID						Not required.
LabMethodID						Not required.
LabMethodName						Not required.
LabName						Not required.
LotNumber						For Pesticides, report the manufacture's lot number for the Florisil cartridges used.
MethodCode						Not required.
MethodID						Nor required.
MethodModificationDescription						Not required.
MethodModificationID						Not required.
MethodName						Not required.
MethodSource		X	X	X		Report "EPA_CLP".
MethodVersion		X	X	X		Report the month and year the SOW was issued.
PreparationBatch		X	X	X		Links all samples that were prepared together. Report a unique identifier (for Inorganic analyses).
PreparationPlusCleanupType		X	X	X		Report "Preparation" or "Cleanup" as applicable.
PreparationType		X	X	X		Report "Automated" or "Manual".
PreparedDate		X	X	X		Report the date and time the sample was prepared. Report in the specified date format.
ProcedureID						Not required.
ProcedureName						Not required.
SampleAmount						Not required.
SampleAmountUnits						Not required.
Solvent						Not required.
Characteristic						Not required.
Analyte	X	X	X	X	X	
AmountAdded	X	X	X	X		For Organic methods, report the volume of standard used in microliters.
AmountAddedUnits	X	X	X	X		Report "uL".
AmountAddedLocation	X	X	X	X		Report "Standard".
AnalyteGroupID						Not required.
AnalyteName	X	X	X	X	X	Report the analytes as they appear in the SOW.
AnalyteNameContext	X	X	X	X	X	Report "CAS".

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
AnalyteType	X	X	X	X	X	Report "Target" for all target analytes; "Internal_Standard" for internal standards; "Surrogate" for DMCs and surrogate compounds; "Monitor" for non-target interferences and masses requiring monitoring; or "Instrument_Performance" for tune analytes.
BiasErrorRatio						Not required.
CalibrationBasis		X				Report "Peak" under the AnalysisGroup node.
CalibrationFactor						Not required.
CalibrationFactorUnits						Not required.
CalibrationType						Not required.
CASRegistryNumber	X	X	X	X	X	Report the CAS Number as it appears in the SOW.
ClientAnalyteID	X	X	X	X	X	Report CAS number.
ClientAnalyteName	X	X	X	X	X	Report the analytes as they appear in the SOW.
Coeffa0						Not required.
Coeffa1						Not required.
Coeffa2						Not required.
Coeffa3						Not required.
CoeffOfDetermination						Not required.
CoeffOfDeterminationLimitLow						Not required.
CoeffOfDeterminationLimitType						Not required.
Comment						Not required.
CorrelationCoeff						Not required.
CorrelationCoeffLimitLow						Not required.
CorrelationCoeffLimitType						Not required.
Counts						Not required.
CountsUncertainty						Not required.
CountsUncertaintyConfidenceLevel						Not required.
CountsUncertaintyDetermination						Not required.
CountsUncertaintyIntervalType						Not required.
CountsUncertaintyLimitHigh						Not required.
CountsUncertaintyLimitLow						Not required.
CountsUncertaintyType						Not required.
CountsUnits						Not required.
DetectionLimit		X	X	X	X	Report the MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column used for analysis from the default aqueous preparation method or other appropriate method to at least two significant figures.
DetectionLimitType		X	X	X	X	Report "MDL", or "DL" for Aroclors without a specific MDL.
DetectionLimitUnits		X	X	X	X	Report "ug/L".
DifferenceErrorRatio						Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability					Instructions
	IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	
Efficiency						Not required.
ExpectedResult		X	X		X	Report the final amount or concentration of the target analyte, internal standard, DMC, or surrogate in the standard in ng for Organic methods. Report the final concentration of the standard in ug/L for Inorganic methods. Report all values to at least two significant figures.
ExpectedResultUncertainty						Not required.
ExpectedResultUncertaintyConfidenceLevel						Not required.
ExpectedResultUncertaintyDetermination						Not required.
ExpectedResultUncertaintyIntervalType						Not required.
ExpectedResultUncertaintyLimitHigh						Not required.
ExpectedResultUncertaintyLimitLow						Not required.
ExpectedResultUncertaintyType						Not required.
ExpectedResultUncertaintyUnits						Not required.
ExpectedResultUnits		X	X		X	Report "ng" or "ug/L" as applicable.
Inclusion		X				Report "No" if an analyte in a standard is not to be included in the calibration curve; otherwise report "Yes".
IntermediateResult	X	X	X	X	X	For Inorganic targets and interferents, report the raw concentration output of the instrument unadjusted for sample weight/volume, percent solids, or dilution factor. For GC/MS and GC methods, report the on-column amount for targets, spikes, DMCs, and surrogates in nanograms from the raw data unadjusted for sample weight/volume, percent solids, or dilution factor. Leave blank if analyte or compound not detected.
IntermediateResultLimitHigh						Not required.
IntermediateResultLimitLow						Not required.
IntermediateResultLimitType						Not required.
IntermediateResultUnits		X	X	X	X	Report "ug/L", "mg/L", or "ng" as applicable.
LabAnalyteID						Not required.
LabQualifiers	X	X	X	X	X	Report flags and concentration qualifiers: "X" for values estimated due to interference. "*" for QC analyses outside control limits. "D" for values reported from a dilution and any TCLP leachate or leachate extract with a dilution factor greater than 10. "J" for values less than CRQL but greater than or equal to the MDL. "U" for values less than the MDL. For Inorganic ICB, CCB, or ICS, report "J" if the absolute value of the result is less than the CRQL but greater than or equal to the MDL, and report "U" if the absolute value of the result is less than the MDL.
LotNumber	X	X	X	X	X	Report the vendor/manufacturer-assigned lot number for this standard.
Mass						Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
MassLimitHigh						Not required.
MassLimitLow						Not required.
MassLimitType						Not required.
MassUnits						Not required.
MeanCalibrationFactor						Not required.
MeanCalibrationFactorUnits						Not required.
MeanRRF						Not required.
MeanRRFLimitLow						Not required.
MeanRRFLimitType						Not required.
PeakID		X	X	X	X	If response from a single peak is used for quantitation, report the ID of that peak. Leave blank for multi-component analytes
PercentBreakdown	X					For Pesticides, report the calculated percent breakdown for 4,4'-DDT and Endrin to the nearest whole percent.
PercentBreakdownLimitHigh	X					Report the upper limit for the percent breakdown to the nearest whole percent.
PercentBreakdownLimitType	X					Report "Method".
PercentDifference		X				For Inorganics, report the ICAL Percent Difference to the nearest whole percent.
PercentDifferenceLimitHigh		X				For Inorganics, report the upper limit for the ICAL Percent Difference to the nearest whole percent.
PercentDifferenceLimitLow		X				For Inorganics report the lower limit for the ICAL Percent Difference to the nearest whole percent.
PercentDifferenceLimitType		X				Report "Method".
PercentMatch						Not required.
PercentRecovery			X		X	Report the Percent Recovery to the nearest whole percent for Inorganic methods, FLO, and GPC. Not required for ICS when true value equals 0.
PercentRecoveryLimitHigh			X		X	Report the upper limit for the Percent Recovery to the nearest whole percent. Not required for ICS when ResultLimitHigh applies.
PercentRecoveryLimitLow			X		X	Report the lower limit for the Percent Recovery to the nearest whole percent. Not required for ICS when ResultLimitLow applies.
PercentRecoveryLimitType			X		X	Report "Method".
PercentRecoveryType						Not required.
PercentRSD						Not required.
PercentRSDLimitHigh						Not required.
PercentRSDLimitLow						Not required.
PercentRSDLimitType						Not required.
QuantitationBasis		X				Report "Internal_Standard" for GC/MS methods or "External_Standard" for GC and Inorganic methods as applicable under the AnalysisGroup node.
QuantitationLimit		X	X	X	X	For Inorganic methods, report the aqueous CRQL to at least two significant figures.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
QuantitationLimitType		X	X	X	X	Report "CRQL".
QuantitationLimitUnits		X	X	X	X	Report "ug/L".
ReportingLimit						Not required.
ReportingLimitType						Not required.
ReportingLimitUnits						Not required.
Response						Not required.
ResponseLimitHigh						Not required.
ResponseLimitLow						Not required.
ResponseLimitType						Not required.
ResponseUnits						Not required.
Result		X	X	X	X	For Inorganics, for detected target and spike analytes, and for monitored masses, report the final calculated result (in ug/L) to two significant figures. Leave blank if the analyte is not detected. For ICB and CCB less than the negative MDL (-MDL), report a leading "-". For ICS, report the result from the instrument (positive, negative, or zero).
ResultLimitHigh					X	For ICP-AS and ICP-MS, for analytes and interferents with true values less than 5x (10x for ICP-MS) CRQL.
ResultLimitLow					X	For ICP-AES and ICP-MS, for analytes and interferents with true values less than 5x (10x for ICP-MS) CRQL.
ResultLimitType					X	Report "Method".
ResultType		X	X	X	X	Report "=" for all detected analytes. Report "Not_Detected" for non-detects. Report "Negative" for ICB, CCB, or ICS results less than the negative MDL (-MDL).
ResultUncertainty						Not required.
ResultUncertaintyConfidenceLevel						Not required.
ResultUncertaintyDetermination						Not required.
ResultUncertaintyIntervalType						Not required.
ResultUncertaintyLimitHigh						Not required.
ResultUncertaintyLimitLow						Not required.
ResultUncertaintyType						Not required.
ResultUncertaintyUnits						Not required.
ResultUnits		X	X	X	X	Report "ug/L".
RPD						Not required.
RPDLimitHigh						Not required.
RPDLimitType						Not required.
RPDType						Not required.
RRF						Not required.
RRFLimitLow						Not required.
RRFLimitType						Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
StandardConcentration		X	X	X	X	Report the concentration of internal standard, DMC or surrogate, or spike analyte added to the sample in ug/L.
StandardConcentrationUnits		X	X	X	X	Report "ug/L".
StandardDeviation						Not required.
StandardDeviationUnits						Not required.
StandardFinalAmount						Not required.
StandardFinalAmountUnits						Not required.
StandardID	X	X	X	X	X	Report the laboratory-assigned identifier for this standard.
StandardSource	X	X	X	X	X	Report the vendor/manufacturer for this standard.
TailingFactor						Not required.
TailingFactorLimitHigh						Not required.
TailingFactorLimitType						Not required.
Wavelength						Not required.
WavelengthUnits						Not required.
WeightingFactor						Not required.
AnalyteComparison		X				For ICP-AES only.
AnalyteName		X				Report the ICP-AES interfering analyte name under the AnalysisGroup node. For ICP-AES target analytes, report as they appear in the SOW.
AnalyteNameContext		X				Report "CAS" under the AnalysisGroup node.
CASRegistryNumber		X				Report the CAS number of the ICP-AES interfering analyte under the AnalysisGroup node. For ICP-AES target analytes, report as they appear in the SOW.
ClientAnalyteID		X				Report the CAS number of the ICP-AES interfering analyte under the AnalysisGroup node.
ClientAnalyteName		X				Report the ICP-AES interfering analyte name under the AnalysisGroup node. For ICP-AES target analytes, report as they appear in the SOW.
Comment						Not required.
CorrectionFactor		X				Enter the ICP-AES interelement correction factor under the AnalysisGroup node to the number of decimal places stored by the instrument and used for correcting the analytical data.
LabAnalyteID						Not required.
AnalyteGroup						Not required.
Peak	X	X	X	X	X	
CalibrationFactor		X	X			For GC methods, report the calculated calibration factor.
CalibrationFactorUnits		X	X			For GC methods, report "1/ng".

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability					Instructions
	IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	
CalibrationType		X				For GC/MS methods, report "Average_Response_Factor" under the AnalysisGroup node. For GC methods, report "Calibration Factor" under the AnalysisGroup node. For Inorganic methods, report "Linear_Regression", "Linear_Regression_With_Blank_Force", "Weighted_Linear_Regression", or "Weighted_Linear_Regression_With_Blank_Force" as applicable under the AnalysisGroup node.
Coeffa0		X				For Inorganic methods, report the y-intercept of the calibration curve under the AnalysisGroup node.
Coeffa1		X				For Inorganic methods, report the slope of the calibration curve under the AnalysisGroup node.
Coeffa2						Not required.
Coeffa3						Not required.
CoeffOfDetermination						Not required.
CoeffOfDeterminationLimitLow						Not required.
CoeffOfDeterminationLimitType						Not required.
Comment						Not required.
CorrelationCoeff		X				For Inorganic methods, report the correlation coefficient (r) of the calibration curve to at least four significant figures under the AnalysisGroup node.
CorrelationCoeffLimitLow		X				For Inorganic methods, report the lower limit for the correlation coefficient to at least four significant figures under the AnalysisGroup node.
CorrelationCoeffLimitType		X				For Inorganic methods, report "Method" under the AnalysisGroup node.
DetectionLimit						Not required.
DetectionLimitType						Not required.
DetectionLimitUnits						Not required.
DifferenceErrorRatio						Not required.
Efficiency						Not required.
Inclusion		X				Report "No" if a peak in a standard is not to be included in the calibration curve; otherwise report "Yes".
IntermediateResult		X	X			For GC/MS and GC methods, report the on-column amount in nanograms from the raw data.
IntermediateResultLimitHigh						Not required.
IntermediateResultLimitLow						Not required.
IntermediateResultLimitType						Not required.
IntermediateResultUnits		X	X			Report "ng".
LabQualifiers						Not required.
ManualIntegration	X	X	X	X	X	For GC/MS and GC methods, report "Yes" if this peak was manually integrated; otherwise report "No".
Mass	X	X	X	X	X	For ICP-MS Tune, report the Average Measured Mass. For other ICP-MS analyses, report the isotope mass.
MassLimitHigh	X					For ICP-MS Tune, report the upper limit for the mass.
MassLimitLow	X					For ICP-MS Tune, report the lower limit for the mass.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability					Instructions
	IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	
MassLimitType	X					For ICP-MS Tune, report "Method".
MassUnits	X	X	X	X	X	For ICP-MS, report "u".
MeanCalibrationFactor		X				For GC methods, report the calculated Mean Calibration Factor under the AnalysisGroup only.
MeanCalibrationFactorUnits		X				Report "1/ng" under the AnalysisGroup only.
MeanRetentionTime		X				For GC/MS and GC methods, report the mean retention time in decimal minutes for the ICAL.
MeanRetentionTimeLimitHigh		X				For GC/MS and GC methods, report the upper limit calculated from the mean retention time in decimal minutes.
MeanRetentionTimeLimitLow		X				For GC/MS and GC methods, report the lower limit calculated from the mean retention time in decimal minutes.
MeanRetentionTimeLimitType		X				For GC/MS and GC methods, report "Method".
MeanRetentionTimeUnits		X				For GC/MS and GC methods, report "minutes".
MeanRRF		X				For GC/MS methods, report the calculated mean RRF to the nearest thousandth for target analytes and DMCs under the AnalysisGroup node only.
MeanRRFLimitLow						Not required.
MeanRRFLimitType						Not required.
PeakID	X	X	X	X	X	Report a unique identifier. This identifier must be consistent throughout an analytical sequence. For ICP-MS analysis using collision or reaction cell, a "-Gas" suffix must be applied to the PeakID.
PeakRatio						Not required.
PeakRatioLimitHigh						Not required.
PeakRatioLimitLow						Not required.
PeakRatioLimitType						Not required.
PercentDifference			X			For GC/MS and GC methods, report the calculated Percent Difference for this peak to the nearest tenth of a percent.
PercentDifferenceLimitHigh			X			For GC/MS and GC methods, report the upper limit for the Percent Difference for this peak to the nearest tenth of a percent.
PercentDifferenceLimitLow			X			For GC/MS and GC methods, report the lower limit for the Percent Difference to the nearest tenth of a percent.
PercentDifferenceLimitType			X			For GC/MS and GC methods, report "Method".
PercentRatio		X	X	X	X	For ICP-MS internal standards, report the %RI (Percent Relative Intensity). Not required for Organic methods.
PercentRatioLimitHigh		X	X	X	X	For ICP-MS internal standards, report the upper limit for the %RI to the nearest whole percent. Not required for Organic methods.
PercentRatioLimitLow		X	X	X	X	For ICP-MS internal standards, report the lower limit for the %RI to the nearest whole percent. Not required for Organic methods.
PercentRatioLimitType		X	X	X	X	Report "Method".
PercentRecovery						Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
PercentRecoveryLimitHigh						Not required.
PercentRecoveryLimitLow						Not required.
PercentRecoveryLimitType						Not required.
PercentRecoveryType						Not required.
PercentRSD	X	X	X	X	X	For ICP-AES and ICP-MS, report the %RSD of the replicates to the nearest whole percent. For GC/MS and GC methods, report the %RSD of the ICAL to the nearest tenth of a percent under the AnalysisGroup only.
PercentRSDLimitHigh	X	X	X	X	X	For ICP-AES and ICP-MS, report the upper limit for the %RSD to the nearest whole percent. For GC/MS and GC methods, report the upper limit for the ICAL %RSD to the nearest tenth of a percent under the AnalysisGroup only.
PercentRSDLimitLow						Not required.
PercentRSDLimitType	X	X	X	X	X	Report "Method".
QuantitationLimit						Not required.
QuantitationLimitType						Not required.
QuantitationLimitUnits						Not required.
ReportingLimit						Not required.
ReportingLimitType						Not required.
ReportingLimitUnits						Not required.
Resolution	X	X	X			For ICP-MS, report the Average Peak Width to at least one decimal place. For Pesticides, report the Percent Resolution for RESC; the midpoint INDA, INDB, or INDC initial calibration standards; and PEM in the ICAL and CCV sequences only to the nearest whole percent.
ResolutionLimitHigh	X					For ICP-MS, report the upper limit from the manufacturer specifications.
ResolutionLimitLow	X					For ICP-MS, report the lower limit from the manufacturer specifications. For Pesticides, report the lower limit for the percent resolution to the nearest whole percent.
ResolutionLimitType	X					For ICP-MS, report "Laboratory". For Pesticides, report "Method".
ResolutionType	X	X	X			For Pesticides, report "Percent_Resolution".
ResolutionUnits	X					For ICP-MS, report "u". For Pesticides, report "Percent".
Response	X	X	X	X	X	For Inorganic methods, report the mean instrument response output. For internal standards, report the uncorrected intensity. For GC/MS or GC methods, report the actual Peak Area or Peak Height from the raw data. For GC/MS tunes, report the abundance of the ion.
ResponseLimitHigh		X	X			Required for GC/MS methods. Report the upper limit for the response for the internal standards only.
ResponseLimitLow		X	X			Required for GC/MS methods. Report the lower limit for the response for the internal standards only.
ResponseLimitType		X	X			Report "Method".
ResponseType						Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
ResponseUnits	X	X	X	X	X	Report "Abundance", "Peak_Height", "Peak_Area", "Counts", or "Absorbance" as appropriate.
Result						Not required.
ResultLimitHigh						Not required.
ResultLimitLow						Not required.
ResultLimitType						Not required.
ResultType						Not required.
ResultUncertainty						Not required.
ResultUnits						Not required.
RetentionTime		X	X		X	For GC/MS and GC methods, report the actual retention time in decimal minutes from the raw data for this peak.
RetentionTimeLimitHigh			X		X	For GC/MS and GC methods, report the upper limit for the retention time in decimal minutes.
RetentionTimeLimitLow			X		X	For GC/MS and GC methods, report the lower limit for the retention time in decimal minutes.
RetentionTimeLimitType			X		X	For GC/MS and GC methods, report "Method".
RetentionTimeUnits		X	X		X	Report "minutes".
RRF		X	X			For GC/MS methods, report the calculated RRF to the nearest thousandth for target analytes and DMCs.
RRFLimitLow		X	X			For GC/MS methods, report the lower limit for the RRF to the nearest thousandth.
RRFLimitType		X	X			For GC/MS methods, report "Method".
StandardDeviation						Not required.
StandardDeviationUnits						Not required.
TailingFactor						Not required.
TailingFactorLimitHigh						Not required.
TailingFactorLimitType						Not required.
Wavelength	X	X	X	X	X	For ICP-AES, Hg, and CN, report the wavelength of the peak in nm.
WavelengthUnits	X	X	X	X	X	Report "nm".
WeightingFactor		X				For Inorganics, report "Inverse_Of_Concentration", "Inverse_Square_Of_Concentration", "Variance", "Inverse_Of_Variance", "Standard Deviation", "Inverse_Of_Standard_Deviation", "Inverse_Square_Of_Standard_Deviation", or "None" as applicable under the AnalysisGroup.
PeakComparison		X	X	X	X	Not required for ICP-AES, Hg, CN, or GC methods.
AnalyteName		X	X	X	X	For ICP-MS, report the name of the associated internal standard as it appears in the SOW. For GC/MS methods, report the tune compound or the associated internal standard as they appear in the SOW.
AnalyteNameContext		X	X	X	X	Report "CAS".
CASRegistryNumber		X	X	X	X	Report the CAS number of the tune compound or associated internal standard.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
ClientAnalyteID		X	X	X	X	Report the CAS number of the tune compound or associated internal standard.
ClientAnalyteName		X	X	X	X	Report the analytes as they appear in the SOW.
Comment						Not required.
PeakID		X	X	X	X	For GC/MS methods, report the mass being compared to the monitored mass. For Internal Standards report the primary quantitation ion. For ICP-MS, report the unique peak identifier of the associated internal standard.
PeakRatio						Not required.
PeakRatioLimitHigh						Not required.
PeakRatioLimitLow						Not required.
PeakRatioLimitType						Not required.
PercentRatio	X					For GC/MS methods, report the Percent Ratio (%Relative Abundance or %Mass) to the nearest hundredth.
PercentRatioLimitHigh	X					Report the upper limit for the Percent Ratio to the nearest hundredth.
PercentRatioLimitLow	X					Report the lower limit for the Percent Ratio to the nearest hundredth.
PercentRatioLimitType	X					Report "Method".
PeakReplicate	X	X	X	X	X	For ICP-AES and ICP-MS only.
Comment						Not required.
IntermediateResult						Not required.
IntermediateResultLimitHigh						Not required.
IntermediateResultLimitLow						Not required.
IntermediateResultUnits						Not required.
Mass						Not required.
MassLimitHigh						Not required.
MassLimitLow						Not required.
MassLimitType						Not required.
MassUnits						Not required.
PeakReplicateID	X	X	X	X	X	Report a unique identifier for each replicate.
Resolution						Not required.
ResolutionLimitHigh						Not required.
ResolutionLimitLow						Not required.
ResolutionLimitType						Not required.
ResolutionType						Not required.
ResolutionUnits						Not required.
Response	X	X	X	X	X	For ICP-AES and ICP-MS methods, report the mean instrument response output. For internal standards, report the uncorrected intensity.
ResponseLimitHigh						Not required.
ResponseLimitLow						Not required.

TABLE 1. DATA ELEMENT INSTRUCTIONS (Con’t)

Node and Data Elements	Applicability					Instructions
	IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	
ResponseLimitType						Not required.
ResponseType						Not required.
ResponseUnits	X	X	X	X	X	Report "Abundance", "Peak_Height", "Peak_Area", "Counts", or "Absorbance" as applicable.

7.2 Stage 2b

TABLE 2. DATA ELEMENT INSTRUCTIONS

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
Header	X	X	X	X	X	X	X	X	
ClientID	X	X	X	X	X	X	X	X	Report "1" for Region 1, "2" for Region 2, etc. For samples received from QATS, report "91". For other programs, report as directed by program.
ClientName									Not required.
Comment									Not required.
DateFormat	X	X	X	X	X	X	X	X	Report MMDDYYYYThh:mm:ss. All dates and times reported in the EDD must follow this format. If any part of the time is unknown, report "00" for the unknown hours, minutes, and seconds.
EDDID	X	X	X	X	X	X	X	X	Report "SEDD".
EDDImplementationID	X	X	X	X	X	X	X	X	Report "SEDD_5-2_GENERAL_2b_3" (This is the DTD used).
EDDImplementationVersion	X	X	X	X	X	X	X	X	Report "SFAM01".
EDDVersion	X	X	X	X	X	X	X	X	Report "5.2".
GeneratingSystemID	X	X	X	X	X	X	X	X	Report the name of generating software or vendor.
GeneratingSystemVersion	X	X	X	X	X	X	X	X	Report the software version number.
LabContract	X	X	X	X	X	X	X	X	Report the Contract Number.
LabContractModificationDescription									Not required.
LabContractModificationID									Not required.
LabDataPackageID	X	X	X	X	X	X	X	X	Report the SDG Number.
LabDataPackageName									Not required.
LabDataPackageVersion	X	X	X	X	X	X	X	X	Report "1", then increment with each resubmission.
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	X	X	X	Report the Laboratory Name.
LabNarrative									Not required.
LabQualifiersDefinition	X	X	X	X	X	X	X	X	Use the format ‘Qualifier:Definition’ to report each qualifier used. Use a ‘;’ to separate the definitions of multiple qualifiers.
LabReportedDate	X	X	X	X	X	X	X	X	Report the date this data was reported to the client in the specified date format.
ProjectID	X	X	X	X	X	X	X	X	Report the Agency-assigned Case Number.
ProjectName									Not required.
SiteID									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
SiteName									Not required.
SamplePlusMethod	X	X	X	X	X	X	X	X	
ClientID	X	X	X						Report "1" for Region 1, "2" for Region 2, etc. For samples received from QATS, report "91". For other programs, report as directed by program.
ClientMethodCategory	X	X		X	X				Report "PAH", "PAH_SIM", or "Dioxane" for analyte subset where applicable.
ClientMethodCode	X	X	X	X	X	X	X	X	Report "TCLP", "SPLP", "Dioxane", or "PAH" when applicable. Otherwise leave blank.
ClientMethodID	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID	X	X	X	X	X	X	X		Report the Modified Analysis Number, if applicable.
ClientMethodName	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodSource	X	X	X	X	X	X	X	X	Report "SFAM01.0".
ClientMethodType	X	X	X	X	X	X	X	X	Report "ICP-AES", "ICP-MS", "CVAA", "Spectrophotometry", "GCECD_External_Standard", or "GCMS_Internal_Standard" as applicable.
ClientMethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
ClientName									Not required.
ClientSampleID	X	X	X	X	X	X	X	X	Report the EPA Sample Number.
CollectedDate	X	X	X						Report the date and time the sample was collected in the specified date format.
CollectedEndDate									Not required.
Comment									Not required.
Composite									Not required.
CoolerID									Not required.
CustodyID	X								Report the Traffic Report/Chain of Custody Record Form number.
EquipmentBatch									Not required.
Filtered	X	X	X				X		Report "Yes" for dissolved metals, or "No" for total metals.
LabContract	X	X	X	X	X	X	X		Report the Contract Number.
LabContractModificationDescription									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabContractModificationID									Not required.
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by the program.
LabMethodID									Not required.
LabMethodName									Not required.
LabName	X	X	X	X	X	X	X	X	Report the Laboratory Name.
LabReceiptDate	X	X	X						Report the date and time the sample was received in the specified date format.
LabReportingBatch	X	X	X	X	X	X	X	X	Links all samples analyzed to this deliverable. Report the SDG Number.
LabSampleID	X	X	X	X	X	X	X	X	Report the Lab Sample ID as assigned by the laboratory.
LocationID									Not required.
LocationName									Not required.
MatrixID	X	X	X	X	X	X	X	X	Report "Water", "Soil", "Sediment", "Wipe", "Filter", "Tissue", or "Waste" as applicable.
MatrixMedium	X	X	X	X	X	X	X	X	Report "Aqueous", "Solid", "Non-aqueous_Liquid", or "Biological_Tissue" as applicable. Use "Solid" for soils, sediments, wipes, filters, and solid wastes. Use "Biological_Tissue" for tissues. Use "Non-aqueous_Liquid" for liquid non-aqueous wastes.
MethodBatch									Not required.
MethodCategory									Not required.
MethodCode									Not required.
MethodID									Not required.
MethodLevel	X	X			X				For GC/MS methods, report "Trace", "Low", or "Medium" as applicable.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X	X	Report "EPA_CLP".
MethodType	X	X	X	X	X	X	X	X	Report "ICP/AES", "ICP/MS", "CVAA", "Spectrophotometry", "GC", or "GC/MS" as applicable.
MethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
OriginalClientSampleID	X	X	X			X	X		Required for medium-level samples that have a low-level sample analysis. Report the low-level EPA Sample Number as applicable.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
OriginalLabSampleID									Not required.
PhaseAnalyzed									Not required.
Preservative	X	X	X						Report any chemical or physical preservative used. Possible values include: "HNO3", "HCl", or "H2SO4" for acid-preserved samples; "NaHSO4" for low VOA soil; "CH3OH" for medium VOA soil; "Ice" for solid samples without acid as applicable. Report "None" if sample was not preserved.
ProjectID	X	X	X	X	X	X	X		Report the Agency-assigned Case Number.
ProjectName									Not required.
QCCategory		X	X	X	X	X	X		Report "Blank" for MB, SB, CB, IB, PB, or LEB; "Spike" for MS and post-digestion spike; "Blank_Spike" for LCS; "Duplicate" for duplicate; "Spike_Duplicate" for MSD; or "Serial_Dilution" for SD.
QCLinkage		X	X	X	X	X	X		Report "LabReportingBatch" for MS/MSD, post-digestion spike, Dup, and SD; "PreparationBatch" for PB, MB, and LCS; "HandlingBatch" for LEB; "CleanupBatch" for CB; "StorageBatch" for SB; or "AnalysisBatch" for IB.
QCType	X	X	X	X	X	X	X	X	Report "Field_Sample" for field samples; "Field_Blank" for field, equipment, rinse, or trip blanks; "PT_Sample" for Performance Evaluation samples or Proficiency Testing audit samples; "Storage_Blank" for SB; "Method_Instrument_Blank" (GC/MS) or "Instrument_Blank" (GC) for IB; "Method_Blank" for PB or MB; "Leachate_Extraction_Blank" for LEB; "Matrix_Spike" for MS; "Matrix_Spike_Duplicate" for MSD; "Duplicate" for Dup; "Cleanup_Blank" for CB; "Laboratory_Control_Sample" for LCS; "Post_Digestion_Spike" for post-digestion spikes; "Serial_Dilution" for SD; or "Non_Client_Sample" for NCS.
Quarantine	X								Report "Yes" or "No" based on sampling information.
SamplingBatch									Not required.
ShippingBatch									Not required.
SiteID									Not required.
SiteName									Not required.
StorageBatch	X	X			X				Required for Volatile GC/MS analysis. Links all samples stored together with the Storage Blank. Report Lab Analysis ID of the Storage Blank. Not required for MB or IB.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
InstrumentQC									Not required.
Characteristic	X	X	X	X	X	X	X		
CharacteristicType	X	X	X	X	X	X	X		Report "Percent_Solids" for aqueous/water and soil/sediment samples, including QC samples, under the SamplePlusMethod node. Report "pH" for aqueous/water samples (and for soil/sediment samples as requested), and "Temperature" for all samples (except wipes) received at the laboratory under each SamplePlusMethod node. For samples with pH adjusted after receipt, also report "pH" under the PreparationPlusCleanup node. Report "pH" and "Temperature" for TCLP or SPLP leachates under the Handling node. Report "Temperature" for stored field core VOA soil samples not analyzed immediately after transfer to gas-tight vials under the Handling node. Report "Area" for wipes if sampling area was provided by the sampler. Report "Percent_Moisture" if requested. Tissue samples do not require "Percent_Solids" or "pH". Wipe samples do not require "Percent_Solids", "pH", or "Temperature".
CharacteristicValue	X	X	X	X	X	X	X		For "Percent_Solids", report "0.0" for aqueous/water samples including QC samples; report the percent solids to two significant figures for soil/sediment samples including QC samples. Report "100" for waste samples when percent solids determination is not required. For "pH", report the pH to the nearest tenth for aqueous/water samples (and for soil/sediment samples as requested) and TCLP/SPLP leachates. For "Temperature", report the temperature at receipt to the nearest degree for all samples (except wipes), TCLP or SPLP leachates, and stored field core VOA soil samples not analyzed immediately after transfer to gas-tight vials. For "Area", report the area in cm^2, converted as necessary.
CharacteristicUnits	X	X	X	X	X	X	X		Report "C" for "Temperature"; "pH_Units" for pH; "Percent" for percent solids or percent moisture; and "cm2" for area.
Comment									Not required.
ContactInformation	X	X	X	X	X	X	X	X	
LabAddress1	X	X	X	X	X	X	X	X	Report the street address of the laboratory.
LabAddress2	X	X	X	X	X	X	X	X	If applicable, report any additional address information (e.g., suite, maildrop). Otherwise leave blank.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabCity	X	X	X	X	X	X	X	X	Report the city in which the laboratory is located.
LabCountry	X	X	X	X	X	X	X	X	Report the country in which the laboratory is located.
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	X	X	X	Report the Laboratory Name.
LabPointOfContact	X	X	X	X	X	X	X	X	Report the name of the person at the laboratory serving as the point of contact.
LabPointOfContactElectronicAddress	X	X	X	X	X	X	X	X	Report the Email address of the point of contact.
LabPointOfContactTitle	X	X	X	X	X	X	X	X	Report the title of the point of contact.
LabPointOfContactType									Not required.
LabState	X	X	X	X	X	X	X	X	Report the state or province in which the laboratory is located.
LabTelephoneNumber	X	X	X	X	X	X	X	X	Report the 10-digit phone number for the laboratory.
LabType									Not required.
LabZipCode	X	X	X	X	X	X	X	X	Report the ZIP or postal code.
Analysis	X	X	X	X	X	X	X	X	
AliquotAmount									Not required.
AliquotAmountUnits									Not required.
AnalysisBatch	X	X	X	X	X	X	X	X	Links this analysis to the instrument QC standard(s) that begins this sequence. Report an identifier for all samples in the analysis batch; each analysis batch shall have a unique identifier within the analytical method.
AnalysisBatchEnd	X	X	X	X	X	X	X	X	Links this analysis to the instrument QC standard(s) that ends this sequence. Report an identifier that links all samples in the analysis batch to the CCV that ends this sequence.
AnalysisDuration									Not required.
AnalysisDurationUnits									Not required.
AnalysisGroupID	X								Links a group of analyses that are used to report a derived result in instance where multiple analyses were performed. Report the AnalysisGroupID of the AnalysisGroup of which this analysis is a member.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
AnalysisType	X	X	X	X	X	X	X		For VOA_Trace and VOA_Low_Med, report "Initial", "Dilution-01", "Reinjection-01", or "Reanalysis-01"; then increment as necessary. For SVOA, report "Initial", "Dilution-01", "Reinjection-01" for extracts with added internal standards that are analyzed a second time without alteration, or "Reanalysis-01" for re-extracted samples and extracts analyzed with fresh internal standards added; then increment as necessary. For Pesticides and Aroclors, report "Initial", "Dilution-01", "Reinjection-01" for extracts analyzed a second time without alteration, or "Reanalysis-01" for re-extracted samples; then increment as necessary. For ICP-AES, ICP-MS, Hg, and CN, report "Initial", "Dilution-01", or "Reanalysis-01" for redigested/redistilled samples and for ICP-MS reanalyzed due to internal standard Percent Relative Intensity (%RI) outside limits; then increment as necessary. For organic TCLP leachate, report "Initial" for the original leachate or leachate extract analysis which has a base dilution factor of 10. Report "Dilution-01" for subsequently diluted analysis; then increment as necessary.
Analyst	X	X	X	X	X	X	X	X	Report the Analyst's initials.
AnalyzedAmount	X	X		X	X				For VOA medium soil/sediment/waste analyses, report the Soil Aliquot Volume in microliters to at least two significant figures. For SVOA, Pesticide, and Aroclor analyses, report the volume of extract added to the vial for analysis. This is the same volume to which the internal standards are added prior to analysis for SVOA.
AnalyzedAmountUnits	X	X		X	X				Report "uL".
AnalyzedDate	X	X	X	X	X	X	X	X	Report the date and time the sample was analyzed in the specified date format.
ClientAnalysisID	X	X		X	X				For Organic methods, report the full EPA Sample Number with applicable suffixes per the requirements in Appendix B – Codes for Labeling Data.
ClientMethodCode	X	X			X				For GC/MS analysis, report "Full_Scan" for the full scan method and "SIM" for the SIM technique. Report "Full_Scan_PAH" for the SVOA PAH and PCP full scan analysis; "Full_Scan_Dioxane" for the SVOA full scan analysis for 1,4-Dioxane only (either separate injections of the same extract or 1,4-Dioxane analysis only); "SIM_PAH" for the SVOA PAH and PCP SIM analysis; and "SIM_Dioxane" for the SVOA 1,4-Dioxane only SIM analysis as applicable.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ClientMethodID	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID									Not required.
ClientMethodName	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodSource	X	X	X	X	X	X	X	X	Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
Column	X	X		X	X				For GC/MS and GC methods, report the column used as applicable
ColumnInternalDiameter	X	X		X	X				Report the Column Internal Diameter in mm.
ColumnInternalDiameterUnits	X	X		X	X				Report "mm".
ColumnLength	X	X		X	X				Report the Column Length in meters.
ColumnLengthUnits	X	X		X	X				Report "m".
Comment									Not required.
ConfirmationAnalysisID	X	X		X	X				Required for GC analysis. Links an analysis to a confirmation analysis. Report the Lab File ID of the confirmation analysis.
Counts									Not required.
CountsUncertainty									Not required.
CountsUncertaintyConfidenceLevel									Not required.
CountsUncertaintyDetermination									Not required.
CountsUncertaintyIntervalType									Not required.
CountsUncertaintyLimitHigh									Not required.
CountsUncertaintyLimitLow									Not required.
CountsUncertaintyType									Not required.
CountsUnits									Not required.
DetectorID									Not required.
DetectorType	X	X		X	X				Required for Organic methods. Report "ECD" for GC or "MS" for GC/MS.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
DilutionFactor	X	X	X	X	X	X	X		Report the Dilution Factor used to the nearest tenth. Report "1.0" when no dilutions are used. Report "10" for the initial analysis of the TCLP leachate extract including LEB when no further dilution is required for the extract analysis. Otherwise, report the incremented dilution factor (e.g., if the dilution factor for a leachate extract analysis is 5, then report 50 as the dilution factor taking into the account of the dilution prior to extraction).
Efficiency									Not required.
HeatedPurge	X	X			X				For VOA, report "Yes" if heated purge was used; otherwise report "No".
Inclusion									Not required.
InjectionVolume	X	X		X	X				For GC analyses and SVOA analysis, report the volume injected in microliters. For VOA analysis, report the purge volume in milliliters. Report the volume to at least two significant figures.
InjectionVolumeUnits	X	X		X	X				Report "uL" or "mL" as applicable.
InstrumentID	X	X	X	X	X	X	X	X	Report the laboratory identifier for the instrument used for this analysis.
LabAnalysisID	X	X	X	X	X	X	X	X	Report a unique identifier.
LabFileID	X	X	X	X	X	X	X	X	Report the Lab File ID.
LabID									Not required.
LabMethodID									Not required.
LabMethodName									Not required.
LabName									Not required.
MethodCode									Not required.
MethodID									Not required.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X	X	Report "EPA_CLP".
MethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
PreparationBatch									Not required.
ProcedureID									Not required.
ProcedureName									Not required.
ReferenceDate									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	Instructions
ResultBasis	X	X	X		X	X	X		Report "Dry" for soil/sediment samples. For Inorganic aqueous/water samples, report "Dissolved" if sample is field-filtered; otherwise report "Total". Report "Wet" for tissue samples or for any other matrices (not aqueous/water) for which the results are not corrected for percent solids.
RunBatch	X	X	X	X	X	X	X	X	Links this analysis to an initial calibration. Report the Lab Analysis ID of the standard (Tune or ICAL standard) that started the ICAL sequence.
Temperature									Not required.
TemperatureUnits									Not required.
Wavelength									Not required.
WavelengthUnits									Not required.
Yield									Not required.
AnalysisGroup	X								
AnalysisGroupID	X								Report a unique ID for the AnalysisGroup if derived result is obtained from multiple analyses.
AnalysisType	X								Report "Sum".
Comment									Not required.
Handling									Not required.
ReportedResult	X	X	X	X	X	X	X		
AnalysisGroupID	X								For derived analyte results summed from multiple analyses, report the unique identifier from the AnalysisGroup from which the result is reported.
AnalyteGroupID	X	X	X	X	X	X	X		For derived analyte results summed from a single analysis, report the unique identifier from the AnalyteGroup from which the result is reported.
AnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS" (Chemical Abstracts Service).
AnalyteType	X	X	X	X	X	X	X		Report "Target" for all target analytes except Hardness; "Spike" for all target analytes designated as spike analytes for MS/MSD, Post-Digestion Spike, and LCS analyses; or "TIC" for all TICs. Report "Derived" for Hardness.
BiasErrorRatio									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
CASRegistryNumber	X	X	X	X	X	X	X		Report the CAS Numbers as it appears in the SOW, and for TICs if known.
ClientAnalyteID	X	X	X	X	X	X	X		Report CAS number. For TICs with no CAS number, report TIC name or as "Unknown-01", then increment with each TIC.
ClientAnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
ClientDetectionLimit	X	X	X	X	X	X	X		For a target or spike analyte, report the unadjusted MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, from which the sample result is reported. Report the unadjusted MDL value in the appropriate units to two significant figures and rounded up from the calculated value.
ClientDetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" for wipe samples.
ClientQuantitationLimit	X	X	X	X	X	X	X		Report the unadjusted CRQL.
ClientQuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; "mg/L" for Hardness; or "ug" for wipe samples.
Comment									Not required.
DetectionLimit	X	X	X	X	X	X	X		For a detected target or spike analyte, report the MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, from which the sample result is reported. Report the MDL value adjusted by the same factors (sample weight/volume, percent solids, and dilution) used to obtain the final calculated sample result in appropriate units to two significant figures. For a non-detected target or spike analyte, report the adjusted MDL (or adjusted DL for Aroclors other than 1016 or 1260) from the same analysis as the reported adjusted CRQL. Not required for Hardness or TICs.
DetectionLimitType	X	X	X	X	X	X	X		Report "MDL_sa" (MDL sample adjusted) or "DL_sa" for Aroclors without a specific MDL.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
DetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" or "ug/cm2" for wipe samples.
DifferenceErrorRatio									Not required.
ExpectedResult		X		X		X			Report the theoretical final calculated concentration (the spike added) for the spiked analytes or the true value for LCS to at least two significant figures. (Not required for GC analysis.)
ExpectedResultUncertainty									Not required.
ExpectedResultUncertaintyConfidenceLevel									Not required.
ExpectedResultUncertaintyDetermination									Not required.
ExpectedResultUncertaintyIntervalType									Not required.
ExpectedResultUncertaintyLimitHigh									Not required.
ExpectedResultUncertaintyLimitLow									Not required.
ExpectedResultUncertaintyType									Not required.
ExpectedResultUncertaintyUnits									Not required.
ExpectedResultUnits		X		X		X			Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for GC/MS soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" for wipe samples.
LabAnalysisID	X	X	X	X	X	X	X		Report the unique identifier from the analysis this reported result was derived from. Not required for Hardness.
LabAnalyteID									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabQualifiers	X	X	X	X	X	X	X		Report flags and concentration qualifiers: "X" for values estimated due to interference. "*" for QC analyses outside control limits. "D" for values reported from a dilution and any TCLP leachate or leachate extract with a dilution factor greater than 10. "J" for reported values less than the reported adjusted CRQL but greater than or equal to the reported adjusted MDL. "U" for values less than the reported adjusted MDL. For Organic methods, report "B" if the same analyte is found in an associated blank; report "H" if the analyte is quantitated using peak heights rather than peak areas. For GC methods, report "C" if the identification of the analyte is confirmed by GC/MS, report "P" if the percent difference between the results on each column exceeds 25% for detects. For GC/MS TICs, report "A" if the TIC is a suspected Aldol-condensation product, report "N" if the TIC has a ≥85% match. For Hardness, report "U" if both values are less than the adjusted MDL. For Inorganic PB/LEB, report "J" if the absolute value of the result is less than the adjusted CRQL but greater than or equal to the adjusted MDL, and report "U" if the absolute value of the result is less than the adjusted MDL.
LabResultStatus	X	X	X						Report "Preliminary" or "Final" as applicable.
PeakID									Not required.
PercentDifference	X	X		X	X		X		Report the serial dilution Percent Difference to the nearest whole percent. For GC analyses (excluding IBs), report the Percent Difference between the final Reported Result and the second column result to the nearest whole percent. (Not required for GC/MS analysis.)
PercentDifferenceLimitHigh	X	X		X	X		X		Report the upper limit for the Percent Difference to the nearest whole percent. (Excluding IB in GC analyses.) (Not required for GC/MS analysis.)
PercentDifferenceLimitLow									Not required.
PercentDifferenceLimitType	X	X		X	X		X		Report "Method". (Excluding IB in GC analysis.) (Not required for GC/MS analysis.)

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PercentRecovery		X		X		X			For GC/MS and Inorganic methods, report the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitHigh		X		X					Report the upper limit for the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitLow		X		X					Report the lower limit for the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitType		X		X					Report "Method".
PercentRecoveryType									Not required.
QuantitationLimit	X	X	X	X	X	X	X		For a detected target, derived, or spike analyte, report the CRQL adjusted by the same factors (sample weight/volume, percent solids, and dilution) used to obtain the final calculated result in the "Result" field to two significant figures. For a non-detected target, derived, or spike analyte, report the adjusted CRQL from the most compliant of the analyses (initial, reanalysis, and re-extraction) performed for the analyte. Report the adjusted CRQL from the initial analysis if no further dilution is intended for the analyte. Not required for TICs.
QuantitationLimitType	X	X	X	X	X	X	X		Report "CRQL_sa" (CRQL sample adjusted).
QuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; "mg/L" for Hardness; or "ug" or "ug/cm2" for wipe samples.
ReportingLimit									Not required.
ReportingLimitType									Not required.
ReportingLimitUnits									Not required.
Result	X	X	X	X	X	X	X		Report the final calculated result for detects to two significant figures. When dilution and/or reanalysis/re-extraction have been performed for a sample, report the most compliant result from the applicable analysis per the requirements in the applicable Exhibit D Section 11.0 technical acceptance criteria. Leave blank if the analyte is not detected. When multiple dilutions have been performed for a sample, report the compliant result from the least diluted analysis. If the result of the required dilution and/or reanalysis/re-extraction is non-compliant, report the result from the initial analysis. For GC methods, report the lower of the two column results from the most compliant analysis. For PB or inorganic LEB results less than the negative MDL (-MDL), report a leading "-".

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ResultLimitHigh									Not required.
ResultLimitLow									Not required.
ResultLimitType									Not required.
ResultType									Report "=" for all detected analytes with results greater than or equal to adjusted MDL or DL. Report "Not_Detected" for non-detects less than the adjusted MDL or DL. Report "Negative" for PB or Inorganic LEB results less than the negative MDL (-MDL).
ResultUncertainty									Not required.
ResultUncertaintyConfidenceLevel									Not required.
ResultUncertaintyDetermination									Not required.
ResultUncertaintyIntervalType									Not required.
ResultUncertaintyLimitHigh									Not required.
ResultUncertaintyLimitLow									Not required.
ResultUncertaintyType									Not required.
ResultUncertaintyUnits									Not required.
ResultUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; "mg/L" for Hardness; or "ug" or "ug/cm2" for wipe samples.
RetentionTime	X	X			X				For GC/MS, report the retention time for all TICs in decimal minutes.
RetentionTimeUnits	X	X			X				Report "minutes".
RPD		X	X						Report the RPD for GC/MS MS/MSD and Inorganic Duplicates to the nearest whole percent. (Not required for GC methods.)
RPDLimitHigh		X	X						Report the upper limit for the RPD to the nearest whole percent. (Not required for GC methods.)
RPDLimitType		X	X						Report "Method". (Not required for GC analysis.)
RPDType									Not required.
PreparationPlusCleanup	X	X	X	X	X	X	X		
AliquotAmount	X	X	X	X	X	X	X		Report the sample amount in grams for soil/sediment/waste or mL for aqueous/water and leachates to at least three significant figures. Not required for wipes.
AliquotAmountUnits	X	X	X	X	X	X	X		Report "g" for soil/sediment/waste or "mL" for aqueous/water and leachates. Not required for wipes.
Analyst	X	X	X	X	X	X	X		Report the Analyst's initials.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
CleanedUpDate	X	X		X	X				Required for SVOA and GC methods as applicable. Report the date and time the sample was cleaned up in the specified date format.
CleanupBatch	X	X		X	X				Required for SVOA and GC methods as applicable. Links all samples that were cleaned up together. Report the Lab File ID of the associated blank or other unique identifier.
CleanupType	X	X		X	X				Required for SVOA and GC methods as applicable. Report "GPC", "Florisil", "Sulfur", or "Sulfuric_Acid" as applicable.
ClientMethodCode									Not required.
ClientMethodID	X	X	X	X	X	X	X		Report the sample preparation ID. Report "200.7" for aqueous/water and leachate ICP-AES; "3050B" for soil/sediment/waste and wipes ICP-AES; "200.8" for aqueous/water and soil/sediment/waste ICP-MS; "7470A" for aqueous/water and leachate mercury; "7471B" for soil/sediment/waste mercury; "Midi-distillation_Aqueous" for midi-distilled aqueous/water and leachate cyanide; "Midi-distillation_Soil" for midi-distilled soil/sediment/waste cyanide; "Micro-distillation_Aqueous" for micro-distilled aqueous/water and leachate cyanide; "Micro-distillation_Soil" for micro-distilled soil/sediment/waste cyanide; "PT" for purge-and-trap; "SEPF" for aqueous/water and leachate separatory funnel extraction; "CLLE" for aqueous/water and leachate continuous liquid-liquid extraction without hydrophobic membrane; "CONH" for aqueous/water and leachate continuous liquid-liquid extraction with hydrophobic membrane; "SONC" for soil/sediment/waste sonication extraction; "SOXH" for soil/sediment/waste Soxhlet extraction; "PFEX" for soil/sediment/waste pressurized fluid extraction; "SPE" for solid-phase extraction; "WD" for waste dilution; or "MW" for soil/sediment/waste microwave extraction.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID									Not required.
ClientMethodName									Not required.
ClientMethodSource	X	X	X	X	X	X	X		Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	X	X		Report the month and year the SOW was issued.
Comment									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
FinalAmount	X	X	X	X	X	X	X		Report the volume of digestate/distillate produced by the preparation method in mL (for Inorganic methods) or the volume of extract upon completion in uL (for GC and SVOA analyses) to at least three significant figures.
FinalAmountUnits	X	X	X	X	X	X	X		Report "mL" or "uL" as applicable.
InitialAmount	X	X		X	X				Required for medium VOA, SVOA, Pesticide, and Aroclor soil/sediment/waste analyses. Report the initial amount of extracted sample used for this preparation or cleanup, or the volume of methanol added to the medium VOA sample, to at least three significant figures.
InitialAmountUnits	X	X		X	X				Required for medium VOA, SVOA, Pesticide, and Aroclor soil/sediment/waste analyses. Report "uL".
LabID									Not required.
LabMethodID									Not required.
LabMethodName									Not required.
LabName									Not required.
LotNumber	X	X		X	X				Required for Pesticide analysis. Report the manufacturer's lot number for the Florisil cartridges used.
MethodCode									Not required.
MethodID									Not required.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X		Report "EPA_CLP".
MethodVersion	X	X	X	X	X	X	X		Report the month and year the SOW was issued.
PreparationBatch	X	X	X	X	X	X	X		Links all samples that were prepared together. Also applicable to VOA_Trace, TVOA_SIM, and VOA Low/Medium samples that were analyzed in the same analytical sequence. Report a unique identifier (for Inorganic analysis) or the Lab File ID of the associated Method Blank (for Organic Analyses) for each batch.
PreparationPlusCleanupType	X	X	X	X	X	X	X		Report "Preparation" or "Cleanup" as applicable.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PreparationType	X	X	X	X	X	X	X		Report "Automated" or "Manual" for Inorganic analyses. For Organic analyses, report "Sonication", "Soxhlet", "Pressurized_Fluid", or "Microwave" for soil/sediment/waste. Report "Sep_Funnel", "Liq_Liq", "Liq_Membrane", or "SPE" for aqueous/water and leachates. Report "Purge_and_Trap" for VOA_Trace, TVOA_SIM, and VOA Low/Medium. Report "Waste_Dilution" for waste dilution.
PreparedDate	X	X	X	X	X	X	X		Report the date and time the sample was prepared or purged as applicable. Report in the specified date format.
ProcedureID									Not required.
ProcedureName									Not required.
Solvent									Not required.
Analyte	X	X	X	X	X	X	X		
AnalyteGroupID	X	X	X	X	X	X	X		For ICP-AES as applicable. Report the identifier that links the Ca or Mg result to the AnalyteGroup Hardness result.
AnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS" as applicable.
AnalyteType	X	X	X	X	X	X	X		Report "Target" for all target analytes except Hardness; "Spike" for all target analytes designated as spike analytes for MS/MSDs, Post-Digestion Spike, and LCS; "Internal_Standard" for internal standards; "Surrogate" for DMCs and surrogates; "TIC" for all TICs; or "Monitor" for non-target interferences and masses requiring monitoring.
BiasErrorRatio									Not required.
CalibrationBasis									Not required.
CalibrationFactor									Not required.
CalibrationFactorUnits									Not required.
CalibrationType									Not required.
CASRegistryNumber	X	X	X	X	X	X	X		Report the CAS Number as it appears in the SOW, and for TICs if known.
ClientAnalyteID	X	X	X	X	X	X	X		Report CAS number. For TICs with no CAS number, report TIC name or as "Unknown-01", then increment with each TIC.
ClientAnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
Coeffa0									Not required.
Coeffa1									Not required.
Coeffa2									Not required.
Coeffa3									Not required.
CoeffOfDetermination									Not required.
CoeffOfDeterminationLimitLow									Not required.
CoeffOfDeterminationLimitType									Not required.
Comment									Not required.
CorrelationCoeff									Not required.
CorrelationCoeffLimitLow									Not required.
CorrelationCoeffLimitType									Not required.
Counts									Not required.
CountsUncertainty									Not required.
CountsUncertaintyConfidenceLevel									Not required.
CountsUncertaintyDetermination									Not required.
CountsUncertaintyIntervalType									Not required.
CountsUncertaintyLimitHigh									Not required.
CountsUncertaintyLimitLow									Not required.
CountsUncertaintyType									Not required.
CountsUnits									Not required.
DetectionLimit	X	X	X	X	X	X	X		For target or spike analytes, report the MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, used for analysis, adjusted for sample weight/volume, percent solids, and dilution factor in the appropriate units to two significant figures.
DetectionLimitType	X	X	X	X	X	X	X		Report "MDL_sa" (MDL sample adjusted) or "DL_sa" for Aroclors without a specific MDL.
DetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" or "ug/cm2" for wipe samples.
DifferenceErrorRatio									Not required.
Efficiency									Not required.
ExpectedResult	X	X		X	X				For Organic analyses, for DMCs, internal standards, and surrogates, report the final amount added in nanograms. For GC methods, report the theoretical final calculated spike concentration for MS/MSD and LCS.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ExpectedResultUncertainty									Not required.
ExpectedResultUncertaintyConfidenceLevel									Not required.
ExpectedResultUncertaintyDetermination									Not required.
ExpectedResultUncertaintyIntervalType									Not required.
ExpectedResultUncertaintyLimitHigh									Not required.
ExpectedResultUncertaintyLimitLow									Not required.
ExpectedResultUncertaintyType									Not required.
ExpectedResultUncertaintyUnits									Not required.
ExpectedResultUnits	X	X		X	X				Report "ng" for DMCs, surrogates, and GC/MS internal standards. For GC MS/MSD and LCS, report "ug/kg" for soil/sediment/waste; "ug/L" for aqueous/water or leachates; or "ug" for wipe samples.
Inclusion	X	X	X	X	X	X	X		Report "Yes" if result of the analysis is to be reported as the final Reported Result from the sample; otherwise report "No".
LabAnalyteID									Not required.
LabQualifiers	X	X	X	X	X	X	X		Report flags and concentration qualifiers: "X" for values estimated due to interference. "*" for QC analyses outside control limits. "D" for values reported from a dilution and any TCLP leachate or leachate extract with a dilution factor greater than 10. "J" for reported values less than the reported adjusted CRQL but greater than or equal to the reported adjusted MDL. "U" for values less than the reported adjusted MDL. "E" if the analyte concentration exceeds the upper limit of the calibration range of the instrument established by the ICAL. For Organic methods, report "B" if the same analyte is found in an associated blank; report "H" if the analyte is quantitated using peak heights rather than peak areas. For GC methods, report "C" if the identification of the analyte is confirmed by GC/MS; report "P" if the percent difference between the results on each column exceeds 25% for detects. For GC/MS TICs, report "A" if the TIC is a suspected Aldol-condensation product; report "N" if the TIC has a ≥85% match. For Inorganic PB/LEB, report "J" if the absolute value of the result is less than the adjusted CRQL but greater than or equal to the adjusted MDL, and report "U" if the absolute value of the result is less than the adjusted MDL.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LotNumber	X	X	X	X	X	X	X		Report the vendor/manufacturer-assigned lot number for this standard (Internal Standards and spiking analytes only).
Mass									Not required.
MassUnits									Not required.
MeanCalibrationFactor									Not required.
MeanCalibrationFactorUnits									Not required.
MeanRRF									Not required.
MeanRRFLimitLow									Not required.
MeanRRFLimitType									Not required.
PeakID	X	X	X	X	X	X	X		If response from a single peak is used for quantitation, report the ID of that peak. For unknown TICs, report the unique identifiers as applicable. For alkanes, report "Total alkanes" as the identifier. Leave blank for multi-component analytes.
PercentBreakdown									Not required.
PercentBreakdownLimitHigh									Not required.
PercentBreakdownLimitType									Not required.
PercentDifference	X	X		X	X				For GC analyses (excluding IB), report the Percent Difference (to the nearest whole percent) between the Analyte Result on the primary column and the Analyte Result on the confirmation column from the corresponding analysis.
PercentDifferenceLimitHigh	X	X		X	X				For GC analyses (excluding IB), report the upper limit for the Percent Difference to the nearest whole percent.
PercentDifferenceLimitLow									Not required.
PercentDifferenceLimitType	X	X		X	X				For GC analyses (excluding IB), report "Method".
PercentRecovery	X	X		X	X				Required for Organic analyses. Report the final calculated percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.
PercentRecoveryLimitHigh	X	X		X	X				Required for Organic analyses. Report the upper limit for the percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.
PercentRecoveryLimitLow	X	X		X	X				Required for Organic analyses. Report the lower limit for the percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.
PercentRecoveryLimitType	X	X		X	X				Required for Organic analyses. Report "Method".
PercentRecoveryType									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PercentRSD									Not required.
PercentRSDLimitHigh									Not required.
PercentRSDLimitLow									Not required.
PercentRSDLimitType									Not required.
QuantitationBasis									Not required.
QuantitationLimit	X	X	X	X	X	X	X		Report the CRQL adjusted for sample weight/volume, percent solids, and dilution to two significant figures.
QuantitationLimitType	X	X	X	X	X	X	X		Report "CRQL_sa" (CRQL sample adjusted).
QuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" or "ug/cm2" for wipe samples.
ReportingLimit									Not required.
ReportingLimitType									Not required.
ReportingLimitUnits									Not required.
Result	X	X	X	X	X	X	X		For detected target or spike analytes, and for monitored masses, report the final calculated result to two significant figures. Leave blank if the analyte or compound is not detected. For PB and Inorganic LEB less than the negative MDL (-MDL), report a leading "-".
ResultLimitHigh									Not required.
ResultLimitLow									Not required.
ResultLimitType									Not required.
ResultType	X	X	X	X	X	X	X		Report "=" for all detected analytes with results greater than or equal to adjusted MDL or DL. Report "Not_Detected" for non-detects less than the adjusted MDL or DL. Report "Negative" for PB or Inorganic LEB results less than the negative MDL (-MDL).
ResultUncertainty									Not required.
ResultUncertaintyConfidenceLevel									Not required.
ResultUncertaintyDetermination									Not required.
ResultUncertaintyIntervalType									Not required.
ResultUncertaintyLimitHigh									Not required.
ResultUncertaintyLimitLow									Not required.
ResultUncertaintyType									Not required.
ResultUncertaintyUnits									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ResultUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" or "ug/cm2" for wipe samples.
RPD		X							Required for GC methods. Report the MS/MSD per-column RPD to the nearest whole percent.
RPDLimitHigh		X							Required for GC methods. Report the upper limit for the RPD to the nearest whole percent.
RPDLimitType		X							Required for GC methods. Report "Method".
RPDType									Not required.
RRF									Not required.
RRFLimitLow									Not required.
RRFLimitType									Not required.
StandardSource	X	X	X	X	X	X	X		Report the vendor/manufacturer for this standard.
TailingFactor									Not required.
TailingFactorLimitHigh									Not required.
TailingFactorLimitType									Not required.
Wavelength									Not required.
WavelengthUnits									Not required.
WeightingFactor									Not required.
AnalyteGroup	X	X	X	X	X	X	X		Not required for Organic methods.
AnalyteGroupID	X	X	X	X	X	X	X		Report a unique identifier.
AnalyteName	X	X	X	X	X	X	X		Report "Hardness".
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS".
AnalyteType	X	X	X	X	X	X	X		Report "Derived".
CASRegistryNumber	X	X	X	X	X	X	X		Report "Hardness".
ClientAnalyteID	X	X	X	X	X	X	X		Report "Hardness".
ClientAnalyteName	X	X	X	X	X	X	X		Report "Hardness".
Comment									Not required.
LabAnalyteID									Not required.
LabQualifiers	X	X	X	X	X	X	X		Report "J" for values less than the adjusted CRQL but greater than or equal to the adjusted MDL. "U" for when both Ca and Mg values are less than the adjusted MDLs.
Result	X	X	X	X	X	X	X		Report the final calculated for detects to two significant figures.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con’t)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ResultType	X	X	X	X	X	X	X		Report "=" for detects. Report "Not_Detected" for non-detects (where both Ca and Mg are not detected).
ResultUncertainty									Not required.
ResultUnits	X	X	X	X	X	X	X		Report "mg/L".
Peak									Not required.
PeakComparison									Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
Header	X	X	X	X	X	
ClientID	X	X	X	X	X	Report "1" for Region 1, "2" for Region 2, etc. For samples received from QATS, report "91". For other programs, report as directed by program.
ClientName						Not required.
Comment						Not required.
DateFormat	X	X	X	X	X	Report MMDDYYYYThh:mm:ss. All dates and times reported in the EDD must follow this format. If any part of the time is unknown, report "00" for the unknown hours, minutes, and seconds.
EDDID	X	X	X	X	X	Report "SEDD".
EDDImplementationID	X	X	X	X	X	Report "SEDD_5-2_GENERAL_2b_3" (This is the DTD used).
EDDImplementationVersion	X	X	X	X	X	Report "SFAM01".
EDDVersion	X	X	X	X	X	Report "5.2".
GeneratingSystemID	X	X	X	X	X	Report the name of generating software or vendor.
GeneratingSystemVersion	X	X	X	X	X	Report the software version number.
LabContract	X	X	X	X	X	Report the Contract Number.
LabContractModificationDescription						Not required.
LabContractModificationID						Not required.
LabDataPackageID	X	X	X	X	X	Report the SDG Number.
LabDataPackageName						Not required.
LabDataPackageVersion	X	X	X	X	X	Report "1", then increment with each resubmission.
LabID	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	Report the Laboratory Name.
LabNarrative						Not required.
LabQualifiersDefinition	X	X	X	X	X	Use the format 'Qualifier:Definition' to report each qualifier used. Use a ';' to separate the definitions of multiple qualifiers.
LabReportedDate	X	X	X	X	X	Report the date this data was reported to the client in the specified date format.
ProjectID	X	X	X	X	X	Report the Agency-assigned Case Number.
ProjectName						Not required.
SiteID						Not required.
SiteName						Not required.
SamplePlusMethod						Not required.
InstrumentQC	X	X	X	X	X	
ClientInstrumentQCType		X	X			For Pesticides, for RESC and standards, report "1' if using a single mixture to calibrate instrument. Report "2" if using two mixtures to calibrate instrument.
ClientMethodCode	X	X	X	X	X	Report "TCLP", "SPLP", "PAH", or "Dioxane" as applicable. Otherwise leave blank.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
ClientMethodID	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodModificationDescription						Not required.
ClientMethodModificationID	X	X	X	X	X	Report the Modified Analysis Number, if applicable.
ClientMethodName	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodSource	X	X	X	X	X	Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	Report the month and year the SOW was issued.
Comment						Not required.
LabID	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabInstrumentQCID	X	X	X	X	X	Report the EPA Sample number or a unique ID for each QC. For Organic ICAL, report the EPA Sample Number of the first standard.
LabMethodID						Not required.
LabMethodName						Not required.
LabName	X	X	X	X	X	Report the Laboratory Name.
MethodCode						Not required.
MethodID						Not required.
MethodModificationDescription						Not required.
MethodModificationID						Not required.
MethodName						Not required.
MethodSource	X	X	X	X	X	Report "EPA_CLP".
MethodVersion	X	X	X	X	X	Report the month and year the SOW was issued.
QCLinkage	X	X	X	X	X	Report "RunBatch" for IPC, RESC, calibration, ICV, ICB, and ICS. Report "AnalysisBatch" for CCV and CCB. Report "CleanupBatch for FLO and GPC.
QCType	X	X	X	X	X	Report "Instrument_Performance_Check_Tune" for Tune and RESC; "Initial_Performance_Check_PEM" for the PEM standards that are part of the ICAL; "Initial_Calibration" for calibration; "Initial_Calibration_Verification" for ICV; "Initial_Calibration_Blank" for ICB; "Continuing_Calibration_Verification" for CCV; "Continuing_Calibration_Blank" for CCB; "Interference_Check_Standard_A" for ICSA; "Interference_Check_Standard_A/B" for ICSAB; "Florisil_Cartridge_Check" for the Florisil cartridge; and "GPC_Calibration_Check" for the GPC calibration check.
ContactInformation	X	X	X	X	X	
LabAddress1	X	X	X	X	X	Report the street address of the laboratory.
LabAddress2	X	X	X	X	X	If applicable, report any additional address information (e.g., suite, maildrop). Otherwise leave blank.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
LabCity	X	X	X	X	X	Report the city in which the laboratory is located.
LabCountry	X	X	X	X	X	Report the country in which the laboratory is located.
LabID	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	Report the Laboratory Name.
LabPointOfContact	X	X	X	X	X	Report the name of person at the laboratory serving as the point of contact.
LabPointOfContactElectronicAddress	X	X	X	X	X	Report the Email address of the point of contact.
LabPointOfContactTitle	X	X	X	X	X	Report the title of the point of contact.
LabPointOfContactType						Not required.
LabState	X	X	X	X	X	Report the state or province in which the laboratory is located.
LabTelephoneNumber	X	X	X	X	X	Report the 10-digit phone number for the laboratory.
LabType						Not required.
LabZipCode	X	X	X	X	X	Report the ZIP or postal code.
Analysis	X	X	X	X	X	
AliquotAmount						Not required.
AliquotAmountUnits						Not required.
AnalysisBatch			X	X		Links this analysis to the instrument QC standard(s) that begins this sequence. Report an identifier for all samples in the analysis batch; each analysis batch shall have a unique identifier within the analytical method.
AnalysisBatchEnd			X	X		Links this analysis to the instrument QC standard that ends this sequence. Report an identifier that links all samples in the analysis batch to the CCV that ends this sequence.
AnalysisDuration						Not required.
AnalysisDurationUnits						Not required.
AnalysisGroupID		X				Links a group of analyses that are used for the initial calibration. Report the Lab Analysis ID of the standard that starts this calibration sequence.
AnalysisType	X	X	X	X	X	Report "Initial" or "Dilution-01"; then increment as necessary. For Tune, IPC, FLO, and GPC, report "Initial". For Organic ICAL/ICV/CCV, report the Calibration level used.
Analyst	X	X	X	X	X	Report the Analyst's initials.
AnalyzedAmount	X	X	X	X	X	Report the volume of the standard placed on the instrument for SVOA, SVOA_SIM, Pesticides, and Aroclors in microliters.
AnalyzedAmountUnits	X	X	X	X	X	Report "uL" for the applicable methods.
AnalyzedDate	X	X	X	X	X	Report the date and time the sample was analyzed in the specified date format.
ClientAnalysisID	X	X	X	X	X	For Organic methods, report the full EPA Sample Number with applicable suffixes per the requirements in Appendix B – Codes for Labeling Data.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
ClientMethodCode	X	X	X	X		For GC/MS analysis, report "Full_Scan" for the full scan method and "SIM" for the SIM technique. Report "Full_Scan_PAH" for the SVOA PAH and PCP full scan analysis; "Full_Scan_Dioxane" for the SVOA full scan analysis for 1,4-Dioxane only (either separate injections of the same extract or 1,4-Dioxane analysis only); "SIM_PAH" for the SVOA PAH and PCP SIM analysis; and "SIM_Dioxane" for the SVOA 1,4-Dioxane only SIM analysis as applicable.
ClientMethodID	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodModificationDescription						Not required.
ClientMethodModificationID						Not required.
ClientMethodName	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", or "CN" as applicable.
ClientMethodSource	X	X	X	X	X	Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	Report the month and year the SOW was issued.
Column	X	X	X	X	X	For GC/MS and GC methods, report the column used as applicable
ColumnInternalDiameter	X	X	X	X	X	Report the Column Internal Diameter in mm.
ColumnInternalDiameterUnits	X	X	X	X	X	Report "mm".
ColumnLength	X	X	X	X	X	Report the Column Length in meters.
ColumnLengthUnits	X	X	X	X	X	Report "m".
Comment						Not required.
ConfirmationAnalysisID						Not required.
Counts						Not required.
CountsUncertainty						Not required.
CountsUncertaintyConfidenceLevel						Not required.
CountsUncertaintyDetermination						Not required.
CountsUncertaintyIntervalType						Not required.
CountsUncertaintyLimitHigh						Not required.
CountsUncertaintyLimitLow						Not required.
CountsUncertaintyType						Not required.
CountsUnits						Not required.
DetectorID						Not required.
DetectorType	X	X	X	X	X	Required for Organic methods. Report "ECD" for GC or "MS" for GC/MS.
DilutionFactor	X	X	X	X	X	Report the Dilution Factor used to the nearest tenth. Report "1.0" when no dilutions are used.
Efficiency						Not required.
HeatedPurge	X	X	X	X		For VOA, report "Yes" if heated purge was used; otherwise report "No".

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
Inclusion		X				Report "Yes" if this standard is to be included in the calibration curve; otherwise report "No".
InjectionVolume	X	X	X	X	X	For GC analyses and SVOA analysis, report the volume injected in microliters. For VOA analysis, report the purge volume in milliliters. Report the volume to at least two significant figures.
InjectionVolumeUnits	X	X	X	X	X	Report "uL" or "mL" as applicable.
InstrumentID	X	X	X	X	X	Report the laboratory identifier for the instrument used for this analysis.
LabAnalysisID	X	X	X	X	X	Report a unique identifier.
LabFileID	X	X	X	X	X	Report the Lab File ID.
LabID						Not required.
LabMethodID						Not required.
LabMethodName						Not required.
LabName						Not required.
MethodCode						Not required.
MethodID						Not required.
MethodModificationDescription						Not required.
MethodModificationID						Not required.
MethodName						Not required.
MethodSource	X	X	X	X	X	Report "EPA_CLP".
MethodVersion	X	X	X	X	X	Report the month and year the SOW was issued.
PreparationBatch						Not required.
ProcedureID						Not required.
ProcedureName						Not required.
ReferenceDate						Not required.
ResultBasis						Not required.
RunBatch	X	X	X	X	X	Links this analysis to an initial calibration. Report the Lab Analysis ID of the standard (Tune or ICAL standard) that started the ICAL sequence.
Temperature						Not required.
TemperatureUnits						Not required.
Wavelength						Not required.
WavelengthUnits						Not required.
Yield						Not required.
AnalysisGroup		X				
AnalysisGroupID		X				This links a group of analyses that are used for the initial calibration. Report the Lab Analysis ID of the Tune or ICAL standard that starts this ICAL sequence.
AnalysisType		X				Report "Initial_Calibration".
Comment						Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
Handling						Not required.
ReportedResult						Not required.
PreparationPlusCleanup		X	X	X		
AliquotAmount		X	X	X		Report the actual amount of standard digested/distilled in mL to at least three significant figures.
AliquotAmountUnits		X	X	X		Report "mL".
Analyst		X	X	X		Report the Analyst's initials.
CleanedUpDate					X	Required for SVOA and GC methods as applicable. Report the date and time the sample was cleaned up in the specified date format.
CleanupBatch					X	Required for SVOA and GC methods as applicable. Links all samples that were cleaned up together. Report the Lab File ID of the associated cleanup blank.
CleanupType					X	Required for SVOA and GC methods as applicable. Report "GPC", "Florisil", "Sulfur", or "Sulfuric_Acid" as applicable.
ClientMethodCode						Not required.
ClientMethodID		X	X	X		Report the sample preparation ID. Report "7470A" for aqueous/water and leachate mercury; "7471B" for soil/sediment/waste mercury; "Midi-distillation_Aqueous" for midi-distilled aqueous/water and leachate cyanide; "Midi-distillation_Soil" for midi-distilled soil/sediment/waste cyanide; "Micro-distillation_Aqueous" for micro-distilled aqueous/water and leachate cyanide; or "Micro-distillation_Soil" for micro-distilled soil/sediment/waste cyanide. For GPC cleanup, report "3640A". For Florisil cleanup, report "3660B". For Sulfuric Acid cleanup, report "3665A".
ClientMethodModificationDescription						Not required.
ClientMethodModificationID						Not required.
ClientMethodName						Not required.
ClientMethodSource		X	X	X		Report "SFAM01.0".
ClientMethodVersion		X	X	X		Report the month and year the SOW was issued.
Comment						Not required.
FinalAmount		X	X	X		Report the volume of digestate or distillate produced by the preparation method in mL to at least three significant figures.
FinalAmountUnits		X	X	X		Report "mL".
InitialAmount					X	Report the initial amount of QC sample used for this cleanup method in microliters.
InitialAmountUnits					X	Report "uL".
LabID						Not required.
LabMethodID						Not required.
LabMethodName						Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
LabName						Not required.
LotNumber					X	For Pesticides, report the manufacturer's lot number for the Florisil cartridges used.
MethodCode						Not required.
MethodID						Not required.
MethodModificationDescription						Not required.
MethodModificationID						Not required.
MethodName						Not required.
MethodSource		X	X	X		Report "EPA_CLP".
MethodVersion		X	X	X		Report the month and year the SOW was issued.
PreparationBatch		X	X	X		Links all samples that were prepared together. Report a unique identifier (for Inorganic analyses).
PreparationPlusCleanupType		X	X	X		Report "Preparation" or "Cleanup" as applicable.
PreparationType		X	X	X		Report "Automated" or "Manual".
PreparedDate		X	X	X		Report the date and time the sample was prepared. Report in the specified date format.
ProcedureID						Not required.
ProcedureName						Not required.
Solvent						Not required.
Characteristic						Not required.
Analyte	X	X	X	X	X	
AnalyteGroupID						Not required.
AnalyteName	X	X	X	X	X	Report the analytes as they appear in the SOW.
AnalyteNameContext	X	X	X	X	X	Report "CAS".
AnalyteType	X	X	X	X	X	Report "Target" for all target analytes; "Internal_Standard" for internal standards; "Surrogate" for DMCs and surrogates; "Monitor" for non-target interferences and masses requiring monitoring; or "Instrument_Performance" for tune analytes.
BiasErrorRatio						Not required.
CalibrationBasis		X				Report "Peak" under the AnalysisGroup node.
CalibrationFactor						Not required.
CalibrationFactorUnits						Not required.
CalibrationType						Not required.
CASRegistryNumber	X	X	X	X	X	Report the CAS Number as it appears in the SOW.
ClientAnalyteID	X	X	X	X	X	Report CAS number.
ClientAnalyteName	X	X	X	X	X	Report the analytes as they appear in the SOW.
Coeffa0						Not required.
Coeffa1						Not required.
Coeffa2						Not required.
Coeffa3						Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
CoeffOfDetermination						Not required.
CoeffOfDeterminationLimitLow						Not required.
CoeffOfDeterminationLimitType						Not required.
Comment						Not required.
CorrelationCoeff						Not required.
CorrelationCoeffLimitLow						Not required.
CorrelationCoeffLimitType						Not required.
Counts						Not required.
CountsUncertainty						Not required.
CountsUncertaintyConfidenceLevel						Not required.
CountsUncertaintyDetermination						Not required.
CountsUncertaintyIntervalType						Not required.
CountsUncertaintyLimitHigh						Not required.
CountsUncertaintyLimitLow						Not required.
CountsUncertaintyType						Not required.
CountsUnits						Not required.
DetectionLimit		X	X	X	X	For target or spike analytes, report the MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, used for analysis, adjusted for sample weight/volume, percent solids, and dilution factor in the appropriate units to two significant figures.
DetectionLimitType		X	X	X	X	Report "MDL", or "DL" for Aroclors without a specific MDL.
DetectionLimitUnits		X	X	X	X	Report "ug/L".
DifferenceErrorRatio						Not required.
Efficiency						Not required.
ExpectedResult		X	X		X	Report the final amount or concentration of the target analyte, internal standard, DMC, or surrogate in the standard in ng for Organic methods. Report the final concentration of the standard in ug/L for Inorganic methods. Report all values to at least two significant figures.
ExpectedResultUncertainty						Not required.
ExpectedResultUncertaintyConfidenceLevel						Not required.
ExpectedResultUncertaintyDetermination						Not required.
ExpectedResultUncertaintyIntervalType						Not required.
ExpectedResultUncertaintyLimitHigh						Not required.
ExpectedResultUncertaintyLimitLow						Not required.
ExpectedResultUncertaintyType						Not required.
ExpectedResultUncertaintyUnits						Not required.
ExpectedResultUnits		X	X		X	Report "ng" or "ug/L" as applicable.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability					Instructions
	IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	
Inclusion		X				Report "No" if an analyte in a standard is not to be included in the calibration curve; otherwise report "Yes".
LabAnalyteID						Not required.
LabQualifiers	X	X	X	X	X	Report flags and concentration qualifiers: "X" for values estimated due to interference. "*" for QC analyses outside control limits. "D" for values reported from a dilution. "J" for values less than the CRQL but greater than or equal to the MDL. "U" for values less than the MDL. For Inorganic ICB, CCB, or ICS, report "J" if the absolute value of the result is less than the CRQL but greater than or equal to the MDL, and report "U" if the absolute value of the result is less than the MDL.
LotNumber	X	X	X	X	X	Report the vendor/manufacturer-assigned lot number for this standard.
Mass						Not required.
MassUnits						Not required.
MeanCalibrationFactor						Not required.
MeanCalibrationFactorUnits						Not required.
MeanRRF						Not required.
MeanRRFLimitLow						Not required.
MeanRRFLimitType						Not required.
PeakID		X	X	X	X	If response from a single peak is used for quantitation, report the ID of that peak.
PercentBreakdown	X					For Pesticides, report the calculated percent breakdown for 4,4'-DDT and Endrin to the nearest whole percent.
PercentBreakdownLimitHigh	X					Report the upper limit for the percent breakdown to the nearest whole percent.
PercentBreakdownLimitType	X					Report "Method".
PercentDifference		X				For Inorganics, report the ICAL Percent Difference to the nearest whole percent.
PercentDifferenceLimitHigh		X				For Inorganics, report the upper limit for the ICAL Percent Difference.
PercentDifferenceLimitLow		X				For Inorganics, report the lower limit for the ICAL Percent Difference.
PercentDifferenceLimitType		X				Report "Method".
PercentRecovery			X		X	Report the Percent Recovery to the nearest whole percent for Inorganic methods, FLO, and GPC. Not required for ICS when true value equals 0.
PercentRecoveryLimitHigh			X		X	Report the upper limit for the Percent Recovery to the nearest whole percent. Not required for ICS when ResultLimitHigh applies.
PercentRecoveryLimitLow			X		X	Report the lower limit for the Percent Recovery to the nearest whole percent. Not required for ICS when ResultLimitLow applies.
PercentRecoveryLimitType			X		X	Report "Method".
PercentRecoveryType						Not required.
PercentRSD						Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
PercentRSDLimitHigh						Not required.
PercentRSDLimitLow						Not required.
PercentRSDLimitType						Not required.
QuantitationBasis		X				Report "Internal_Standard" for GC/MS methods, or "External_Standard" for GC and Inorganic methods as applicable under the AnalysisGroup node.
QuantitationLimit		X	X	X	X	For Inorganic methods, report the aqueous CRQL to at least two significant figures.
QuantitationLimitType		X	X	X	X	Report "CRQL".
QuantitationLimitUnits		X	X	X	X	Report "ug/L".
ReportingLimit						Not required.
ReportingLimitType						Not required.
ReportingLimitUnits						Not required.
Result		X	X	X	X	For Inorganics, for detected target and spike analytes, and for monitored masses, report the final calculated result (in ug/L) to two significant figures. Leave blank if the analyte is not detected. For ICB and CCB less than the negative MDL (-MDL), report a leading "-". For ICS, report the result from the instrument (positive, negative, or zero).
ResultLimitHigh					X	For ICP-AES and ICP-MS, for analytes and interferents with true values less than 5x (10x for ICP-MS) CRQL.
ResultLimitLow					X	For ICP-AES and ICP-MS, for analytes and interferents with true values less than 5x (10x for ICP-MS) CRQL.
ResultLimitType					X	Report "Method".
ResultType		X	X	X	X	Report "=" for all detected analytes. Report "Not_Detected" for non-detects. Report "Negative" for ICB, CCB, or ICS results less than the negative MDL (-MDL).
ResultUncertainty						Not required.
ResultUncertaintyConfidenceLevel						Not required.
ResultUncertaintyDetermination						Not required.
ResultUncertaintyIntervalType						Not required.
ResultUncertaintyLimitHigh						Not required.
ResultUncertaintyLimitLow						Not required.
ResultUncertaintyType						Not required.
ResultUncertaintyUnits						Not required.
ResultUnits		X	X	X	X	Report "ug/L".
RPD						Not required.
RPDLimitHigh						Not required.
RPDLimitType						Not required.
RPDType						Not required.
RRF						Not required.
RRFLimitLow						Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
RRFLimitType						Not required.
StandardSource	X	X	X	X	X	Report the vendor/manufacturer for this standard.
TailingFactor						Not required.
TailingFactorLimitHigh						Not required.
TailingFactorLimitType						Not required.
Wavelength						Not required.
WavelengthUnits						Not required.
WeightingFactor						Not required.
AnalyteGroup						Not required.
Peak	X	X	X	X	X	
CalibrationFactor						Not required.
CalibrationFactorUnits						Not required.
CalibrationType		X				For GC/MS methods, report "Average_Response_Factor" under the AnalysisGroup node. For GC methods, report "Calibration Factor" under the AnalysisGroup node. For Inorganic methods, report "Linear_Regression", "Linear_Regression_With_Blank_Force", "Weighted_Linear_Regression", or "Weighted_Linear_Regression_With_Blank_Force" as applicable under the AnalysisGroup node.
Coeffa0		X				For inorganic methods, report the y-intercept of the calibration curve under the AnalysisGroup node.
Coeffa1		X				For inorganic methods, report the slope of the calibration curve under the AnalysisGroup node.
Coeffa2						Not required.
Coeffa3						Not required.
CoeffOfDetermination						Not required.
CoeffOfDeterminationLimitLow						Not required.
CoeffOfDeterminationLimitType						Not required.
Comment						Not required.
CorrelationCoeff		X				For Inorganic methods, report the correlation coefficient (r) of the calibration curve to at least four significant figures under the AnalysisGroup node.
CorrelationCoeffLimitLow		X				For Inorganic methods, report the lower limit for the correlation coefficient to at least four significant figures under the AnalysisGroup node.
CorrelationCoeffLimitType		X				For Inorganic methods, report "Method" under the AnalysisGroup node.
DifferenceErrorRatio						Not required.
Efficiency						Not required.
Inclusion		X				Report "No" if a peak in a standard is not to be included in the calibration curve; otherwise report "Yes".
LabQualifiers						Not required.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
Mass	X					For ICP-MS Tune, report the Average Measured Mass. For other ICP-MS analyses, report the isotope mass.
MassLimitHigh	X					For ICP-MS Tune, report the upper limit for the mass.
MassLimitLow	X					For ICP-MS Tune, report the lower limit for the mass.
MassLimitType	X					For ICP-MS Tune, report "Method".
MassUnits	X					For ICP-MS, report "u".
MeanCalibrationFactor		X				For GC methods, report the calculated Mean Calibration Factor under the AnalysisGroup only.
MeanCalibrationFactorUnits		X				Report "1/ng" under the AnalysisGroup only.
MeanRetentionTime		X				For GC/MS and GC methods, report the mean retention time in decimal minutes for the ICAL.
MeanRetentionTimeLimitHigh		X				For GC/MS and GC methods, report the upper limit calculated from the mean retention time in decimal minutes.
MeanRetentionTimeLimitLow		X				For GC/MS and GC methods, report the lower limit calculated from the mean retention time in decimal minutes.
MeanRetentionTimeLimitType		X				For GC/MS and GC methods, report "Method".
MeanRetentionTimeUnits		X				For GC/MS and GC methods, report "minutes".
MeanRRF		X				For GC/MS methods, report the calculated mean RRF to the nearest thousandth for target analytes and DMCs under the AnalysisGroup node only.
MeanRRFLimitLow						Not required.
MeanRRFLimitType						Not required.
PeakID	X	X	X	X	X	Report a unique identifier. This identifier must be consistent throughout an analytical sequence. For ICP-MS analysis using collision or reaction cell, a "-Gas" suffix must be applied to the PeakID.
PercentDifference			X			For GC/MS and GC methods, report the calculated Percent Difference for this peak to the nearest tenth of a percent.
PercentDifferenceLimitHigh			X			For GC/MS and GC methods, report the upper limit for the Percent Difference for this peak to the nearest tenth of a percent.
PercentDifferenceLimitLow			X			For all GC/MS and GC methods, report the lower limit for the Percent Difference for this peak to the nearest tenth of a percent.
PercentDifferenceLimitType			X			Report "Method".
PercentRecovery						Not required.
PercentRecoveryLimitHigh						Not required.
PercentRecoveryLimitLow						Not required.
PercentRecoveryLimitType						Not required.
PercentRecoveryType						Not required.
PercentRSD	X	X	X	X	X	For ICP-AES and ICP-MS, report the %RSD of the replicates to the nearest whole percent. For GC/MS and GC methods, report the %RSD of the ICAL to the nearest tenth of a percent under the AnalysisGroup only.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
PercentRSDLimitHigh	X	X	X	X	X	For ICP-AES and ICP-MS, report the upper limit for the %RSD to the nearest whole percent. For GC/MS and GC methods, report the upper limit for the ICAL %RSD to the nearest tenth of a percent under the AnalysisGroup only.
PercentRSDLimitLow						Not required.
PercentRSDLimitType	X	X	X	X	X	Report "Method".
Resolution	X					For ICP-MS, report the Average Peak Width to at least one decimal place. For Pesticides, report the Percent Resolution for RESC; the midpoint INDA, INDB, or INDC initial calibration standards; and PEM in the ICAL and CCV sequences only to the nearest whole percent.
ResolutionLimitHigh	X					For ICP-MS, report the upper limit from the manufacturer specifications.
ResolutionLimitLow	X					For ICP-MS, report the lower limit from the manufacturer specifications. For Pesticides, report the lower limit for the percent resolution to the nearest whole percent.
ResolutionLimitType	X					Report "Laboratory".
ResolutionType	X					For ICP-MS, report "Laboratory". For Pesticides, report "Method".
ResolutionUnits	X					For ICP-MS, report "u". For Pesticides, report "Percent".
Result						Not required.
ResultLimitHigh						Not required.
ResultLimitLow						Not required.
ResultLimitType						Not required.
ResultType						Not required.
ResultUncertainty						Not required.
ResultUnits						Not required.
RRF		X	X			For GC/MS methods, report the calculated RRF to the nearest thousandth for target analytes and DMCs.
RRFLimitLow		X	X			For GC/MS methods, report the lower limit for the RRF to the nearest thousandth.
RRFLimitType		X	X			For GC/MS methods, report "Method".
TailingFactor						Not required.
TailingFactorLimitHigh						Not required.
TailingFactorLimitType						Not required.
Wavelength	X	X	X	X	X	For ICP-AES, Hg, and CN, report the wavelength of the peak in nm.
WavelengthUnits	X	X	X	X	X	Report "nm".
WeightingFactor		X				For Inorganic, report "Inverse_Of_Concentration", "Inverse_Square_Of_Concentration", "Variance", "Inverse_Of_Variance", "Standard_Deviation", "Inverse_Of_Standard_Deviation", "Inverse_Square_Of_Standard_Deviation", or "None" as applicable under the AnalysisGroup node.

TABLE 2. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: IPC/Tune	ICAL	ICV/CCV	ICB/CCB	ICS/FLO/GPC	Instructions
PeakComparison		X	X	X	X	Not required for ICP-AES, Hg, CN, or GC methods.
Comment						Not required.
PeakID		X	X	X	X	For GC/MS methods, report the mass being compared to the monitored mass. For Internal Standards, report the primary quantitation ion. For ICP-MS, report the unique peak identifier of the associated internal standard.
PercentRatio	X					For GC/MS methods, report the Percent Ratio (%Relative Abundance or %Mass) to the nearest hundredth.
PercentRatioLimitHigh	X					Report the upper limit for the Percent Ratio to the nearest hundredth.
PercentRatioLimitLow	X					Report the lower limit for the Percent Ratio to the nearest hundredth.
PercentRatioLimitType	X					Report "Method".

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TABLE 3. DATA ELEMENT INSTRUCTIONS

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
Header	X	X	X	X	X	X	X	X	
ClientID	X	X	X	X	X	X	X	X	Report "1" for Region 1, "2" for Region 2, etc. For samples received from QATS, report "91". For other programs, report as directed by program.
ClientName									Not required.
Comment									Not required.
DateFormat	X	X	X	X	X	X	X	X	Report MMDDYYYYThh:mm:ss. All dates and times reported in the EDD must follow this format. If any part of the time is unknown, report "00" for the unknown hours, minutes, and seconds.
EDDID	X	X	X	X	X	X	X	X	Report "SEDD".
EDDImplementationID	X	X	X	X	X	X	X	X	Report "SEDD_5-2_GENERAL_2a_2" (This is the DTD used).
EDDImplementationVersion	X	X	X	X	X	X	X	X	Report "SFAM01".
EDDVersion	X	X	X	X	X	X	X	X	Report "5.2".
GeneratingSystemID	X	X	X	X	X	X	X	X	Report the name of generating software or vendor.
GeneratingSystemVersion	X	X	X	X	X	X	X	X	Report the software version number.
Lab Contract	X	X	X	X	X	X	X	X	Report the Contract Number.
LabContractModificationDescription									Not required.
LabContractModificationID									Not required.
LabDataPackageID	X	X	X	X	X	X	X	X	Report the SDG Number.
LabDataPackageName									Not required.
LabDataPackageVersion	X	X	X	X	X	X	X	X	Report "1", then increment with each resubmission.
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
Lab Name	X	X	X	X	X	X	X	X	Report the Lab Name.
LabNarrative									Not required.
LabQualifiersDefinition	X	X	X	X	X	X	X	X	Use the format ‘Qualifier:Definition’ to report each qualifier used. Use a ‘;’ to separate the definitions of multiple qualifiers.
LabReportedDate	X	X	X	X	X	X	X	X	Report the date this data was reported to the client in the specified date format.
ProjectID	X	X	X	X	X	X	X	X	Report the Agency-assigned Case Number.
ProjectName									Not required.
SiteID									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
SiteName									Not required.
SamplePlusMethod	X	X	X	X	X	X	X	X	
ClientID	X	X	X						Report "1" for Region 1, "2" for Region 2, etc. For samples received from QATS, report "91". For other programs, report as directed by program.
ClientMethodCategory	X	X		X	X				Report "PAH", "PAH_SIM", or "Dioxane" for analyte subset where applicable.
ClientMethodCode	X	X	X	X	X	X	X	X	Report "TCLP", "SPLP", "Dioxane", or "PAH" when applicable. Otherwise leave blank.
ClientMethodID	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", "CN", "Anions", "Cr(VI)", or "TOC" as applicable.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID	X	X	X	X	X	X	X		Report the Modified Analysis Number, if applicable.
ClientMethodName	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", "CN", "Anions", "Cr(VI)", or "TOC" as applicable.
ClientMethodSource	X	X	X	X	X	X	X	X	Report "SFAM01.0".
ClientMethodType	X	X	X	X	X	X	X	X	Report "ICP-AES", "ICP-MS", "CVAA", "Spectrophotometry", "IC", "TOC", "GCECD_External_Standard", or "GCMS_Internal_Standard" as applicable.
ClientMethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
ClientName									Not required.
ClientSampleID	X	X	X	X	X	X	X	X	Report the EPA Sample Number.
CollectedDate	X	X	X						Report the date and time the sample was collected in the specified date format.
CollectedEndDate									Not required.
Comment									Not required.
Composite									Not required.
CoolerID									Not required.
CustodyID	X								Report the Traffic Report/Chain of Custody Record Form number.
EquipmentBatch									Not required.
Filtered	X								Report "Yes" for dissolved metals, Anions, or Cr(VI); or "No" for total metals or TOC.
LabContract	X	X	X	X	X	X	X		Report the Contract Number.
LabContractModificationDescription									Not required.
LabContractModificationID									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabMethodID									Not required.
LabMethodName									Not required.
LabName	X	X	X	X	X	X	X	X	Report the Laboratory Name.
LabReceiptDate	X	X	X						Report the date and time the sample was received in the specified date format.
LabReportingBatch	X	X	X	X	X	X	X	X	Links all samples analyzed to this deliverable. Report the SDG Number.
LabSampleID	X	X	X	X	X	X	X	X	Report the Lab Sample ID as assigned by the laboratory.
LocationID									Not required.
LocationName									Not required.
MatrixID	X	X	X	X	X	X	X	X	Report "Water", "Soil", "Sediment", "Wipe", "Filter", "Tissue", or "Waste" as applicable.
MatrixMedium	X	X	X	X	X	X	X	X	Report "Aqueous", "Solid", "Non-aqueous_Liquid", or "Biological_Tissue" as applicable. Use "Solid" for soils, sediments, wipes, filters, and solid wastes. Use "Biological_Tissue" for tissues. Use "Non-aqueous_Liquid" for liquid non-aqueous wastes.
MethodBatch									Not required.
MethodCategory									Not required.
MethodCode									Not required.
MethodID									Not required.
MethodLevel	X	X			X				For GC/MS methods, report "Trace", "Low", or "Medium" as applicable.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X	X	Report "EPA_CLP".
MethodType	X	X	X	X	X	X	X	X	Report "ICP/AES", "ICP/MS", "CVAA", "Spectrophotometry", "IC", "TOC", "GC/MS", or "GC" as applicable.
MethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
OriginalClientSampleID	X	X	X			X	X		Required for medium-level samples that have a low-level sample analysis. Report the low-level EPA Sample Number as applicable.
OriginalLabSampleID									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PhaseAnalyzed									Not required.
Preservative	X	X	X						Report any chemical or physical preservative used. Possible values include: "HNO3", "HCl", "H3PO4", or "H2SO4" for acid-preserved samples; "NaHSO4" for low VOA soil; "CH3OH" for medium VOA soil; "NH4" or "CO3" for hexavalent chromium; "Ice" for solid samples without acid as applicable. Report "None" if sample was not preserved.
ProjectID	X	X	X	X	X	X	X		Report the Agency-assigned Case Number.
ProjectName									Not required.
QCCategory		X	X	X	X	X	X		Report "Blank" for PB, MB, SB, CB, IB, or LEB; "Spike" for MS and post-digestion spike; "Blank_Spike" for LCS; "Duplicate" for duplicate; "Spike_Duplicate" for MSD; or "Serial_Dilution" for SD.
QCLinkage		X	X	X	X	X	X		Report "LabReportingBatch" for MS/MSD, post-digestion spike, Dup, and SD; "PreparationBatch" for PB, MB, and LCS; "HandlingBatch" for LEB; "CleanupBatch" for CB; "StorageBatch" for SB; or "AnalysisBatch" for IB.
QCType	X	X	X	X	X	X	X	X	Report "Field_Sample" for field samples; "Field_Blank" for field, equipment, rinse, or trip blanks; "PT_Sample" for Performance Evaluation samples or Proficiency Testing audit samples; "Storage_Blank" for SB; "Method_Instrument_Blank" (GC/MS) or "Instrument_Blank" (GC) for IB; "Method_Blank" for PB; "Leachate_Extraction_Blank" for LEB; "Cleanup_Blank" for CB; "Matrix_Spike" for MS; "Matrix_Spike_Duplicate" for MSD; "Duplicate" for Dup; "Laboratory_Control_Sample" for LCS; "Post_Digestion_Spike" for post-digestion spikes; "Serial_Dilution" for SD; or "Non_Client_Sample" for NCS.
Quarantine	X								Report "Yes" or "No" based on sampling information.
SamplingBatch									Not required.
ShippingBatch									Not required.
SiteID									Not required.
SiteName									Not required.
StorageBatch	X	X			X				Required for Volatile GC/MS analysis. Links all samples stored together with the Storage Blank. Report Lab Analysis ID of the Storage Blank. Not required for MB or IB.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
Characteristic	X	X	X	X	X	X	X		
CharacteristicType	X	X	X	X	X	X	X		Report "Percent_Solids" for aqueous/water and soil/sediment samples, including QC samples, under the SamplePlusMethod node. Report "pH" for aqueous/water samples (and for soil/sediment samples as requested), and "Temperature" for all samples (except wipes) received at the laboratory under each SamplePlusMethod node. For samples with pH adjusted after receipt, also report "pH" under the PreparationPlusCleanup node. Report "pH" and "Temperature" for TCLP or SPLP leachates under the Handling node. Report "Temperature" for stored field core VOA soil samples not analyzed immediately after transfer to gas-tight vials under the Handling node. Report "Area" for wipes if sampling area was provided by the sampler. Report "Percent_Moisture" if requested. Tissue samples do not require "Percent_Solids" or "pH". Wipe samples do not require "Percent_Solids", "pH", or "Temperature".
CharacteristicValue	X	X	X	X	X	X	X		For "Percent_Solids", report "0.0" for aqueous/water samples including QC samples; report the percent solids to two significant figures for soil/sediment samples including QC samples. Report "100" for waste samples when percent solids determination is not required. For "pH", report the pH to the nearest tenth for aqueous/water samples (and for soil/sediment samples as requested) and TCLP/SPLP leachates. For "Temperature", report the temperature at receipt to the nearest degree for all samples (except wipes), TCLP or SPLP leachates, and stored field core VOA soil samples not analyzed immediately after transfer to gas-tight vials. For "Area", report the area in cm^2, converted as necessary.
CharacteristicUnits	X	X	X	X	X	X	X		Report "C" for "Temperature"; "pH_Units" for pH; "Percent" for percent solids or percent moisture; and "cm2" for area.
Comment									Not required.
ContactInformation	X	X	X	X	X	X	X	X	
LabAddress1	X	X	X	X	X	X	X	X	Report the street address of the laboratory.
LabAddress2	X	X	X	X	X	X	X	X	If applicable, report any additional address information (e.g., suite, maildrop). Otherwise leave blank.
LabCity	X	X	X	X	X	X	X	X	Report the city in which the laboratory is located.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabCountry	X	X	X	X	X	X	X	X	Report the country in which the laboratory is located.
LabID	X	X	X	X	X	X	X	X	Report the Agency-assigned Lab Code. For other programs, report as directed by program.
LabName	X	X	X	X	X	X	X	X	Report the Laboratory Name.
LabPointOfContact	X	X	X	X	X	X	X	X	Report the name of the person at the laboratory serving as the point of contact.
LabPointOfContactElectronicAddress	X	X	X	X	X	X	X	X	Report the Email address of the point of contact.
LabPointOfContactTitle	X	X	X	X	X	X	X	X	Report the title of the point of contact.
LabPointOfContactType									Not required.
LabState	X	X	X	X	X	X	X	X	Report the state or province in which the laboratory is located.
LabTelephoneNumber	X	X	X	X	X	X	X	X	Report the 10-digit phone number for the laboratory.
LabType									Not required.
LabZipCode	X	X	X	X	X	X	X	X	Report the ZIP or postal code.
Analysis	X	X	X	X	X	X	X	X	
AliquotAmount									Not required.
AliquotAmountUnits									Not required.
AnalysisDuration									Not required.
AnalysisDurationUnits									Not required.
AnalysisGroupID	X								Links a group of analyses that are used to report a derived result in instances where multiple analyses. Report the AnalysisGroupID of the AnalysisGroup of which this analysis is a member.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
AnalysisType	X	X	X	X	X	X	X		For VOA_Trace and VOA_Low_Med, report "Initial", "Dilution-01", "Reinjection-01", or "Reanalysis-01"; then increment as necessary. For SVOA, report "Initial", "Dilution-01", "Reinjection-01" for extracts with added internal standards that are analyzed a second time without alteration, or "Reanalysis-01" for re-extracted samples and extracts analyzed with fresh internal standards added; then increment as necessary. For Pesticides and Aroclors, report "Initial", "Dilution-01", "Reinjection-01" for extracts analyzed a second time without alteration, or "Reanalysis-01" for re-extracted samples; then increment as necessary. For ICP-AES, ICP-MS, Hg, CN, Anions, Cr(VI), and TOC, report "Initial", "Dilution-01", or "Reanalysis-01" for reprepared samples and for ICP-MS reanalyzed due to internal standard Percent Relative Intensity (%RI) outside limits; then increment as necessary. For TCLP leachate, report "Initial" for the original leachate or leachate extract which has a base dilution factor of 10. Report "Dilution-01" for the subsequently diluted analysis; then increment as necessary.
Analyst	X	X	X	X	X	X	X	X	Report the Analyst's initials.
AnalyzedAmount	X	X		X	X				For VOA medium soil/sediment/waste analyses, report the Soil Aliquot Volume in microliters to at least two significant figures. For SVOA, Pesticide, and Aroclor analyses, report the volume of extract added to the vial for analysis. This is the same volume to which the internal standards are added prior to analysis for SVOA.
AnalyzedAmountUnits	X	X		X	X				Report "uL".
AnalyzedDate	X	X	X	X	X	X	X	X	Report the date and time the sample was analyzed in the specified date format.
ClientAnalysisID	X	X		X	X				For Organic methods, report the full EPA Sample Number with applicable suffixes per the requirements in Appendix B – Codes for Labeling Data.
ClientMethodCode	X	X			X				For GC/MS analysis, report "Full_Scan" for the full scan method and "SIM" for the SIM technique. Report "Full_Scan_PAH" for the SVOA PAH and PCP full scan analysis; "Full_Scan_Dioxane" for the SVOA full scan analysis for 1,4-Dioxane only (either separate injections of the same extract or 1,4-Dioxane analysis only); "SIM_PAH" for the SVOA PAH and PCP SIM analysis; and "SIM_Dioxane" for the SVOA 1,4-Dioxane only SIM analysis as applicable.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ClientMethodID	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", "CN", "Anions", "Cr(VI)", or "TOC" as applicable.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID									Not required.
ClientMethodName	X	X	X	X	X	X	X	X	Report "VOA_Trace", "TVOA_SIM", "VOA_Low_Med", "SVOA", "SVOA_SIM", "Pest", "Aroclor", "ICP_AES", "ICP_MS", "Hg", "CN", "Anions", "Cr(VI)", or "TOC" as applicable.
ClientMethodSource	X	X	X	X	X	X	X	X	Report "SFAM01.0".
ClientMethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.
Column	X	X		X	X				For GC/MS, GC, and IC methods, report the column used as applicable.
ColumnInternalDiameter	X	X		X	X				Report the Column Internal Diameter in mm.
ColumnInternalDiameterUnits	X	X		X	X				Report "mm".
ColumnLength	X	X		X	X				Report the Column Length in meters.
ColumnLengthUnits	X	X		X	X				Report "m".
Comment									Not required.
ConfirmationAnalysisID	X	X		X	X				Required for GC analysis. Links an analysis to a confirmation analysis. Report the Lab File ID of the confirmation analysis.
Counts									Not required.
CountsUncertainty									Not required.
CountsUncertaintyConfidenceLevel									Not required.
CountsUncertaintyDetermination									Not required.
CountsUncertaintyIntervalType									Not required.
CountsUncertaintyLimitHigh									Not required.
CountsUncertaintyLimitLow									Not required.
CountsUncertaintyType									Not required.
CountsUnits									Not required.
DetectorID									Not required.
DetectorType	X	X		X	X				Required for Organic methods. Report "ECD" for GC or "MS" for GC/MS.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
DilutionFactor	X	X	X	X	X	X	X		Report the Dilution Factor used to the nearest tenth. Report "1.0" when no dilutions are used. Report "10" for the initial analysis of the TCLP leachate extract including LEB when no further dilution is required for the extract analysis. Otherwise, report the incremented dilution factor (e.g., if the dilution factor for a leachate extract analysis is 5, then report 50 as the dilution factor taking into the account of the dilution prior to extraction). Report "10" for the initial analysis of the TCLP leachate extract including LEB when no further dilution is required for the extract analysis. Otherwise, report the incremented dilution factor (e.g., if the dilution factor for a leachate extract analysis is 5, then report 50 as the dilution factor taking into the account of the dilution prior to extraction).
Efficiency									Not required.
HeatedPurge	X	X			X				For VOA, report "Yes" if heated purge was used; otherwise report "No".
Inclusion									Not required.
InjectionVolume	X	X		X	X				For GC analyses and SVOA analysis, report the volume injected in microliters. For VOA analysis, report the purge volume in milliliters. Report the volume to at least two significant figures.
InjectionVolumeUnits	X	X		X	X				Report "uL" or "mL" as applicable.
InstrumentID	X	X	X	X	X	X	X	X	Report the laboratory identifier for the instrument used for this analysis.
LabAnalysisID	X	X	X	X	X	X	X	X	Report a unique identifier.
LabFileID	X	X	X	X	X	X	X	X	Report the Lab File ID.
LabID									Not required.
LabMethodID									Not required.
LabMethodName									Not required.
LabName									Not required.
MethodCode									Not required.
MethodID									Not required.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X	X	Report "EPA_CLP".
MethodVersion	X	X	X	X	X	X	X	X	Report the month and year the SOW was issued.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PreparationBatch									Not required.
ProcedureID									Not required.
ProcedureName									Not required.
ReferenceDate									Not required.
ResultBasis	X	X	X		X	X	X		Report "Dry" for soil/sediment samples. For Inorganic aqueous/water samples, report "Dissolved" if sample is field-filtered; otherwise report "Total". Report "Wet" for tissue samples or for any other matrices (not aqueous/water) for which the results are not corrected for percent solids.
Temperature									Not required.
TemperatureUnits									Not required.
Wavelength									Not required.
WavelengthUnits									Not required.
Yield									Not required.
AnalysisGroup	X								
AnalysisGroupID	X								Report a unique identifier for the AnalysisGroup if derived result from multiple analyses.
AnalysisType	X								Report "Sum".
Comment									Not required.
Handling									Not required.
ReportedResult	X	X	X	X	X	X	X		
AnalysisGroupID	X								For derived analyte results summed from multiple analyses, report the unique identifier from the AnalysisGroup from which the result is reported.
AnalyteGroupID	X	X	X	X	X	X	X		For derived analyte results summed from a single analysis, report the unique identifier from the AnalyteGroup from which the result is reported.
AnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS" (Chemical Abstracts Service).
AnalyteType	X	X	X	X	X	X	X		Report "Target" for all target analytes except Hardness; "Spike" for all target analytes designated as spike analytes for MS/MSD, Post-Digestion Spike, and LCS analyses; or "TIC" for all TICs. Report "Derived" for Hardness.
BiasErrorRatio									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
CASRegistryNumber	X	X	X	X	X	X	X		Report the CAS Number as it appears in the SOW, and for TICs if known.
ClientAnalyteID	X	X	X	X	X	X	X		Report CAS number. For TICs with no CAS number, report TIC name or as "Unknown-01", then increment with each TIC.
ClientAnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
ClientDetectionLimit	X	X	X	X	X	X	X		For a target or spike analyte, report the unadjusted MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, from which the sample result is reported. Report the unadjusted MDL value in the appropriate units to two significant figures and rounded up from the calculated value.
ClientDetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment, or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Anions aqueous/water or TOC aqueous/water; or "ug" for wipe samples.
ClientQuantitationLimit	X	X	X	X	X	X	X		Report the unadjusted CRQL.
ClientQuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment, or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Hardness, Anions aqueous/water, or TOC aqueous/water; or "ug" for wipe samples.
Comment									Not required.
DetectionLimit	X	X	X	X	X	X	X		For a detected target or spike analyte, report the MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, from which the sample result is reported. Report the MDL value adjusted by the same factors (sample weight/volume, percent solids, and dilution) used to obtain the final calculated sample result in appropriate units to two significant figures. For a non-detected target or spike analyte, report the adjusted MDL (or adjusted DL for Aroclors other than 1016 or 1260) from the same analysis as the reported adjusted CRQL. Not required for Hardness or TICs.
DetectionLimitType	X	X	X	X	X	X	X		Report "MDL_sa" (MDL sample adjusted) or "DL_sa" for Aroclors without a specific MDL.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
DetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment, or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Anions aqueous/water or TOC aqueous/water; or "ug" for wipe samples.
DifferenceErrorRatio									Not required.
ExpectedResult		X		X		X			Report the theoretical final calculated concentration (the spike added) for the spiked analytes or the true value for LCS to at least two significant figures. Not required for GC.
ExpectedResultUncertainty									Not required.
ExpectedResultUncertaintyConfidenceLevel									Not required.
ExpectedResultUncertaintyDetermination									Not required.
ExpectedResultUncertaintyIntervalType									Not required.
ExpectedResultUncertaintyLimitHigh									Not required.
ExpectedResultUncertaintyLimitLow									Not required.
ExpectedResultUncertaintyType									Not required.
ExpectedResultUncertaintyUnits									Not required.
ExpectedResultUnits		X		X		X			Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment, or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Anions aqueous/water or TOC aqueous/water; or "ug" for wipe samples.
LabAnalysisID	X	X	X	X	X	X	X		Report the unique identifier from the analysis this reported result was derived from. Not required for Hardness.
LabAnalyteID									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabQualifiers	X	X	X	X	X	X	X		Report flags and concentration qualifiers: "X" for values estimated due to interference. "*" for QC analyses outside control limits. "D" for values reported from a dilution and any TCLP leachate or leachate extract with a dilution factor greater than 10. "J" for reported values less than the reported adjusted CRQL but greater than or equal to the reported adjusted MDL. "U" for values less than the reported adjusted MDL. For Organic methods, report "B" if the same analyte is found in an associated blank; report "H" if the analyte is quantitated using peak heights rather than peak areas. For GC methods, report "C" if the identification of the analyte is confirmed by GC/MS, report "P" if the percent difference between the results on each column exceeds 25% for detects. For GC/MS TICs, report "A" if the TIC is a suspected Aldol-condensation product, report "N" if the TIC has a ≥85% match. For Hardness, report "U" if both values are less than the adjusted MDL. For Inorganic PB/LEB, report "J" if the absolute value of the result is less than the adjusted CRQL but greater than or equal to the adjusted MDL, and report "U" if the absolute value of the result is less than the adjusted MDL.
LabResultStatus	X	X	X						Report "Preliminary" or "Final" as applicable.
PeakID									Not required.
PercentDifference	X	X		X	X		X		Report the serial dilution Percent Difference to the nearest whole percent. For dual-column GC analyses (excluding IBs), report the Percent Difference between the final Reported Result and the second column result to the nearest whole percent. (Not required for GC/MS or GC/FID analysis.)
PercentDifferenceLimitHigh	X	X		X	X		X		Report the upper limit for the Percent Difference to the nearest whole percent. (Excluding IB in GC analyses. (Not required for GC/MS or GC/FID analysis.)
PercentDifferenceLimitLow									Not required.
PercentDifferenceLimitType	X	X		X	X		X		Report "Method". (Excluding IB in GC analysis.) (Not required for GC/MS analysis.)

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PercentRecovery		X		X		X			For GC/MS, Inorganic, Anions, Cr(VI), and TOC, report the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitHigh		X		X					Report the upper limit for the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitLow		X		X					Report the lower limit for the Percent Recovery to the nearest whole percent.
PercentRecoveryLimitType		X		X					Report "Method".
PercentRecoveryType									Not required.
QuantitationLimit	X	X	X	X	X	X	X		For a detected target, derived, or spike analyte, report the CRQL adjusted by the same factors (sample weight/volume, percent solids, and dilution) used to obtain the final calculated result in the "Result" field to two significant figures. For a non-detected target, derived, or spike analyte, report the adjusted CRQL from the most compliant of the analyses (initial, reanalysis, and re-extraction) performed for the analyte. Report the adjusted CRQL from the initial analysis if no further dilution is intended for the analyte. Not required for TICs.
QuantitationLimitType	X	X	X	X	X	X	X		Report "CRQL_sa" (CRQL sample adjusted).
QuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment, or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Hardness, Anions aqueous/water, or TOC aqueous/water; or "ug" or "ug/cm2" for wipe samples.
ReportingLimit									Not required.
ReportingLimitType									Not required.
ReportingLimitUnits									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability: Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	Instructions
Result	X	X	X	X	X	X	X		Report the final calculated result for detects to two significant figures. When dilution and/or reanalysis/re-extraction have been performed for a sample, report the most compliant result from the applicable analysis per the requirements in the applicable Exhibit D Section 11.0 technical acceptance criteria. Leave blank if the analyte is not detected. When multiple dilutions have been performed for a sample, report the compliant result from the least diluted analysis. If the result of the required dilution and/or reanalysis/re-extraction is non-compliant, report the result from the initial analysis. For GC methods, report the lower of the two column results from the most compliant analysis. For PB or inorganic LEB results less than the negative MDL (-MDL), report a leading "-".
ResultLimitHigh									Not required.
ResultLimitLow									Not required.
ResultLimitType									Not required.
ResultType	X	X	X	X	X	X	X		Report "=" for all detected analytes with results greater than or equal to adjusted MDL or DL. Report "Not_Detected" for non-detects less than the adjusted MDL or DL. Report "Negative" for PB or Inorganic LEB results less than the negative MDL (-MDL).
ResultUncertainty									Not required.
ResultUncertaintyConfidenceLevel									Not required.
ResultUncertaintyDetermination									Not required.
ResultUncertaintyIntervalType									Not required.
ResultUncertaintyLimitHigh									Not required.
ResultUncertaintyLimitLow									Not required.
ResultUncertaintyType									Not required.
ResultUncertaintyUnits									Not required.
ResultUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment, or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Hardness, Anions aqueous/water or TOC aqueous/water; or "ug" or "ug/cm2" for wipe samples.
RetentionTime	X	X			X				For GC/MS, report the retention time for all TICs in decimal minutes.
RetentionTimeUnits	X	X			X				Report "minutes".

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
RPD		X	X						Report the RPD for GC/MS MS/MSD and Inorganic Duplicates to the nearest whole percent. (Not required for GC methods.)
RPDLimitHigh		X	X						Report the upper limit for the RPD to the nearest whole percent. Not required for GC methods.
RPDLimitType		X	X						Report "Method". (Not required for GC methods.)
RPDType									Not required.
PreparationPlusCleanup	X	X	X	X	X	X	X		
AliquotAmount	X	X	X	X	X	X	X		Report the sample amount in grams for soil/sediment/waste or mL for aqueous/water and leachate to at least three significant figures. Not required for wipes.
AliquotAmountUnits	X	X	X	X	X	X	X		Report "g" for soil/sediment/waste or "mL" for aqueous/water and leachate. Not required for wipes.
Analyst	X	X	X	X	X	X	X		Report the Analyst's initials.
CleanedUpDate	X	X		X	X				Required for SVOA and GC methods as applicable. Report the date and time the sample was cleaned up in the specified date format.
CleanupBatch	X	X		X	X				Required for SVOA and GC methods as applicable. Links all samples that were cleaned up together. Report the Lab File ID of the associated cleanup blank or other unique identifier.
CleanupType	X	X		X	X				Required for SVOA and GC methods as applicable. Report "GPC", "Florisil", "Sulfur", or "Sulfuric_Acid" as applicable.
ClientMethodCode									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ClientMethodID	X	X	X	X	X	X	X		Report the sample preparation ID. Report "200.7" for aqueous/water and leachate ICP-AES; "3050B" for soil/sediment/waste and wipes ICP-AES; "200.8" for aqueous/water and soil/sediment/waste ICP-MS; "7470A" for aqueous/water and leachate mercury; "7471B" for soil/sediment/waste mercury; "Midi-distillation_Aqueous" for midi-distilled aqueous/water and leachate cyanide; "Midi-distillation_Soil" for midi-distilled soil/sediment/waste cyanide; "Micro-distillation_Aqueous" for micro-distilled aqueous/water and leachate cyanide; "Micro-distillation_Soil" for micro-distilled soil/sediment/waste cyanide; "PT" for purge-and-trap; "SEPF" for aqueous/water and leachate separatory funnel extraction; "CLLE" for aqueous/water and leachate continuous liquid-liquid extraction without hydrophobic membrane; "CONH" for aqueous/water and leachate continuous liquid-liquid extraction with hydrophobic membrane; "SONC" for soil/sediment/waste sonication extraction; "SOXH" for soil/sediment/waste Soxhlet extraction; "PFEX" for soil/sediment/waste pressurized fluid extraction; "SPE" for solid-phase extraction; "WD" for waste dilution; "MW" for soil/sediment/waste microwave extraction; "300.0" for anion filtration; "218.6" for Cr(VI) filtration; "TOC_Persulfate" for instrument using persulfate oxidation; "TOC_Combustion" for instruments using combustion; or "TOC_Solid" for soil/sediment analysis of TOC.
ClientMethodModificationDescription									Not required.
ClientMethodModificationID									Not required.
ClientMethodName									Not required.
ClientMethodSource	X	X	X	X	X	X	X		Report "SFAM01.0.
ClientMethodVersion	X	X	X	X	X	X	X		Report the month and year the SOW was issued.
Comment									Not required.
FinalAmount	X	X	X	X	X	X	X		Report the volume of digestate/distillate produced by the preparation method in mL (for Inorganic, Anions, Cr(VI), and TOC) or the volume of extract upon completion in uL (for GC and SVOA analyses) to at least three significant figures.
FinalAmountUnits	X	X	X	X	X	X	X		Report "mL" or "uL" as applicable.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
InitialAmount	X	X		X	X				Required for medium VOA, SVOA, Pesticide, and Aroclor soil/sediment/waste analyses. Report the initial amount of extracted sample used for this preparation or cleanup, or the volume of methanol added to the medium VOA sample, to at least three significant figures.
InitialAmountUnits	X	X		X	X				Required for medium VOA, SVOA, Pesticide, and Aroclor soil/sediment/waste analyses. Report "uL".
LabID									Not required.
LabMethodID									Not required.
LabMethodName									Not required.
LabName									Not required.
LotNumber	X	X		X	X				Required for Pesticide analysis. Report the manufacturer's lot number for the Florisil cartridges used.
MethodCode									Not required.
MethodID									Not required.
MethodModificationDescription									Not required.
MethodModificationID									Not required.
MethodName									Not required.
MethodSource	X	X	X	X	X	X	X		Report "EPA_CLP".
MethodVersion	X	X	X	X	X	X	X		Report the month and year the SOW was issued.
PreparationBatch	X	X	X	X	X	X	X		Links all samples that were prepared together. Also applicable to VOA_Trace, TVOA_SIM, and VOA Low/Medium samples that were analyzed in the same analytical sequence. Report a unique identifier (for Inorganic analysis) or the Lab File ID of the associated Method Blank (for Organic Analyses) for each batch.
PreparationPlusCleanupType	X	X	X	X	X	X	X		Report "Preparation" or "Cleanup" as applicable.
PreparationType	X	X	X	X	X	X	X		Report "Automated" or "Manual" for Inorganic analyses. For Organic analyses, report "Sonication", "Soxhlet", "Pressurized_Fluid", or "Microwave" for soil/sediment/waste. Report "Sep_Funnel", "Liq_Liq", "Liq_Membrane", or "SPE" for aqueous/water and leachates. Report "Purge_and_Trap" for VOA_Trace, TVOA_SIM, and VOA Low/Medium. Report "Waste_Dilution" for waste dilution. Report "Filter" for Anions and Cr(VI); or the applicable ClientMethodID for TOC.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PreparedDate	X	X	X	X	X	X	X		Report the date and time the sample was prepared. Report in the specified date format.
ProcedureID									Not required.
ProcedureName									Not required.
Solvent									Not required.
Analyte	X	X	X	X	X	X	X		
AnalyteGroupID	X	X	X	X	X	X	X		For ICP-AES analysis as applicable. Report the identifier that links the Ca or Mg result to the AnalyteGroup Hardness result.
AnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS" as applicable.
AnalyteType	X	X	X	X	X	X	X		Report "Target" for all target analytes except Hardness; "Spike" for all target analytes designated as spike analytes for MS/MSD, Post-Digestion Spike, and LCS; "Internal_Standard" for internal standards; "Surrogate" for DMCs and surrogates; "TIC" for TICs; or "Monitor" for non-target interferences and masses requiring monitoring.
BiasErrorRatio									Not required.
CASRegistryNumber	X	X	X	X	X	X	X		Report the CAS Number as it appears in the SOW, and for TICs if known.
ClientAnalyteID	X	X	X	X	X	X	X		Report CAS number. For TICs with no CAS number, report TIC name or as "Unknown-01", then increment with each TIC.
ClientAnalyteName	X	X	X	X	X	X	X		Report the analytes as they appear in the SOW or as identified for TICs. Report unknown TICs as "Unknown-01", then increment for each TIC.
Comment									Not required.
Counts									Not required.
CountsUncertainty									Not required.
CountsUncertaintyConfidenceLevel									Not required.
CountsUncertaintyDetermination									Not required.
CountsUncertaintyIntervalType									Not required.
CountsUncertaintyLimitHigh									Not required.
CountsUncertaintyLimitLow									Not required.
CountsUncertaintyType									Not required.
CountsUnits									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
DetectionLimit	X	X	X	X	X	X	X		For target or spike analytes, report the MDL (or DL for Aroclors other than 1016 or 1260) for the instrument and type and dimensions of column, as applicable, used for analysis, adjusted for sample weight/volume, percent solids, and dilution factor in the appropriate units to two significant figures.
DetectionLimitType	X	X	X	X	X	X	X		Report "MDL_sa" (MDL sample adjusted) or "DL_sa" for Aroclors without a specific MDL.
DetectionLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment, or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Anions aqueous/water or TOC aqueous/water; or "ug" or "ug/cm2" for wipe samples.
DifferenceErrorRatio									Not required.
Efficiency									Not required.
ExpectedResult	X	X		X	X				For Organic analyses, for DMCs, internal standards, and surrogates, report the final amount added in nanograms. For GC methods, report the theoretical final calculated spike concentration for MS/MSD and LCS.
ExpectedResultUncertainty									Not required.
ExpectedResultUncertaintyConfidenceLevel									Not required.
ExpectedResultUncertaintyDetermination									Not required.
ExpectedResultUncertaintyIntervalType									Not required.
ExpectedResultUncertaintyLimitHigh									Not required.
ExpectedResultUncertaintyLimitLow									Not required.
ExpectedResultUncertaintyType									Not required.
ExpectedResultUncertaintyUnits									Not required.
ExpectedResultUnits	X	X		X	X				Report "ng" for DMCs, surrogates, and GC/MS internal standards. For GC MS/MSD and LCS, report "ug/kg" for soil/sediment/waste; "ug/L" for aqueous/water or leachate; or "ug" for wipe samples.
Inclusion									Not required.
LabAnalyteID									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
LabQualifiers	X	X	X	X	X	X	X		Report flags and concentration qualifiers: "X" for values estimated due to interference. "*" for QC analyses outside control limits. "D" for values reported from a dilution and any TCLP leachate or leachate extract with a dilution factor greater than 10. "J" for reported values less than the reported adjusted CRQL but greater than or equal to the reported adjusted MDL. "U" for values less than the reported adjusted MDL. "E" if the analyte concentration exceeds the upper limit of the calibration range of the instrument established by the ICAL. For Organic methods, report "B" if the same analyte is found in an associated blank; report "H" if the analyte is quantitated using peak heights rather than peak areas. For GC methods, report "C" if the identification of the analyte is confirmed by GC/MS, report "P" if the percent difference between the results on each column exceeds 25% for detects. For GC/MS TICs, report "A" if the TIC is a suspected Aldol-condensation product, report "N" if the TIC has a ≥85% match. For Inorganic PB/LEB, report "J" if the absolute value of the result is less than the adjusted CRQL but greater than or equal to the adjusted MDL, and report "U" if the absolute value of the result is less than the adjusted MDL.
LotNumber	X	X	X	X	X	X	X		Report the vendor/manufacturer-assigned lot number for this standard (Internal Standards and spiking analytes only).
PeakID	X	X	X	X	X	X	X		If response from a single peak is used for quantitation, report the ID of that peak. For unknown TICs, report the unique identifiers as applicable. For alkanes, report "Total alkanes" as the identifier. Leave blank for multi-component analytes.
PercentRecovery	X	X		X	X				Required for Organic analyses. Report the final calculated percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.
PercentRecoveryLimitHigh	X	X		X	X				Required for Organic analyses. Report the upper limit for the percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
PercentRecoveryLimitLow	X	X		X	X				Required for Organic analyses. Report the lower limit for the percent recovery of the GC spikes, DMCs, and surrogates to the nearest whole percent.
PercentRecoveryLimitType	X	X		X	X				Report "Method".
PercentRecoveryType									Not required.
QuantitationLimit	X	X	X	X	X	X	X		Report the CRQL adjusted for sample weight/volume, percent solids, and dilution factor to two significant figures.
QuantitationLimitType	X	X	X	X	X	X	X		Report "CRQL_sa" (CRQL sample adjusted).
QuantitationLimitUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Anions aqueous/water or TOC aqueous/water; or "ug" or "ug/cm2" for wipe samples.
ReportingLimit									Not required.
ReportingLimitType									Not required.
ReportingLimitUnits									Not required.
Result	X	X	X	X	X	X	X		For detected target or spike analytes, and for monitored masses, report the final calculated result to two significant figures. Leave blank if the analyte or compound is not detected. For PB and Inorganic LEB less than the negative MDL (-MDL), report a leading "-".
ResultLimitHigh									Not required.
ResultLimitLow									Not required.
ResultLimitType									Not required.
ResultType	X	X	X	X	X	X	X		Report "=" for all detected analytes with results greater than or equal to adjusted MDL or DL. Report "Not_Detected" for non-detects less than the adjusted MDL or DL. Report "Negative" for PB or Inorganic LEB results less than the negative MDL (-MDL).
ResultUncertainty									Not required.
ResultUncertaintyConfidenceLevel									Not required.
ResultUncertaintyDetermination									Not required.
ResultUncertaintyIntervalType									Not required.
ResultUncertaintyLimitHigh									Not required.
ResultUncertaintyLimitLow									Not required.
ResultUncertaintyType									Not required.
ResultUncertaintyUnits									Not required.

TABLE 3. DATA ELEMENT INSTRUCTIONS (Con't)

Node and Data Elements	Applicability								Instructions
	Sample	MS/MSD	Dup	LCS	PB/LEB/MB/SB/CB/IB	PDS	SD	NCS	
ResultUnits	X	X	X	X	X	X	X		Report "mg/kg" for Inorganic soil/sediment/waste, Anions soil/sediment or TOC soil/sediment; "ug/kg" for Organic soil/sediment/waste; "ug/L" for aqueous/water, leachate, or Cr(VI); "mg/L" for Anions aqueous/water or TOC aqueous/water; or "ug" or "ug/cm2" for wipe samples.
StandardSource	X	X	X	X	X	X	X		Report the vendor/manufacturer for this standard.
Wavelength									Not required.
WavelengthUnits									Not required.
AnalyteGroup	X	X	X	X	X	X	X		
AnalyteGroupID	X	X	X	X	X	X	X		Report a unique identifier.
AnalyteName	X	X	X	X	X	X	X		Report "Hardness".
AnalyteNameContext	X	X	X	X	X	X	X		Report "CAS".
AnalyteType	X	X	X	X	X	X	X		Report "Derived".
CASRegistryNumber	X	X	X	X	X	X	X		Report "Hardness".
ClientAnalyteID	X	X	X	X	X	X	X		Report "Hardness".
ClientAnalyteName	X	X	X	X	X	X	X		Report "Hardness".
Comment									Not required.
LabAnalyteID									Not required.
LabQualifiers	X	X	X	X	X	X	X		Report "J" for values less than the adjusted CRQL but greater than or equal to the adjusted MDL. Report "U" for when both Ca and Mg values are less than the adjusted MDLs.
Result	X	X	X	X	X	X	X		Report the final calculated for detects to two significant figures.
ResultType	X	X	X	X	X	X	X		Report "=" for detects. Report "Not_Detected" for non-detects (where both Ca and Mg are not detected).
ResultUncertainty									Not required.
ResultUnits	X	X	X	X	X	X	X		Report "mg/L".

TABLE 4. ABBREVIATIONS

Abbreviation/Acronym	Definition
%D	Percent Difference
%R	Percent Recovery
%RI	Percent Relative Intensity
%RSD	Percent Relative Standard Deviation
CAS	Chemical Abstracts Service
CB	Cleanup Blank
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CN	Cyanide
Cr(VI)	Hexavalent Chromium
CRQL	Contract Required Quantitation Limit
DMC	Deuterated Monitoring Compound
DTD	Document Type Definition
Dup	Duplicate Sample
EDD	Electronic Data Deliverable
FLO	Florisil Cartridge Check
GC	Gas Chromatography or Gas Chromatograph
GPC	Gel Permeation Chromatography Calibration Verification
Hg	Mercury
IB	Instrument Blank
IC	Ion Chromatography
ICAL	Initial Calibration
ICB	Initial Calibration Blank
ICP-AES	Inductively Coupled Plasma - Atomic Emission Spectroscopy
ICP-MS	Inductively Coupled Plasma - Mass Spectrometry
ICS	Interference Check Sample
ICSA	Interference Check Sample Solution A
ICSAB	Interference Check Sample Solution AB
ICV	Initial Calibration Verification
ID	Identifier
IEC	Interelement Correction
IPC	Instrument Performance Check (Tune)
Lab	Laboratory
LCS	Laboratory Control Sample
LEB	Leachate Extraction Blank
MD	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike or Mass Spectrometer or Mass Spectrometry
MSD	Matrix Spike Duplicate
NCS	Non-Client (ZZZZZ) Sample
PAH	Polynuclear Aromatic Hydrocarbon
PB	Preparation Blank

TABLE 4. ABBREVIATIONS (Con't)

Abbreviation/Acronym	Definition
PDS	Post-Digestion/Distillation Spike
PEM	Performance Evaluation Mixture
Pest	Pesticides
QATS	Quality Assurance Technical Support
QC	Quality Control
RESC	Resolution Check Mixture
RPD	Relative Percent Difference
RRF	Relative Response Factor
SB	Storage Blank
SD	Serial Dilution
SDG	Sample Delivery Group
SIM	Selected Ion Monitoring
SPE	Solid Phase Extraction
SPLP	Synthetic Precipitation Leaching Procedure
SOW	Statement of Work
SVOA	Semivolatile Organic Analyte
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TOC	Total Organic Carbon
TVOA	Trace Volatile Organic Analyte
u	Atomic Mass Unit
VOA	Volatile Organic Analyte