BASIC ORDERING AGREEMENT
ATTACHMENT 1

STATEMENT
OF
WORK

LABORATORY
ANALYTICAL
SERVICES

ADMIN RECORD

1/238

STATEMENT OF WORK
LABORATORY ANALYTICAL SERVICES

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1.0 GENERAL

1.1 Scope

1.1.1 Prime or other authorized subcontractors to the Department of Energy (termed "Contractor" in this document) are seeking proposals from analytical laboratories to perform quality chemical analyses on soil, sediment, groundwater, water, etc. samples. Organic, inorganic, and radiochemical analytical services and physical parameter measurements are required. Compliance with environmental regulations requires detailed constituent monitoring The scope of this document is to identify the default performance criteria and data deliverable requirements from analytical laboratories providing services to these prime and subcontractors for routine laboratory analytical services.

1.1.2 Prompt definitive chemical analyses of samples are imperative to meet strict reporting deadlines enforced by federal and state environmental laws and regulations using SW846 methodology, when possible. Chemical data provided shall be such that the Contractor can validate to EPA "definitive" level data. Some samples may contain hazardous substances and/or low levels of radioactivity. Any and all data and documentation generated as a result of this procurement may be subjected to regulatory and public scrutiny. Multiple laboratories are needed to perform these analyses within the stated time constraints without compromising the quality of the results. Samples may originate from groundwaters, surface waters, waste streams, processes, biota uptake, personnel health and safety, and research efforts.

1.2 Purpose

1.2.1 Contractors are responsible for the collection and distribution of analytical information at their sites. This can include information from samples on soil, sediment, rock, groundwater, surface water, solids, fuel, oil, coal, sludges, ash and other materials in the areas of industrial hygiene, bioassay, toxicity testing, air and stack monitoring, drinking water, fauna, biota, waste materials, filters, and air.

1.2.2 Methods considered "routine" are listed in Attachment B, Analyte List. The versions of the methods will be in accordance with the most recently promulgated versions of the methods of the state or Environmental Protection Agency (EPA) region that has primacy over the environmental activity. Older versions of these methods can be implemented at the request of the Contractor. There may be methods other than those listed in Attachment 1-B, Analyte List, which may be considered as Special Analytical Services. Additional instructions for these Special Analytical Services, will be included in site specific contracts via Contracts, Task Orders, Laboratory Delivery Orders, etc. written against the Basic Order Agreement (BOA).

1.2.3 In this document, the words "shall" and "must" are used to denote a requirement; the word "should" is used to denote a recommendation; and the word "may" is used to denote permission, neither a requirement nor a recommendation.

1.3 Implementation of requirements

Site specific contracts will be written by each Contractor against the BOA via Contracts, Task Orders, Laboratory Delivery Orders, etc.. These will cover either a discrete number of samples or a financial limit, and period of performance; and will indicate whether the specifics of this document will be required or whether alternative methodologies or deliverables will be required.

1.3.1 Exceptions to Requirements Contained in this SOW

1.3.1.1 By the Contractor - identified during analytical planning

Exceptions to requirements initiated by the Contractor will be made in site specific contracts via Contracts, Task Orders, Laboratory Delivery Orders, etc. written against the BOA.

1.3.1.2 By the Laboratory - identified immediately prior to or during analyses, or prior to accepting task orders, delivery orders, or etc.

Exceptions to requirements initiated by the laboratory must involve consultation with the client Contractor and must be documented in the laboratory case narrative of each data package.

1.3.2 Exceptions to Recommendations

Exceptions to recommendations need only be documented in the laboratory case narrative when those recommendations are denoted "as appropriate" in this document. Exceptions to all other recommendations do not need to be documented in the laboratory case narrative.

1.4 General Description of the Service

The price per analysis proposed by the laboratory should reflect:

- all costs associated with sample logistics (including bottles and labels, if requested by the Contractor)
- shipment of supplies and samples (if requested by the Contractor),
- sample handling, treatment, preparation, extraction, analyses (including quality control samples)
- quality assurance, quality control
- clean-up, storage, and disposal requirements
- reporting of the results (including use of Electronic Data Deliverables),
- document filing and archiving

Items not reflected as cost per analysis include financial reporting and copying and shipping of raw project data to the Contractor.

1.4.1 Services to Be Included

1.4.1.1 This specification solicits logistical and analytical laboratory support to the Contractors for the characterization of environmental and other types of samples using standard EPA-accepted protocols and methods when available. Samples may contain hazardous constituents and/or low levels of radioactivity.

1.4.1.2 Analytical services shall include the following:

- Maintaining and returning original sample chains of custody;
- Handling and storage of samples in compliance with all state and federal guidelines and regulations;
- Participating in Contractor, EPA, and DOE quality assurance programs;
- Analysis of the samples (for physical parameters and organic, inorganic, and radiochemical constituents) within the designated EPA holding times for that constituent, requested turn-around-times, or within specified turnaround times per each release order (whichever is less);
- Hard copy and electronic transmittal of both analytical results and invoices in required formats;
- Proper legal management and disposal of sample residual and extracts;
- Provide the originating Contractor a record of disposal of sample residuals per Contractor specifications
- Retention of all documents for a period of five years, within the requirements of the QA Program as detailed in QSAS (Attachment 1-A). After the 5 years the laboratory shall check with the Contractor for written permission for disposition.

1.4.2 Responsibility for Materials and Services

1.4.2.1 All samples will be collected by Contractor personnel or subcontractors. Sample sizes provided by the Contractor shall be at least the laboratory-specified minimum, when possible. Samples will be initially screened for radioactivity levels by the Contractor or the level of radioactivity will be based on process knowledge prior to sample shipment. Contractors will identify and promptly notify the laboratory of the results for those samples showing elevated radioactivity levels or provide historical knowledge of potential radioactivity for the samples not suspected of having significant levels of radioactivity. Sample vials and containers will be marked as radioactive if above Department Of Transportation (DOT) radioactive shipping limits; or if the samples are from suspected radioactive areas, as required by the Price Anderson Act Amendments.

1.4.2.2 The analytical laboratory shall furnish everything necessary for the performance of work in accordance with the

requirements of this specification. (See section 5.0 for the use of sub-tier laboratories or other subcontractors.)

1.4.2.3 The laboratory is expected to keep current with the changing dynamics of the environmental analytical services industry. As new analytical technologies, methods, regulatory acts, and certification or intercomparison programs are developed and issued, the Contractor may, solely at its discretion, include them as requirements in a revision to this specification. In addition, the laboratory is encouraged to notify the Technical Representative (TR) or other designated technical agreement administrator of new or improved methodologies and/or capabilities which it obtains throughout the subcontract agreement period. Laboratory suggested services will be evaluated by the Contractor and considered for incorporation into this agreement.

2.0 REFERENCES

2.1 Glossary and Abbreviations

See Section 3 of Attachment 1-A "Quality Systems for Analytical Services" (QSAS) for definitions and acronyms.

2.2 Codes, Standards, Orders, and Regulations

See Section 2 of Attachment 1-A "Quality Systems for Analytical Services" (QSAS) for listing of codes, standards, orders and regulations

2.2.1 The laboratory shall have, for the duration of the agreement, all applicable state and federal licenses and/or certifications necessary for operation of the analytical facilities to meet this specification and the site specific requirements. Failure to secure or maintain applicable licenses and/or certifications shall constitute grounds for refusal to award or for termination of the agreement.

2.2.2 Laboratories that use, store and/or dispose of radioactive materials must have and maintain a current Nuclear Regulatory Commission (NRC) or Agreement State license. The laboratory must maintain the appropriate NRC or state licenses having a possession limit for samples containing a mixture of radionuclides, including tritium or transuranics, that the state or the NRC defines as radioactive materials. The license shall ensure that such materials can be received and properly disposed.

2.2.3 The laboratory shall provide transportation and shipping of materials in accordance with all state and federal regulations. As a minimum, the laboratory shall follow Department of Transportation (DOT) regulations, as specified in the most current revision of 49CFR100-180 and 49CFR383-389.

2.2.4 The laboratory shall have the ability to perform the contracted organic, inorganic, radiological, and other specified analyses, as well as physical parameters, according to applicable EPA or other

standard protocols and methods. The laboratory shall have current copies of the documents available for audit at the laboratory. The laboratory shall be responsible for obtaining future updates of these documents. Contractors will supply the required documents specific to their site(s). Current revisions or editions of the referenced documents shall be used to conduct unmodified standard methods analyses.

2.2.5 Any specific site procedure required by a Contractor will be identified in site specific contracts via Contracts, Task Orders, Laboratory Delivery Orders, etc. written against the BOA. Such procedures will be provided by the Contractor.

2.2.6 The laboratory shall have an industrial hygiene/chemical hygiene plan and a radiation safety plan which meets and implements all laboratory safety requirements outlined by the Occupational Safety and Health Administration (OSHA) in the most current revision of 29CFR1910.1450, "Occupational Exposures to Hazardous Chemicals in Laboratories." A stringent health and safety plan that addresses hazardous and radioactive materials is required during performance of this agreement. The laboratory is expected to follow the applicable "Good Laboratory Practice Standards" specified in the most current revision of 40CFR792 during performance of work under this agreement.

3.0 WORK REQUIREMENTS

3.1 Technical Requirements

The technical requirements contained in this section are generic requirements for all Contractors. Contractors that have specific needs/requirements will identify these specifics in their site specific contracts via Contracts, Task Orders, Laboratory Delivery Orders, etc. written against the BOA.

3.1.1 Sample Requirements

3.1.1.1 Sample Size and Number of Containers

3.1.1.1.1 The laboratory shall assist the Contractor in minimizing sample size (mass or volume) and the number of sample containers necessary to perform the requested analyses. Sample sizes provided by the Contractor shall be at least the protocol-specified minimum.

3.1.1.1.2 The laboratory shall submit a summary table (hard copy and diskette or FTP/email attachment submittal) of minimum field sample size requirements for each package of analyses listed in Attachment K, Analyte List, or other rational grouping. This summary table shall be submitted to the TR or authorized technical representative within 30 calendar days of agreement award and within 15 calendar days of any revision or update.

3.1.1.2 Collection, Packaging and Shipment of Samples

3.1.1.2.1 The Laboratory is not required to provide any materials or incur any expenses associated with the collection, packaging, or preparation of samples for shipment to the Laboratory; unless otherwise specified in site specific contracts via Contracts, Task Orders, Laboratory Delivery Orders, etc. written against the BOA. This includes costs associated with:

- Sample bottles/containers
- Sample bottle/container labels
- Field preservatives
- Shipping containers (including coolers)
- Shipping materials
- Shipping labels

3.1.1.2.2 The Contractor shall notify the laboratory of a pending sample shipment, including a reference to the purchase order, number of samples, and any pertinent information not included in the purchase order. The laboratory shall receive an estimated radiological activity report for a shipment of samples with suspect radiological content and the Contractor may require, at its discretion, a permission to ship notice from the Laboratory.

3.1.1.2.3 The lab may, at their discretion, refuse to accept a sample shipment. This refusal must be made prior to shipment and may be verbal, but must be documented in writing.

3.1.1.2.4 Samples will be shipped to the Laboratory at the Contractor's expense, unless otherwise specified in site specific contracts via Contracts, Task Orders, Laboratory Delivery Orders, etc. written against the BOA.. Verification of sample receipt by the Laboratory will be communicated to the Contractor's Representative/Designee as soon as possible, unless otherwise specified in site specific contracts written against the BOA.

3.1.1.2.5 If the laboratory receives any sample that is out of specified temperature limits, the laboratory shall immediately stop all work with that sample and call the TR or authorized technical representative for instructions for proceeding with, or cancellation of, analyses for that sample.

3.1.1.2.6 The Laboratory shall return, at Laboratory's expense, all coolers to the owner within 30 calendar days, unless otherwise specified in site specific contracts via Contracts, Task Orders, Laboratory Delivery Orders, etc. written against the BOA..

3.1.1.2.7 An example of a Contractor's COC will be provided as part of the site specific contracts written against the BOA.

3.1.1.3 Sample Characteristics

Unless specifically precluded because of prior process knowledge, samples will be initially screened for radioactivity levels by the Contractor prior to sample shipment, The Contractor will identify and notify the laboratory of those samples showing elevated radioactivity levels, provide a copy of available radiological data, and coordinate shipments. The samples may have highly elevated dissolved solids, total suspended solids and/or tritium, radioactive materials, PCBs and other possible hazardous constituents which the laboratory must be equipped to receive and handle correctly.

3.1.1.4 Sample Disposition and Waste Return

3.1.1.4.1 Unless otherwise specified by site specific contracts written against the BOA, unused sample portions shall be maintained in accordance with current applicable EPA requirements for a minimum period of 60 calendar days (maximum - 75 calendar days) after receipt of the analytical results by the Contractor. This unused sample portion allows for a possible sample rerun, if needed.

3.1.1.4.2 Unless specifically agreed to at the time of sample shipment, the Laboratory assumes ownership of all samples sent to it by the Contractor for analysis. The Laboratory shall be responsible for proper disposal of all sample residuals and secondary waste, in accordance with 40 CFR, Parts 260-271 and 761, 49 CFR Parts 171-180, and all applicable federal, state and local statutes, regulations, ordinances, orders and rules. The Laboratory shall be the generator responsible for designating, manifesting and disposing of the samples and secondary laboratory waste. Disposal shall be appropriately documented (e.g. Chain of Custody, disposal report) and a copy made available upon specific request by the Contractor.

3.1.1.4.3 The Laboratory shall notify the Contractor, in writing, of its schedule for disposal of residuals of such samples. In the event the Laboratory cannot lawfully dispose of a specific residual sample and/or secondary waste, and with prior written approval, the Contractor shall take custody of the sample from Laboratory and arrange for its proper disposal.

3.1.1.4.4 The Laboratory shall maintain all waste disposal records as required by applicable federal, state and local laws. The Laboratory shall maintain an auditable file system. The file system may be verified during facility assessments.

3.1.1.4.5 All transportation of wastes en route to final disposal shall be performed in compliance with then-current promulgated US Department of Transportation regulations (49 CFR, Parts 171-180).

3.1.2 Analysis

3.1.2.1 Laboratory Requirements

See Attachment 1-A (QSAS) for detailed Laboratory QA requirements.

3.1.2.2 Analytical Requirements

See Attachment D to the QSAS (Attachment 1-A) for specific analytical requirements.

3.1.2.2.1 The laboratory shall analyze for the constituents or analytical packages as listed in Attachment 1-B, Analyte List, which includes a complete listing of methods, suites, subsuites and analytes. Included in this attachment are individual sections for:

- Volatile Organic Analyses (VOA)
- Semi-Volatile Organic Analyses (SVOA)
- Pesticides/PCB's
- Dioxins/Furans
- Herbicides
- Metals
- Wet Chemistry
- Universal treatment Standard List (UTS)
- Alpha Spectroscopy
- Gamma Spectroscopy
- Liquid Scintillation (LSC)
- Kinetic Phosphorescence Analysis (KPA)
- Miscellaneous and special analyses

3.1.2.2.2 The laboratory shall be required to maintain method detection limits (MDL) and estimated quantitation limits (EQL) below the Required Detection Limit (RDL) for each analyte/compound in the analyte list.

3.1.2.2.3 The required analytical constituents and RDLs are listed in Attachment 1-B, Analyte List, along with the suggested analytical method(s). The laboratory may propose alternate methods to the Contractor, but the Contractor must approve the alternate method before considered as an acceptable method. If the laboratory cannot meet the RDL in the Analyte List, then the laboratory should propose for the Contractor's review and acceptance the MDLs they can achieve. The laboratory shall report Tentatively Identified Compounds (TIC), if requested, for volatiles and semivolatiles.

3.1.2.2.4 A metals method detection limits (MDL) study using a simulated soil matrix shall be performed

and submitted with the other MDL studies. Any additional costs for this study shall be reflected in the unit prices for metals analyses.

3.1.2.3 Analytical Holding Times

3.1.2.3.1 The laboratory shall analyze the sample for the required constituents within the designated EPA holding times.

3.1.2.3.2 The site-specific contracts will specify the time in which the contractor agrees to get the sample to the lab prior to the end of the hold time. If the timeframe is not met, the sample becomes an accelerated analysis or prep as defined by the hold time. The laboratory shall notify the contractor in writing when this occurs.

3.1.2.3.3 For organics, as required by specific EPA methods or requirements, storage between the time of extraction and concentration shall be at 4°C. This requirement may be modified in site specific contracts written against the BOA. Storage for metals following digestion may be at room temperature.

3.1.2.3.4 Medium- or high-concentration volatile organics shall not be held following extraction; their analysis must take place immediately after extraction. Volatile organics are to be analyzed by the low-level method unless the concentration criteria listed for medium- or high-concentration analysis in the requested method are met.

3.1.2.3.5 Holding time ends when the analysis, resulting in reported data, has been initiated (i.e., semi-volatile GC/MS extract is injected into the last instrumentation). If the final reported data results from a dilution or re-injection of the sample, this analysis must have been completed within the holding time.

3.1.2.4 Contract Required Detection Limits

3.1.2.4.1 Contract Required Detection Limits (CRDLs), also referred to as Required Detection Limits (RDLs), are defined as a contractually specified detection limit that, under typical analytical circumstances, should be achievable

3.1.2.4.2 The reporting limit of all sample results shall be equal to or less than the RDLs specified in Attachment 1-B, Analyte List, including all analytical samples and quality indicator samples.

3.1.2.4.3 Radiochemistry Limits

- The Minimum requirement for radiochemistry detection are defined in the QSAS (Attachment 1-A)

- All reported quantities, including but not limited to results, total unpropagated uncertainty and minimum detectable activity shall be reported to three digits in scientific notation.
- If the RDLs could not be obtained because of laboratory errors or oversight such as inadequate counting times, inadequate aliquot size, inappropriate dilution, low detector efficiencies, high detector backgrounds, etc., then the sample shall be reanalyzed under more optimal conditions.
- If the RDLs could not be achieved because of problems with the sample, such as inadequate sample provided, elevated radioactivity levels, sample matrix interferences, multiphase liquids, etc., then such problems shall be explained in the case narrative.

3.1.2.5 Sample Reruns

The laboratory shall repeat (rerun) analysis when requested by the TR or authorized technical representative on the preserved original unused sample portions or on unused portions of sample preparations (e.g., extracts/digests) if adequate amounts are available and within holding times. The completed data package, including the electronic deliverable, must be received by the Contractor within the schedule outlined for original sample shipment, starting from the date of the written rerun request.

3.1.2.6 Dilution

See QSAS (Attachment 1-A) for minimum dilution requirements.

If a sample contains multiple off scale analytes or is still off scale after dilution, the TR or authorized technical representative shall be contacted for guidance.

3.1.2.7 Expedited Analyses

3.1.2.7.1 The laboratory shall have the ability to handle expedited analyses (rush service). Only those samples specifically marked and accompanied by a written request from the Contractor's designee for rush service will be treated as rush samples. Such notice will state the number of samples required, types of analyses, and the required turnaround time.

3.1.2.7.2 The Contractor may desire to 'rush' samples already in the Laboratory's possession. In these cases the Contractor's designee will fax or e-mail a request stating the number of samples required, types of analyses, and the required turnaround time.

3.1.2.7.3 The lab may, at their discretion, refuse to accept a 'rush' request. This refusal may be verbal, but must be documented in writing. This refusal must be performed in a timely manner; within one (1) hour of receipt of the request.

3.1.2.7.4 Rush request samples shall be completed and the complete data package (in the specified data format) reported before the rush service period expires, if the analytical method can be completed within the requested rush period. Rush service shall be required to be available for the following periods:

21 calendar days (with EDD)

14 calendar days (with EDD)

7 calendar days (with EDD)

3 calendar days (with EDD)

48 hours (EDD shall follow within 7 calendar days)

24 hours (EDD shall follow within 7 calendar days)

3.1.2.7.5 If the laboratory receives any sample that has exceeded or will exceed EPA holding times (excluding pH and 48-hour or less holding times) before the analysis is initiated (preparation and/or analysis), the laboratory shall immediately stop all work with that sample and call the TR or alternate for instructions prior to proceeding with analysis.

3.1.2.7.6 Premium pay for expedited analyses will be according to the Expedited Analysis Pricing Schedule included in the BOA, or by site specific contracts written against the BOA.

3.1.2.7.7 Invoicing and data reporting for rush samples shall be kept separate from regular samples.

3.1.2.8 Special Analyses

The laboratory shall provide a list of special analyses capabilities to the Contractor. The laboratory shall perform special analyses or studies when requested by the TR or authorized technical representative. Invoicing and data reporting for special analyses shall be kept separate from regular analyses.

3.1.3 Additional General Radioanalytical Requirements

See Appendix D of the QSAS (Attachment 1-A) for General Radioanalytical Requirements

3.1.3.1 Selection of Method

Analytical methods selected to produce data to meet the requirements of this SOW shall not have conditions and limitations that can preclude the possibility of meeting the data requirements. This condition applies to sample preparation, separation, preparation for counting, and actual counting or measurement of the sample. The requirements for specific analyses shall supersede any general requirements in the case of conflicting statements.

3.1.3.2 Instrument Maintenance/Repair Documentation

Following all repairs and modifications, verification of calibration and background determination and/or calibration with background determination shall be performed and documented.

3.1.3.3 Isotopic Determination by Alpha Spectroscopy

3.1.3.3.1 Calibration Standards

Check sources shall be used only to verify that efficiencies have not changed. They shall not be used to determine efficiencies

3.1.3.4 Liquid Scintillation Counting

3.1.3.4.1 Sample preparation

Other Isotopes (e.g. C-14, Fe-55, Ni-63, Tc-99, I-129, I-131, Pm-147, Pb-210, Pu-241) Due to the variety of effective methods for the analysis of various matrices and analytes, specific sample preparation procedures shall be accepted by the Site prior to use.

3.1.3.4.2 Efficiency

Methods for determining efficiency (other than quench curves or constant quench) such as internal-standard methods, shall be performed according to Site accepted procedures

3.1.3.5 Gamma Spectroscopy

3.1.3.5.1 Sample Counting Requirements

Spectral Acquisition, Processing and QC Software: The Laboratory shall identify the software package(s) and versions used to analyze Site samples in the Case Narrative. If the Laboratory uses commercially provided software unmodified to process spectra and calculate gamma spectroscopy MDAs, documentation shall be provided upon request. If the Laboratory has modified the commercial software, or uses in-house developed software, a description of the software or modifications shall be provided. The description shall include the algorithms and equations used for peak detection and fitting, nuclide identification, interference correction, energy and efficiency determination, and result, uncertainty and MDA calculation.

3.1.4 Data Management

3.1.4.1 General

3.1.4.1.1 It is the intent of this agreement to reach a standardization in the way each DOE Site (Contractor) receives its analytical data. Participating DOE Sites will work with analytical laboratories on this standardization effort. During the interim period, each participating laboratory shall adhere to the data

delivery requirements of each participating DOE site (Contractor). The requirements for each site will be provided as part of the site specific written against the BOA. A generalized overview of requirements is provided in the QSAS (Attachment 1-A).

3.1.4.1.2 Each Contractor maintains a comprehensive data review and validation program with both technical and administrative aspects. Technical data review includes checks for reasonableness of data and compares results between replicates, other QA samples, and reference materials. Administrative review verifies that the requested analyses were performed according to subcontract specifications and that invoices match items delivered and subcontract prices.

3.1.4.1.3 Additionally, during the review of the data package if it is discovered that there are missing data, corrupted data files, blank diskettes, or similar problems with the data, the Contractor will notify the laboratory and the laboratory shall provide its response within 24 hours (Monday-Friday).

3.1.4.1.4 The laboratory shall respond to requests for data anomaly rechecks on previously reported results. The Contractor shall request data rechecks within 90 days from delivery of data. Rechecks after that period may be subject to a negotiated surcharge. The scope of the data recheck shall be defined in writing by the TR or authorized technical representative and may include review of calculations, aliquot size, yield, and other data associated with the reported analytical result. Rechecks may also involve review of the results of associated quality control samples and other samples processed in the same analytical batch. As with all QA/QC responses, written response of the data recheck must be received by the TR or authorized technical representative within 7 calendar days of the request. Initial transmittal of response via facsimile/FTP/email with hard copy follow-up is acceptable.

3.1.4.1.5 Detailed information regarding Laboratory Data Validation Functional Guidelines and Laboratory QC Samples will be provided by the individual Contractors as part of their site specific contracts written against the BOA.

3.1.4.1.6 The laboratory shall make modifications, changes, or improvements (including additional data reporting requirements) to the data format as specified in site specific contracts written against the BOA.

3.1.4.2 Data Reports

3.1.4.2.1 Specifications for report formats are listed in Section 13 of the QSAS (Attachment 1-A)

3.1.4.2.2 Analytical data Report

3.1.4.2.2.1 Each data report should be sent as one package. Data from different projects or delivery orders shall not be mixed on the same diskette.

3.1.4.2.2.2 Each page of the data package shall be sequentially numbered. The laboratory shall ensure that all computer printouts and photocopies are readable.

3.1.4.2.2.3 New analytical results (including QA samples), rush service, corrections of previous data, special studies data, and reanalyses shall be sent as separate files as requested by the Contractor.

3.1.4.2.3 Laboratory Case Narrative

The laboratory case narrative is a document written by the laboratory for each sample data set, which includes, at a minimum, the following:

- The cover page shall include a list of the samples included in the package
- A short description of the samples upon receipt at the laboratory, which may include date of receipt, condition of sample containers, temperature, and pH (pH paper is appropriate), and presence of the chain of custody;
- A listing of the procedures that are used in preparing the samples for analysis; if in-house procedures are used, reference must be made to standard methods on which these procedures are based;
- Any significant technical difficulties encountered in preparing and analyzing the samples, which may directly affect the quality of the results;
- Any instances of repreparation and/or reanalysis of samples due to nonconformances with requirements
- A listing of deviations from regulatory-driven method requirements and accompanying regulatory agency-approved variance(s);
- An explanation of laboratory data qualifiers used with the reported data;
- Technically sound rationale for not achieving Contractor Required Detection limits (CRDL); and
- Signature(s) of laboratory designee(s) for ensuring data quality and data package content.

3.1.4.2.4 Electronic Data Deliverables

Format for Electronic Data Deliverables (EDDs) will be included in site specific contracts written against the BOA.

3.1.5 Turnaround Times (TAT)

3.1.5.1 Turnaround times will initiate from the time of sample receipt at the Laboratory and end at the time the required complete data deliverables are received by the contractor..

3.1.5.2 The standard turnaround time for laboratory results will be four (4) weeks (28 calendar days) after receipt of the last sample of a Reporting Delivery Group (RDG) at the Laboratory, unless specified otherwise by site specific contracts written against the BOA.

3.1.5.3 The Laboratory may request an extension of time to deliver within the required Turnaround Time. Such request for extension of performance must be presented to the Contractor's designee in writing, e-mail or fax, and must justify the reason for extension. Justifiable reasons may include:

- sudden, major weather-related impacts such as hurricanes, flooding, or tornadoes;
- sudden failure of electrical power;
- sudden failure of instrumentation
- unexpected absence of key personnel; or
- significant matrix interferences beyond expectations which may adversely affect the resultant quality control unless alternative chemistries are investigated.

3.1.6 Radioactive Materials Inventory

The Laboratory shall have and maintain a system to keep inventory of the radioactive materials in the laboratories possession. A report of this inventory shall be provided by the Laboratory, as requested, to the Contractor

3.2 Quality Requirements

Quality requirements are defined in the QSAS (Attachment 1-A)

3.3 Personnel Qualifications/Certification

Requirements for personnel qualifications/certifications are defined in the QSAS (attachment 1-A)

3.4 Deliverables

A Contractor's TR or authorized technical representative will serve as the point of contact for all technical communications associated with this specification. All other correspondence shall be directed to the Contractor's Procurement Representative for this agreement. Submittal of all deliverables generated through the performance of this specification shall be made to the TR or authorized technical representative, unless specified otherwise by site specific written against the BOA.

3.4.1 General Requirements

3.4.1.1 In no case will reports or analytical data be released to a third party (outside of the Contractor) without the prior written permission of the TR.

3.4.1.2 Each page of the data package shall be single sided and sequentially numbered. The laboratory shall ensure that all computer printouts and photocopies are readable.

3.4.1.3 All components of data package deliverables shall contain original documents where possible. Photocopies of original documents shall be included in the sample data package when the original is bound in a logbook maintained by the Laboratory. Photocopies of original documents may also be submitted if the original data were previously submitted under another data package.

3.4.1.4 Under no circumstances shall colored paper be used in a sample data package.

3.4.1.5 Hard copy deliverables shall be reported on CLP forms or equivalent unless specified otherwise by site specific contracts written against the BOA. No specific reporting format is specified in this document; however, the deliverables identified in the QSAS must be present in the hard copy deliverables.

3.4.2 Sample Analysis Reporting Categories

Sample Analysis Reporting Categories are defined in the QSAS (Attachment 1-A)

3.4.3 Raw Data

3.4.3.1 General

3.4.3.1.1 Raw data includes but is not limited to: logbooks, bench sheets, calibration records, continuing calibration verification samples (CCV), continuing calibration blanks (CCB), interference check samples (ICS), initial calibration verification samples (ICV), and initial calibration blanks (ICB), RAD spectra, ICSA from metals analysis, instrument printouts and other related documentation.

3.4.3.1.2 The Contractor reserves the right to visit the laboratory and review raw data.

3.4.3.1.3 Additionally, the Contractor may request that raw data be pulled, copied and sent to the Contractor in order to complete a records review.

3.5 Audits and Performance Evaluation

3.5.1 Audits and performance evaluation requirements are defined in the QSAS (Attachment 1-A)

3.5.2 A copy of all audits and a copy of any and all Corrective Action Reports or (CAR), or other responses, to audits on the laboratory conducted by the EPA or any other regulatory agency shall be sent to the designated person for each DOE Contractor within 30 calendar days of issuance of the audit response.

4.0 ACCEPTANCE OF SERVICES

Due to reporting requirements imposed on the Contractor by various oversight and regulatory agencies, analytical data may need to be used prior to actual acceptance. Use of reported data will constitute acceptance for samples analyzed under this agreement.

Analytical data are not deemed final until the laboratory has responded to all the Contractor's questions pertaining to a particular data set, the Contractor has formally accepted the data, and all data validation issues have been resolved.

5.0 THIRD PARTY (SUB-TIER) SERVICES

See Section 14 & 15 of the QSAS (Attachment 1-A)

6.0 ATTACHMENTS

1-A U.S. Department of Energy Office of Environmental Management Quality Systems for Analytical Services

1-B Analyte (Line Item Code) List

ATTACHMENT 1-A

U. S. Department of Energy
Office of

Environmental Management Quality Systems
for
Analytical Services

April 2004

U.S. Department of Energy

[redacted]

April 2004

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DEPARTMENT OF ENERGY QUALITY SYSTEMS FOR ANALYTICAL SERVICES

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Preface to the U.S. Department of Energy (DOE) Quality Systems for Analytical Services

Purpose: This Quality Systems for Analytical Services (QSAS) establishes a single, integrated quality assurance (QA) program for providers of analytical laboratories supporting the U.S. DOE operations. This document will allow laboratories providing testing services to DOE to implement a unified standard, thus improving efficiency and quality in a cost-effective manner. Furthermore, this QSAS represents a significant advance toward harmonizing analytical data quality requirements across various Federal agencies and closely follows the approach being taken by the Department of Defense and Environmental Protection Agency (EPA).

Objectives: As the primary requirements document for the DOE QA program for analytical laboratory services, this QSAS conforms to DOE Order 414.1 A *Quality Assurance* (DOE Order 414.1A). This order applies directly to suppliers and subcontractors (e.g., providers of analytical laboratory services) that perform work outside the boundaries of a DOE facility, as well as suppliers performing work on a DOE facility (e.g., Government Owned Contractor Operated laboratories). To conform to DOE Order 414.1 A, this QSAS addresses the following objectives:

- Allows line organizations to minimize risk while maximizing reliability and performance of subcontractor laboratories.
- Provides for the review, evaluation and improvement of performance based on an approved QA Program.
- Establishes a single, integrated QA program.
- Establishes criteria for independent assessments (through the DOE Consolidated Audit Program) to measure quality and to promote improvement.

Technical Basis: Providers of laboratory services to DOE shall be committed to generating data of known, documented quality. To present a coherent approach to this objective, the QSAS provides specific technical requirements and clarification for the implementation of DOE requirements. This document is based in total on EPA's National Environmental Laboratory Accreditation Conference (NELAC) Chapter 5 Quality System as adopted in 2000. Gray texts are DOECAP specific additions/clarifications for implementation to DOE analytical chemistry.

Applicability: This QSAS is designed to serve as the standard reference and basis for commercial contractual relationships between DOE operations and providers of analytical testing services. The QSAS must be incorporated either whole or in part into contract vehicles or agreement between the purchaser and commercial provider of analytical testing services.

Implementation and Assessment: The effective implementation of the requirements in this QSAS is the basis for qualification of laboratories providing testing services to DOE. Requirements that are specific to DOE that supplement, deviate, or clarify NELAC standards are highlighted in the QSAS by the use of gray shaded text. The qualification of laboratories is assessed through the DOECAP. Current DOECAP Audit Checklists can be accessed on-line at: http://emnamp.inel.gov/DOECAP/eds.html.

This document is maintained by the DOECAP Operations Team.

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DOE QUALITY SYSTEMS FOR ANALYTICAL SERVICES

Quality Systems include all QA policies and quality control (QC) standard operating procedures (SOPs), which shall be delineated in a Quality Manual and followed to ensure and document the quality of the analytical data. **Laboratories seeking a contract award under this DOE QSAS must assure implementation of all QA policies and the essential QC SOPs specified in this QSAS**. The QA policies, which establish essential QC SOPs, are applicable to environmental laboratories regardless of size and complexity.

The intent of this Chapter is to provide sufficient detail concerning quality system requirements so that all accrediting authorities evaluate laboratories consistently and uniformly.

NELAC is committed to the use of Performance-based Measurement Systems (PBMS) in environmental testing and provides the foundation for PBMS implementation in these standards. While this stand may not currently satisfy all the anticipated needs of PBMS, NELAC will address future needs within the context of State statutory and regulatory requirements and the finalized EPA implementation plans for PBMS.

Chapter 5 of the NELAC Quality System is organized according to the structure of International Standardization and Organization/International Electrochemical Commission (ISO/IEC) Guide 25, 1990. Where deemed necessary, specific areas within this Chapter may contain more information than specified by ISO/IEC Guide 25. All items identified in this Chapter shall be available for on-site inspection or data audit.

1.0 SCOPE

a. This standard sets out the general requirements that a laboratory has to successfully demonstrate to be recognized as competent to carry out specific environmental tests.

b. This Standard includes additional requirements and information for assessing competence or for determining compliance by the organization or accrediting authority granting the recognition (or approval). If more stringent standards or requirements are included in a mandated test method or by regulation, the laboratory shall demonstrate that such requirements are met. If it is not clear which requirements are more stringent, the standard from the method or regulation is to be followed. (See the supplemental accreditation requirements in Section 1.9.2 **[NELAC Section 1.9.2 does not pertain to doe].)**

c. This standard is for use by analytical laboratories supporting the DOE in the development and implementation of their quality systems. It shall be used by accrediting authorities, in assessing the competence of environmental laboratories.

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3.0 DEFINITIONS

analytical batch	A prep batch or part of a prep batch that is analyzed with the same instrumentation, method sequence, and lots of reagents, and with the manipulations common to each sample within the same time period or in continuous sequential time periods. It is preferable that the analytical batch be the prep batch. If equipment restrictions limit the number of samples in any particular step, the samples in the batch are processed continuously and consecutively until the entire batch is completed.
ASTM Type I Water	Reagent water with a resistivity of greater than 18 megohm/cm at 25° C and has been polished with a 0.20 µm membrane filter. For additional specifications, refer to ASTM D1193-91, "Standard Specification for Reagent Water."
ASTM Type II Water	Deionized water with a resistivity of greater than 1.0 megohm/cm at 25°C. For additional specifications, refer to ASTM D1193-91, "Standard Specification for Reagent Water."
background	Ambient signal response recorded by measurement instruments that are independent of radioactivity contributed by the radionuclides being measured in the sample.
bias	The deviation of a single measured value of a random variable from a corresponding expected value, or a fixed mean deviation from the expected value that remains constant over replicated measurements within the statistical precision of the measurement. (Synonyms: deterministic error, fixed error, systematic error.)
blank spike (BS)	An aliquot of laboratory-originating blank matrix (distilled and/or deionized water, clean soil, or sand) spiked with a known quantity of analytes of interest. The spiking standard must be from the same source as, but not used as, a calibration standard. The blank spike is carried through the entire preparation and the analytical steps as the method blank. Measures accuracy/precision of target analytes in the absence of interferences and is prepared from a source independent of calibration standards. A BS can also be a laboratory control sample (LCS).
carriers	Carriers are typically nonradioactive (e.g., natural strontium, barium, yttrium) elements. They follow similar chemical reactions as the analyte during processing and are added to samples to determine the overall chemical yield for the analytical preparation steps. The yield of the carrier is typically determined gravimetrically.
combined standard uncertainty (total propagated uncertainty)	An estimate or approximation of the error associated with a measured value by propagation of individual uncertainties.

contractor	Prime or subcontractors to the U.S. DOE (termed "contractor" in this document).
contract required detection limit (CRDL)	A contractually-specified detection limit that, under typical analytical circumstances, should be achievable (synonymous with required detection limit).
counting efficiency	The ratio of the net count rate of a radionuclide standard source to its corresponding known activity.
curies	The traditional unit used to express the activity (amount) of radioactive material. The SI unit for activity is the becquerel. 1 curie (Ci) = 2.22×10^{12} disintegrations/minute 1 millicurie (mCi) = 2.22×10^{9} disintegrations/minute 1 microcurie (µci) = 2.22×10^{6} disintegrations/minute 1 picocurie (pCi) = 2.22 disintegrations/minute 1 becquerel (Bq) = 1 disintegrations/second
daughter	A nuclide formed by radioactive decay of a parent radionuclide.
decision level concentration	Quantity of analyte at or above which an *a priori* decision is made that a positive quantity of the analyte is present. For this standard, the probability of a Type I error (probability of erroneously reporting a detectable nuclide in an appropriate blank or sample) is set at 0.05.
design	Method development and software.
dilution factor (DF)	The factor by which the dilution level of the sample differs from that of a predefined method blank. The method blank is prepared within the prescribed parameters of the method, and has a dilution factor of one. The dilution factor does not include a dryness factor.
duplicates	Identical splits of individual samples that are analyzed by the laboratory to test for method reproducibility in a given matrix. In this case, samples are split in the laboratory.
electronic data deliverable (EDD)	The electronic media prescribed by the requirements set forth in the statement of work.
energy calibration	The correlation of the multichannel analyzer (MCA) channel number to decay photon energy, obtained from the location of peaks from known radioactive standards.
error	An estimation of the analytical measurement uncertainty, expressed as an error term with a specific analytical result, or as a typical value for a specific analytical technique.

field blank	A sample prepared in the field by transferring ASTM Type II Water to a clean sample container. The field blank is used to indicate the presence of contamination due to sample collection and handling.
half-life ($T_{1/2}$)	The time required for 50 percent of a given mass of a radioactive isotope to decay.
holding times (sample)	The duration between date of sample collection and dates of sample preparation (extraction/distillation) and/or analysis.
instrument detection limit (IDL)	The concentration of an analyte that produces an output signal twice the root mean square of the background noise, or the parameter determined by multiplying by three the standard deviation obtained for the analysis of a standard solution at a concentration of three to five times the desired IDL on three nonconsecutive days with seven consecutive measurements per day. IDL is only required for the metals analysis.
item	A collective term that may include hardware, samples, software or data.
key peak	A spectral peak used for identification or quantification of an isotope.
laboratory	A body that calibrates and/or tests.
laboratory control sample (LCS)	An aliquot of laboratory-originating blank matrix (distilled and/or deionized water, clean soil, or sand) spiked with a known quantity of analytes of interest. The spiking standard must be from a different source as the calibration standards. The blank spike is carried through the entire preparation and analytical steps as the method blank. A LCS is also known as a BS.
Matrix	The substrate of a test sample. **Field of Accreditation Matrix:** these matrix definitions shall be used when accrediting a laboratory. *Drinki8ng Water*: any aqueous sample that has been designated a potable or potential potable water source. *Non-Potable Water*: any aqueous sample excluded from the definition of Drinking Water Matrix. Includes surface water, groundwater, effluents, water treatment chemicals, and toxicity characteristic leaching procedure (TCLP) or other extracts. *Solid and Chemical Materials*: includes soils, sediments, sludges, products and by-products of an industrial process that results in a matrix not previously defined.

Matrix (Cont'd)	*Biological Tissue*: any sample of a biological origin such as fish tissue, shellfish, or plant material. Such samples shall be grouped according to origin. *Air and Emissions*: whole gas or vapor samples including those contained in flexible or rigid wall containers and the extracted concentrated analytes of interest from a gas or vapor that are collected with a sorbent tube, impinger solution, filter, or other device. Quality System Matrix: These matrix definitions are an expansion of the field of accreditation matrices and shall be used for purposes of batch and quality control requirements. These matrix distinctions shall be used: Aqueous: any aqueous sample excluded from the definition of Drinking Water matrix or Saline/Estuarine source. Includes surface water, groundwater, effluents, and TCLP or other extracts. Drinking Water: any aqueous sample that has been designated a potable or potential potable water source. Saline/Estuarine: any aqueous sample from an ocean or estuary, or other salt water source such as the Great Salt Lake. Non-aqueous Liquid: any organic liquid with <15% settleable solids. Biological Tissue: any sample of a biological origin such as fish tissue, shellfish, or plant material. Such samples shall be grouped according to origin. Solids: includes soils, sediments, sludges, and other matrices with >15% settleable solids. Chemical Waste: a product or by-product of an industrial process that results in a matrix not previously defined. Air and Emissions: whole gas or vapor samples including those contained in flexible or rigid wall containers and the extracted concentrated analytes of interest from a gas or vapor that are collected with a sorbent tube, impinger solution, filter, or other device.
matrix spike	A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency. Matrix spikes are not required for radiochemical analyses if an isotopic tracer or chemical carrier is used in the analysis to determine chemical recovery (yield) for the chemical separation and sample mounting SOPs. Matrix spikes are not required for Gross Alpha, Gross Beta, or Gamma Analysis.

matrix spike duplicate	A second replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.
method blank	A sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.
method detection limit (MDL)	The minimum concentration of a substance (an analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. The MDL is determined from a minimum of seven replicates at one to five times the expected detection limit. The calculation is from the standard deviation times the student-t-value at the desired confidence level. The sample is carried through the entire method under ideal conditions. The method detection limit is reported as from a spiked method blank, factoring in all nominal weights, dilutions, etc., common to the method, and with the same units as the sample to which it corresponds.
minimum detectable activity (MDA)	The MDA is the smallest amount (activity or mass) of an analyte in a sample that will be detected with a probability β of non-detection (Type II error) while accepting a probability α of erroneously deciding that a positive (non-zero) quantity of analyte is present in an appropriate blank sample (Type I error). For the purposes of this standard, the α and β probabilities are both set at 0.05 unless otherwise specified. (Reference: ANSI N13.30 and ANSI N42.23)
minimum detectable concentration (MDC)	The minimum detectable amount expressed in concentration units.
mixed waste	Waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation Recovery Act (RCRA) respectively.
National Environmental Laboratory Accreditation Conference (NELAC)	NELAC is a cooperative association of States and Federal Agencies, formed to establish and promote mutually acceptable performance standards for the operation of environmental laboratories. The standards cover both analytical testing of environmental samples and the laboratory accreditation process.
National Environmental Laboratory Program (NELAP)	NELAP is the program that implements the NELAC standards. States and Federal agencies serve as Accrediting Authorities with coordination facilitated by EPA to assure uniformity. Accreditation by one NELAP Accrediting Authority is mutually recognized by the other State and Federal Accrediting Authorities approved under NELAP.

nuclide	An atomic species characterized by the constitution of its nucleus, specifically by the number of protons and neutrons.
practical quantitation limit (PQL)	The lowest concentration where the 95 percent confidence interval is within 20 percent of the true concentration of the sample. The percent uncertainty at the 95 percent confidence level shall not exceed 20 percent of the results for concentrations greater than the practical quantitation limit.
radioactive decay	The process by which a spontaneous change in nuclear state takes place. This process is accompanied by the emission of energy and subatomic particles.
radioactive waste	Solid, liquid, or gaseous materials containing radionuclides regulated under the Atomic Energy Act of 1954 as amended, and of negligible economic value considering recovery costs.
radiation yield	The amount of radiation of the type being measured that is produced per each disintegration, which occurs. For gamma spectrometry, this is commonly called gamma abundance.
region of interest (ROI)	In radiochemical analysis, the Multichannel Analyzer region defining the isotope of interest displayed in terms of energy or channels.
relative bias	The quotient of the bias divided by the expected value.
replicate	The measurements of the variable of interest performed identically on two or more sub-samples of the same sample within a short time interval DOE considers the term replicate to mean three or more sub-samples.
reporting batch	A group of sample results reported together in a single data package. The reporting batch may be comprised of samples prepared and analyzed together in the same preparation batch or samples prepared and analyzed in different preparation and analytical batches.
reporting delivery group (RDG)	Up to 20 field samples collected at one site, under one task order, or geographical area received within each 14 calendar-day period (7) calendar-day period for statement of work requiring 14-day deliverables). The 14-day period begins with the receipt of the last sample received by the laboratory. Samples may be assigned to the appropriate reporting delivery group by matrix (i.e., all soils in one reporting delivery group, all waters in another). Data for all samples in a reporting delivery group must be submitted together in one package. In the event that the reporting delivery group is defined in the statement of work, the requirements of the statement of work will supersede this definition of the reporting delivery group.

required detection limit (RDL)	A contractually specified detection limit that, under typical analytical circumstances, should be achievable (synonymous with contract required detection limit).
sample	A single container or series of containers identified by a unique number comprised of material drawn from a single location or composite of locations during a fixed period representative of that location(s) and time period(s) for the purpose of analytical testing or physical evaluation.
standard operating procedure (SOP)	A written document that details the method of an operation, analysis, or action whose techniques and procedures are thoroughly prescribed and that is accepted as the method for performing certain routine or repetitive tasks.
standard reference material	Material characterized by the U. S. National Institute of Standards and Technology (NIST) or other recognized source for the activity of radionuclides/non-radionuclides and issued with a certificate that gives the results of the characterization.
technical requirements	Detailed instructions identifying the specific analysis or parameter desired and the requested regulatory method of analysis. Any deviation(s) from the regulatory methods regarding preparation and analysis protocol(s) and or reporting will be defined.
traceable standard	A Standard Reference Material (SRM) purchased either directly from the NIST or the other approved vendors who provide the traceability certificate to the NIST. A radionuclide that chemically mimics and does not interfere with the target radioanalyte through the chemical preparation and instrument analysis.
traceability	The property of a result of a measurement whereby it can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons. (VIM-6.12) Demonstrated lineage of measurement process quality to the national physical standards. A daughter nuclide, which has been removed from the parent(s) in the decay chain in which it was produced.
tracer	A radionuclide that chemically mimics and does not interfere with the target radioanalyte through the chemical preparation and instrument analysis. The percent yield of the recovered tracer radioisotope after the sample/tracer aliquot has undergone preparation and instrument analysis.
tracer chemical recovery	The percent yield of the recovered tracer radioisotope after the sample/tracer aliquot has undergone preparation and instrument analysis. The property of a result of a measurement whereby it can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons. (VIM-6.12) Demonstrated lineage of measurement process quality to the national physical standards.

unsupported nuclide material	A daughter nuclide, which has been removed from the parent(s) in the decay chain in which it was produced. A reference material usually prepared by a single laboratory for its own use as a calibration standard, as a control standard, or for the qualification of a measurement method. For further definition and requirements see STD.ASTM C1128.
working reference material	A reference material usually prepared by a single laboratory for its own use as a calibration standard, as a control standard, or for the qualification of a measurement method. For further definition and requirements see STD.ASTM C1128.

4.0 ORGANIZATION AND MANAGEMENT

4.1 LEGAL DEFINITION OF LABORATORY

The laboratory shall be legally identifiable. It shall be organized and shall operate in such a way that its permanent, temporary and mobile facilities meet the requirements of this Standard.

4.2 ORGANIZATION

The laboratory shall:

a. Have managerial staff with the authority and resources needed to discharge their duties.

b. Have processes to ensure that its personnel are free from any commercial, financial and other undue pressures which adversely affect the quality of their work.

c. Be organized in such a way that confidence in its independence of judgment and integrity is maintained at all times.

d. Specify and document the responsibility, authority, and interrelationship of all personnel who manage, perform or verify work affecting the quality of calibrations and tests.

Such documentation shall include:

1) a clear description of the lines of responsibility in the laboratory and shall be proportioned such that adequate supervision is ensured; and

2) job descriptions for all positions.

e. Provide supervision by persons familiar with the calibration or test methods and SOPs, the objective of the calibration or test and the assessment of the results.

The ratio of supervisory to non-supervisory personnel shall be such as to ensure adequate supervision to ensure adherence to laboratory SOPs and accepted techniques.

f. Have a technical director(s) (however named) who has overall responsibility for the technical operation of the environmental testing laboratory.

The technical director(s) shall certify that personnel with appropriate educational and/or technical background perform all tests for which the laboratory is accredited. Such certification shall be documented.

The technical director(s) shall meet the requirements specified in the Accreditation Process. (see NELAC Section 4.1.1.1) **[NELAC Section 4.1.1.1 does not pertain to DOE.]**

g. Have a QA officer (however named) who has responsibility for the quality system and its implementation.

The QA officer shall have direct access to the highest level of management at which decisions are taken on laboratory policy or resources, and to the technical director. Where staffing is limited, the QA officer may also be the technical director or deputy technical director.

The QA officer (and/or his/her designees) shall:

1) Serve as the focal point for QA/QC and be responsible for the oversight and/or review of quality control data.

> **The QA Officer or his/her designee shall periodically review control charts at a specified frequency for out of control conditions and initiate appropriate corrective action SOPs.**
>
> **DOECAP 1.1.6 and 2.10.3**

2) Have functions independent from laboratory operations for which they have quality assurance oversight.

3) Be able to evaluate data objectively and perform assessments without outside (e.g., managerial) influence.

> **The QA officer shall be empowered to stop unsatisfactory work, or prevent the reporting of results generated from an out-of-control measurement system.**
>
> **DOECAP 1.1.4**

4) Have documented training and/or experience in QA/QC SOPs and be knowledgeable in the quality system as defined under NELAC.

5) Have a general knowledge of the analytical test methods for which data review is performed.

6) Arrange for or conduct internal audits as per 5.3 annually.

7) Notify laboratory management of deficiencies in the quality system and monitor corrective action.

h. Nominate deputies in case of absence of the technical director(s) and/or QA officer.

i. Have documented policy and SOPs to ensure the protection of clients' confidential information and proprietary rights (this may not apply to in-house laboratories).

j. For purposes of qualifying for and maintaining accreditation, each laboratory shall participate in a proficiency test program as outlined in **QSAS Section 5.3.4 b**.

5.0 QUALITY SYSTEM - ESTABLISHMENT, AUDITS, ESSENTIAL QUALITY CONTROLS, AND DATA VERIFICATION

5.1 ESTABLISHMENT

The laboratory shall establish and maintain a quality system based on the required elements contained in this chapter and appropriate to the type, range and volume of environmental testing activities it undertakes.

a. The elements of this quality system shall be documented in the organization's quality manual.

b. The quality documentation shall be available for use by the laboratory personnel.

c. The laboratory shall define and document its policies and objectives for, and its commitment to accepted laboratory practices and quality of testing services.

d. The laboratory management shall ensure that these policies and objectives are documented in a quality manual and communicated to, understood and implemented by, all laboratory personnel concerned.

e. The quality manual shall be maintained current under the responsibility of the QA officer.

5.2 QUALITY MANUAL

The quality manual, and related quality documentation, shall state the laboratory's policies and operational SOPs established in order to meet the requirements of this Standard. The Quality Manual shall list on the title page: a document title; the laboratory's full name and address; the name, address (if different from above), and telephone number of individual(s) responsible for the laboratory; the name of the QA officer (however named); the identification of all major organizational units which are to be covered by this quality manual and the effective date of the version. The quality manual and related quality documentation also shall contain:

"The name, address and telephone number of individual(s) responsible for the laboratory" does not apply to DOECAP audited facilities.

a. A quality policy statement, including objectives and commitments, by top management.

b. The organization and management structure of the laboratory, its place in any parent organization and relevant organizational charts.

c. The relationship between management, technical operations, support services and the quality system.

d. SOPs **or reference to SOPs** to ensure that all records required under this Chapter **("this Chapter" refers to QSAS 5.2 d)** are retained, as well as SOPs for control and maintenance of documentation through a document control system which ensures that all SOPs, manuals, or documents clearly indicate the time period during which the SOP or document was in force.

The laboratory shall establish a minimum frequency for reviewing, updating, and distributing current revisions of controlled documents and SOPs.

DOECAP 1.2.6

e. Job descriptions of key staff and reference to the job descriptions of other staff.

f. Identification of the laboratory's approved signatories; at a minimum, the title page of the Quality Manual must have the signed and dated concurrence, (with appropriate titles) of all responsible parties including the QA officer(s), technical director(s), and the agent who is in charge of all laboratory activities such as the laboratory director or laboratory manager.

g. The laboratory's SOPs **or reference to SOPs** for achieving traceability of measurements.

h. A list of all test methods under which the laboratory performs its accredited testing.

i. Mechanisms for ensuring that the laboratory reviews all new work to ensure that it has the appropriate facilities and resources before commencing such work.

j. Reference to the calibration and/or verification test SOPs used.

k. SOPs **or reference to SOPs** for handling submitted samples *[and sample disposition].*

l. Reference to the major equipment and reference measurement standards used as well as the facilities and services used by the laboratory in conducting tests.

SOPs for procurement and standards.

m. Reference to SOPs for calibration, verification and maintenance of equipment.

n. Reference to verification practices which may include interlaboratory comparisons, proficiency testing programs, use of reference materials and internal QC schemes.

o. SOPs **or reference to SOPs** to be followed for feedback and corrective action whenever testing discrepancies are detected, or departures from documented policies and SOPs occur.

p. The laboratory management arrangements for exceptionally permitting departures from documented policies and SOPs or from standard specifications.

q. SOPs **or reference to SOPs** for dealing with complaints.

r. SOPs **or reference to SOPs** for protecting confidentiality (including national security concerns), and proprietary rights.

s. SOPs **or reference to SOPs** for audits and data review.

SOPs or reference to SOPs for data management, including LIMS, software validation, verification, and control.

SOPs or reference to SOPs related to health and safety.

t. Processes/SOPs **or references to SOPs** for establishing that personnel are adequately experienced in the duties they are expected to carry out and are receiving any needed training.

u. Ethics policy statement developed by the laboratory and processes/SOPs for educating and training personnel in their ethical and legal responsibilities including the potential punishments and penalties for improper, unethical or illegal actions.

v. **SOPs or** reference to SOPs for reporting analytical results.

w. Table of contents, applicable lists of references and glossaries, and appendices.

5.3 AUDITS, REVIEWS, AND CORRECTIVE ACTIONS

5.3.1 Internal Audits

The laboratory shall arrange for annual internal audits to verify that its operations continue to comply with the requirements of the laboratory's quality system. It is the responsibility of the QA officer to plan and organize audits as required by a predetermined schedule and requested by management. Such audits shall be carried out by trained and qualified personnel who are, wherever resources permit, independent of the activity to be audited.

DOE does not recognize the exemption "wherever resources permit" allowed under NELAC. Under the terms of this QSAS, management shall ensure that sufficient resources are available so that all internal audits shall be conducted by personnel independent of the activity to be audited.

Personnel shall not audit their own activities except when it can be demonstrated that an effective audit will be carried out. Where the audit findings cast doubt on the correctness or validity of the laboratory's calibrations or test results, the laboratory shall take immediate corrective action and shall immediately notify, in writing, any client whose work was involved.

Personnel conducting independent assessments shall have sufficient authority, access to work areas, and organizational freedom necessary to observe all activities affecting quality and to report the results of such assessments to laboratory management.

DOECAP 1.2.9

5.3.2 Managerial Review

The laboratory management shall conduct a review, at least annually, of its quality system and its testing and calibration activities to ensure its continuing suitability and effectiveness and to introduce any necessary changes or improvements in the quality system and laboratory operations. The review shall take account of reports from managerial and supervisory personnel, the outcome of recent internal audits, assessments by external bodies, the results of interlaboratory comparisons or proficiency tests, any changes in the volume and type of work undertaken, feedback from clients, corrective actions and other

relevant factors. The laboratory shall have a SOP for review by management and maintain records of review findings and actions.

5.3.3 Audit Review

All audit and review findings and any corrective actions that arise from them shall be documented. The laboratory management shall ensure that these actions are discharged within the agreed timeframe as indicated in the quality manual and/or SOPs.

The internal audit program shall include standard formats for reporting findings to laboratory management.

DOECAP 1.2.8 and 1.2.10

5.3.4 Performance Audits

In addition to the requirements of 5.3.1, 5.3.2, and 5.3.3 above, all laboratories awarded contract under this QSAS shall participate as required by the DOECAP. Current audit checklists are maintained by DOECAP and can be accessed at the following URL: http://emnamp.inel.gov/DOECAP/eds.html.

In addition to periodic audits, the laboratory shall ensure the quality of results provided to clients by implementing checks to monitor the quality of the laboratory's analytical activities. Examples of such checks are:

a. Internal QC SOPs using statistical techniques (see 5.4 below).

b. Participation in proficiency testing or other interlaboratory comparisons.

The laboratory shall demonstrate successful participation for a minimum of one year in a nationally recognized performance evaluation (PE) program prior to contract award under this QSAS. The laboratory shall demonstrate continued proficiency throughout the term of the contract award.

DOECAP 1.2.14

The purpose of PE sample analysis is to gauge the proficiency of each method performed by the laboratory under the awarded contract by providing samples of homogenous blend and known analyte concentration. Results from the analysis of PE samples shall also be used to verify the laboratory's continuing ability to produce acceptable analytical data.

The single-blind studies must be related to regulatory or environmental programs, matrix types, or analytes for each of the analytical disciplines (i.e., inorganic, organic, radiochemistry) that each laboratory is awarded contract under this QSAS. A laboratory is only required to analyze samples containing analytes, and samples of matrices, applicable to data they report under DOE contracts.

Required PE programs include:

- **EML QA Program, conducted by DOE-EML in New York, New York.**
- **MAPEP, conducted by DOE RESL at the INEEL.**

- RadCheM™ PT Program, conducted by Environmental Resource Associates (or equivalent programs offered by other commercial suppliers if such suppliers become NVLAP-accredited in the future), for radioactivity measurements in drinking water.

- NELAC Fields of Testing for CWA-Water [formerly known as WP] Under the terms of this QSAS, a laboratory may participate in two single-blind, single-concentration PT studies provided by an approved supplier. The PT suppliers must be approved by the PTOB/PTPA administered by the NELAP.

- NELAC Fields of Testing for SDWA-Water [formerly known as WS] Under the terms of this QSAS, a laboratory must participate in two single-blind, single-concentration PT studies provided by an approved supplier. The PT suppliers must be approved by the PTOB/PTPA administered by the NELAP.

Recommended Program:

- Quarterly Blind (QB) PE, conducted by EPA Office of Emergency and Remedial Response through EPA Center for Risk.

- NELAC Fields of Testing for RCRA Solid. Under the terms of this QSAS, a laboratory may participate in two single-blind, single-concentration PT studies provided by an approved supplier. The PT suppliers must be approved by the PTOB/PTPA administered by the NELAP.

In addition, the Contractor reserves the right to submit blind PE samples. Each laboratory shall continue to participate in all applicable rounds of external PE programs. The results of all PE programs will be utilized in the reports produced for EM laboratory users. Therefore, DOE will provide the laboratories operating to this QSAS instruction for ensuring the results of the NELAC-accredited studies are made available to DOE.

Reporting an unacceptable value, as calculated by the program, will result in a probationary period until the next reporting period for that analyte. Any applicable analyte for which individual laboratory results are entered as NR or "not reported" will not be considered an acceptable result. Any individual analyte failures must be corrected within the next PE program performance cycle period. If the laboratory fails two consecutive evaluations, the laboratory may not receive samples for analysis by the failed method until an acceptable PE score has been achieved. The laboratory can demonstrate proficiency by acceptable performance in an unscheduled evaluation at the expense of the laboratory.

The laboratory shall document the cause for failed PE results and develop a corrective action to address this cause within 21 calendar days from receipt of the results. These actions should then be available for DOECAP review upon request.

DOECAP 1.2.15

c. Use of certified reference materials and/or in-house QC using secondary reference materials as specified in Section 5.4.

d. Replicate testings using the same of difference test methods.

e. Re-testing of retained samples sometimes referred to as "recycle samples."

f. Correlation of results for different but related analysis of a sample (for example, total phosphorus should be greater than or equal to orthophosphate).

5.3.5 Corrective Actions

a. In addition to providing acceptance criteria and specific protocols for corrective actions in the Method SOPs (see 10.1.1), the laboratory shall implement general SOPs to be followed to determine when departures from documented policies, SOPs and QC have occurred. These SOPs shall include but are not limited to the following:

1) Identify the individual(s) responsible for assessing each QC data type.

2) Identify the individual(s) responsible for initiating and/or recommending corrective actions.

3) Define how the analyst shall treat a data set if the associated QC measurements are unacceptable.

4) Specify how out-of-control situations and subsequent corrective actions are to be documented.

5) Specify SOPs for management (including the QA officer) to review corrective action reports.

> **The corrective action process shall determine the events leading to the adverse condition, the technical activities associated with the problem, the generic implications of the problem, the extent to which similar problems have occurred, the effectiveness of the corrective actions, the actions taken to preclude recurrence, review of regulatory requirements, and client notification.**
>
> **Written SOPs shall be in place for the notification of affected organizations regarding nonconforming items.**
>
> **The laboratory shall have a system that tracks corrective actions to completion.**
>
> **DOECAP 1.2.17**

b. To the extent possible, samples shall be reported only if all quality control measures are acceptable. If a quality control measure is found to be out of control, and the data is to be reported, all samples associated with the failed quality control measure shall be reported with the appropriate data qualifier(s) and noted in the Case Narrative.

5.4 ESSENTIAL QUALITY CONTROL PROCEDURES

These general QC principles shall apply, where applicable, to all testing laboratories. The manner in which they are implemented is dependent on the types of tests performed by the laboratory (i.e., chemical, whole effluent toxicity, microbiological, radiological, air) and are further described in Appendix D. The standards for any given test type shall assure that the applicable principles are addressed:

a. All laboratories shall have detailed written protocols in place to monitor the following quality controls:

1) Positive and negative controls to monitor tests such as blanks, spikes, reference toxicants.

Positive and negative controls to monitor accuracy, bias, and cross-contamination potential, e.g., blanks, matrix spikes, tracer recovers, laboratory control standards, and standard reference materials.

2) Tests to define the variability and/or repeatability of the laboratory results such as replicates.

3) Measures to assure the accuracy of the test method including calibration and/or continuing calibrations, use of certified reference materials, proficiency test samples, or other measures.

4) Measures to evaluate test method capability, such as detection limits and quantitation limits or range of applicability such as linearity.

The laboratory shall maintain a list of typical detection limits, achieved for water, soil, and other matrices commonly analyzed, and SOPs for determining limits of detection and frequency of verification. **DOECAP 1.2.19**
Method detection limits shall be updated at a specified frequency. **DOECAP 2.7.1 and 3.7**

5) Selection **and documentation** of appropriate formulae to reduce raw data to final results such as regression analysis, comparison to internal/external standard calculations, and statistical analyses.

6) Selection **verification** and use of reagents and standards of appropriate quality.

7) Measures to assure the selectivity of the test for its intended purpose.

8) Measures to assure constant and consistent test conditions (both instrumental and environmental) where required by the test method such as temperature, humidity, light or specific instrument conditions.

b. All QC measures shall be assessed and evaluated on an on-going basis and QC acceptance criteria shall be used to determine the usability of the data (see Appendix D).

Statistical control charts shall be maintained for precision and accuracy, updated in a real time manner, and accessible to the individual performing the analyses. Analysts shall be responsible or monitoring the control charts on a real time basis. Control limits must be updated on a periodic frequency. **DOECAP 2.10.4**

c. The laboratory shall have SOPs for the development of acceptance/rejection criteria where no method or regulatory criteria exist (see 11.2, Sample Acceptance Policy.)

d. The QC protocols specified by the laboratory's method manual (10.1.2) shall be followed. The laboratory shall ensure that the essential standards outlined in Appendix D, or mandated methods or regulations (whichever are more stringent) are incorporated into their method manuals. When it is not apparent which is more stringent the QC in the mandated method or regulations is to be followed.

   The essential QC measures for testing are found in Appendix D of this Chapter.

6.0 PERSONNEL

6.1 GENERAL REQUIREMENTS FOR LABORATORY STAFF

The laboratory shall have sufficient personnel with the necessary education, training, technical knowledge and experience for their assigned functions. All personnel shall be responsible for complying with all QA/QC requirements that pertain to their organizational/technical function. Each technical staff member must have a combination of experience and education to adequately demonstrate a specific knowledge of their particular function and a general knowledge of laboratory operations, test methods, QA/QC SOPs and records management.

The laboratory organization shall establish well-defined and documented roles and responsibilities for each position.

DOECAP 1.1.5

6.2 LABORATORY MANAGEMENT RESPONSIBILITIES

In addition to 4.2.d, the laboratory management shall be responsible for:

a. Defining the minimal level of qualification, experience and skills necessary for all positions in the laboratory. In addition to education and/or experience, basic laboratory skills such as using a balance, colony counting, aseptic or quantitative techniques shall be considered.

b. Ensuring that all technical laboratory staff has demonstrated capability in the activities for which they are responsible. Such demonstration shall be documented. (See Appendix C); Note: In laboratories with specialized "work cells" (a well-defined group of analysts that together perform the method analysis), the group as a unit must meet the above criteria and this demonstration must be fully documented.

c. Ensuring that the training of each member of the technical staff is kept up-to-date (on-going) by the following:

1) Evidence must be on file that demonstrates that each employee has read, understood, and is using the latest version of the laboratory's in-house quality documentation, which relates to his/her job responsibilities.

2) Training courses or workshops on specific equipment, analytical techniques or laboratory SOPs shall all be documented.

3) Training courses in ethical and legal responsibilities including the potential punishments and penalties for improper, unethical or illegal actions. Evidence must also be on file that demonstrates that each employee has read, acknowledged and understood their personal ethical and legal responsibilities including the potential punishments and penalties for improper, unethical or illegal actions.

A refresher training course in ethical and legal responsibilities shall be implemented on an annual basis.

Analyst training shall be considered up to date if an employee training file contains a certification that technical personnel have read, understood and agreed to perform the most recent version of the test

method (the approved method or SOP as defined by the laboratory document control system, 5.2.d) and documentation of continued proficiency by at least one of the following once per year:

i. Acceptable performance of a blind sample (single blind to the analyst).

ii. Another demonstration of capability.

iii. Successful analysis of a blind performance sample on a similar test method using the same technology (e.g., gas chromatography/mass spectroscopy (GC/MS) volatiles by purge and trap for Methods 524.2, 624 or 5035/8260) would only require documentation for one of the test methods.

iv. At least four consecutive LCSs with acceptable levels of precision and accuracy.

v. If i–iv cannot be performed, analysis of authentic samples with results statistically indistinguishable from those obtained by another trained analyst.

Training documentation shall include evidence of indoctrination in the laboratory safety policies, waste management practices, and radiation worker training.

DOECAP 1.3.1

d. Documenting all analytical and operational activities of the laboratory.

The laboratory shall have a system in place to record incidents involving spillage of reagents and client samples.

DOECAP 2.15.2

e. Supervising all personnel employed by the laboratory.

f. Ensuring that all sample acceptance criteria (Section 11) are verified and that samples are logged into the sample tracking system and properly labeled and stored.

g. Documenting the quality of all data reported by the laboratory.

h. Developing a proactive program for prevention and detection of improper, unethical or illegal actions. Components of this program could include: internal proficiency testing (single and double blind); post-analysis, electronic data and magnetic tape audits; effective reward program to improve employee vigilance and co-monitoring; and separate SOPs identifying appropriate and inappropriate laboratory and instrument manipulation practices.

Developing, maintaining, and implementing a Chemical Hygiene Plan, Waste Management Plan, and Radiation Protection Plan.

6.3 RECORDS

Records on the relevant qualifications, training, skills and experience of the technical personnel shall be maintained by the laboratory [see 6.2.c], including records on demonstrated proficiency for each laboratory test method, such as the criteria outlined in 10.2.1 for chemical testing.

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7.0 PHYSICAL FACILITIES - ACCOMMODATION AND ENVIRONMENT

7.1 ENVIRONMENT

a. Laboratory accommodation, test areas, energy sources, lighting, heating and ventilation shall be such as to facilitate proper performance of tests.

b. The environment in which these activities are undertaken shall not invalidate the results or adversely affect the required accuracy of measurement. Particular care shall be taken when such activities are undertaken at sites other than the permanent laboratory premises.

c. The laboratory shall provide for the effective monitoring, control and recording of environmental conditions as appropriate. Such environmental conditions may include biological sterility, dust, electromagnetic interference, humidity, mains voltage, temperature, and sound and vibration levels.

d. In instances where monitoring or control of any of the above mentioned items are specified in a test method or by regulation, the laboratory shall meet and document adherence to the laboratory facility requirements.

NOTE: It is the laboratory's responsibility to comply with the relevant health and safety requirements. This aspect, however, is outside the scope of this Standard.

Training documentation shall include evidence of indoctrination in the laboratory safety policies, waste management practices, and radiation worker training.

DOECAP 1.3.2

The laboratory shall maintain a radiological control program that rigorously addresses analytical radiological control. The program shall address the SOPs for segregating samples with potentially widely varying levels of radioactivity. The radiological control program shall explicitly define how low level and high-level samples will be identified, segregated and processed in order to prevent sample cross-contamination.

The laboratory must demonstrate compliance or exempt status with the environmental, safety and health requirements of applicable laws, regulations, and standards.

- The laboratory shall have a waste management plans which meets the requirements of 40 CFR 273.
- The waste management plan shall include (not limited to) the following):
  - Administrative programs to demonstrate compliance for effluent discharges as required by regulatory agencies;
  - Training SOPs, schedules and management of training records in the areas of waste management, shipping, waste handling and radioactive materials control;
  - Radioactive volumetric and surface release policies;
  - Permits and licenses to handle hazardous and radioactive waste;
  - Policy or direction on how to conduct waste brokering and Transport, Storage and Disposal Facility (TSDF) evaluation to ensure proper disposition of waste;

- Tracking of individual sample containers from receipt to final disposition; and,
- Waste Minimization program including substitution (when permitted), segregation, recycling.

- The laboratory shall have in place a Radioactive Materials License. Exemptions to this requirement will be on a site specific basis. The Radioactive Materials License shall allow possession of sufficient quantities of radioactive samples to meet Department of Energy (DOE) specific contract needs.
- The laboratory shall have in place a Radioactive Materials Inventory capable of tracking standards, tracers, and all licensable samples.
- An onsite person shall be present to fill the function of the Radiation Safety Officer and this person shall be listed in the Radioactive Materials License.
- The laboratory shall comply with applicable requirements of 10 CFR 20.
- The laboratory shall comply with applicable requirements of 10 CFR 19.
- The laboratory shall establish a quantitative definition for a "radioactive sample" above which a sample is considered to be radioactive.
- The laboratory shall comply with applicable requirements of 40 CFR 261 – 268 and 761.
- Radioactive and mixed wastes shall be segregated from non-radioactive process wastes.
- The laboratory shall comply with 29 CFR 1910.

7.2 WORK AREAS

a. There shall be effective separation between neighboring areas when the activities therein are incompatible including culture handling or incubation areas and volatile organic chemicals handling areas.

b. Access to and use of all areas affecting the quality of these activities shall be defined and controlled.

c. Adequate measures shall be taken to ensure good housekeeping in the laboratory and to ensure that any contamination does not adversely affect data quality.

A copy of the laboratory-specific SOP for glassware shall be available to applicable laboratory personnel. The sample preparation area shall be kept clean to avoid contamination or cross-contamination.

DOECAP 1.4.1, 2.2.4 a

d. Workspaces must be available to ensure an unencumbered work area. Work areas include:

1) Access and entryways to the laboratory.

2) Sample receipt area(s).

3) Sample storage area(s).

4) Chemical and waste storage area(s).

If contamination is discovered, the laboratory shall have a corrective action plan in place to identify and eliminate the source; determine which samples may have been impacted, and implement measures to prevent recurrence.
DOECAP 2.15.3

5) Data handling and storage area(s).

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8.0 EQUIPMENT AND REFERENCE MATERIALS

8.1 Listing of Equipment and Reference Materials

The laboratory shall be furnished with all items of equipment (including reference materials) required for the correct performance of tests for which accreditation is sought [for which contract was awarded under this QSAS]. In those cases where the laboratory needs to use equipment outside its permanent control it shall ensure that the relevant requirements of this Standard are met.

8.2 Maintenance

All equipment shall be properly maintained, inspected and cleaned. Maintenance SOPs shall be documented.

8.3 Out of Service Equipment

Any item of the equipment which has been subjected to overloading or mishandling, or which gives suspect results, or has been shown by verification or otherwise to be defective, shall be taken out of service, clearly identified and wherever possible stored at a specified place until it has been repaired and shown by calibration, verification or test to perform satisfactorily. The laboratory shall examine the effect of this defect on previous calibrations or tests.

8.4 Identifying Calibration Status

Each item of equipment including reference materials shall be labeled, marked or otherwise identified to indicate its calibration status.

Thermometers, pipettes, and automatic sample dispensers shall be uniquely identified by an identification protocol.

DOECAP 3.3.4 and 4.8.2

8.5 Records

Records shall be maintained of each major item of equipment and all reference materials significant to the tests performed. These records shall include documentation on all routine and non-routine maintenance activities and reference material verifications.

The laboratory shall maintain sufficient spare parts to minimize equipment down time and maintain an inventory of these parts.

DOECAP 2.14.4

The records shall include:

a. The name of the item of equipment.

b. The manufacturer's name, type identification, and serial number or other unique identification.

c. Date received and date placed in service (if available).

d. Current location, where appropriate.

e. If available, condition when received (e.g. new, used, re-conditioned).

f. Copy of the manufacturer's instructions, where available.

g. Dates and results of calibrations and/or verifications and date of the next calibration and/or verification.

This shall include instrument configuration and settings. **DOECAP 4.11.3**

h. Details of maintenance carried out to date and planned for the future.

i. History of any damage, malfunction, modification or repair.

Instrumentation shall be set up according to the manufacturer's instructions. Any deviations shall be documented in the instrument maintenance log.

9.0 MEASUREMENT TRACEABILITY AND CALIBRATION

9.1 GENERAL REQUIREMENTS

All measuring operations and testing equipment having an effect on the accuracy or validity of tests shall be calibrated and/or verified before being put into service and on a continuing basis. The laboratory shall have an established program for the calibration and verification of its measuring and test equipment. This includes balances, thermometers and control standards.

9.2 TRACEABILITY OF CALIBRATION

a. The overall program of calibration and/or verification and validation of equipment shall be designed and operated so as to ensure that measurements made by the laboratory are traceable to national standards of measurement.

b. Calibration certificates shall indicate the traceability to national standards of measurement and shall provide the measurement results and associated uncertainty of measurement and/or a statement of compliance with an identified metrological specification. The laboratory shall maintain records of all such certifications.

c. Where traceability to national standards of measurement is not applicable, the laboratory shall provide satisfactory evidence of correlation of results, for example by participation in a suitable program of interlaboratory comparisons, proficiency testing, or independent analysis.

9.3 REFERENCE STANDARDS

a. Reference standards of measurement held by the laboratory (such as Class S or equivalent weights or traceable thermometers) shall be used for calibration only and for no other purpose, unless it can be demonstrated that their performance as reference standards have not been invalidated. Reference standards of measurement shall be calibrated by a body that can provide traceability. Where possible, this traceability shall be to a national standard of measurement.

b. There shall be a program of calibration and verification for reference standards.

c. Where relevant, reference standards and measuring and testing equipment shall be subjected to in-service checks between calibrations and verifications. Reference materials shall be traceable. Where possible, traceability shall be to national or international standards of measurement or to national or international standard reference materials.

9.4 CALIBRATION

Calibration requirements are divided into two parts: (1) requirements for analytical support equipment, and (2) requirements for instrument calibration. In addition, the requirements for instrument calibration are divided into initial instrument calibration and continuing instrument calibration verification.

9.4.1 Support Equipment

These standards apply to all devices that may not be the actual test instrument, but are necessary to support laboratory operations. These include but are not limited to: balances, ovens, refrigerators, freezers, incubators, water baths, temperature measuring devices (including thermometers and thermistors), thermal/pressure sample preparation devices, volumetric dispensing devices (such as Eppendorf®, or automatic dilutor/dispensing devices), **ultrasonic disruptors and microwave digestion units**

if quantitative results are dependent on their accuracy, as in standard preparation and dispensing or dilution into a specified volume.

a. All support equipment shall be maintained in proper working order. The records of all repair and maintenance activities, including service calls, shall be kept.

> **Catastrophic failure of refrigerators, freezer units shall be addressed in laboratory SOPs.**
>
> **DOECAP 1.6.10**

b. All support equipment shall be calibrated or verified at least annually, using NIST traceable references or other international standards when available, over the entire range of use.

> **When a traceable standard is not available, written approval for use of a non-traceable standard must be obtained from DOE or the DOE contractor.**

> **Balances shall be calibrated before initial use and annually thereafter and labeled to that effect by an independent (third party) professional technician. Laboratory personnel shall check balances daily or before use and the balance check shall bracket the range of use.**
>
> **DOECAP 2.2.6,7 and 4.8.6,8**
>
> **Liquid-in-glass thermometers shall be calibrated against an NIST traceable standard at least every five years.**
>
> **DOECAP 2.2.8 and 4.8.5**

The results of such calibration shall be within the specifications required of the application for which this equipment is used or

1) The equipment shall be removed from service until repaired or

2) The laboratory shall maintain records of established correction factors to correct all measurements.

c. Raw data records shall be retained to document equipment performance.

d. Prior to use on each working day, balances, ovens, refrigerators, freezers, and water baths shall be checked in the expected use range, with NIST traceable references where available. The acceptability for use or continued use shall be according to the needs of the analysis or application for which the equipment is being used.

> **The conductivity and/or resistivity of the water from the purification system shall be monitored daily or before use and the results are recorded in a logbook.**
>
> **DOECAP 1.6.6**
>
> **Daily balance checks shall be documented in controlled logbooks. Balance checks shall bracket the range of use.**
>
> **DOECAP 1.6.9 and 2.2.7**

Daily monitoring of refrigerator temperatures shall be recorded in a logbook or via electronic media such as a data logger.

DOECAP 2.2.10

e. Mechanical volumetric dispensing devices including burettes (except Class A glassware) shall be checked for accuracy on at least a quarterly use basis. Glass microliter syringes are to be considered in the same manner as Class A glassware, but must come with a certificate attesting to established accuracy or the accuracy must be initially demonstrated and documented by the laboratory.

The accuracy of all non-Class-A pipettes and automatic dispensers used for quantitative measurements shall be verified monthly or whenever degradation of measuring equipment is suspected.

DOECAP 2.2.9 and 3.3.3

Sample glassware and containers are either designated as disposable or cleaned according to recommended procedures that are listed in the individual Analytical Master Specifications.

DOECAP 1.6.7, 2.2.3 and 3.4.2

f. For chemical tests the temperature, cycle time, and pressure of each run of autoclaves must be documented by the use of appropriate chemical indicators or temperature recorders and pressure gauges.

g. For biological tests that employ autoclave sterilization see Section D.3.8.

The laboratory shall have a SOP for reagent and deionized water production that includes (at a minimum): preventative maintenance of water purification equipment, control criteria, and corrective action process for out-of-spec water.

DOECAP 1.6.5

Sonication equipment shall be tuned prior to use to ensure optimal performance.

DOECAP 2.2.15

9.4.2 Instrument Calibration

This standard specifies the essential elements that shall define the SOPs and documentation for initial instrument calibration and continuing instrument calibration verification to ensure that the data must be of known quality and be appropriate for a given regulation or decision. This standard does not specify detailed procedural steps ("how to") for calibration, but establishes the essential elements for selection of the appropriate technique(s). This approach allows flexibility and permits the employment of a wide variety of analytical SOPs and statistical approaches currently applicable for calibration. If more stringent standards or requirements are included in a mandated test method or by regulation, the laboratory shall demonstrate that such requirements are met. If it is not apparent which standard is more stringent, then the requirements of the regulation or mandated test method are to be followed.

NOTE: In the following sections, initial instrument calibration is directly used for quantitation and continuing instrument calibration verification is used to confirm the continued validity of the initial calibration.

9.4.2.1 Initial Instrument Calibration

The following items are essential elements of initial instrument calibration:

a. The details of the initial instrument calibration SOPs including calculations, integrations, acceptance criteria and associated statistics must be included or referenced in the test method SOP. When initial instrument calibration SOPs are referenced in the test method, then the referenced material must be retained by the laboratory and be available for review.

b. Sufficient raw data records must be retained to permit reconstruction of the initial instrument calibration, e.g., calibration date, test method, instrument, analysis date, each analyte name, analyst's initials or signature; concentration and response, calibration curve or response factor; or unique equation or coefficient used to reduce instrument responses to concentration.

c. Sample results must be quantitated from the initial instrument calibration and may not be quantitated from any continuing instrument calibration verification.

d. All initial instrument calibrations must be verified with a standard obtained from a second manufacturer or lot if the lot can be demonstrated from the manufacturer as prepared independently from other lots. Traceability shall be to a national standard, when available.

e. Criteria for the acceptance of an initial instrument calibration must be established, e.g., correlation coefficient or relative percent difference. The criteria used must be appropriate to the calibration technique employed.

f. Results of samples not bracketed by initial instrument calibration standards (within calibration range) must be reported as having less certainty, e.g., defined qualifiers or flags or explained in the case narrative. The lowest calibration standard must be above the detection limit.

> **Samples with concentrations that exceed the calibration range must be diluted to fall within the range.**
>
> **DOECAP 2.6.2**
>
> **Samples shall only be initially diluted so that all the project required quantitation limits can be met; otherwise, samples shall be re-analyzed at a lower dilution. All exceptions shall be discussed with the contract technical point of contact.**
>
> **DOECAP 2.6.3**

g. If the initial instrument calibration results are outside established acceptance criteria, corrective actions must be performed. Data associated with an unacceptable initial instrument calibration shall not be reported.

h. Calibration standards must include concentrations at or below the regulatory limit/decision level, if these limits/levels are known by the laboratory, unless these concentrations are below the laboratory's demonstrated detection limits (See D.1.4 [C.1.4] Detection Limits).

i. If a reference or mandated method does not specify the number of calibration standards, the minimum number is two, not including blanks or a zero standard. The laboratory must have a SOP for determining the number of points for establishing the initial instrument calibration.

9.4.2.2 Continuing Instrument Calibration Verification

When an initial instrument calibration is not performed on the day of analysis, the validity of the initial calibration shall be verified prior to sample analyses by a continuing instrument calibration verification with each analytical batch. The following items are essential elements of continuing instrument calibration verification:

a. The details of the continuing instrument calibration procedure, calculations and associated statistics must be included or referenced in the test method SOP.

b. A continuing instrument calibration verification must be repeated at the beginning and end of each analytical batch. The concentrations of the calibration verification shall be varied within the established calibration range. If an internal standard is used, only one continuing instrument calibration verification must be analyzed per analytical batch.

c. Sufficient raw data records must be retained to permit reconstruction of the continuing instrument calibration verification, e.g., test method, instrument, analysis date, each analyte name, concentration and response, calibration curve or response factor, or unique equations or coefficients used to convert instrument responses into concentrations. Continuing calibration verification records must explicitly connect the continuing verification data to the initial instrument calibration.

d. Criteria for the acceptance of a continuing instrument calibration verification must be established, e.g., relative percent difference.

e. If the continuing instrument calibration verification results obtained are outside established acceptance criteria, corrective actions must be performed.

Corrective actions shall follow method requirements.

If routine corrective action SOPs fail to produce a second consecutive (immediate) calibration verification within acceptance criteria, then either the laboratory has to demonstrate performance after corrective action with two consecutive successful calibration verifications, or a new initial instrument calibration must be performed. If the laboratory has not demonstrated acceptable performance, sample analyses shall not occur until a new initial calibration curve is established and verified. However, sample data associated with an unacceptable calibration verification may be reported as qualified data under the following special conditions:

1) When the acceptance criteria for the continuing calibration verification are exceeded high (i.e., high bias) and there are associated samples that are non-detects, then those non-detects may be reported. Otherwise the samples affected by the unacceptable calibration verification shall be reanalyzed after a new calibration curve has been established, evaluated and accepted.

2) When the acceptance criteria for the continuing calibration verification are exceeded low (i.e., low bias), those sample results may be reported if they exceed a maximum regulatory limit/decision level. Otherwise the samples affected by the unacceptable verification shall be reanalyzed after a new calibration curve has been established, evaluated and accepted.

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10.0 TEST METHODS AND STANDARD OPERATING PROCEDURES

10.1 METHODS DOCUMENTATION

a. The laboratory shall have documented instructions on the use and operation of all relevant equipment, on the handling and preparation of samples and for calibration and/or testing, where the absence of such instructions could jeopardize the calibrations or tests.

b. All instructions, standards, manuals and reference data relevant to the work of the laboratory shall be maintained up-to-date and be readily available to the staff.

10.1.1 Standard Operating Procedures

Laboratories shall maintain SOPs that accurately reflect all phases of current laboratory activities such as assessing data integrity, corrective actions, handling customer complaints, and all test methods.

a. These documents, for example, may be equipment manuals provided by the manufacturer, or internally written documents.

b. The test methods may be copies of published methods as long as any changes or selected options in the methods are documented and included in the methods manual (see 10.1.2).

c. Copies of all SOPs shall be accessible to all personnel.

d. The SOPs shall be organized.

e. Each SOP shall clearly indicate the effective date of the document, the revision number and the signature(s) of the approving authority.

Copies of laboratory SOPs shall be distributed in a controlled manner and retained in the laboratory's archives.

DOECAP 1.7.1, 2.1.3 and 3.1.5

SOPs shall be in place for (but not limited to) the following areas:

- Sample management
- Reagent/Standard Preparation
- General Laboratory Techniques
- Test Methods
- Equipment Calibration and Maintenance
- Quality Control
- Corrective Action

- Data Reduction and Validation
- Reporting
- Records Management
- Waste Disposal

DOECAP 1.7.2 and 2.1.1

10.1.2 Laboratory Method Manual(s)

a. The laboratory shall have and maintain an in-house methods manual(s) for each accredited analyte or test method **as a hardcopy or electronic**.

b. This manual may consist of copies of published or referenced test methods or SOPs that have been written by the laboratory. In cases where modifications to the published method have been made by the laboratory or where the referenced test method is ambiguous or provides insufficient detail, these changes or clarifications shall be clearly described. Each test method shall include or reference where applicable.

1) Identification of the test method.

2) Applicable matrix or matrices.

3) Detection limit.

4) Scope and application, including components to be analyzed.

5) Summary of the test method.

6) Definitions.

7) Interferences.

8) Safety.

9) Equipment and supplies.

10) Reagents and standards.

11) Sample collection, preservation, shipment and storage.

12) Quality control.

13) Calibration and standardization.

14) Procedure.

15) Calculations.

16) Method performance.

17) Pollution prevention.

18) Data assessment and acceptance criteria for quality control measures.

19) Corrective actions for out-of-control data.

20) Contingencies for handling out-of-control or unacceptable data.

21) Waste management.

22) References.

23) Any tables, diagrams, flowcharts and validation data.

10.2 TEST METHODS

The laboratory shall use appropriate test methods and SOPs for all tests and related activities within its responsibility (including sample collection, sample handling, transport and storage, sample preparation and sample analysis). The method and SOPs shall be consistent with the accuracy required, and with any standard specifications relevant to the calibrations or tests concerned.

a. When the use of reference test methods for a sample analysis are mandated or requested, only those methods shall be used.

b. Where test methods are employed that are not required, as in the Performance Based Measurement System approach, the methods shall be fully documented and validated (see 10.2.1 and Appendix C), and be available to the client and other recipients of the relevant reports.

When laboratory SOPs are used to validate non-standardized methods, laboratory designed/developed methods, standardized methods used outside their intended range and amplifications of standardized methods to confirm that the methods are fit for the intended use, then the procedures shall include the following:

- **Scope**
- **Description of the type of item to be tested or calibrated**
- **Parameters or quantities to be determined**
- **Apparatus, equipment, reference standards and reference materials required**
- **Environmental conditions required and any stabilization period needed**
- **Description of the SOP, including affixing identification marks, handling, transporting, storing and preparing of items, checks to be made before the work is started, checking that the equipment is working properly and, where required, calibrating and adjusting the equipment before each use,**

method of recording the observations and results, and any safety measures to be observed

- **Criteria and/or requirements for approval/rejections**
- **Data to be recorded and method analysis and presentation**
- **Uncertainty or SOP for estimating uncertainty**

DOECAP 1.7.4

Control methods are accessible to the individual performing the analyses, data reviewers, and the QA staff.

DOECAP 1.7.5

10.2.1 Demonstration of Capability

a. Prior to acceptance and institution of any test method, satisfactory demonstration of method capability is required. (See Appendix C and 6.2.b.) In general, this demonstration does not test the performance of the method in real world samples, but in the applicable and available clean matrix sample of a matrix in which no target analytes or interferences are present at concentrations that impact the results of a specific test method), e.g., water, solids, biological tissue and air. In addition, for analytes that do not lend themselves to spiking, the demonstration of capability may be performed using quality control samples.

b. Thereafter, continuing demonstration of method performance, as per the QC requirements in Appendix D (such as laboratory control samples) is required.

c. In cases where a laboratory analyzes samples using a test method that has been in use by the laboratory before July 1999, and there have been no significant changes in instrument type, personnel or test method, the continuing demonstration of method performance and the analyst's documentation of continued proficiency shall be acceptable. The laboratory shall have records on file to demonstrate that an initial demonstration of capability is not required.

d. In all cases, the appropriate forms such as the Certification Statement (Appendix C) must be completed and retained by the laboratory to be made available upon request. All associated supporting data necessary to reproduce the analytical results summarized in the Certification Statement must be retained by the laboratory. (See Appendix C for Certification Statement.)

e. A demonstration of capability must be completed each time there is a change in instrument type, personnel, or test method.

f. In laboratories with a specialized "work cell(s)" (a group consisting of analysts with specifically defined tasks that together perform the test method), the group as a unit must meet the above criteria and this demonstration of capability must be fully documented.

g. When a work cell(s) is employed, and the members of the cell change, the new employee(s) must work with experienced analyst(s) in that area of the workcell where they are employed. This new work cell must demonstrate acceptable performance through acceptable continuing performance checks (appropriate sections of Appendix D, such as laboratory control samples). Such performance must be documented and the four preparation batches following the change in personnel must not result in the failure of any batch acceptance criteria, e.g., method blank and LCS, or the demonstration of capability must be repeated. In addition, if the entire work cell is changed/replaced, the work cell must perform the demonstration of capability (Appendix C).

h. When a work cell(s) is employed the performance of the group must be linked to the training record of the individual members of the work cell (see Section 6.2).

10.3 SAMPLE ALIQUOTS

Where sampling (as in obtaining sample aliquots from a submitted sample) is carried out as part of the test method, the laboratory shall use documented SOPs and appropriate techniques to obtain representative subsamples.

10.4 DATA VERIFICATION

Calculations and data transfers shall be subject to appropriate checks.

a. The laboratory shall establish SOPs to ensure that the reported data are free from transcription and calculation errors.

b. The laboratory shall establish SOPs to ensure that all QC measures are reviewed, and evaluated before data are reported.

c. The laboratory shall establish SOPs addressing manual calculations including manual integrations.

10.5 DOCUMENTATION AND LABELING OF STANDARDS AND REAGENTS

Documented SOPs shall exist for the purchase, reception and storage of consumable materials used for the technical operations of the laboratory.

a. The laboratory shall retain records for all standards, reagents and media including the manufacturer/vendor, the manufacturer's Certificate of Analysis or purity (if supplied), the date of receipt, recommended storage conditions, and an expiration date after which the material shall not be used unless its reliability is verified by the laboratory.

The laboratory shall have a SOP in place to track the expiration date of standards. If the standards are not re-verified, as stated above, the laboratory shall remove the standard or clearly designate it as acceptable for qualitative purposes only.

DOECAP 2.5.10

Standards and reference materials shall be stored separately from samples and standards protected in a controlled cabinet or refrigerator.

DOECAP 1.8.8, 2.5.8

Chemicals shall be of sufficient purity to meet contract requirement.

DOECAP 1.7.9

Purchased stock mixtures and reagents shall be labeled with the date opened.

DOECAP 2.5.3

b. Original containers (such as provided by the manufacturer or vendor) shall be labeled with an expiration date.

c. Records shall be maintained on reagent and standard preparation. These records shall indicate traceability to purchased stocks or neat compounds, reference to the method of preparation, date of preparation, expiration date and preparer's initials.

d. All containers of prepared reagents and standards must bear a unique identifier and expiration date and be linked to the documentation requirements in 10.5.c above.

10.6 COMPUTERS AND ELECTRONIC DATA RELATED REQUIREMENTS

Where computers, automated equipment, or microprocessors, are used for the capture, processing, manipulation, recording, storage or retrieval of test data, the laboratory shall ensure that:

a. All requirements of this Standard (i.e., Chapter 5 NELAC Quality System) are met.

In addition to meeting the requirements of this standard, laboratory shall employ the data management principles established in EPA-2185, "Good Automated Laboratory Practices."

b. Computer software is tested and documented to be adequate for use (e.g., internal audits, personnel training, focus point of QA and QC).

c. SOPs are established and implemented for protecting the integrity of data; such SOPs shall include, but not be limited to, integrity of data entry or capture, data storage, data transmission and data processing.

Computer programs (software) used for instrument performance output, data reduction, and/or for data interpretation shall be validated before use and verified after any changes are made.

DOECAP 1.14.2

Spreadsheets used for calculations shall be verified before initial use and following any changes to equations or formulas and documentation shall be readily available for review.

DOECAP 2.16.6

d. Computer and automated equipment are maintained to ensure proper functioning and provided with the environmental and operating conditions necessary to maintain the integrity of calibration and test data.

e. It establishes and implements appropriate SOPs for the maintenance of security of data including the prevention of unauthorized access to, and the unauthorized amendment of, computer records.

The LIMS and electronic data management support staff and users shall have adequate education, training and experience to perform assigned LIMS and electronic data management functions.

DOECAP 5.1.1

Job descriptions, resumes, qualifications and training for the LIMS and electronic data management support staff are current.

DOECAP 5.1.2

QA personnel are separate from and independent of LIMS and electronic data management personnel.

DOECAP 5.1.3

Periodic inspections of the LIMS operations are performed by the QA Unit to ensure the integrity of LIMS data. The QA Unit maintains records of inspections and submits reports to laboratory management noting any problems identified with LIMS data processing stating the corrective actions taken.

DOECAP 5.2.1

Individuals responsible for entering and recording data into the LIMS are uniquely identified when the data are recorded, and the times and dates are documented.

DOECAP 5.2.2

The instrument transmitting data to the LIMS is uniquely identified when the data are recorded, and the time and date are documented.

DOECAP 5.2.3

Documentation for changes made to data in the LIMS includes:

- The original recorded required documentation
- Clear evidence that a change was made
- The reason for the change
- The date of the change
- The person who made the change
- The person who authorized the change.

DOECAP 5.2.4

Software Change Control documentation identifies:

- Persons requesting and authorizing software changes

- Requirements to be met by the change
- Measures for testing and QA
- Methods for moving changed versions to the production environment
- Change request forms/problem reports
- Priority of change requests.

DOECAP 5.3.1

Documents available in the laboratory to demonstrate the validity of software used in the LIMS include:

- Software description and functional requirements
- Listing of algorithms and formulas
- Testing and quality assurance documentation
- Installation, operation, and maintenance records.

DOECAP 5.3.2

The software historical files of all versions of software programs exist and include dates that software was placed into and removed from production.

DOECAP 5.3.3

Individual user names and passwords have been implemented on the LIMS.

DOECAP 5.4.1

Passwords are changed regularly.

DOECAP 5.4.2

Users are trained in computer awareness security.

DOECAP 5.4.3

Operating system privileges and file access safeguards are implemented to restrict the use of LIMS data to users with authorized access.

DOECAP 5.4.4

System events such as logon failures or break-in attempts are monitored.

DOECAP 5.4.5

The LIMS is protected by application-specific safeguards.

DOECAP 5.4.6

The LIMS is protected from the introduction of computer viruses.

DOECAP 5.4.7

System backups occur on a regular and published schedule and can be performed by more than one person within an organization.

DOECAP 5.4.8

Physical access to the LIMS is limited by security measures such as locating the system within a secured facility or room, and/or utilizing cipher locks or key cards.

DOECAP 5.4.9

A description of the LIMS design and capacity is documented and maintained.

DOECAP 5.5.1

Documentation of the regularly scheduled maintenance for LIMS hardware and communications components is maintained and includes:

- Descriptions of operations performed
- Names of persons who conducted them
- Dates operations were performed
- Results

DOECAP 5.5.2

Documentation for repair of malfunctioning or inoperable LIMS hardware and communications components is maintained and includes:

- A description of the problem
- Corrective action taken
- Acceptance testing criteria
- Testing performed to ensure proper performance prior to returning the LIMS hardware to production.

DOECAP 5.5.3

The LIMS is located in a temperature-controlled environment with adequate ventilation.

DOECAP 5.6.1

The LIMS and associated communications components are protected through the use of surge protectors and connection to an uninterrupted power supply.

DOECAP 5.6.2

Fire protection devices are available to protect the LIMS from fire.

DOECAP 5.6.3

Environmentally adequate storage space is provided for the retention of LIMS data storage media and hard copy records. Long-term archival of LIMS backup media are

stored in an offsite location with the same environmental control and security systems required of onsite storage facilities.

DOECAP 5.6.4

The QA Unit is responsible for ensuring that no deviations from approved SOPs were made without proper authorization and documentation.

DOECAP 5.7.1

An SOP exists for how LIMS raw data are to be entered in, processed, maintained, or reported by the LIMS.

DOECAP 5.7.2

An SOP exists to verify and document the accuracy of LIMS Raw Data.

DOECAP 5.7.3

An SOP exists for making changes to LIMS Raw Data.

DOECAP 5.7.4

An SOP exists for software development methodologies that are based on the size and nature of the software being developed.

DOECAP 5.7.5

An SOP exists for testing and quality assurance methods to ensure that all LIMS software accurately performs its intended functions. The SOP includes:

- Acceptance criteria
- Tests to be used
- Personnel responsible for conducting the tests
- Documentation of test results
- Test review and approval.

DOECAP 5.7.6

An SOP exists for software change control methods that include instructions for requesting, testing, approving, documenting, and implementing changes.

DOECAP 5.7.7

An SOP exists for software version control methods that document the LIMS software version currently used. Data sets are documented with the date and time of generation and/or the LIMS software version used to generate the data set.

DOECAP 5.7.8

An SOP exists for maintaining a historical file of software, software operating SOPs, software changes, and software version numbers.

DOECAP 5.7.9

All SOPs and LIMS documentation are readily available in the facility where the software is used and where the procedures are performed.

DOECAP 5.7.10

Emergency, backup, disaster recovery, and contingency plans exist for the LIMS.

DOECAP 5.7.11

An SOP exists for defining the acceptance criteria, testing, documentation, and approval required for changes to LIMS hardware and communications components.

DOECAP 5.7.12

An SOP exists for adequately testing, inspecting and maintaining the LIMS.

DOECAP 5.7.13

An SOP exists for the retention of LIMS Raw Data, documentation, and records
pertaining to the LIMS.

DOECAP 5.7.14

SOPs are periodically reviewed at a frequency adequate to ensure that they accurately describe the current SOPs.

DOECAP 5.7.15

A SOP exists for creating electronic data deliverables.

DOECAP 5.7.16

A SOP exists for verifying that electronic data deliverables match hardcopy report forms (for clients requiring both).

DOECAP 5.7.17

A SOP exists for handling and documenting client-requested modifications to electronic data deliverable formats.

DOECAP 5.7.18

The hardcopy data reporting forms and electronic data deliverables are created from the same source.

DOECAP 5.8.1

A corrective action plan exists for resolving discrepancies between electronic data deliverables and hard copy report forms.

DOECAP 5.8.2

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11.0 SAMPLE HANDLING, SAMPLE ACCEPTANCE POLICY, AND SAMPLE RECEIPT

While the laboratory may not have control of field sampling activities, the following are essential to ensure the validity of the laboratory's data.

11.1 SAMPLE TRACKING

a. The laboratory shall have a documented system for uniquely identifying the items to be tested, to ensure that there can be no confusion regarding the identity of such items at any time. This system shall include identification for all samples, subsamples, and subsequent extracts and/or digestates. The laboratory shall assign a unique identification (ID) code to each sample container received in the laboratory. The use of container shape, size or other physical characteristic, such as amber glass, or purple top, is not an acceptable means of identifying the sample.

b. This laboratory code shall maintain an unequivocal link with the unique field ID code assigned each container.

c. The laboratory ID code shall be placed on the sample container as a durable label.

d. The laboratory ID code shall be entered into the laboratory records (see 11.3.d) and shall be the link that associates the sample with related laboratory activities such as sample preparation or calibration.

e. In cases where the sample collector and analyst are the same individual or the laboratory preassigns numbers to sample containers, the laboratory ID code may be the same as the field ID code.

11.2 SAMPLE ACCEPTANCE POLICY

The laboratory must have a written sample acceptance policy that clearly outlines the circumstances under which samples shall be accepted or rejected. Data from any samples that do not meet the following criteria must be flagged in an unambiguous manner clearly defining the nature and substance of the variation. This sample acceptance policy shall be made available to sample collection personnel and shall include, but is not limited to, the following areas of concern:

a. Proper, full, and complete documentation, which shall include sample identification, the location, date and time of collection, collector's name, preservation type, sample type and any special remarks concerning the sample.

b. Proper sample labeling to include unique identification and a labeling system for the samples with requirements concerning the durability of the labels (water resistant) and the use of indelible ink.

c. Use of appropriate sample containers.

d. Adherence to specified holding times.

The laboratory shall have SOPs in place to address notification of laboratory personnel of short holding times.

DOECAP 1.8.2

The maximum radiological sample holding time allowable is 180 days. Additionally, the maximum sample holding time shall not exceed 5 half-lives of an unsupported nuclide of interest when five half-lives is shorter than 180 days. The laboratory shall be able to accommodate sample specific requirements for specific isotopes or very short-lived isotopes.

e. Adequate sample volume. Sufficient sample volume must be available to perform the necessary tests.

f. SOPs to be used when samples show signs of damage, contamination or inadequate preservation.

The laboratory shall have SOPs in place to address the use of fume hoods for opening samples and shipping containers, and radiation screening of samples, lab notification and labeling requirements for radioactive samples.

DOECAP 1.8.2

At sample receiving, samples from potentially radioactive sites shall be screened to ensure that the customer identification of radioactivity is correct, to ensure that the sample is properly categorized for sample handling in the laboratory, and, in the absence of customer supplied information, to obtain data input for the radioactive materials license tracking system. The screening should ensure that the shipping container does not exhibit loose contamination or unacceptable external radiation readings.

DOECAP 1.8.10

11.3 SAMPLE RECEIPT PROTOCOLS

a. Upon receipt, the condition of the sample, including any abnormalities or departures from standard condition as prescribed in the relevant test method, shall be recorded. All items specified in 11.2 above shall be checked.

1) All samples that require thermal preservation shall be considered acceptable if the arrival temperature is either within 2°C of the required temperature or the method specified range. For samples with a specified temperature of 4°C, samples with a temperature ranging from just above the freezing temperature of water to 6°C shall be acceptable. Samples that are hand delivered to the laboratory immediately after collection may not meet this criterion. In these cases, the samples shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

2) The laboratory shall implement SOPs for checking chemical preservation using readily available techniques, such as pH or free chlorine, prior to or during sample preparation or analysis.

Radiological sample matrices other than water shall not be preserved with acid. The laboratory shall have the ability to meet sample specific guidance/requirements for verification of preservation.

b. The results of all checks shall be recorded.

c. Where there is any doubt as to the item's suitability for testing, where the sample does not conform to the description provided, or where the test required is not fully specified, the laboratory shall attempt to consult the client for further instruction before proceeding. The laboratory shall establish whether the sample has received all necessary preparation, or whether the client requires preparation to be undertaken or arranged by the laboratory. If the sample does not meet the sample receipt acceptance criteria listed in this standard, the laboratory shall either:

1) Retain correspondence and/or records of conversations concerning the final disposition of rejected samples; or

2) Fully document any decision to proceed with the analysis of samples not meeting acceptance criteria.

i. The condition of these samples shall, at a minimum, be noted on the chain of custody; or

ii. Transmittal form and laboratory receipt documents; or,

iii. The analysis data shall be appropriately "qualified" on the final report.

d. The laboratory shall utilize a permanent chronological record such as a log book or electronic database to document receipt of all sample containers.

1) This sample receipt log shall record the following:

i. Client/project name.

ii. Date and time of laboratory receipt.

iii. Unique laboratory ID code (see 11.1).

iv. Signature or initials of the person making the entries.

During the log-in process, the following information must be unequivocally linked to the log record or included as a part of the log. If such information is recorded/documented elsewhere, the records shall be part of the laboratory's permanent records, easily retrievable upon request and readily available to individuals who will process the sample. Note: The placement of the laboratory ID number on the sample container is not considered a permanent record.

i. The field ID code that identifies each container must be linked to the laboratory ID code in the sample receipt log.

ii. The date and time of sample collection must be linked to the sample container and to the date and time of receipt in the laboratory.

iii. The requested analyses (including applicable approved test method numbers) must be linked to the laboratory ID code.

iv. Any comments resulting from inspection for sample rejection shall be linked to the laboratory ID code.

e. All documentation, such as memos or transmittal forms that is transmitted to the laboratory by the sample transmitter, shall be retained.

f. A complete chain of custody record form (Sections 12.3 and Appendix E), if utilized, shall be maintained.

When the laboratory receives samples, and internal chain of custody procedure shall be initiated.

DOECAP 1.8.4

Internal custody shall be maintained until final disposition or return of the sample to the client.

DOECAP 1.8.6

11.4 STORAGE CONDITIONS

The laboratory shall have documented SOPs and appropriate facilities to avoid deterioration, contamination, or damage to the sample during storage, handling, preparation, and testing; any relevant instructions provided with the item shall be followed. Where items have to be stored or conditioned under specific environmental conditions, these conditions shall be maintained, monitored and recorded.

a. Samples shall be stored according to the conditions specified by preservation protocols:

1) Samples that require thermal preservation shall be stored under refrigeration which is +/-2°C of the specified preservation temperature unless method specific criteria exist. For samples with a specified storage temperature of 4°C, storage at a temperature above the freezing point of water to 6°C shall be acceptable.

2) Samples shall be stored away from all standards reagents, food and other potentially contaminating sources. Samples shall be stored in such a manner to prevent cross contamination.

A refrigerator storage blank shall be present for the storage of all volatile organic samples. Specific SOPs for assessing the adequacy of these storage blank data and taking action for nonconforming conditions shall be established. The refrigerator storage blank shall be analyzed at least every 14 days when samples are being stored in the laboratory. The data from the analysis of the refrigerator storage blanks shall be available for review.

DOECAP 1.8.7 and 2.2.11

b. Sample fractions, extracts, leachates and other sample preparation products shall be stored according to 11.4.a above or according to specifications in the test method.

c. Where a sample or portion of the sample is to be held secure (for example, for reasons of record, safety or value, or to enable check calibrations or tests to be performed later), the laboratory shall have storage and security arrangements that protect the condition and integrity of the secured items or portions concerned.

d.

The laboratory shall maintain an indexed sample storage system that facilitates sample retrieval.

DOECAP 1.8.9

The laboratory shall establish, implement, and document SOPs to ensure the sample's radioactivity levels are consistent with the accompanying documentation and that Laboratory regulatory levels are not exceeded.

DOECAP 1.8.10

11.5 SAMPLE DISPOSAL

The laboratory shall have SOPs for the disposal of samples, digestates, leachates and extracts or other sample preparation products.

All labeling on disposed sample containers shall be removed or defaced and rendered illegible

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12.0 RECORDS

The laboratory shall maintain a record system to suit its particular circumstances and comply with any applicable regulations. The system shall produce unequivocal, accurate records, which document all laboratory activities. The laboratory shall retain all original observations, calculations and derived data, calibration records and a copy of the test report for a minimum of five years. There are two levels of sample handling: 1) sample tracking and 2) legal chain of custody protocols, which are used for evidentiary or legal purposes. All essential requirements for sample tracking (e.g., chain of custody form) are outlined in Sections 12.1, 12.2 and 12.3. If a client specifies that a sample will be used for evidentiary purposes, then a laboratory shall have a written SOP for how that laboratory will carry out legal chain of custody for example, ASTM D 4840-95 and Manual for the Certification of Laboratories Analyzing Drinking Water, March 1997, Appendix A.

12.1 RECORD KEEPING SYSTEM AND DESIGN

The record keeping system must allow historical reconstruction of all laboratory activities that produced the analytical data. The history of the sample must be readily understood through the documentation.

The records control system SOP shall include:

- **The requirements and responsibilities for record transmittal, distribution, change, retention, protection preservation, traceablility, archival, retrieval, and disposal.**
- **Verification that records received are legible and are in agreement with the transmittal document.**
- **Replacement, restoration or substitution of lost or damaged records.**

DOECAP 1.7.3

This shall include interlaboratory transfers of samples and/or extracts.

a. The records shall include the identity of personnel involved in sampling, sample receipt, preparation, calibration or testing.

b. All information relating to the laboratory facilities equipment, analytical test methods, and related laboratory activities, such as sample receipt, sample preparation, or data verification shall be documented.

c. The record keeping system shall facilitate the retrieval of all working files and archived records for inspection and verification purposes (e.g., set format for naming electronic files).

d. All changes to records shall be signed or initialed by responsible staff. The reason for the signature or initials shall be clearly indicated in the records such as "sampled by," "prepared by," or "reviewed by."

e. All generated data except those that are generated by automated data collection systems, shall be recorded directly, promptly and legibly in permanent **blue or black** ink.

f. Entries in records shall not be obliterated by methods such as erasures, overwritten files or markings. All corrections to record-keeping errors shall be made by one line marked through the error. The individual making the correction shall sign (or initial) and date the correction. These criteria also shall apply to electronically maintained records.

> **Corrections to quality records shall also include a justification for the change, if not self-explanatory.**
>
> **DOECAP 1.9.4**

g. Refer to 10.6 for Computer and Electronic Data.

12.2 RECORDS MANAGEMENT AND STORAGE

a. All records (including those pertaining to calibration and test equipment), certificates and reports shall be safely stored, held secure and in confidence to the client. NELAP-related records shall be available to the accrediting authority.

b. All records, including those specified in 12.3 shall be retained for a minimum of five years from generation of the last entry in the records. All information necessary for the historical reconstruction of data must be maintained by the laboratory. Records that are stored only on electronic media must be supported by the hardware and software necessary for their retrieval.

c. Records that are stored or generated by computers or personal computers shall have hard copy or write-protected backup copies.

d. The laboratory shall establish a record management system for control of laboratory notebooks, instrument logbooks, standards logbooks, and records for data reduction, validation storage and reporting.

> **Laboratory notebooks (logbooks) shall have sequentially numbered pages, shall have entries that are signed by the person responsible for performing the activity at the time the activity is performed, and shall have entries in chronological order.**
>
> **DOECAP 2.1.3 and 3.1.5**
>
> **Laboratory notebooks (logbooks) shall have a unique serial number clearly displayed on each notebook.**
>
> **DOECAP 3.1.5**

e. Access to archived information shall be documented with an access log. These records shall be protected against fire, theft, loss, environmental deterioration, vermin and, in the case of electronic records, electronic or magnetic sources.

> **The records control system SOP shall address the requirements for access to and control of the files, including accountability of records removed from the storage location.**
>
> **DOECAP 1.7.3**

> **Records of data and other technical information shall be maintained in environmentally secure controlled access storage, which shall protect the records from unauthorized access or damage. Alternatively, the laboratory shall store duplicate records at a different location.**
>
> **DOECAP 1.9.5**

f. The laboratory shall have a plan to ensure that the records are maintained or transferred according to the clients' instructions and this QSAS in the event that a laboratory transfers ownership or goes out of business. In addition, in cases of bankruptcy, appropriate regulatory and state legal requirements concerning laboratory records must be followed.

12.3 LABORATORY SAMPLE TRACKING

12.3.1 Sample Handling

A record of all SOPs to which a sample is subjected while in the possession of the laboratory shall be maintained. These shall include but are not limited to all records pertaining to:

a. Sample preservation including appropriateness of sample container and compliance with holding time requirement.

b. Sample identification, receipt, acceptance or rejection and log-in.

c. Sample storage and tracking including shipping receipts, sample transmittal forms, (chain of custody form).

d. The laboratory shall have documented SOPs for the receipt and retention of test items, including all provisions necessary to protect the integrity of samples.

12.3.2 Laboratory Support Activities

In addition to documenting all the above-mentioned activities, the following shall be retained:

a. All original raw data, whether hard copy or electronic, for calibrations, samples and quality control measures, including analysts work sheets and data output records (chromatograms, strip charts, and other instrument response readout records.

b. A written description or reference to the specific test method used which includes a description of the specific computational steps used to translate parametric observations into a reportable analytical value.

c. Copies of final reports.

d. Archived SOPs.

e. Correspondence relating to laboratory activities for a specific project.

f. All corrective action reports, audits, and audit responses.

g. Proficiency test results and raw data.

h. Results of data review, verification, and cross-checking SOPs.

12.3.3 Analytical Records

The essential information to be associated with analysis, such as strip charts, tabular printouts, computer data files, analytical notebooks, and run logs, shall include:

a. Laboratory sample ID code.

b. Date of analysis and time of analysis is required if the holding time is 72 hours or less or when time critical steps are included in the analysis, e.g., extractions, and incubations.

c. Instrumentation identification and instrument operating conditions/parameters (or reference to such data).

d. Analysis type.

e. All manual calculations (e.g., manual integrations).

f. Analyst's or operator's initials/signature.

g. Sample preparation including cleanup, separation protocols, incubation periods or subculture, ID codes, volumes, weights, instrument printouts, meter readings, calculations, reagents.

h. Sample analysis.

i. Standard and reagent origin, receipt, preparation, and use.

j. Calibration criteria, frequency and acceptance criteria.

k. Data and statistical calculations, review, confirmation, interpretation, assessment and reporting conventions.

l. Quality control protocols and assessment.

m. Electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries.

n. Method performance criteria including expected quality control requirements.

12.3.4 Administrative Records

The following shall be maintained:

a. Personnel qualifications, experience and training records.

12.4 A LOG OF NAMES, INITIALS AND SIGNATURES FOR ALL INDIVIDUALS WHO ARE RESPONSIBLE FOR SIGNING OR INITIALING ANY LABORATORY RECORD.LEGAL/EVIDENTIARY CUSTODY

The use of legal chain of custody (COC) protocols may be required by some State or federal programs. In addition to the records listed in 12.3 and the performance standards outlined in 12.1 and 12.2, the following protocols shall be incorporated if legal COC is implemented by the organization.

12.4.1 Basic Requirements

The legal CoC custody records shall establish an intact, continuous record of the physical possession, storage and disposal of sample containers, collected samples, sample aliquots, and sample extracts or digestates. For ease of discussion, the above-mentioned items shall be referred to as samples:

a. A sample is in someone's custody if:

(1) It is in one's actual physical possession;

(2) It is in one's view, after being in one's physical possession;

(3) It is in one's physical possession and then locked up so that no one can tamper with it;

(4) It is kept in a secured area, restricted to authorized personnel only.

b. The CoC records shall account for all time periods associated with the samples.

c. The CoC records shall identify individuals who physically handled individual samples.

d. In order to simplify record-keeping, the number of people who physically handle the sample should be minimized. A designated sample custodian, who is responsible for receiving, storing and distributing samples is recommended.

e. The CoC records are not limited to a single form or document. However, organizations should attempt to limit the number of documents that would be required to establish CoC.

f. Legal CoC custody shall begin at the point established by the federal or State oversight program. This may begin at the point that cleaned sample containers are provided by the laboratory or the time sample collection occurs.

g. The CoC forms shall remain with the samples during transport or shipment.

h. If shipping containers and/or individual sample containers are submitted with sample custody seals, and any seals are not intact, the lab shall note this on the chain of custody.

i. Mailed packages should be registered with return receipt requested. If packages are sent by common carrier, receipts should be retained as part of the permanent CoC documentation.

j. Once received by the laboratory, laboratory personnel are responsible for the care and custody of the sample and must be prepared to testify that the sample was in their possession and view or secured in the laboratory at all times from the moment it was received from the custodian until the time that the analyses are completed or the time of sample disposal.

12.4.2 Required Information in Custody Records

In addition to the information specified in 11.1.a and 11.1.b, tracking records shall include, by direct entry or linkage to other records:

a. Time of day and calendar date of each transfer or handling SOP;

b. Signatures of all personnel who physically handle the sample(s);

c. All information necessary to produce unequivocal, accurate records that document the laboratory activities associated with sample receipt, preparation, analysis and reporting; and

d. Common carrier documents.

12.4.3 Controlled Access to Samples

Access to all legal samples and subsamples shall be controlled and documented.

a. A clean, dry, isolated room, building, and/or refrigerated space that can be securely locked from the outside must be designated as a custody room.

b. Where possible, distribution of samples to the analyst performing the analysis must be made by the custodian(s).

c. The laboratory area must be maintained as a secured area, restricted to authorized personnel only.

d. Once the sample analyses are completed, the unused portion of the sample, together with all identifying labels, must be returned to the custodian. The returned tagged sample must be retained in the custody room until permission to destroy the sample is received by the custodian or other authority.

12.4.4 Transfer of Samples to Another Party

Transfer of samples, subsamples, digestates or extracts to another party are subject to all of the requirements for legal chain of custody.

12.4.5 Sample Disposal

a. If the sample is part of litigation, disposal of the physical sample shall occur only with the concurrence of the affected legal authority, sample data user and/or submitter of the sample.

b. All conditions of disposal and all correspondence between all parties concerning the final disposition of the physical sample shall be recorded and retained.

c. Records shall indicate the date of disposal, the nature of disposal (such as sample depleted, sample disposed in hazardous waste facility, or sample returned to client), and the name of the individual who performed the task.

d. Records of demonstration of capability for each analyst.

e. A log of names, initials and signatures for individuals who are responsible for signing or initialing any laboratory record.

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13.0 LABORATORY REPORT FORMAT AND CONTENTS

The results of each test, or series of tests carried out by the laboratory shall be reported accurately, clearly, unambiguously, and objectively. The results shall normally be reported in a test report and shall include all the information necessary for the interpretation of the test results and all information required by the method used. Some regulatory reporting requirements or formats such as monthly operating reports may not require all items listed below, however, the laboratory shall provide all the required information to their client for use in preparing such regulatory reports.

a. Except as discussed in 13.b, each report to an outside client shall include at least the following information (those prefaced with "where relevant" are not mandatory):

1) A title (e.g., "Test Report" or "Test Certificate," "Certificate of Results" or "Laboratory Results").

2) Name and address of laboratory, and location where the test was carried out if different from the address of the laboratory and phone number with name of contact person for questions.

3) Unique identification of the certificate or report (such as serial number) and of each page, and the total number of pages.

This requirement may be presented in several ways:

i. The total number of pages may be listed on the first page of the report as long as the subsequent pages are identified by the unique report identification and consecutive numbers or

ii. Each page is identified with the unique report identification. The pages are identified as a number of the total report pages (example: 3 of 10, or 1 of 20).

iii. Other methods of identifying the pages in the report may be acceptable as long as it is clear to the reader that discrete pages are associated with a specific report, and that the report contains a specified number of pages.

4) Name and address of client, where appropriate and project name if applicable.

5) Description and unambiguous identification of the tested sample including the client identification code.

6) Identification of test results derived from any sample that did not meet NELAC sample acceptance requirements such as improper container, holding time, or temperature.

7) Date of receipt of sample, date and time of sample collection, date(s) of performance test, and time of sample preparation and/or analysis if the required holding time for either activity is less than or equal to 72 hours.

8) Identification of the test method used, or unambiguous description of any non-standard method used.

9) If the laboratory collected the sample, reference to sampling SOP.

10) Any deviations from (such as failed quality control), additions to or exclusions from the test method (such as environmental conditions), and any non-standard conditions that may have affected the quality of results, and including the use and definitions of data qualifiers.

11) Measurements, examinations and derived results, supported by tables, graphs, sketches and photographs as appropriate, and any failures identified; identify whether data are calculated on a dry weight or wet weight basis; identify the reporting units such as Fg/l or mg/kg; and for Whole Effluent Toxicity, identify the statistical package used to provide data.

12) When required, a statement of the estimated uncertainty of the test result.

13) A signature and title, or an equivalent electronic identification of the person(s) accepting responsibility for the content of the certificate or report (however produced), and date of issue.

14) At the laboratory's discretion, a statement to the effect that the results relate only to the items tested or to the sample as received by the laboratory.

15) At the laboratory's discretion, a statement that the certificate or report shall not be reproduced except in full, without the written approval of the laboratory.

16) Clear identification of all test data provided by outside sources, such as subcontracted laboratories, clients, etc.

17) Clear identification of numerical results with values outside of quantitation limits.

b. Laboratories that are operated by a facility and whose sole function is to provide data to the facility management for compliance purposes (in-house or captive laboratories) shall have all applicable information specified in 1 through 17 above readily available for review by the accrediting authority.

However formal reports detailing the information are not required if:

1) The in-house laboratory is itself responsible for preparing the regulatory reports; or

2) The laboratory provides information to another individual within the organization for preparation of regulatory reports. The facility management must ensure that the appropriate report items are in the report to the regulatory authority if such information is required.

c. Where the certificate or report contains results of tests performed by subcontractors, these results shall be clearly identified by subcontractor name or applicable accreditation number.

d. After issuance of the report, the laboratory report shall remain unchanged. Material amendments to a calibration certificate, test report or test certificate after issue shall be made only in the form of a further document, or data transfer including the statement "Supplement to Test Report or Test Certificate, serial number . . . [or as otherwise identified]," or equivalent form of wording. Such amendments shall meet all the relevant requirements of this Standard.

e. The laboratory shall notify clients promptly, in writing, of any event such as the identification of defective measuring or test equipment that casts doubt on the validity of results given in any calibration certificate, test report or test certificate or amendment to a report or certificate.

f. The laboratory shall, where clients require transmission of test results by telephone, telex, facsimile or other electronic or electromagnetic means follow documented SOPs that ensure that the requirements of this Standard are met and that all reasonable steps are taken to preserve confidentiality.

g. Laboratories accredited to be in compliance with these standards shall certify that the test results meet all requirements of NELAC or provide reasons and/or justification if they do not.

Data Package Components

1. RESULTS ONLY DELIVERABLE

The following is a listing of hard copy deliverables required for the Results Only Deliverable category. This category contains the minimum components required for a data package deliverable. All components contained in this category shall be included in all other deliverable categories.

Component Name Description

Cover Page The cover page shall contain a list of all samples analyzed within a Reporting Delivery Group (RDG) and provide certain analytical information and general comments applicable to the RDG as a whole.

At a minimum this is to include:

- *Laboratory Name*
- *Subcontract Number*
- *Statement of Work Identifier*
- *Method Name or Description*
- *Contractor RDG*

- *Laboratory Report Identification*
- *Line Item Code(s) associated with the RDG*
- *Contractor Sample Numbers cross-referenced to laboratory ID numbers*
- *Matrix*
- *Date sample(s) received at laboratory*
- *Date sample(s) prepared*
- *Date sample(s) analyzed*
- *Comments:*

Chain of Custody

Case Narrative

Sample Summary

Sheet(s)

1. CLP-SOW Form 1s or equivalent.
2. Calculations, significant figures, for these forms shall be as specified in the latest version of the CLP-SOW.
3. Flagging protocols for these forms shall be as specified in Attachment C, QA Program Special QA Requirements, or by individual site contractors.
4. Item H, Data Qualifiers.
5. For Volatile Organic Analyses, a maximum of ten (10) Tentatively Identified Compounds (TICs) shall be library searched and reported on the appropriate form (Form 1E) using CLP-SOW Guidelines.
6. For Semivolatile Organic Analyses, a maximum of twenty (20) TICs shall be library searched and reported on the appropriate form (Form 1F) using CLP-SOW guidelines.

2. STANDARD DELIVERABLE

The following is a listing of hard copy deliverables required for the Standard Deliverable category. This category contains all the components required for *Results Only Deliverable* plus all applicable CLP-SOW forms associated with the analyses. For those data packages generated using non-CLP methods, the CLP forms or their equivalent are required. The laboratory shall ensure that all forms submitted as equivalent include all of the same type of information present on the CLP forms themselves. The forms shall be modified to meet the analytical method requirements.

Component Name Description

Results Only Deliverable

All components contained in the Results Only Deliverable data package

CLP-SOW Forms 1 through 14, or equivalent, that are associated with the analyses.

1. CLP-SOW Form 1s or equivalent shall be used for reporting all Sample and QC sample results.

2. QC and Calibration forms shall follow or be adapted from CLP –SOW format. Forms for non-CLP methods shall be modified to meet the analytical method requirements.

3. If analyses were performed on multiple days, the forms shall be in chronological order, by instrument (if more than one instrument is used).

4. Form titles, form order, calculations, significant figures, control limits, and shall be as specified in the CLP-SOW.

5. Flagging protocols for these forms shall be as specified in Attachment C, QA Program Special QA Requirements, Item H, Data Qualifiers; or by individual site contractors.

6. Line Item specific CRDLs provided in this SOW shall be substituted for CRDLs specified in CLP-SOW.

7. Line Item specified CRDLs provided in this SOW shall be used for application of qualifiers.

3. STANDARD PLUS RAW DATA DELIVERABLE

The following is a listing of hard copy deliverables required for the Standard Plus Raw Data Deliverable category. This category contains all the components required for the *Standard Deliverable* plus preparation and instrument raw data.

Component Name Description

Standard Deliverable All components contained in the Standard Deliverable data package

Raw Data **Preparation Raw Data**

Sample preparation raw data shall be documented in the form of: *bench sheets and/or preparation logs containing, at a minimum, the following:*

Analytical Batch identifier

Date of preparation

Identifier for the laboratory SOP for the preparation

Identifiers for all sample and QC solutions prepared

Balance identifiers with dates of use

Initial and final weights and volumes for all samples and QC samples including gross weights and tare weights where applicable

Pipette identifiers and dates of use (if applicable)

Comments describing any significant sample changes or reactions which occur during preparation

Indication of percent moisture and pH, as applicable

Signatures and dates of all analysts and reviewers

- *Instrument run logs*

Calibration Raw Data

All associated raw data used to calibrate the instrument, used for continuing calibrations, etc.

Sample Analysis Raw Data

All raw data associated with the generation of sample results. This includes data for analyses performed but not used for reporting.

QC Raw Data

Raw data for all quality control analyses including, but not limited to, initial calibration, continuing calibration, matrix spike, duplicate, blanks, LCS, serial dilution, MSA, etc.

Note: Specific deliverable requirements may be specified by individual sites.

14.0 SUBCONTRACTING ANALYTICAL SAMPLES

a. The laboratory shall advise the client in writing of its intention to subcontract any portion of the testing to another party.

b. Where a laboratory subcontracts any part of the testing covered under NELAP, this work shall be placed with a laboratory accredited under NELAP for the tests to be performed or with a laboratory that meets applicable statutory and regulatory requirements for performing the tests and submitting the results of tests performed. The laboratory performing the subcontracted work shall be indicated in the final report and non-NELAP accredited work shall be clearly identified.

c. The laboratory shall retain records demonstrating that the above requirements have been met.

The laboratory shall not use any sub-tier laboratories or subcontractors (including those possessing the same or similar corporate name) for performance of work under this specification without written approval from the Procurement Representative. If the use of sub-tier laboratories or subcontractors is approved, these sub-tier laboratories and subcontractors must meet all of the requirements of this specification, including being available for Contractor inspections and audits on a demand basis.

Some Contractors may not allow any subcontracting to third party (sub-tier) laboratories. If this is the case, then this will be specifically noted in site-specific contracts via Contracts, Task Orders, Laboratory Delivery Orders, etc. written against the BOA.

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15.0 OUTSIDE SUPPORT SERVICES AND SUPPLIES

a. Where the laboratory procures outside services and supplies, other than those referred to in this Standard, in support of tests, the laboratory shall use only those outside support services and supplies that are of adequate quality to sustain confidence in the laboratory's tests.

> **The procurement system controls shall include applicable technical and administrative requirements for contracted services and items including acceptance criteria and shall establish the process for selecting and qualifying subcontractors.**
>
> **DOECAP 1.12.2**

b. Where no independent assurance of the quality of outside support services or supplies is available, the laboratory shall have SOPs to ensure that purchased equipment, materials and services comply with specified requirements. The laboratory shall, ensure that purchased equipment and consumable materials are not used until they have been inspected, calibrated or otherwise verified as complying with any standard specifications relevant to the calibrations or tests concerned.

> **Contracted items and services with the potential to affect the quality of analytical tests shall be controlled by one or more of the following: source evaluation and selection (pre-performance/pre-award survey), source verification, audit, and/or examination of items or services before use.**
>
> **DOECAP 1.12.1**

c. The laboratory shall maintain records of all suppliers from whom it obtains support services or supplies required for tests.

> **When there are indications that subcontractors knowingly supplied items or services of substandard quality, this information shall be forwarded to appropriate management for action.**
>
> **DOECAP 1.12.3**

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16.0 COMPLAINTS

The laboratory shall have documented policy and SOPs for the resolution of complaints received from clients or other parties about the laboratory's activities. Where a complaint, or any other circumstance, raises doubt concerning the laboratory's compliance with the laboratory's policies or procedures, or with the requirements of this Standard or otherwise concerning the quality of the laboratory's calibrations or tests, the laboratory shall ensure that those areas of activity and responsibility involved are promptly audited in accordance with Section 5.3.1. Records of the complaint and subsequent actions shall be maintained.

APPENDIX A

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APPENDIX B

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APPENDIX C

DEMONSTRATION OF CAPABILITY

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Appendix C - DEMONSTRATION OF CAPABILITY

C-1 PROCEDURE FOR DEMONSTRATION OF CAPABILITY

A demonstration of capability (DOC) must be made prior to using any test method, and at any time there is a change in instrument type, personnel or test method (see 10.2.1).

Note: In laboratories with specialized "work cells" (a well defined group of analysts that together perform the method analysis), the group as a unit must meet the above criteria and this demonstration must be fully documented.

In general, this demonstration does not test the performance of the method in real world samples, but in the applicable and available clean matrix (a sample of a matrix in which no target analytes or interferences are present at concentrations that impact the results of a specific test method), e.g., water, solids, biological tissue and air. However, before any results are reported using this method, actual sample spike results may be used to meet this standard, i.e., at least four consecutive matrix spikes within the last twelve months. In addition, for analytes which do not lend themselves to spiking, e.g., TSS, the demonstration of capability may be performed using quality control samples.

All demonstrations shall be documented through the use of the form in this appendix.

The following steps, which are adapted from the EPA test methods published in 40 CFR Part 136, Appendix A, shall be performed if required by mandatory test method or regulation. Note: For analytes for which spiking is not an option and for which QC samples are not readily available, the 40 CFR approach is one way to perform this demonstration. It is the responsibility of the laboratory to document that other approaches to DOC are adequate, this shall be documented in the laboratory's Quality Manual, e.g., for Whole Effluent Toxicity Testing see section D.2.1.a.1.

a) A QC sample shall be obtained from an outside source. If not available, the QC sample may be prepared by the laboratory using stock standards that are prepared independently from those used in instrument calibration. **The test samples shall be matrix specific with expected interferences.**

b) The analyte(s) shall be diluted in a volume of clean matrix sufficient to prepare four aliquots at the concentration specified, or if unspecified, to a concentration approximately 10 times the method-stated or laboratory-calculated method detection limit.

c) At least four aliquots shall be prepared and analyzed according to the test method either concurrently or over a period of days.

d) Using all of the results, calculate the mean recovery ($\bar{x}$) in the appropriate reporting units (such as μg/L) and the standard deviations of the population sample (n-1) (in the same units) for each parameter of interest. When it is not possible to determine mean and standard deviations, such as for presence/absence and logarithmic values, the laboratory must assess performance against established and documented criteria.

e) Compare the information from (d) above to the corresponding acceptance criteria for precision and accuracy in the test method (if applicable) or in laboratory-generated acceptance criteria (if there are not established mandatory criteria). If all parameters meet the acceptance criteria, the analysis of actual samples may begin. If any one of the

parameters do not meet the acceptance criteria, the performance is unacceptable for that parameter.

f) When one or more of the tested parameters fail at least one of the acceptance criteria, the analyst must proceed according to 1) or 2) below.

1) Locate and correct the source of the problem and repeat the test for all parameters of interest beginning with c) above.

2) Beginning with c) above, repeat the test for all parameters that failed to meet criteria. Repeated failure, however, confirms a general problem with the measurement system. If this occurs, locate and correct the source of the problem and repeat the test for all compounds of interest beginning with c).

C-2 CERTIFICATION STATEMENT

The following certification statement shall be used to document the completion of each demonstration of capability. A copy of the certification statement shall be retained in the personnel records of each affected employee (see 6.3 and 12.3.4.b).

Demonstration of Capability
Certification Statement

Date: Page ____of ____

Laboratory Name:

Laboratory Address:

Analyst(s) Name(s):

Matrix:
(examples: laboratory pure water, soil, air, solid, biological tissue)

Method number, SOP#, Rev#, and Analyte, or Class of Analytes or Measured Parameters:
(examples: barium by 200.7, trace metals by 6010, benzene by 8021, etc.)

We, the undersigned, CERTIFY that:

1. The analysts identified above, using the cited test method(s), which is in use at this facility for the analyses of samples under the National Environmental Laboratory Accreditation Program, have met the Demonstration of Capability.

2. The test method(s) was performed by the analyst(s) identified on this certification.

3. A copy of the test method(s) and the laboratory-specific SOPs are available for all personnel on-site.

4. The data associated with the demonstration capability are true, accurate, complete and self-explanatory (1).

5. All raw data (including a copy of this certification form) necessary to reconstruct and validate these analyses have been retained at the facility, and that the associated information is well-organized and available for review by authorized assessors.

Technical Director's Name and Title	Signature	Date
Quality Assurance Officer's Name	Signature	Date

This certification form must be completed each time a demonstration of capability study is completed.

(1) True: Consistent with supporting data.

Accurate: Based on good laboratory practices consistent with sound scientific principles/practices.

Complete: Includes the results of all supporting performance testing.

Self-Explanatory: Data properly labeled and stored so that the results are clear and require no additional explanation.

APPENDIX D

ESSENTIAL QUALITY CONTROL REQUIREMENTS

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Appendix D - ESSENTIAL QUALITY CONTROL REQUIREMENTS

The QC protocols specified by the laboratory's method manual (10.1.2) shall be followed. The laboratory shall ensure that the essential standards outlined in Appendix D are incorporated into their method manuals and/or the Laboratory Quality Manual.

All QC measures shall be assessed and evaluated on an on-going basis and QC acceptance criteria shall be used to determine the validity of the data. The laboratory shall have SOPs for the development of acceptance/rejection criteria where no method or regulatory criteria exists.

The requirements from the body of Chapter 5, e.g., 5.4, apply to all types of testing. T he specific manner in which they are implemented is detailed in each of the sections of this Appendix, i.e., chemical testing, W.E.T. testing, microbiology testing, radiochemical testing and air testing.

D-1 CHEMICAL TESTING

D-1.1 Positive and Negative Controls

a) Negative Control - Method Performance

Purpose—The method blank is used to assess the preparation batch for possible contamination during the preparation and processing steps. The method blank shall be processed along with and under the same conditions as the associated samples to include all steps of the analytical SOP. SOPs shall be in place to determine if a method blank is contaminated. Any affected samples associated with a contaminated method blank shall be reprocessed for analysis or the results reported with appropriate data qualifying codes.

Frequency—The method blank shall be analyzed at a minimum of 1 per preparation batch. In those instances for which no separate preparation method is used (example: volatiles in water) the batch shall be defined as environmental samples that are analyzed together with the same method and personnel, using the same lots of reagents, not to exceed the analysis of 20 environmental samples.

Composition—The method blank shall consist of a matrix that is similar to the associated samples and is known to be free of the analytes of interest.

Evaluation Criteria and Corrective Action—While the goal is to have no detectable contaminants, each method blank criteria and must be critically evaluated as to the nature of the interference and the corrective effect on the analysis of each sample within the batch. The source of Action: contamination shall be investigated and measures taken to minimize or eliminate the problem and affected samples reprocessed or data shall be appropriately qualified if:

1) The concentration of a targeted analyte in the blank is at or above the reporting limit as established by the test method or by regulation, AND is greater than 1/10 of the amount measured in any sample.

2) The blank contamination otherwise affects the sample results as per the test method requirements or the individual project data quality objectives.

b) Positive Control - Method Performance

1) Laboratory Control Sample

Purpose—The LCS is used to evaluate the performance of the total analytical system, including all preparation and analysis steps. Results of the LCS are compared to established criteria and, if found to be outside of these criteria, indicates that the analytical system is "out of control". Any affected samples associated with an out of control LCS shall be reprocessed for re-analysis or the results reported with appropriate data qualifying codes.

Frequency—The LCS shall be analyzed at a minimum of 1 per preparation batch. Exceptions would be for those analytes for which no spiking solutions are available such as total suspended solids, total dissolved solids, total volatile solids, total solids, pH, color, odor, temperature, dissolved oxygen or turbidity. In those instances for which no separate preparation method is used (example: volatiles in water) the batch shall be defined as environmental samples that are analyzed together with the same method and personnel, using the same lots of reagents, not to exceed the analysis of 20 environmental samples.

Composition—The LCS is a controlled matrix, known to be free of analytes of interest, spiked with known and verified concentrations of analytes. NOTE: the matrix spike may be used in place of this control as long as the acceptance criteria are as stringent as for the LCS. Alternatively the LCS may consist of a media containing known and verified concentrations of analytes or as Certified Reference Material (CRM). All analyte concentrations shall be within the calibration range of the methods. The following shall be used in choosing components for the spike mixtures:

The components to be spiked shall be as specified by the mandated test method or other regulatory requirement or as requested by the client. In the absence of specified spiking components the laboratory shall spike per the following:

For those components that interfere with an accurate assessment such as spiking simultaneously with technical chlordane, toxaphene and PCBs, the spike should be chosen that represents the chemistries and elution patterns of the components to be reported.

For those test methods that have extremely long lists of analytes, a representative number may be chosen. The analytes selected should be representative of all analytes reported. The following criteria shall be used for determining the minimum number of analytes to be spiked. However, the laboratory shall insure that all targeted components are included in the spike mixture over a 2 year period.

i). For methods that include 1-10 targets, spike all components;

ii). For methods that include 11-20 targets, spike at least 10 or 80%, whichever is greater;

iii). For methods with more than 20 targets, spike at least 16 components.

Evaluation Criteria and Corrective Action—The results of the individual batch LCS are calculated in percent recovery. The laboratory shall document the calculation for percent recovery.

The individual LCS is compared to the acceptance criteria as published in the mandated test method. Where there are no established criteria, the laboratory shall determine internal criteria and document the method used to establish the limits or utilize client specified assessment criteria.

A LCS that is determined to be within the criteria effectively establishes that the analytical system is in control and validates system performance for the samples in the associated batch. Samples analyzed along with a LCS determined to be "out of control" should be considered suspect and the samples reprocessed and re-analyzed or the data reported with appropriate data qualifying codes.

c) Sample Specific Controls

The laboratory must document SOPs for determining the effect of the sample matrix on method performance. These SOPs relate to the analyses of matrix specific QC samples and are designed as data quality indicators for a specific sample using the designated test method. These controls alone are not used to judge laboratory performance.

Examples of matrix specific QC include: Matrix Spike (MS); Matrix Spike Duplicate (MSD); sample duplicates; and surrogate spikes. The laboratory shall have SOPs in place for tracking, managing, and handling matrix specific QC criteria including spiking appropriate components at appropriate concentrations, calculating recoveries and relative percent difference, evaluating and reporting results based on performance of the QC samples.

Matrix Spike, Matrix Spike Duplicates:

Purpose—Matrix specific QC samples indicate the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. The information from these controls is sample/matrix specific and would not normally be used to determine the validity of the entire batch.

Frequency—The frequency of the analysis of matrix specific samples shall be determined as part of a systematic planning process (e.g., Data Quality Objectives) or as specified by the required mandated test method.

Composition—The components to be spiked shall be as specified by the mandated test method. Any permit specified analytes, as specified by regulation or client requested analytes shall also be included. If there are no specified components, the laboratory shall spike per the following:

For those components that interfere with an accurate assessment such as spiking simultaneously with technical chlordane, toxaphene and PCBs, the spike should be chosen that represents the chemistries and elution patterns of the components to be reported.

For those test methods that have extremely long lists of analytes, a representative number may be chosen using the following criteria for choosing the number of analytes to be spiked. However, the laboratory shall insure that all targeted components are included in the spike mixture over a 2 year period.

i). For methods that include 1-10 targets, spike all components;

ii). For methods that include 11-20 targets, spike at least 10 or 80%, whichever is greater;

iii). For methods with more than 20 targets, spike at least 16 components.

Evaluation Criteria and Corrective Action—The results from matrix spike/matrix spike duplicate are primarily designed to assess the precision and accuracy of analytical results in a given matrix and are expressed as percent recovery (%R) and relative percent difference (RPD). The laboratory shall document the calculation for relative percent difference.

Results are compared to the acceptance criteria as published in the mandated test method. Where there are no established criteria, the laboratory should determine internal criteria and document the method used to establish the limits. For matrix spike results outside established criteria corrective action shall be documented or the data reported with appropriate data qualifying codes.

d) Matrix Duplicates:

Purpose—Matrix duplicates are defined as replicate aliquots of the same sample taken through the entire analytical SOP. The results from this analysis indicate the precision of the results for the specific sample using the selected method. The matrix duplicate provides a usable measure of precision only when target analytes are found in the sample chosen for duplication.

Frequency—The frequency of the analysis of matrix duplicates may be determined as part of a systematic planning process (e.g. Data Quality Objectives) or as specified by the mandated test method.

Composition—Matrix duplicates are performed on replicate aliquots of actual samples. The composition is usually not known.

Evaluation Criteria and Corrective Action—The results from matrix duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as RPD or another statistical treatment (e.g., absolute differences). The laboratory shall document the calculation for relative percent difference or other statistical treatments.

Results are compared to the acceptance criteria as published in the mandated test method. Where there are no established criteria, the laboratory shall determine internal criteria and document the method used to establish the limits. For matrix duplicates results outside established criteria corrective action shall be documented or the data reported with appropriate data qualifying codes.

e) Surrogate Spikes:

Purpose—Surrogates are used most often in organic chromatography test methods and are chosen to reflect the chemistries of the targeted components of the method. Added prior to sample preparation/extraction, they provide a measure of recovery for every sample matrix.

Frequency—Except where the matrix precludes its use or when not available, surrogate compounds must be added to all samples, standards, and blanks for all appropriate test methods.

Composition—Surrogate compounds are chosen to represent the various chemistries of the target analytes in the method. They are often specified by the mandated method and are deliberately chosen for their being unlikely to occur as an environmental contaminant. Often this is accomplished by using deuterated analogs of select compounds.

Evaluation Criteria and Corrective Action—The results are compared to the acceptance criteria as published in the mandated test method. Where there are no established criteria, the laboratory should determine internal criteria and document the method used to establish the limits. Surrogates outside the acceptance criteria must be evaluated for the effect indicated for the individual sample results. The appropriate corrective action may be guided by the data quality objectives or other site specific requirements. Results reported from analyses with surrogate recoveries outside the acceptance criteria should include appropriate data qualifiers.

D-1.2 Detection Limits

The laboratory shall utilize a test method that provides a detection limit that is appropriate and relevant for the intended use of the data. Detection limits shall be determined by the protocol in the mandated test method or applicable regulation, e.g., MDL. If the protocol for determining detection limits is not specified, the selection of the procedure must reflect instrument limitations and the intended application of the test method.

a) A detection limit study is not required for any component for which spiking solutions or quality control samples are not available such as temperature.

b) The detection limit shall be initially determined for the compounds of interest in each test method in a matrix in which there are not target analytes nor interferences at a concentration that would impact the results or the detection limit must be determined in the matrix of interest (see definition of matrix).

c) Detection limits must be determined each time there is a change in the test method that affects how the test is performed, or when a change in instrumentation occurs that affects the sensitivity of the analysis.

d) All sample processing steps of the analytical method shall be included in the determination of the detection limit.

e) All SOPs used must be documented. Documentation must include the matrix type. All supporting data must be retained.

f) The laboratory must have established SOPs to relate detection limits with quantitation limits.

g) The test method's quantitation limits must be established and must be above the detection limits.

D-1.3 Data Reduction

The SOPs for data reduction, such as use of linear regression, shall be documented.

D-1.4 Quality of Standards and Reagents

a) The source of standards shall comply with 9.2.

b) Reagent Quality, Water Quality and Checks:

1) Reagents - In methods where the purity of reagents is not specified, analytical reagent grade shall be used. Reagents of lesser purity than those specified by the test method shall not be used. The labels on the container should be checked to verify that the purity of the reagents meets the requirements of the particular test method. Such information shall be documented.

2) Water -The quality of water sources shall be monitored and documented and shall meet method specified requirements.

3) The laboratory will verify the concentration of titrants in accordance with written laboratory SOPs.

D-1.5 Selectivity

a) Absolute retention time and relative retention time aid in the identification of components in chromatographic analyses and to evaluate the effectiveness of a column to separate constituents. The laboratory shall develop and document acceptance criteria for retention time windows.

b) A confirmation shall be performed to verify the compound identification when positive results are detected on a sample from a location that has not been previously tested by the laboratory. Such confirmations shall be performed on organic tests such as pesticides,herbicides, or acid extractable or when recommended by the analytical test method except when the analysis involves the use of a mass spectrometer. Confirmation is required unless stipulated in writing by the client. All confirmation shall be documented.

c) The laboratory shall document acceptance criteria for mass spectral tuning.

D-1.6 Constant and Consistent Test Conditions

a) The laboratory shall assure that the test instruments consistently operate within the specifications required of the application for which the equipment is used.

b) Glassware Cleaning - Glassware shall be cleaned to meet the sensitivity of the test method.

Any cleaning and storage SOPs that are not specified by the test method shall be documented in laboratory records and SOPs.

D-2 TOXICITY TESTING

These standards apply to laboratories measuring the toxicity and/or bioaccumulation of contaminants in general. They are applicable to toxicity or bioaccumulation test methods for evaluating effluents (whole effluent toxicity or WET), receiving waters, sediments, elutriates, leachates and soils. In addition to the essential quality control standards described below, some methods may have additional or other requirements based on factors such as the type of matrix evaluated. Additional information can be found in the following methods manuals (or most recent edition): EPA/600/4-91/002, EPA/600/4-91/003, EPA/600/4-90/027F (WET testing), EPA/600/4-90/031 (general aquatic toxicity testing), EPA/600/R-94/025, EPA/600/R-94/024, EPA/503/R-91/001, EPA/823/B-98/004 (sediments and elutriates), EPA/600/3-88/029, EPA/600/3-89/013, ASTM E1598-94 AND ASTM 1676-97 (soils).

D-2.1 Positive and Negative Controls

a) Positive Control - Reference Toxicants - Reference toxicant tests indicate the sensitivity of the test organisms being used and demonstrate a laboratory's ability to obtain consistent results with the test method.

1) The laboratory must demonstrate its ability to obtain consistent results with reference toxicants before it performs toxicity tests with effluents or other environmental samples for regulatory compliance purposes.

i). To meet this requirement, the intra-laboratory precision must be determined by performing five or more acceptable reference toxicant tests for each test method and species with different batches of organisms and appropriate negative controls (water, sediment, or soil).

ii). An intralaboratory coefficient of variation (%CV) is not established for each test method. However, a testing laboratory shall maintain control charts for the control performance and reference toxicant statistical endpoint (such as NOEC or ECp) and shall evaluate the intralaboratory variability with a specific reference toxicant for each test method.

2) Ongoing laboratory performance shall be demonstrated by performing regular reference toxicant tests for each test method and species in accordance with the minimum frequency requirements specified in D.2.1.a.3.

i). Intralaboratory precision on an ongoing basis must be determined through the use of reference toxicant tests and plotted in QC charts. The control charts shall be plotted as point estimate values, such as EC25 for chronic tests and LC50 for acute tests, or as appropriate hypothesis test values, such as the no observed effects concentration (NOEC) or no observed adverse effects concentration (NOAEC), overtime within a laboratory.

ii). For endpoints that are point estimates (ICp, ECp) control charts are constructed by plotting the cumulative mean and the control limits which consist of the upper and lower 95% confidence limits (+/- 2 std. dev.); these values are re-calculated with each successive test result. For endpoints from hypothesis tests (NOEC, NOAEC) the values are plotted directly and the control limits consist of one concentration interval above

and below the concentration representing central tendency (i.e. the mode).

iii). After 20 data points are collected for a test method and species, the control chart is maintained using only the last 20 data points, i.e. each successive mean value and control limit is calculated using only the last 20 values.

iv). Control chart limits are expected to be exceeded occasionally regardless of how well a laboratory performs. Acceptance limits for point estimates (ICp, ECp) which are based on 95% confidence limits should theoretically be exceeded for one in twenty tests. Depending on the dilution factor and test sensitivity, control charts based on hypothesis test values (NOEC, NOAEC) may be expected to be exceeded on a similar frequency. Test results which fall outside of control chart limits at a frequency of 5% or less, or which fall just outside control chart limits (especially in the case of highly proficient laboratories which may develop relatively narrow acceptance limits over time), are not rejected de facto. Such data are evaluated in comparison with control chart characteristics including the width of the acceptance limits and the degree of departure of the value from acceptance limits.

v). Laboratories shall develop an acceptance/rejection policy for reference toxicant data which considers test dilution factor, test sensitivity (for hypothesis test values), testing frequency, out-of-control test frequency, relative width of acceptance limits and degree of difference between test results and acceptance limits.

vi). In the case of reference toxicant data which fails to meet acceptance criteria, the results of environmental toxicity tests conducted during the affected period may be suspect and regarded as provisional. In this case the test SOP is examined for defects and the test repeated if necessary, using a different batch of organisms, as soon as possible or the data is qualified.

3) The frequency of reference toxicant testing shall comply with the EPA or state permitting authority requirements. The following minimum frequency shall be met:

i). Each batch of test organisms obtained from an outside source, field collection or from laboratory spawning of field-collected species not amenable to routine laboratory culture (for example, sea urchins and bivalve mollusks) must be evaluated with a reference toxicant test of the same type as the environmental toxicity test within the seven days preceding the test or concurrently with the test.

ii). Test organisms obtained from in-house laboratory cultures must be tested with reference toxicant tests at least once each month for each test method. However, if a given species produced by in-house cultures is used only monthly, or less frequently, a reference toxicant test of the same type must be performed with each environmental toxicity test.

iii). For test methods and species commonly used in the laboratory, but which are tested on a seasonal basis (e.g., sea urchin fertilization tests), reference toxicant tests must be conducted for each month the method is in use.

4) These standards do not currently specify a particular reference toxicant and dilution series however, if the state or permitting authority identifies a reference toxicant or dilution series for a particular test, the laboratory shall follow the specified requirements. All reference toxicant tests conducted for a given test method and species must use the same reference toxicant, test concentrations, dilution water and data analysis methods. A dilution factor of 0.5× or greater shall be used for both acute and chronic tests.

5) The reference toxicant tests shall be conducted following the same SOPs as the environmental toxicity tests for which the precision is being evaluated, unless otherwise specified in the test method (for example, 10-day sediment tests employ 96-h water-only reference toxicant tests). The test duration, dilution or control water, feeding, organism age, age range and density, test volumes, renewal frequency, water quality measurements, and the number of test concentrations, replicates and organisms per replicate shall be the same as specified for the environmental toxicity test.

b) Negative Control - Control, Brine Control, Control Sediment, Control Soil or Dilution Water -

1) The standards for the use, type and frequency of testing of negative controls are specified by the test methods and by permit or regulation and shall be followed. A negative control is included with each test.

2) Appropriate additional negative controls shall be included when sample adjustments (for example addition of sodium hydroxide for pH adjustment or thiosulfate for dechlorination) or solvent carriers are used in the test.

3) Test Acceptability Criteria (TAC) - The test acceptability criteria (for example, the whole-effluent chronic Ceriodaphnia test, requires 80% or greater survival and an average 15 young per female in the controls) as specified in the test method must be achieved for both the reference toxicant and the effluent or environmental sample toxicity test. The criteria shall be calculated and shall meet the method specified requirements for performing toxicity tests.

D-2.2 Variability and/or Reproducibility

Intralaboratory precision shall be determined on an ongoing basis through the use of further reference toxicant tests and related control charts as described in item D.2.1.a above.

D-2.3 Accuracy

This principle is not applicable to Toxicity Testing.

D-2.4 Test Sensitivity

a) If the Dunnett's SOP is used, the statistical minimum significant difference (SMSD) shall be calculated according to the formula specified by the test method and reported with the test results.

b) Estimate the SMSD for non-normal distribution and or heterogenous variances.

c) Point estimates: (LCp, ICp, or ECp) - Confidence intervals shall be reported as a measure of the precision around the point estimate value.

d) The SMSD shall be calculated and reported for only hypothesis test values, such as the NOEC or NOAEC.

D-2.5 Selection of Appropriate Statistical Analysis Methods

a) If required, methods of data analysis and endpoints are specified by language in the regulation, permit or the test method.

b) Dose Response Curves - When required, the data shall be plotted in the form of a curve relating the dose of the chemical or concentration of sample to cumulative percentage of test organisms demonstrating a response such as death.

D-2.6 Selection and Use of Reagents and Standards

a) The grade of all reagents used in toxicity tests is specified in the test method except the reference standard. All reference standards shall be prepared from chemicals which are analytical reagent grade or better. The preparation of all standards and reference toxicants shall be documented.

b) All standards and reagents associated with chemical measurements, such as dissolved oxygen, pH or specific conductance, shall comply with the standards outlined in Section 9.4 above.

c) Only reagent-grade water collected from distillation or deionization units (> 17 megohm resistivity) is used to prepare reagents.

D-2.7 Selectivity

This principle is not applicable. The selectivity of the test is specified by permit or regulation.

D-2.8 Constant and Consistent Test Conditions

a) If closed refrigerator-sized incubators are used, culturing and testing of organisms shall be separated to avoid loss of cultures due to cross-contamination.

b) Laboratory space must be adequate for the types and numbers of tests performed. The building must provide adequate cooling, heating and illumination for conducting testing and culturing; hot and cold running water must be available for cleaning equipment.

c) Air used for aeration of test solutions, dilution waters and cultures must be free of oil and fumes.

d) The laboratory or a contracted outside expert shall positively identify test organisms to species on an annual basis. The taxonomic reference (citation and page(s)) and the names(s) of the taxonomic expert(s) must be kept on file at the laboratory. When organisms are obtained from an outside source the supplier must provide this same information.

e) Instruments used for routine measurements of chemical and physical parameters such as pH, DO, conductivity, salinity, alkalinity, hardness, chlorine, and weight shall be calibrated, and/or standardized per manufacturer's instructions and Section 9.4. Temperature shall be calibrated per section 9.4.2.1. All measurements and calibrations shall be documented.

f) Test temperature shall be maintained as specified for the test method. Temperature control equipment must be adequate to maintain the required test temperature(s). The average daily temperature of the test solutions must be maintained within 1°C of the selected test temperature, for the duration of the test. The minimum frequency of measurement shall be once per 24 hour period. The test temperature for continuous-flow toxicity tests shall be recorded and monitored continuously.

g) Reagent grade water, prepared by any combination of distillation, reverse osmosis, ion exchange, activated carbon and particle filtration, shall meet the following requirements as verified by monthly measurement: conductivity less than or equal to 0.1 umhos or resistivity greater than or equal to 17 megohm, pH 5.5 to 7.5 S.U. and total residual chlorine non-detectable.

h) The quality of the standard dilution water used for testing or culturing must be sufficient to allow satisfactory survival, growth and reproduction of the test species as demonstrated by routine reference toxicant tests and negative control performance. Water used for culturing and testing shall be analyzed for toxic metals and organics whenever the minimum acceptability criteria for control survival, growth or reproduction are not met and no other cause, such as contaminated glassware or poor stock, can be identified. It is recognized that the analyte lists of some methods manuals may not include all potential toxicants, are based on estimates of chemical toxicity available at the time of publication and may specify detection limits which are not achievable in all matrices. However, for those analytes not listed, or for which the measured concentration or detection limit is greater than the method-specified limit, the laboratory must demonstrate that the analyte at the measured concentration or reported detection limit does not exceed one tenth the expected chronic value for the most sensitive species tested and/or cultured. The expected chronic value is based on professional judgment and the best available scientific data. The "USEPA Ambient Water Quality Criteria Documents" and the EPA AQUIRE data base provide guidance and data on acceptability and toxicity of individual metals and organic compounds.

i) For each new batch of laboratory-prepared or lot of commercial food used by the laboratory, the performance of organisms fed with the new food shall be compared with the performance of organisms fed with a food of known quality. If the food is used for culturing, its suitability is determined using a measure that evaluates the effect of food quality on survival and growth or reproduction of each of the relevant test species. Where applicable, foods used only in chronic toxicity tests are evaluated using the reference toxicant regularly employed in the laboratory QA program and compared with results of previous test(s) using a food of known quality. In the case of algae, rotifers or other cultured foods, which are collected as a continuous batch, the quality is assessed as described above, each time new nutrient stocks are prepared, a new starter culture is

employed or when a significant change in culture conditions occurs. The laboratory shall have written SOPs for the statistical evaluation of food acceptance.

j) Food used to culture organisms used in bioaccumulation tests must be analyzed for the compounds to be measured in the bioaccumulation tests.

k) Test chamber size and test solution volume shall be as specified in the test method. All test chambers used in a test must be identical.

l) Test organisms shall be fed the quantity and type food or nutrients specified in the test method. They shall also be fed at the intervals specified in the test methods.

m) All organisms in a test must be from the same source. Where available certified seeds are used for soil tests.

n) All organisms used in tests, or used as broodstock to produce neonate test organisms (for example cladocerans and larval fish), must appear healthy, show no signs of stress or disease and exhibit acceptable survival (90% or greater) during the 24 hour period immediately preceding use in tests.

o) All materials used for test chambers, culture tanks, tubing, etc. and coming in contact with test samples, solutions, control water, sediment or soil or food must be non-toxic and cleaned as described in the test methods. Materials must not reduce or add to sample toxicity. Appropriate materials for use in toxicity testing and culturing are described in the referenced manuals.

p) Light intensity shall be maintained as specified in the methods manuals. Measurements shall be made and recorded on a yearly basis. Photoperiod shall be maintained as specified in the test methods and shall be documented at least quarterly. For algal and plant tests, the light intensity shall be measured and recorded at the start of each test.

q) At a minimum, during aquatic chronic testing DO and pH shall be measured daily in at least one replicate of each concentration. In static-renewal tests DO must be measured at both the beginning and end of each 24-h exposure period and may be measured in old and new solutions prior to organism transfer, or after organism transfer; pH is measured at the end of each exposure period (i.e. in old solutions).

r) The health and culturing conditions of all organisms used for testing shall be documented by the testing laboratory. Such documentation shall include culture conditions (e.g., salinity, hardness, temperature, pH) and observations of any stress, disease or mortality. When organisms are obtained from an outside source, the laboratory shall obtain written documentation of these water quality parameters and biological observations for each lot of organism received. These observations shall adequately address the 24-hour time period referenced in item D.2.8.n.above. The laboratory shall also record each of these observations and water quality parameters upon the arrival of the organisms at the testing laboratory.

s) Age and the age range of the test organisms must be as specified in the test method. Supporting information, such as hatch dates and times, times of brood releases and metrics (for example, chironomid head capsule width) shall be documented.

t) The maximum holding time of effluents (elapsed time from sample collection to first use in a test) shall not exceed 36 hours and the last use of the sample in test renewals shall not exceed 72 hours without the permission of the permitting authority.

u) All samples shall be chilled to 4°C during or immediately after collection (see requirements in section 11.3).

v) Organisms obtained from an outside source must be from the same batch) Chronic tests shall have a minimum of four replicates per treatment.

w) The control population of Ceriodaphnia in chronic effluent or receiving water tests shall contain no more than 20% males.

x) Dissolved oxygen and pH in aquatic tests shall be within acceptable range at test initiation and aeration (minimal) is provided to tests if, and only if, acceptable dissolved oxygen concentrations cannot be otherwise maintained or if specified by the test method.

y) The test soils or sediments must be within the geochemical tolerance range of the test organism.

z) An individual test may be conditionally acceptable if temperature, dissolved oxygen, pH and other specified conditions fall outside specifications, depending on the degree of the departure and the objectives of the tests (see test conditions and test acceptability criteria specified for each test method). The acceptability of the test shall depend on the experience and professional judgment of the technical employee and the permitting authority.

D-3 MICROBIOLOGY TESTING

These standards apply to laboratories undertaking microbiological analysis of environmental samples. Microbiological testing refers to and includes the detection, isolation, enumeration, or identification of microorganisms and/or their metabolites, or determination of the presence or absence of growth in materials and media.

D-3.1 Sterility Checks and Blanks, Positive and Negative Controls

a) Sterility Checks and Blanks

The laboratory shall demonstrate that the filtration equipment and filters, sample containers, media and reagents have not been contaminated through improper handling or preparation, inadequate sterilization, or environmental exposure.

1) A sterility blank shall be analyzed for each lot of pre-prepared, ready-to-use medium (including chromofluorogenic reagent) and for each batch of medium prepared in the laboratory. This shall be done prior to first use of the medium.

2) For each filtration series in the filtration technique, the laboratory shall prepare at least one beginning and one ending sterility check. When an interruption of more than 30 minutes occurs, the filtration funnels shall be re-sterilized.

3) For pour plate technique, sterility blanks of the medium shall be made by pouring, at a minimum, one uninoculated plate for each lot of pre-prepared, ready-to-use media and for each batch of medium prepared in the laboratory.

4) Sterility checks on sample containers shall be performed on at least one container for each lot of purchased, pre-sterilized containers. For containers prepared and sterilized in the laboratory, a sterility check shall be performed on one container per sterilized batch with non-selective growth media.

5) A sterility blank shall be performed on each batch of dilution water prepared in the laboratory and on each batch of pre-prepared, ready-to-use dilution water with non-selective growth media.

6) At least one filter from each new lot of membrane filters shall be checked for sterility with non-selective growth media.

b) Positive Controls

Positive culture controls demonstrate that the medium can support the growth of the target organism(s), and that the medium produces the specified or expected reaction to the target organism(s).

1) Each pre-prepared, ready-to-use lot of medium (including chromofluorogenic reagent) and each batch of medium prepared in the laboratory shall be tested with at least one pure culture of a known positive reaction. This shall be done prior to first use of the medium.

c) Negative Controls

Negative culture controls demonstrate that the medium does not support the growth of non-target organisms or does not demonstrate the typical positive reaction of the target organism(s).

Each pre-prepared, ready-to-use lot of selective medium (including chromofluorogenic reagent) and each batch of selective medium prepared in the laboratory shall be analyzed with one or more known negative culture controls, i.e., non-target organisms, as appropriate to the method. This shall be done prior to first use of the medium.

D-3.2 Test Variability/Reproducibility

For test methods that specify colony counts such as membrane filter or plated media, duplicate counts shall be performed monthly on one positive sample, for each month that the test is performed. If the laboratory has two or more analysts, each analyst shall count typical colonies on the same plate. Counts must be within 10% difference to be acceptable. In a laboratory with only one microbiology analyst, the same plate shall be counted twice by the analyst, with no more than 5% difference between the counts.

D-3.3 Method Evaluation

a) Laboratories are required to demonstrate proficiency with the test method prior to first use. This shall be achieved by comparison to a method already approved for use in the laboratory, or by analyzing a minimum of ten spiked samples whose matrix is

representative of those normally submitted to the laboratory, or by analyzing and passing one proficiency test series provided by an approved proficiency sample provider. The laboratory shall maintain this documentation as long as the method is in use and for at least 5 years past the date of last use.

b) Laboratories shall participate in the Proficiency Test programs identified by NELAP (4.2.j or 5.3.4). The results of these analyses shall be used to evaluate the ability of the laboratory to produce acceptable data.

D-3.4 Test Performance

a) All growth and recovery media must be checked to assure that the target organism(s) respond in an acceptable and predictable manner (see D.3.1.b).

b) To ensure that analysis results are accurate, target organism identity shall be verified as specified in the method, e.g., by use of the completed test, or by use of secondary verification tests such as a catalase test.

D-3.5 Data Reduction

The calculations, data reduction and statistical interpretations specified by each test method shall be followed.

D-3.6 Quality of Standards, Reagents and Media

The laboratory shall ensure that the quality of the reagents and media used is appropriate for the test concerned.

a) Culture media may be prepared from commercial dehydrated powders or may be purchased ready-to-use. Preparation from different chemical ingredients shall not be done unless the media is not available commercially or unless specified by the method.

b) Reagents, commercial dehydrated powders and media shall be used within the shelf-life of the product and shall be documented according to 10.5.

c) Distilled water, deionized water or reverse-osmosis produced water free from bactericidal and inhibitory substances shall be used in the preparation of media, solutions and buffers. The quality of the water shall be monitored for chlorine residual, specific conductance, and heterotrophic bacteria plate count monthly (when in use), when maintenance is performed on the water treatment system, or at startup after a period of disuse longer than one month. Analysis for metals and the Bacteriological Water Quality Test (to determine presence of toxic agents or growth promoting substances) shall be performed annually. Results of these analyses shall meet the specifications of the required method and records of analyses shall be maintained for five years. (An exception to performing the Bacteriological Water Quality Test shall be given to laboratories that can supply documentation to show that their water source meets the criteria, as specified by the method, for Type I or Type II reagent water.)

d) Media, solutions and reagents shall be prepared, used and stored according to a documented SOP following the manufacturer's instructions or the test method. Documentation for media prepared in the laboratory shall include date of preparation, preparer's initials, type and amount of media prepared, manufacturer and lot number,

final pH of the media, and expiration date. Documentation for media purchased pre-prepared, ready-to-use shall include manufacturer, lot number, type and amount of media received, date of receipt, expiration date of the media, and pH of the media.

D-3.7 Selectivity

a) In order to ensure identity and traceability, reference cultures used for positive and negative controls shall be obtained from a recognized national collection, organization, or manufacturer recognized by the NELAP Accrediting Authority. Microorganisms maybe single use preparations or cultures maintained by documented procedures that demonstrate the continued purity and viability of the organism.

1) Reference cultures maybe revived (if freeze-dried) or transferred from slants and subcultured once to provide reference stocks. The reference stocks shall be preserved by a technique which maintains the characteristics of the strains. Reference stocks shall be used to prepare working stocks for routine work. If reference stocks have been thawed, they must not be refrozen and re-used.

2) Working stocks shall not be sequentially cultured more than five times and shall not be subcultured to replace reference stocks.

D-3.8 Constant and Consistent Test Conditions

a) Laboratory Facilities

Floors and work surfaces shall be non-absorbent and easy to clean and disinfect. Work surfaces shall be adequately sealed. Laboratories shall provide sufficient storage space, and shall be clean and free from dust accumulation. Plants, food, and drink shall be prohibited from the laboratory work area.

b) Laboratory Equipment

1) Temperature Measuring Devices

Temperature measuring devices such as liquid-in-glass thermometers, thermocouples, and platinum resistance thermometers used in incubators, autoclaves and other equipment shall be the appropriate quality to meet specification(s) in the test method. The graduation of the temperature measuring devices must be appropriate for the required accuracy of measurement and they shall be calibrated to national or international standards for temperature (see 9.2). Calibration shall be done at least annually.

2) Autoclaves

i). The performance of each autoclave shall be initially evaluated by establishing its functional properties and performance, for example heat distribution characteristics with respect to typical uses. Autoclaves shall meet specified temperature tolerances. Pressure cookers shall not be used for sterilization of growth media.

ii). Demonstration of sterilization temperature shall be provided by use of continuous temperature recording device or by use of a maximum

registering thermometer with every cycle. Appropriate biological indicators shall be used once per month to determine effective sterilization. Temperature sensitive tape shall be used with the contents of each autoclave run to indicate that the autoclave contents have been processed.

iii). Records of autoclave operations shall be maintained for every cycle. Records shall include: date, contents, maximum temperature reached, pressure, time in sterilization mode, total run time (may be recorded as time in and time out) and analyst's initials.

iv). Autoclave maintenance, either internally or by service contract, shall be performed annually and shall include a pressure check and calibration of temperature device. Records of the maintenance shall be maintained in equipment logs.

v). The autoclave mechanical timing device shall be checked quarterly against a stopwatch and the actual time elapsed documented.

3) Volumetric Equipment

Volumetric equipment shall be calibrated as follows:

i). equipment with movable parts such as automatic dispensers, dispensers/diluters, and mechanical hand pipettes shall be calibrated quarterly.

ii). equipment such as filter funnels, bottles, non-class A glassware, and other marked containers shall be calibrated once per lot prior to first use.

iii). the volume of the disposable volumetric equipment such as sample bottles, disposable pipettes, and micropipette tips shall be checked once per lot.

4) UV Instruments

UV instruments, used for sanitization, shall be tested quarterly for effectiveness with an appropriate UV light meter or by plate count agar spread plates. Replace bulbs if output is less than 70% of original for light tests or if count reduction is less than 99% for a plate containing 200 to 300 organisms.

5) Conductivity meters, oxygen meters, pH meters, hygrometers, and other similar measurement instruments shall be calibrated according to the method specified requirements (see Section 9.4).

6) Incubators, Water Baths, Ovens

i). The stability and uniformity of temperature distribution and time required after test sample addition to re-establish equilibrium conditions in incubators and water baths shall be established. Temperature of incubators and water baths shall be documented twice daily, at least four hours apart, on each day of use.

ii). Ovens used for sterilization shall be checked for sterilization effectiveness monthly with appropriate biological indicators. Records shall be maintained for each cycle that include date, cycle time, temperature, contents and analyst's initials.

7) Labware (Glassware and Plasticware)

i). The laboratory shall have a documented SOP for washing labware, if applicable. Detergents designed for laboratory use must be used.

ii). Glassware shall be made of borosilicate or other non-corrosive material, free of chips and cracks, and shall have readable measurement marks.

iii). Labware that is washed and reused shall be tested for possible presence of residues which may inhibit or promote growth of microorganisms by performing the Inhibitory Residue Test annually, and each time the laboratory changes the lot of detergent or washing SOPs.

iv). Washed labware shall be tested at least once daily, each day of washing, for possible acid or alkaline residue by testing at least one piece of labware with a suitable pH indicator such as bromothymol blue. Records of tests shall be maintained.

D-4 RADIOCHEMICAL TESTING

These standards apply to laboratories undertaking the examination of environmental samples by radiochemical analysis. These SOPs for radiochemical analysis may involve some form of chemical separation followed by detection of the radioactive decay of analyte (or indicative daughters) and tracer isotopes where used. For the purpose of these standards SOPs for the determination of radioactive isotopes by mass spectrometry (e.g., ICP-MS or TIMS) or optical (e.g. KPA) techniques are not addressed herein.

KPA is addressed in Section D.4.10.

D-4.1 Negative and Positive Controls

QC Sample Preparation: All samples and QC samples in each Analytical Batch shall be prepared concurrently and in the same manner.

QC Sample Counting: All QC samples shall be counted and analyzed in the same manner as the samples in the Analytical Batch, in the same time frame and using the same instrument calibration parameters, instrument analysis algorithms, etc.

The same time frame implies that where multiple detectors are used and are sufficient to count the entire batch at the same time, the entire batch is counted at the same time. If the number of detectors is not sufficient to count the entire batch at the same time, then samples shall be counted consecutively on the available detector(s).

The same instrument calibration parameters, instrument analysis algorithms, etc. implies that these parameters for a given instrument shall not be changed for the samples in that batch. It is understood that for multiple detectors, the parameters may not be identical.

NOTE: NELAC does not address radioisotopic determinations by mass spectrometry (ICPM, TIMS) or kinetic phosphorescence analysis.

a) Negative Controls

1) Method Blank - Shall be performed at a frequency of one per preparation batch. The results of this analysis shall be one of the QC measures to be used to assess the batch. The method blank result shall be assessed against the specific acceptance criteria [see 10.1.2.b)18] specified in the laboratory method manual [see 10.1.2]. When the specified method blank acceptance criteria is not met the specified corrective action and contingencies [see 10.1.2.ab) 19 and 20] shall be followed and results reported with appropriate data qualifying codes. The occurrence of a failed method blank acceptance criteria and the actions taken shall be noted in the laboratory report [see 13.a)10].

Batch blanks shall be counted for a sufficient time to meet the required detection limit except in the case where the achieved MDA is calculated from the standard deviation of a blank population. In this case the batch blanks shall be counted for the same count time as the samples.

The batch blank matrix shall be the same as the samples, as can be reasonably achieved and shall be documented in the Case Narrative.

2) In the case of gamma spectrometry where the sample matrix is simply aliquoted into a calibrated counting geometry the method blank shall be of similar counting geometry that is empty or filled to similar volume with ASTM Type II water to partially simulate gamma attenuation due to a sample matrix.

The following batch blank matrices shall be used:

Sample Type	**Blank Matrix Specifications**
Water	Distilled or deionized water acidified to pH ≤2, radon free
Soil	Empty counting container
Filters	Physically and chemically identical filter media (supplied to the laboratory by customer)

Miscellaneous Solids
Empty counting container

3) There shall be no subtraction of the required method blank [see D.4.1.a)1] result from the sample results in the associated preparation or analytical batch unless permitted by method or program. This does not preclude the application of any correction factor (e.g. instrument background, analyte presence in tracer, reagent impurities, peak overlap, calibration blank, etc.) to all analyzed samples, both program/project submitted and internal quality control samples. However, these correction factors shall not depend on the required method blank result in the associated analytical batch.

The blank results should be compared to the sample specific MDA values to identify false positive results.

4) The method blank sample shall be prepared with similar aliquot size to that of the routine samples for analysis and the method blank result and acceptance criteria [10.1.2.b)18] shall be calculated in a manner that compensates for sample results based upon differing aliquot size.

All samples and QC samples in each preparation (or analytical) batch shall be prepared concurrently and in exactly the same manner.

Blank Acceptance Criteria:

The MDA of the batch blank shall be less than the RDL.

If all sample results in the batch are greater than the RDL, then the Batch Blank MDA shall be less than the activity of the least active sample in the batch of that sample.

If all of the samples in the batch are less than the RDL, the activity of the blank shall be less than the MDA.

If some samples are less than the RDL and some are greater than the RDL, then the Batch Blank activity must be less than the MDA.

b) Positive Controls

1) Laboratory Control Samples - Shall be performed at a frequency of one per preparation batch. The results of this analysis shall be one of the QC measures to be used to assess the batch. The LCS result shall be assessed against the specific acceptance criteria [see 10.1.2.b)18] specified in the laboratory method manual [see 10.1.2]. When the specified LCS acceptance criteria is not met the specified corrective action and contingencies [see 10.1.2.b)19 and 20] shall be followed. The occurrence of a failed LCS acceptance criteria and the actions taken shall be noted in the laboratory report [see 13.a)10].

Counting: The LCS shall be counted for a sufficient time to meet the required detection limit.

Matrix: The matrix shall be the same as the samples, as can be reasonably achieved, and the matrix shall be documented in the Case Narrative.

Acceptance Criteria: The relative bias as calculated from the formula:

Relative bias = $\frac{observed - known}{known}$

Shall be in the range -.25 to +.25. (Reference: ANSI N13.30, Appendix B)

For gross alpha, gross beta analysis, the acceptance criteria are applicable when the analyte in the LCS is the same analyte used for the calibration curve.

2) Matrix Spike - Shall be performed at a frequency of one per preparation batch for those methods which do not utilize an internal standard or carrier, for which there is a chemical separation process, and where there is sufficient sample to do so. The exceptions are gross alpha, gross beta and tritium which shall require matrix spikes for aqueous samples. The results of this analysis shall be one of the quality control measures to be used to assess the batch. The matrix spike result shall be assessed against the specific acceptance criteria [see 10.1.2.b)18] specified in the laboratory method manual [see 10.1.2]. When the specified matrix spike acceptance criteria is not met, the specified corrective action and contingencies [see 10.1.2.b)19 and 20] shall be followed. The occurrence of a failed matrix spike acceptance criteria and the actions taken shall be noted in the laboratory report [see 13.a)10]. The lack of sufficient sample aliquot size to perform a matrix spike shall be noted in the laboratory report.

Matrix Spikes: Matrix spikes shall be added as early in the sample preparation steps as practicable.

Matrix spikes are not required for radiochemical analyses if an isotopic tracer or chemical carrier is used in the analysis to determine chemical recovery (yield) for the chemical separation and sample mounting procedures. Matrix spikes are not required for gross alpha, gross beta, or gamma analysis.

Matrix spikes shall be run on a separate sample aliquot using the same analyte as that being analyzed whenever possible.

3) The activity of the laboratory control sample shall: (1) be two to ten times the detection limit or (2) at a level comparable to that of routine samples if the sample activities are expected to exceed 10 times the detection limit.

LCS Selection and Level: The LCS shall be of the same analyte as the sample analyte and shall be at least 5 times but not greater than 20 times the RDL with the following exceptions:

For RDLs of low activity the analyte shall be at a level where the random counting error does not exceed 10% in the counting time required to attain the RDL.

Analytes for gamma spectroscopy need not be the same as the sample analyte but should fall in the approximate energy region of the spectrum (low, mid-range, or high energy).

4) The activity of the matrix spike analytes(s) shall be greater than ten times the detection limit.

Matrix Spike Selection and Level: The matrix spike shall be added at a concentration of at least 5 but not greater than 20 times the RDL. In samples having known significant activity of the radionuclides to be analyzed, more than 20 times the RDL may be added to minimize the effect of the sample activity on determination of spike recoveries.

5) The laboratory standards used to prepare the LCS and matrix spike shall be from a source independent of the laboratory standards used for instrument calibration.

6) The matrix spike shall be prepared by adding a known activity of target analyte. Where a radiochemical method, other than gamma spectroscopy, has more than one reportable analyte isotope (e.g. plutonium, Pu 238 and Pu 239, using alpha spectrometry), only one of the analyte isotopes need be included in the laboratory control or matrix spike sample at the indicated activity level. However, where more than one analyte isotope is present above the specified detection limit each shall be assessed against the specified acceptance criteria.

Matrix Spike

Counting: The matrix spike shall be counted for a sufficient time to meet the required detection limit.

Acceptance Criteria: Matrix spike recoveries shall be within the control limits of 60 – 140%. Matrix spike samples for which the sample activity is greater than five times the spiking level are not required to meet this criteria.

7) Where gamma spectrometry is used to identify and quantitate more than one analyte isotope the LCS and matrix spike shall contain isotopes that represent the low (e.g., americium-241), medium (e.g., cesium-137) and high (e.g., cobalt-60) energy range of the analyzed gamma spectra. As indicated by these examples the isotopes need not exactly bracket the calibrated energy range or the range over which isotopes are identified and quantitated.

The LCS shall be traceable to the NIST or shall be a working reference material as described in *ASTM C 1128* and may used repeatedly for different analytical batches as long as it is appropriate for the matrix and geometry of the batch.

The analyte need not be the same as the sample analyte but shall fall in the approximate energy region of the spectrum as the analyte(s) i.e. low, mid-range, or high energy.

Matrix Spike sample is not required for gamma spectrometry analysis.

8) The LCS shall be prepared with similar aliquot size to that of the routine samples for analyses.

c) Other Controls

1) Tracer - For those methods that utilize a tracer (i.e. internal standard) each sample result shall have an associated tracer recovery calculated and reported. The tracer recovery for each sample result shall be one of the QC measures to be used to assess the associated sample result acceptance. The tracer recovery shall be assessed against the specific acceptance criteria [see 10.1.2.b)18] specified in the laboratory method manual [see 10.1.2]. When the specified tracer recovery acceptance criteria is not met the specified corrective action and contingencies [see 10.1.2.b)19 and 20] shall be followed. The occurrence of a failed tracer recovery acceptance criteria and the actions taken shall be noted in the laboratory report [see 13.a) 10].

2) Carrier - For those methods that utilize a carrier, each sample shall have an associated carrier recovery calculated and reported. The carrier recovery for each sample shall be one of the QC measures to be used to assess the associated sample result acceptance. The carrier recovery shall be assessed against the specific acceptance criteria [see 10.1.2.b)18] specified in the laboratory method manual [see 10.1.2]. When the specified carrier recovery acceptance criteria is not met the specified corrective action and contingencies [see 10.1.2.b)19 and 20] shall be followed. The occurrence of a failed carrier recovery acceptance criteria and the actions taken shall be noted in the laboratory report [see 13.a)11].

Tracers and carriers chemically mimic and do not interfere with the target analyte through radiochemical separations. Isotopic tracers are typically radioactive materials (e.g., Pu-242, Sr-85) while carriers are typically nonradioactive (e.g., natural strontium). They are added to samples to determine the overall chemical yield for the analytical preparation steps. When tracers or carriers are used, each sample (including any batch associated QC samples) shall be spiked separately with the same materials and individual sample yields will be determined. The tracer shall be added to the sample at the very beginning of the sample preparation SOP. For solid samples the tracer shall be added after grinding, sieving, etc. but prior to any muffling or dissolution of the sample.

The recovery of isotopic tracers shall be in the range 30% - 110%.

The recovery of stable carriers shall be in the range 40% - 110%.

The uncertainty in the tracer or carrier recovery shall be incorporated into the combined standard uncertainty of the measurement

D-4.2 Analytical Variability/Reproducibility

a) Replicate - Shall be performed at a frequency of one per preparation batch where there is sufficient sample to do so. The results of this analysis shall be one of the QC measures to be used to assess batch acceptance. The replicate result shall be assessed against the specific acceptance criteria [see 10.1.2.b)18] specified in the laboratory method manual [see 10.1.2]. When the specified replicate acceptance criteria is not met the specified corrective action and contingencies [see 10.1.2.b) 19 and 20] shall be followed. The corrective action shall consider the fact that sample inhomogeneity may be a cause of the failed replicate acceptance criteria. The occurrence of a failed replicate acceptance criteria and the actions taken shall be noted in the laboratory report [see 13.a)10].

Duplicates: The purpose of the Duplicate sample analysis is to assess the laboratory precision by providing information on the laboratory's reproducibility, and the homogeneity of the sample. The Duplicate activity shall not be averaged with the corresponding sample activity when reporting results. Samples identified as Field Blanks shall not be used for Duplicate sample analysis.

Frequency: At least one duplicate sample shall be prepared and analyzed with every Analytical Batch of samples.

Counting: The duplicate shall be counted for a sufficient time to meet the required detection limit.

Evaluation Criteria: The normalized absolute difference between the sample and laboratory duplicate, given by the following equation shall be used to determine that the results do not differ significantly when compared to their respective one sigma uncertainty.

$$\frac{|S-D|}{\sqrt{(CSU_S)^2+(CSU_D)^2}} \leq 3^*$$

(* 2.58 was rounded to 3)

S = Sample result

D = Duplicate result

CSU_S = 1s Combined Standard Uncertainty of the sample

CSU_D = 1s Combined Standard Uncertainty of the duplicate

Duplicates, which do not meet the above requirements due to the difficulty of subsampling, shall be described in the Case Narrative.

b) For low level samples (less than approximately three times the detection limit) the laboratory may analyze duplicate LCSs or a replicate MS (MS and a MSD) to determine reproducibility within a preparation batch.

D-4.3 Method Evaluation

In order to ensure the accuracy of the reported result, the following SOPs shall be in place:

a) Initial Demonstration of Capability- (section 10.2.1 and Appendix C) shall be performed initially (prior to the analysis of any samples) and with a significant change in instrument type, personnel or method.

b) Proficiency Test Samples -The results of such analysis (4.2.j and 5.3.4) shall be used by the laboratory to evaluate the ability of the laboratory to produce accurate data.

D-4.4 Radiation Measurement System Calibration

Because of the stability and response nature of modern radiation measurement instrumentation, it is not typically necessary to verify calibration of these systems each day of use. This section addresses those practices that are necessary for proper calibration and those requirements of Section 9.4.2 (Instrument Calibrations) that are not applicable to some types of radiation measurement instrumentation.

a) Initial Instrument Calibration

Item a presents requirements for Instrument Calibration.

In item (1), DOE adopts the term detector response instead of activity detection efficiency.

1) Given that activity detection efficiency is independent of sample activity at all but extreme activity levels, the requirements of subsections f, h and i of 9.4.2.1 are not applicable to radiochemical method calibrations except mass attenuation in gas-proportional counting and sample quench in liquid scintillation counting.

2) Radiochemistry analytical instruments are subject to calibration when purchased, when the instrument is serviced, when the instrument is moved and when the instrument setting(s) have been changed.

Clarification is provided for the preceding sentence. Radiochemistry analytical instruments are subject to a full calibration prior to initial use, when the instrument is placed back in service after malfunctioning and the instrument's response has changed as determined by a QC check or when the instrument's response exceeds predetermined acceptance criteria for the instrument QC.

3) Instrument calibration shall be performed with reference standards as defined in Section D.4.7a. The standards shall have the same general characteristics (i.e., geometry, homogeneity, density, etc.) as the associated samples.

Detector response (efficiency) shall be determined with sources that are NIST traceable or with sources prepared from NIST traceable standards. (DOECAP 4.10.1 and 4.13.4) When sources used for determinations for detector response are prepared from NIST traceable standards, they shall be "working reference materials" as defined in STD.ASTM C1128.

For alpha spectrometry, a material balance check shall be done on each source which clearly demonstrates that greater than 99% of the standards used were carried on the source. The material balance check shall be done on the fraction remaining from either the neodymium fluoride precipitation or the electro deposition plus all rinses from an adequate cleaning of any vessel used in the process. The estimated error in preparing the source shall be propagated into the error of the efficiency determination.

Check sources shall be used only to verify that efficiencies have not changed. They shall not be used to determine efficiencies.

4) The frequency of calibration shall be addressed in the laboratory method manual [see 10.1.2.b)13] if not addressed in the method. A specific frequency (e.g., monthly) or observations from the associated control or tolerance chart, as the basis for calibration shall be specified.

b) Continuing Instrument Calibration Verification

Calibration verification checks shall be performed using appropriate check sources and monitored with control charts or tolerance charts to ensure that the instrument is operating properly and that the calibration has not changed. The same check source used in the preparation of the tolerance chart or control chart at the time of calibration shall be used in the calibration verification of the instrument. The check sources must provide adequate counting statistics for a relatively short count time and the source should be sealed or encapsulated to prevent loss of activity and contamination of the instrument and laboratory personnel. For alpha and gamma spectroscopy systems, the instrument calibration verification shall include checks on the counting efficiency and the relationship between channel number and alpha or gamma ray energy.

For gamma spectroscopy systems, the calibration verification checks for efficiency and energy calibration shall be performed on a day of use basis along with performance checks on peak resolution.

For systems using sample changers and/or long count times that run more than a day, the energy calibration shall be checked before each analytical batch.

The full-width-half-maximum (FWHM) resolution of the detector should be evaluated daily or prior to instrument use. The measured FWHM resolution shall be trended. Corrective actions should be taken when an intolerable condition becomes evident or when gross

changes are identified in the resolution of the detector at the energies that bound the applicable energy range (ASTM D 3649-98a).

5) For alpha spectroscopy systems, the calibration verification check for energy calibration shall be performed on a weekly basis and the performance check for counting efficiency shall be performed on at least a monthly basis.

Detector response (counting efficiency) determinations shall be performed when the check source count is outside the acceptable limits of the control chart (reference ANSI N42.23, Annex A5).

It is important to use calibration or QC sources that will not cause detector contamination from recoil atoms from the source.

6) For gas-proportional and liquid scintillation counters, the calibration verification check for counting efficiency shall be performed on a day of use basis. Verification of instrument calibration does not directly verify secondary calibrations, e.g., the mass efficiency curve or the quench curve.

7) For scintillation counters the calibration verification for counting efficiency shall be performed on a day of use basis.

c) Background Measurement

Background measurements shall be made on a regular basis and monitored using control charts or tolerance charts to ensure that a laboratory maintains its capability to meet required data quality objectives. These values are subtracted from the total measured activity in the determination of the sample activity.

1) For gamma spectroscopy systems, background measurements shall be performed on at least a monthly basis.

For gamma spectroscopy systems, long background measurements shall be performed on at least a monthly basis. The duration of the background measurement shall be sufficient to quantify contamination that may affect routine sample measurements (the count time for the background shall be at least as long as the sample count time).

DOECAP 4.13.16 and 4.14.4

A background shall also be collected after any counting chamber changes have been made, i.e. cleaning, liner replacement, or instrument modification.

DOECAP 4.12.5

2) For alpha spectroscopy systems, background measurements shall be performed on at least a monthly basis.

For alpha spectroscopy systems, long background measurements shall be performed on at least a monthly basis. Background determinations shall be performed for each region of interest (ROI). The duration of the background measurement shall be sufficient to quantify contamination that may affect routine sample measurements.

3) For gas-proportional counters background measurements shall be performed on a weekly basis.

For gas-proportional counters, long background measurements shall be performed on at least a weekly basis for both alpha and beta. The duration of the background measurement shall be sufficient to quantify contamination that may affect routine sample measurements.

4) For scintillation counters, background measurements shall be performed each day of use.

For scintillation counters, background measurements shall be performed each day of use. The duration of the background measurement shall be sufficient to quantify contamination that may affect routine sample measurements. This daily instrument check should include a check with an unquenched, sealed background vial (which should never be used to correct sample results for background since it is not in the same configuration as samples).

D-4.5 Detection Limits

a) Must be determined prior to sample analysis and must be re-determined each time there is a significant change in the test method or instrument type.

b) The SOPs employed must be documented and consistent with mandated method or regulation.

The SOPs that incorporate the equations to calculate the critical level and the minimum detectable concentration (or activity) must be documented and consistent with mandated method or regulation.

MDA Determination

- The MDA (minimum detectable amount) is the smallest amount (activity or mass) of an analyte in a sample that will be detected with a probability β of non-detection (Type II error) while accepting a probability α of erroneously deciding that a positive (non-zero) quantity of analyte is present in an appropriate blank sample (Type I error). For the purposes of this QSAS, the α and β probabilities are both set at 0.05 unless otherwise specified. (Reference: *ANSI N13.30 and ANSI N42.23*)

- MDA Factors and Conditions - MDAs are determined based on the factors and conditions, which influence the measurement. Sample size, count duration, tracer chemical recovery, detector background, blank standard deviation, and detector efficiency shall be optimized to result in sample MDAs less than or equal to the RDLs. If RDLs are not achieved, then the

cause shall be addressed comprehensively in the Case Narrative.

- MDA Calculation - The basic detection limit calculation shall be based on that developed by L. A. Currie, "Limits for Qualitative Detection and Quantitative Determination, ANALYTICAL CHEMISTRY, March, 1968, Vol. 40, NO.3, pg. 586.The following general equations shall be used to calculate the MDA.

- Without Blank Population -

[redacted]

where,

b	=	background count rate in cpm
T	=	count time in minutes
K	=	efficiency * $e^{-\lambda t}$ * aliquot fraction * tracer recovery*ABN
Efficiency	=	detector efficiency
t	=	time from sample collection to mid-point of count time(or nuclide separation time, as applicable) in the same units as half-life
λ	=	Analyte decay constant = ln2/(half-life)
ABN	=	abundance

  - Use of the above equation requires that the background and sample count times are either equivalent, or the background count time is greater than the sample count time. When sample and background counts are different, this must be included in the equation.
  - The above equation for MDA has the units of dpm/sample. Any other units will require specification by Site/Project.
  - Site specific requirements may be provided for other MDA formulations.

- With Blank Population -

[redacted]

The use of this equation assumes that the standard deviation of a sample, where the sample contains no actual analyte activity above that of the appropriate blank, is equal to the standard deviation of the appropriate blank.
s_b = standard deviation of the blank population where the blank population is in total blank counts in count time T
Use of blank populations for calculation of MDAs requires the selection of an implementation method, which includes but is not limited to:

- Identification of blanks to be used in the population

- The number of blanks to use in the population
- How the blank population changes
- Limitations on the deletion of blanks
- The method of implementation shall not introduce any statistical bias
- The appropriate blank subtraction shall be the mean blank value of the blank population

– The implementation of blank populations for calculation of MDAs shall be described in detail in an SOP. (Reference: *ANSI N13.30,* Appendix A.5.13 for examples of MDA calculations)

- MDA Optimization - The laboratory shall optimize analysis parameters in order to achieve analyte MDAs less than or equal to the RDLs, except when sample activities are significantly greater than the RDL. Samples with elevated activities shall be handled according to the following requirements:

  – The appropriate aliquot size shall be determined based on the activity level in the sample. The aliquot shall be large enough to generate data, which meet the following criteria:

  – The measurement uncertainty shall not be greater than 10% of the sample activity.

  – The MDA for the analysis shall be a maximum of 10% of the sample activity.

D-4.6 Data Reduction

a) Refer to Section 10.6," Computers and Electronic Data Related Requirements," of this document.

Negative Numbers: All negative activities shall be reported as such. If the sum of the activity and the measurement uncertainty at 3-sigma is a negative number, the cause shall be investigated and evaluated to determine if it is systematic or random. If the cause is systematic, it shall be corrected. If the cause is random it shall be documented in the Case Narrative. Recurrent problems with significant negative results suggest that the background subtraction and/or blank subtraction, if applicable, are in error or that the estimate of error is low. Investigation of such problems and documentation of the resolution is required and shall be discussed in the Case Narrative.

b) Measurement Uncertainties - each result shall be reported with the associated measurement uncertainty. The SOPs for determining the measurement uncertainty must be documented and be consistent with mandated method and regulation.

Measurement Uncertainties: Each result shall be reported with the associated measurement uncertainty as a combined standard uncertainty. The SOP for determining the measurement uncertainty must be consistent with mandated method and regulation.

Combined Standard Uncertainty: All measurement uncertainties shall be propagated and reported with each result. The formula for calculating the combined standard uncertainty of a result shall be documented in the appropriate SOP. The combined standard uncertainty shall include both systematic and random error.

DOECAP 4.1.6

Systematic Error shall include but is not necessarily limited to:

The errors from all measurement devices such as but not limited to pipets and balances.

The uncertainty of known values of tracer solutions, calibration uncertainties, etc.

Random Error shall include but is not necessarily limited to the total random counting error associated with each sample and appropriately propagated when more than one variable is used to determine the result.

D-4.7 Quality of Standards and Reagents

a) The QC program shall establish and maintain provisions for radionuclide standards.

1) Reference standards that are used in a radiochemical laboratory shall be obtained from the NIST, EPA, or suppliers who participate in supplying NIST standards or NIST traceable radionuclides. Any reference standards purchased outside the United States shall be traceable back to each country's national standards laboratory. Commercial suppliers of reference standards shall conform to ANSI N42.22 to assure the quality of their products.

2) Reference standards shall be accompanied with a certificate of calibration whose content is as described in ANSI N42.22 - 1995, Section 8, Certificates.

Standards shall be verified prior to initial use.

Preparations of standards solutions used for a period of time exceeding one year shall be verified annually, at a minimum, and documented in a logbook.

At least three verification measurements of a standard shall be used to determine the mean value and standard deviation of the verification results.

The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements.

The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

3) Laboratories should consult with the supplier if the lab's verification of the activity of the reference traceable standard indicates a noticeable deviation from the certified value. The laboratory shall not use a value other than the decay corrected certified value.

Corrections for radioactive decay and/or ingrowth of progeny have been performed for radionuclide standards. (ANSI N42.234.1.3.22)

b) All reagents used shall be analytical reagent grade or better.

Water purity shall be at least distilled or deionized water.

D-4.8 Constant and Consistent Test Conditions

a) To prevent incorrect analysis results caused by the spread of contamination among samples, the laboratory shall establish and adhere to written SOPs to minimize the possibility of cross-contamination between samples.

Backgrounds for alpha spectrometers and gas flow proportional counters should be rechecked after being subjected to high-activity samples.

DOECAP 4.11.5

The laboratory shall maintain a radiological control program that rigorously addresses analytical radiological control. The program shall address the SOPs for segregating samples with potentially widely varying levels of radioactivity. The radiological control program shall explicitly define how low level and high level samples will be identified, segregated and processed in order to prevent sample cross-contamination.

The detection/quantification requirements for contamination control sampling should be consistent with the lowest level of sample analyte or MDA requirement. Samples should be segregated by activity levels in sample receipt, processing areas, and storage areas.

b) For gamma spectrometry systems, background check measurements shall be performed each day of use.

c) For gas-proportional counter systems, background check measurements shall be performed each day of use.

A daily background counting time that is shorter in duration compared to a sample counting interval may only identify a high level of contamination. Lower levels of contamination not detected in a shorter background counting time may bias the results of the sample analyses.

D-4.9 Isotopic Determinations by Alpha Spectrometry (DOECAP 4.14)

a) **Internal Tracer - Shall be used for isotope specific analysis by alpha spectrometry. Initial sample preparation shall include treatment to ensure that tracer and analyte will undergo similar reactions during processing. All tracers used for alpha spectrometry shall be tested**

by the laboratory for contribution in the ROIs of the analytes of interest. If a significant contribution is found, the method for correction shall be Site accepted prior to use.

b) Background Correction - The gross counts in each target analyte and tracer ROI shall be corrected for the particular detector's background contribution in those same ROIs.

c) Blank Correction - shall not be routinely performed.

d) Conditions Requiring Reanalysis

1) Sample and Analyte Specific Conditions: Any one of the following are additional conditions that require reanalysis for a particular sample and analyte.

i). If the tracer recovery for the sample does not fall within 30% - 110%, reanalysis is required, beginning with preparation.

ii). If the FWHM for the tracer peak exceeds 100 keV and/or the peak energy does not fall within ±50 keV of the known peak energy, reanalysis is required.

iii). If the target analyte and tracer peaks are not resolved because the target analyte activity is significantly larger than the tracer activity, the sample shall be re-analyzed with a smaller aliquot such that resolution of tracer and analyte peaks is accomplished.

iv). If the sample analyte spectrum contains significant interferences with the analyte and/or tracer ROIs, reanalysis is required.

2) Analytical Batch Conditions: If the tracer chemical recovery for the Batch Blank does not fall with 30% - 110%, reanalysis of the entire Analytical Batch, beginning with the preparation, is required if sufficient sample is available.

e) Instrument Calibration - Calibration of each alpha spectrometry detector used to produce data shall include channel vs. energy calibration, detector response (efficiency) determination, and background determination for each ROI. Alpha spectrum regions of interest shall be selected with consistency from analyte to analyte.

f) Energy Calibration

1) The energy calibration for each detector shall be performed. A curve shall be fit for Energy (Y-axis) versus Channel (X-axis) and the equation with the slope and Y-intercept for the fit shall be documented.

2) The slope of the equation shall be <15 keV/channel.

3) The energy calibration shall be performed using at least three isotopes within the energy range of 3 to 6 MeV.

4) The final peak energy positions of all observed isotopes shall be within ±40 keV of the expected peak energy.

g) Background Requirements

1) The background total counts (or counts per unit time) for each target analyte and tracer isotope ROI shall be analyzed on each detector and documented.

2) The background for each ROI shall be sufficiently low to optimize the MDA.

3) The limits of acceptability for each background ROI shall be documented. These shall be set such that RDLs can be obtained for backgrounds at the limit of acceptability.

4) Background count times shall be equal to or longer than sample count times.

h) Detector Response Determination Requirements

Detector response (efficiency) is not used in the calculation of results when tracers are used in the analysis, but only used to calculate the estimated yield, which is also not used, except as a general method performance indicator.

1) The response (efficiency) counts for the ROI shall be background corrected using the same ROI for the background unless the background is less than 0.5% of the total counts in the ROI.

i) The response (efficiency) shall be determined on at least 10,000 net counts in the ROI (after background correction).

j) Check source counts to verify detector response (efficiency) shall be determined on at least 2,000 counts.

k) The detector response and detector response error shall be documented.

l) The detector response check as determined by the check source count and its associated error and limits of acceptability for the check source result shall be documented.

m) Spectrum Assessment

1) ROIs shall be clearly indicated either graphically or in tabular form on alpha printouts. **Spectra with ROIs shall be saved and made available for review upon request.**

n) The FWHM resolution for each sample and QC sample tracer peak shall be ≤100 keV.

o) The tracer peak energy for each sample and QC sample shall be within ±50 keV of the expected energy.

p) Each sample and QC sample spectrum shall be assessed for correctly chosen ROIs, acceptable spectral resolution, acceptable energy calibration and interferences with the analyte and tracer ROIs.

D-4.10 Liquid Scintillation Counting (DOECAP 4.15)

a) Tritium in Water - Water samples for tritium analysis and all associated QC samples shall be distilled prior to analysis unless specified otherwise by the contractor. The applicable preparation SOP shall specify the fraction to be collected. The same fraction shall be collected for samples and all associated QC samples.

b) Counting Vial Preparation - Samples shall be counted in vials equivalent to or superior to low potassium glass vials or high density polyethylene vials. Samples in polyethylene vials shall be counted within a time period not to exceed the manufacturer's specification for the cocktail used in the analysis. Analysis documentation shall contain sufficient information for this to be verified. Vials shall be prepared according to manufacturer's specification for the cocktail. The vials shall be "dark adapted" for a minimum of 30 minutes or according to the cocktail manufacturer's specifications before counting. The prepared vials shall be inspected to verify that the sample loaded properly in the cocktail.

c) SOPs for methods using liquid scintillation counting shall incorporate and adhere to ANSI N42.15-1997, American National Standard Check Sources for and Verification of Liquid Scintillation Systems. References are for the current version. When references change, an implementation schedule will be determined.

d) Instrument Background - The instrument background vial for all tritium matrices shall be prepared with low-tritium or "dead" water. The instrument background vial shall be prepared with the same water to cocktail ratio as the samples are prepared. The type of water used to prepare the instrument background vial shall be explicitly noted on the preparation and counting documentation. The instrument background shall be determined weekly or with each sample batch. Unless calculated from a running average of background counts, the most recent background count shall be used to calculate sample activities and MDAs. This is not a performance check rather a background subtraction sample in a configuration equivalent to that of associated samples in the batch. It is used to generate the background subtraction data for the batch (using either the results associated directly with that batch or results of a rolling mean).

e) For analysis methods using quench curves to determine individual sample detector response, the quench curves shall be generated at least yearly and verified after any instrument maintenance.

f) If the calibration method is constant quench, the detector response (efficiency) standards shall be counted weekly or with each counting batch.

g) Sample Specific Conditions - The following are conditions that require reanalysis for a particular sample and analyte, beginning with the preparation or recounting, as appropriate:

1) If constant quench method of calibration is used, the quench of the sample shall be within +/-5% of the quench of the efficiency standard. If this condition is not met, the sample must be reanalyzed beginning with vial preparation.

2) If the sample quench does not fall within the range of the quench curve, the samples shall be re-analyzed such that the sample quench is in the range of a quench curve.

h) Spectrum Assessment - For analytes requiring separations other than distillation:

1) Sample spectra shall be retained for each sample and QC sample including identification of ROIs.

2) Each sample and QC sample spectrum shall be assessed for correctly chosen ROIs, acceptability of peak shape, and interferences due to non-target analytes or luminescence.

D-4.11 Gas Proportional Counting (DOECAP 4.13)

a) Planchets - shall be thoroughly cleaned before use to ensure that there are no interfering residues or contamination. All planchets shall be prepared not to exceed sample weights in excess of the calibrated ranges of established self-absorption curves. Sample weights shall be documented and stable prior to counting. Planchets exhibiting physical characteristics notably different from the self-absorption standards (e.g., evidence of corrosion) shall not be counted unless remediation efforts such as additional sample preparation and remounting, flaming prove unsuccessful. Any non-routine counting situations shall be documented in the Case Narrative.

b) Instrument Calibration - shall be performed in accordance with the requirements in ANSI N42.25, Calibration and Usage of Alpha/Beta Proportional Counters. Where the word "should" is used in ANSI N42.25, calibration shall be performed in accordance with the statement. References are for the current version. When references change, an implementation schedule will be determined.

c) Calibration Sources and Standards –

1) The standard reference material used to prepare sources for determining detector efficiencies and self-absorption curves shall be NIST traceable. The calibration sources shall provide adequate counting statistics over the period for which the source is to be counted.

d) However, the source shall not be so radioactive as to cause pulse pileups or dead time that is significantly different from that to be expected from routine analyses.

e) The geometry of the calibration sources used for efficiency and self-absorption/crosstalk curves shall be the same as that of the prepared sample and QC sample planchets. The depth and shape (flat, flanged, ringed, etc.), in addition to the diameter, are factors which shall be the same for calibration sources as for samples.

f) The sources used for the determination of self-absorption and cross talk should be of similar isotope content to that of the analytical samples. Am-241 or Th-230 shall be used for alpha and Cs-137 or Sr-90/Y-90 for beta.

g) Self-Absorption and Cross-Talk Curves

1) Self-absorption curves are required for both alpha and beta counting.

2) A cross-talk curve shall be established for alpha to beta cross-talk versus residue weight.

3) Beta to alpha cross-talk is not significantly affected by planchet residue weight, and is generally constant over the applicable weight range. Therefore this cross-talk correction does not require residue weight consideration.

4) The data used to generate self-absorption and cross-talk curves shall consist of at least 7 points, well distributed throughout the mass range.

5) Each alpha and beta calibration standard shall be counted to an accumulation of 10,000 counts.

h) Check Source Requirements

1) The alpha and beta calibration of each detector used to count analytical samples or QC samples shall be checked daily. The only exception to this requirement is when performing analyses with extended count times. In this case, check source measurements may be performed between sample sets.

2) Following gas bottle changes, check sources and backgrounds shall be analyzed before samples are counted.

3) Check source data shall be documented and retained.

D-4.12 Gamma Spectrometry (DOECAP 4.14)

a) Sample Counting Requirements

1) SOPs for sample analysis by gamma spectrometry shall incorporate and adhere to ANSI N42.14-1991, Calibration and use of Germanium Spectrometers for the Measurement of Gamma Ray Emission Rate of Radionuclides, and/or ANSI N42.12-1994, Calibration and Usage of Thallium-Activated Sodium Iodide Detector Systems for Assay of Radionuclides. References are for the current version. When references change, an implementation schedule will be determined.

2) The gamma detector system shall consist of any detector suitable for measuring the gamma isotopes of interest in the range of ≥0.06 to ≤2 MeV with regard to attaining RDLs, bias and precision requirements. Ge detectors of either intrinsic (pure) germanium or lithium drifted germanium are preferred; however for some specific requirements, another detector type, such as sodium iodide, may be more appropriate.

3) Detectors shall be calibrated for the specific geometry and matrix considerations used in the sample analysis.

Spectral Data Reference - Identification of the reference used for the half-life, abundance and peak energy of all nuclides shall be documented. Should have

capability to seal soil samples in airtight cans or equivalent in order to allow ingrowth of radon when accurate analysis of Ra-226 or its progeny is requested by gamma spectroscopy.

b) Efficiency Calibration Requirements

1) Each gamma spectrometry system shall be efficiency calibrated for the sample geometry and matrix with NIST traceable standards or prepared from NIST traceable sources.

i). Germanium Detectors: Refer to *ANSI N42.14* for guidance on isotope specific efficiency and efficiency as a function of energy calibrations.

ii). Sodium Iodide Detectors: Refer to *ANSI N42.12*.

iii). At least 10,000 net counts (total counts minus the Compton continuum and ambient background) shall be accumulated in each full-energy gamma-ray peak of interest used for the efficiency equation (ASTM D 3649-98a).

iv). Efficiencies shall be determined, when there is a change in resolution, geometry, or system configuration (ASTM D 3649-98a).

2) Current software that does not require a physical calibration standard to obtain efficiencies for various matrices and geometries may be used to count samples where a standard calibration source of known matrix and geometry cannot be specified. This type of calibration technique is preferred for matrices such as waste or debris. When such software is used, the laboratory shall supply detailed information and documentation regarding the selection of parameters used to specify the efficiency calibration and sample models. Each sample selected for analysis using this type of calibration shall have a unique set of model parameters associated with it. When such models are used, the closest model to the actual sample shall be selected. The model selected for each sample shall be presented in the Case Narrative and shall include a discussion of actual and predicted peak ratios for isotopes with multiple gamma energies present in the sample.

1. Energy Calibration Requirements

Germanium Detectors: Refer to ANSI N42.14, paragraph 5.1.

Sodium Iodide Detectors: Refer to ANSI N42.12, paragraph 4.3.2.

d) Performance Testing

Germanium Detectors: Refer to ANSI N42.14, paragraph 7.

Sodium Iodide Detectors: Refer to ANSI N42.12, paragraph 4.3.5.

e) Spectrum Assessment: Each sample and QC sample spectrum shall be assessed for acceptability of key peak width and shape, and interference due to superimposed peaks or other sources. Any major contributor to the spectrum that is an unidentified peak shall be discussed in the Case Narrative.

D-4.13 Total Uranium by Laser Induced Kinetic Phosphorescence (DOECAP 4.16)

a) Sample Preparation, Glassware, Water

1) Water samples shall be at least evaporated to dryness and wet-ashed as described in ASTM Specification D 5174-91, *Trace Uranium by Pulsed-Laser Phosphorimetry* prior to KPA measurement.

2) For each sample, both the sample and sample plus spike shall be measured to demonstrate that there are no quenching interferences.

3) For all low-level uranium analysis, prior to initial use, all new glassware with the exception of cuvettes used in KPA measurement, shall be soaked in hot 8 molar nitric acid for at least two hours and then in room temperature 8 molar nitric acid overnight.

4) ASTM Type II water shall be used to prepare but is not limited to standards, preparation of all reagents, and for final rinsing of glassware for items used in the determination of low level uranium.

5) The sample preparation must yield samples such that lifetimes shall fall in the range of 150 μs to 350 μs.

b) Minimum Detectable Concentration (MDC) Determination

1) The MDC is a function of the sample size, variability of the preparation blanks, and instrument background which is a combination of low-level signals produced by sources other than the analyte including: photomultiplier tube dark count (electronic noise), luminescence from the quartz cells and optics, impurities in reagents, and stray ambient light.

MDC Calculation: The following equation shall be used to calculate the MDC:

$MDC = [(4.65*S_b)*DIL]/V$

where:

S_b = standard deviation(s) of the blank population

DIL = dilution factor (ratio of total sample taken for preparation/aliquot measured in the cuvette)

V = sample volume or weight (liters or grams)

Units are in μg/l or μg/g

The method of implementation of blank populations for calculation of MDCs shall be described in detail in an SOP.

2) The sample volume used for blanks shall be identical to the typical sample volume analyzed. If a given sample size differs from the sample size used in the blanks, this shall be addressed in the Case Narrative. It is not expected that sample size will differ from the sample size of the blanks.

3) The analyte MDC's as calculated above must be less than or equal to the RDL at the lowest dilution factor.

1. Sample and Analyte Specific Conditions - that require reanalysis for a particular sample beginning with KPA measurement. If succeeding KPA measurement does not provide an adequate result, another aliquot must be started with the sample preparation.

1) The lifetime of the phosphorescence is less than 150 us or greater than 350 us.

2) The linear regression coefficient of the decay plot is less than 0.96 for samples where the measured concentration is greater than the RDL. Every effort should be made to keep this greater than 0.98. It is expected that for most samples this will be greater than 0.99.

3) If the standard addition recovery is less than 90%, re-analysis is required:
Standard Addition Recovery =
(Conc. Spike-Conc. Sample)/ (Std.Conc. × Std.Vol) × 100
(Sample Vol.+Std.Vol.)

4) Analyte concentration is not in the range of the calibration curve used.

5) The Reference Ratio is less than 0.9 or greater than 1.1.

6) The continuing Calibration Check Standard is not within 10% of the known value.

c) Instrument Calibration

1) The KPA shall be calibrated daily when in use. The order for performing calibration shall be: a background, followed by calibration curve, followed by calibration check standard.

2) The background shall be sufficiently low to permit attaining RDL's.

3) At least three standards shall be used for each calibration range. The calibration range shall include the range of the samples to be measured. R^2 (linear regression coefficient) for the calibration curve shall be greater than or equal to 0.99.

4) The LCS shall be measured in the same calibration range as the samples in the batch. Observe the instrument manufacturer's recommendations for calibrating high and low ranges. If the measurements are performed in more than one calibration range, then a separate LCS shall be prepared for each range.

d) Calibration Check Standard

1) The performance check shall be performed using a separately prepared standard a different concentration from the calibration standards.

2) The performance check shall be performed upon completion of calibration and subsequently after every 10 samples are analyzed.

3) The relative bias of the calibration check standard shall be in the range -0.10 to +0.10.

D-4.14 Conditions Requiring Reanalysis or Recount

If reanalysis is not possible, the Client shall be contacted for specific guidance or requirements.

a) General Conditions

1) If the RDLs could not be achieved because of laboratory errors or oversights such as inadequate count times, inadequate aliquot size, inappropriate dilution, low detector efficiencies, high detector backgrounds, etc., then the sample shall be reanalyzed under more optimal conditions.

2) If the RDLs could not be achieved because of problems associated with the sample such as inadequate sample provided, elevated radioactivity levels, sample matrix interferences such as high amounts of suspended solids, multiphase liquids, etc., then such problems shall be explained in the Case Narrative.

b) Sample and Analyte Specific Conditions: Any one of the following are additional conditions that require reanalysis for a particular sample and analyte:

1) If, for any reason, sample or batch QC integrity becomes suspect (e.g., spillage, mis-identification, cross-contamination), all potentially affected samples shall be reanalyzed from a point before that which the integrity came into question. If new batch QC must be prepared for reanalysis, samples for reanalysis shall be restarted at the normal point of initiation for the batch QC.

2) All samples failing the criteria for tracers or carriers as defined in D.4.1.c.

3) All samples associated with expired standards.

c) Analytical Batch Conditions: Except where noted otherwise, any one of the following conditions requires reanalysis of the entire Analytical Batch, beginning with the preparation:

- Batches, which failed the Batch Blank criteria for, batch blanks as defined in D.4.1.a.
- Batches, which failed the LCS criteria as, defined in D.4.1.b.
- Batches, which failed the Matrix Spike criteria as, defined in D.4.1.b.

d) Conditions requiring a re-count – If the RDL was not achieved due to inadequate count duration, low detector efficiencies, or high detector backgrounds, the sample shall be re-

counted under more optimal conditions, and the reasons for the re-count shall be documented in the Case Narrative of the laboratory report.

D-5 AIR TESTING

These standards shall apply to samples that are submitted to a laboratory for the purpose of analysis. They do not apply to field activities such as source air emission measurements or the use of continuous analysis devices.

D-5.1 Negative and Positive Controls

a) Negative Controls

1) Method Blanks – Shall be performed at a frequency of at least one (1) per batch of twenty (20) environmental samples or less per sample preparation method. The results of the method blank analysis shall be used to evaluate the contribution of the laboratory provided sampling media and analytical sample preparation procedures to the amount of analyte found in each sample. If the method blank result is greater than the detection limit and contributes greater than 10% of the total amount of analyte found in the sample, the source of the contamination must be investigated and measures taken to eliminate the source of contamination. If contamination is found, the data shall be qualified in the report.

2) Collection Efficiency- Sampling trains consisting of multiple sections (e.g. filters, sorbent tubes, impingers) that are received intact by the laboratory, shall be separated into "front" and "back" sections if required by the client. Each section shall be processed and analyzed separately and the analytical results reported separately.

b) Positive Controls

1) LCS - Shall be analyzed at a rate of at least one (1) per batch of twenty (20) or fewer samples per sample preparation method for each analyte. If a spiking solution is not available, a calibration solution, whose concentration approximates that of the samples, shall be included in each batch and with each lot of media. If a calibration solution must be used for the LCS, the client will be notified prior to the start of analysis. The concentration of the LCS shall be relevant to the intended use of the data and either at a regulatory limit or below it.

c) Surrogates - Shall be used as required by the test method or if requested by the client.

d) Matrix spike - Shall be used as required by the test method, or if requested by the client.

D-5.2 Analytical Variability/Reproducibility

(MSDs or Laboratory Duplicates - Shall be analyzed at a minimum of 1 in 20 samples per sample batch. The laboratory shall document their SOP to select the use of appropriate types of spikes and duplicates. The selected samples(s) shall be rotated among client samples so that various matrix problems may be noted and/or addressed. Poor performance in the spikes and duplicates may indicate a problem with the sample composition and shall be reported to the client.

D-5.3 Method Evaluation

In order to ensure the accuracy of the reported result, the following SOPs shall be in place:

a) Demonstration of Capability - (Sections 6.2 and 10.2.1) shall be performed prior to the analysis of any samples and with a significant change in instrument type, personnel, matrix, or test method.

b) Calibration -Calibration protocols specified in Section 9.4 shall be followed.

c) Proficiency Test Samples -The results of such analyses (4.2.j or 5.3.4) shall be used by the laboratory to evaluate the ability of the laboratory to produce accurate data.

D-5.4 Detection Limits

The laboratory shall utilize a test method that provides a detection limit that is appropriate and relevant for the intended use of the data. Detection limits shall be determined by the protocol in the mandated test method or applicable regulation, e.g., MDL. If the protocol for determining detection limits is not specified, the selection of the procedure must reflect instrument limitations and the intended application of the test method.

a) A detection limit study is not required for any component for which spiking solutions are not available such as temperature or on-line analyses.

b) The detection limit shall be initially determined for the compounds of interest in each test method in a matrix in which there are not target analytes nor interferences at a concentration that would impact the results or the detection limit must be determined in the matrix of interest (see definition of matrix).

c) Detection limits must be determined each time there is a significant change in the test method or instrument type.

d) All sample processing steps of the analytical method must be included in the determination of the detection limit.

e) All SOPs used must be documented. Documentation must include the matrix type. All supporting data must be retained.

f) The laboratory must have established SOPs to tie detection limits with quantitation limits.

D-5.5 Data Reduction

The SOPs for data reduction, such as use of linear regression, shall be documented.

D-5.6 Quality of Standards and Reagents

a) The source of standards shall comply with 9.2.

b) The purity of each analyte standard and each reagent shall be documented by the laboratory through certificates of analyses from the manufacturer/vendor, manufacturer/vendor specifications, and/or independent analysis.

c) In methods where the purity of reagents is not specified, analytical reagent grade or higher quality, if available, shall be used.

D-5.7 Selectivity

The laboratory shall develop and document acceptance criteria for test method selectivity such as absolute and relative retention times, wavelength assignments, mass spectral library quality of match, and mass spectral tuning.

D-5.8 Constant and Consistent Test Conditions

a) The laboratory shall assure that the test instruments consistently operate within the specifications required of the application for which the equipment is used.

b) The laboratory shall document that all sampling equipment, containers and media used or supplied by the laboratory meet required test method criteria.

c) If supplied or used by the laboratory, SOPs for field equipment decontamination shall be developed and their use documented.

The laboratory shall have a documented program for the calibration and verification of sampling equipment such as pumps, meter boxes, critical orifices, flow measurement devices and continuous analyzers, if these equipment are used or supplied by the laboratory.

APPENDIX E

ADDITIONAL SOURCES OF INFORMATION

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Appendix E - ADDITIONAL SOURCES OF INFORMATION

Non-Mandatory Appendix

Additional sources of information are available to assist laboratories in the design and implementation of a quality system. These materials may be found on the NELAC web page at www.epa.gov/ttn/nelac under the topic "Related Information."

ATTACHMENT 1-B

ANALYTE LIST

(Line Item Codes)

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
VOA-A-001	VOA	CLP-SOW	Water/Waste Water	Chloromethane	74-87-3	10	µg/L
				Bromomethane	74-83-9	10	µg/L
				Vinyl Chloride	75-01-4	10	µg/L
				Chloroethane	75-00-3	10	µg/L
				Methylene Chloride	75-09-2	10	µg/L
				Acetone	67-64-1	10	µg/L
				Carbon Disulfide	75-15-0	10	µg/L
				1,1-Dichloroethene	75-35-4	10	µg/L
				1,1-Dichloroethane	75-34-3	10	µg/L
				1,2-Dichloroethene (total)	540-59-0	10	µg/L
				Chloroform	67-66-3	10	µg/L
				1,2-Dichloroethane	107-06-2	10	µg/L
				2-Butanone	78-93-3	10	µg/L
				1,1,1-Trichloroethane	71-55-6	10	µg/L
				Carbon Tetrachloride	56-23-5	10	µg/L
				Bromodichloromethane	75-27-4	10	µg/L
				1,2-Dichloropropane	78-87-5	10	µg/L
				cis-1,3-Dichloropropene	10061-01-5	10	µg/L
				Trichloroethene	79-01-6	10	µg/L
				Dibromochloromethane	124-48-1	10	µg/L
				1,1,2-Trichloroethane	79-00-5	10	µg/L
				Benzene	71-43-2	10	µg/L
				trans-1,3-Dichloropropene	10061-02-6	10	µg/L
				Bromoform	75-25-2	10	µg/L
				4-Methyl-2-pentanone	108-10-1	10	µg/L
				2-Hexanone	591-78-6	10	µg/L
				Tetrachloroethene	127-18-4	10	µg/L
				Toluene	108-88-3	10	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/L
				Chlorobenzene	108-90-7	10	µg/L
				Ethyl Benzene	100-41-4	10	µg/L
				Styrene	100-42-5	10	µg/L
				Xylenes (Total)	1330-20-7	10	µg/L
VOA-A-002	VOA - Single Compound	CLP-S0W	Water/Waste Water				
VOA-A-003	VOA	CLP Low Level Soil	Soil/Sediment	Chloromethane	74-87-3	10	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				Acetone	67-64-1	10	µg/L
				Carbon Disulfide	75-15-0	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				2-Butanone	78-93-3	10	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L
				Bromoform	75-25-2	1	µg/L
				2-Hexanone	591-78-6	10	µg/L
				4-Methyl-2pentanone	108-10-1	10	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-008	VOA - Single Compound	SW-846 8260 Low Level	Water/Waste Water				
VOA-A-009	Volatile Organics	SW-846 8260	Water/Aqueous Waste	Dichlorodifluoromethane	75-71-8	5	µg/L
				Chloromethane	74-87-3	5	µg/L
				Bromomethane	74-83-9	5	µg/L
				Vinyl Chloride	75-01-4	5	µg/L
				Chloroethane	75-00-3	5	µg/L
				Trichlorofluoromethane	75-69-4	5	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/L
				Methylene Chloride	75-09-2	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Acetone	67-64-1	100	µg/L
				Carbon Disulfide	75-15-0	5	µg/L
				1,1-Dichloroethene	75-35-4	5	µg/L
				1,1-Dichloroethane	75-34-3	5	µg/L
				trans-1,2-Dichloroethene	156-60-5	5	µg/L
				2,2-Dichloropropane	594-20-7	5	µg/L
				cis-1,2-Dichloroethene	156-59-2	5	µg/L
				Bromochloromethane	74-97-5	5	µg/L
				Chloroform	67-66-3	5	µg/L
				1,2-Dichloroethane	107-06-2	5	µg/L
				2-Butanone	78-93-3	100	µg/L
				1,1,1-Trichloroethane	71-55-6	5	µg/L
				Carbon Tetrachloride	56-23-5	5	µg/L
				Bromodichloromethane	75-27-4	5	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L
				1,2-Dichloropropane	78-87-5	5	µg/L
				trans-1,3-Dichloropropene	10061-02-6	5	µg/L
				Dibromomethane	74-95-3	5	µg/L
				Trichloroethene	79-01-6	5	µg/L
				Dibromochloromethane	124-48-1	5	µg/L
				1,1,2-Trichloroethane	79-00-5	5	µg/L
				1,1-Dichloropropene	563-58-6	5	µg/L
				Benzene	71-43-2	5	µg/L
				cis-1,3-Dichloropropene	10061-01-5	5	µg/L
				Bromoform	75-25-2	5	µg/L
				2-Hexanone	591-78-6	50	µg/L
				4-Methyl-2pentanone	108-10-1	50	µg/L
				1,3-Dichloropropane	142-28-9	5	µg/L
				Tetrachloroethene	127-18-4	5	µg/L
				Toluene	108-88-3	5	µg/L
				Chlorobenzene	108-90-7	5	µg/L
				Ethylbenzene	100-41-4	5	µg/L
				Styrene	100-42-5	5	µg/L
				Xylenes (total)	1330-20-7	5	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L
				1,2-Dibromoethane	106-93-4	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isopropylbenzene	98-82-8	5	µg/L
				Bromobenzene	108-86-1	5	µg/L
				1,2,3-Trichloropropane	96-18-4	5	µg/L
				n-Propylbenzene	103-65-1	5	µg/L
				2-Chlorotoluene	95-49-8	5	µg/L
				4-Chlorotoluene	106-43-4	5	µg/L
				1,3,5-Trimethylbenzene	108-67-8	5	µg/L
				tert-Butylbenzene	98-06-6	5	µg/L
				1,2,4-Trimethylbenzene	95-63-6	5	µg/L
				sec-Butylbenzene	135-98-8	5	µg/L
				m-Dichlorobenzene	541-73-1	5	µg/L
				4-Isopropyltoluene	99-87-6	5	µg/L
				p-Dichlorobenzene	106-46-7	5	µg/L
				o-Dichlorobenzene	95-50-1	5	µg/L
				n-Butylbenzene	104-51-8	5	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L
				1,2,4-Trichlorobenzene	120-82-1	5	µg/L
				Hexachlorobutadiene	87-68-3	5	µg/L
				Naphthalene	91-20-3	5	µg/L
				1,2,3-Trichlorobenzene	87-61-6	5	µg/L
VOA-A-010	VOA - Single Compound	SW-846 8260	Water/Aqueous Waste				
VOA-A-011	Volatile Organics	SW-846 8260	Soil/Sediment/Waste	Dichlorodifluoromethane	75-71-8	5	µg/kg
				Chloromethane	74-87-3	5	µg/kg
				Bromomethane	74-83-9	5	µg/kg
				Vinyl Chloride	75-01-4	5	µg/kg
				Chloroethane	75-00-3	5	µg/kg
				Trichlorofluoromethane	75-69-4	5	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/kg
				Methylene Chloride	75-09-2	5	µg/kg
				Acetone	67-64-1	100	µg/kg
				Carbon Disulfide	75-15-0	5	µg/kg
				1,1-Dichloroethene	75-35-4	5	µg/kg
				1,1-Dichloroethane	75-34-3	5	µg/kg
				trans-1,2-Dichloroethene	156-60-5	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2,2-Dichloropropane	594-20-7	5	µg/kg
				cis-1,2-Dichloroethene	156-59-2	5	µg/kg
				Bromochloromethane	74-97-5	5	µg/kg
				Chloroform	67-66-3	5	µg/kg
				1,2-Dichloroethane	107-06-2	5	µg/kg
				2-Butanone	78-93-3	100	µg/kg
				1,1,1-Trichloroethane	71-55-6	5	µg/kg
				Carbon Tetrachloride	56-23-5	5	µg/kg
				Bromodichloromethane	75-27-4	5	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/kg
				1,2-Dichloropropane	78-87-5	5	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	5	µg/kg
				Dibromomethane	74-95-3	5	µg/kg
				Trichloroethene	79-01-6	5	µg/kg
				Dibromochloromethane	124-48-1	5	µg/kg
				1,1,2-Trichloroethane	79-00-5	5	µg/kg
				1,1-Dichloropropene	563-58-6	5	µg/kg
				Benzene	71-43-2	5	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	5	µg/kg
				Bromoform	75-25-2	5	µg/kg
				2-Hexanone	591-78-6	50	µg/kg
				4-Methyl-2pentanone	108-10-1	50	µg/kg
				1,3-Dichloropropane	142-28-9	5	µg/kg
				Tetrachloroethene	127-18-4	5	µg/kg
				Toluene	108-88-3	5	µg/kg
				Chlorobenzene	108-90-7	5	µg/kg
				Ethylbenzene	100-41-4	5	µg/kg
				Styrene	100-42-5	5	µg/kg
				Xylenes (total)	1330-20-7	5	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/kg
				1,2-Dibromoethane	106-93-4	5	µg/kg
				Isopropylbenzene	98-82-8	5	µg/kg
				Bromobenzene	108-86-1	5	µg/kg
				1,2,3-Trichloropropane	96-18-4	5	µg/kg
				n-Propylbenzene	103-65-1	5	µg/kg
				2-Chlorotoluene	95-49-8	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				4-Chlorotoluene	106-43-4	5	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	5	µg/kg
				tert-Butylbenzene	98-06-6	5	µg/kg
				1,2,4-Trimethylbenzene	95-63-6	5	µg/kg
				sec-Butylbenzene	135-98-8	5	µg/kg
				m-Dichlorobenzene	541-73-1	5	µg/kg
				4-Isopropyltoluene	99-87-6	5	µg/kg
				p-Dichlorobenzene	106-46-7	5	µg/kg
				o-Dichlorobenzene	95-50-1	5	µg/kg
				n-Butylbenzene	104-51-8	5	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	5	µg/kg
				Hexachlorobutadiene	87-68-3	5	µg/kg
				Naphthalene	91-20-3	5	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	5	µg/kg
VOA-A-012	VOA - Single Compound	SW-846 8260	Soil/Sediment/Waste				
VOA-A-013	VOA - All Compounds	SW-846 8260B - PREP 5035	Soil	(see VOA-A-10)			
VOA-A-014	VOA - Single Compound	SW-846 8260B - PREP 5035	Soil				
VOA-A-015	VOA Sweep (Screen)	SW-846 8260 Medium Level	Soil/Sediment	Dichlorodifluoromethane	75-71-8	1200	µg/kg
				Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	600	µg/kg
				Trichlorofluoromethane	75-69-4	600	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	600	µg/kg
				Methylene Chloride	75-09-2	600	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	600	µg/kg
				1,1-Dichloroethene	75-35-4	600	µg/kg
				1,1-Dichloroethane	75-34-3	600	µg/kg
				trans-1,2-Dichloroethene	156-60-5	600	µg/kg
				2,2-Dichloropropane	594-20-7	600	µg/kg
				cis-1,2-Dichloroethene	156-59-2	600	µg/kg
				Bromochloromethane	74-97-5	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chloroform	67-66-3	600	µg/kg
				1,2-Dichloroethane	107-06-2	600	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	600	µg/kg
				Carbon Tetrachloride	56-23-5	600	µg/kg
				Bromodichloromethane	75-27-4	600	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	600	µg/kg
				1,2-Dichloropropane	78-87-5	600	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	600	µg/kg
				Dibromomethane	74-95-3	600	µg/kg
				Trichloroethene	79-01-6	600	µg/kg
				Dibromochloromethane	124-48-1	600	µg/kg
				1,1,2-Trichloroethane	79-00-5	600	µg/kg
				1,1-Dichloropropene	563-58-6	600	µg/kg
				Benzene	71-43-2	600	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	600	µg/kg
				Bromoform	75-25-2	600	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				4-Methyl-2pentanone	108-10-1	1200	µg/kg
				1,3-Dichloropropane	142-28-9	600	µg/kg
				Tetrachloroethene	127-18-4	600	µg/kg
				Toluene	108-88-3	600	µg/kg
				Chlorobenzene	108-90-7	600	µg/kg
				Ethylbenzene	100-41-4	600	µg/kg
				Styrene	100-42-5	600	µg/kg
				Xylenes (total)	1330-20-7	600	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	600	µg/kg
				1,2-Dibromoethane	106-93-4	600	µg/kg
				Isopropylbenzene	98-82-8	600	µg/kg
				Bromobenzene	108-86-1	600	µg/kg
				1,2,3-Trichloropropane	96-18-4	600	µg/kg
				n-Propylbenzene	103-65-1	600	µg/kg
				2-Chlorotoluene	95-49-8	600	µg/kg
				4-Chlorotoluene	106-43-4	600	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	600	µg/kg
				tert-Butylbenzene	98-06-6	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				Acetone	67-64-1	10	µg/L
				Carbon Disulfide	75-15-0	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				2-Butanone	78-93-3	10	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L
				Bromoform	75-25-2	1	µg/L
				2-Hexanone	591-78-6	10	µg/L
				4-Methyl-2pentanone	108-10-1	10	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-008	VOA - Single Compound	SW-846 8260 Low Level	Water/Waste Water				
VOA-A-009	Volatile Organics	SW-846 8260	Water/Aqueous Waste	Dichlorodifluoromethane	75-71-8	5	µg/L
				Chloromethane	74-87-3	5	µg/L
				Bromomethane	74-83-9	5	µg/L
				Vinyl Chloride	75-01-4	5	µg/L
				Chloroethane	75-00-3	5	µg/L
				Trichlorofluoromethane	75-69-4	5	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/L
				Methylene Chloride	75-09-2	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Acetone	67-64-1	100	µg/L
				Carbon Disulfide	75-15-0	5	µg/L
				1,1-Dichloroethene	75-35-4	5	µg/L
				1,1-Dichloroethane	75-34-3	5	µg/L
				trans-1,2-Dichloroethene	156-60-5	5	µg/L
				2,2-Dichloropropane	594-20-7	5	µg/L
				cis-1,2-Dichloroethene	156-59-2	5	µg/L
				Bromochloromethane	74-97-5	5	µg/L
				Chloroform	67-66-3	5	µg/L
				1,2-Dichloroethane	107-06-2	5	µg/L
				2-Butanone	78-93-3	100	µg/L
				1,1,1-Trichloroethane	71-55-6	5	µg/L
				Carbon Tetrachloride	56-23-5	5	µg/L
				Bromodichloromethane	75-27-4	5	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L
				1,2-Dichloropropane	78-87-5	5	µg/L
				trans-1,3-Dichloropropene	10061-02-6	5	µg/L
				Dibromomethane	74-95-3	5	µg/L
				Trichloroethene	79-01-6	5	µg/L
				Dibromochloromethane	124-48-1	5	µg/L
				1,1,2-Trichloroethane	79-00-5	5	µg/L
				1,1-Dichloropropene	563-58-6	5	µg/L
				Benzene	71-43-2	5	µg/L
				cis-1,3-Dichloropropene	10061-01-5	5	µg/L
				Bromoform	75-25-2	5	µg/L
				2-Hexanone	591-78-6	50	µg/L
				4-Methyl-2pentanone	108-10-1	50	µg/L
				1,3-Dichloropropane	142-28-9	5	µg/L
				Tetrachloroethene	127-18-4	5	µg/L
				Toluene	108-88-3	5	µg/L
				Chlorobenzene	108-90-7	5	µg/L
				Ethylbenzene	100-41-4	5	µg/L
				Styrene	100-42-5	5	µg/L
				Xylenes (total)	1330-20-7	5	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L
				1,2-Dibromoethane	106-93-4	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isopropylbenzene	98-82-8	5	µg/L
				Bromobenzene	108-86-1	5	µg/L
				1,2,3-Trichloropropane	96-18-4	5	µg/L
				n-Propylbenzene	103-65-1	5	µg/L
				2-Chlorotoluene	95-49-8	5	µg/L
				4-Chlorotoluene	106-43-4	5	µg/L
				1,3,5-Trimethylbenzene	108-67-8	5	µg/L
				tert-Butylbenzene	98-06-6	5	µg/L
				1,2,4-Trimethylbenzene	95-63-6	5	µg/L
				sec-Butylbenzene	135-98-8	5	µg/L
				m-Dichlorobenzene	541-73-1	5	µg/L
				4-Isopropyltoluene	99-87-6	5	µg/L
				p-Dichlorobenzene	106-46-7	5	µg/L
				o-Dichlorobenzene	95-50-1	5	µg/L
				n-Butylbenzene	104-51-8	5	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L
				1,2,4-Trichlorobenzene	120-82-1	5	µg/L
				Hexachlorobutadiene	87-68-3	5	µg/L
				Naphthalene	91-20-3	5	µg/L
				1,2,3-Trichlorobenzene	87-61-6	5	µg/L
VOA-A-010	VOA - Single Compound	SW-846 8260	Water/Aqueous Waste				
VOA-A-011	Volatile Organics	SW-846 8260	Soil/Sediment/Waste	Dichlorodifluoromethane	75-71-8	5	µg/kg
				Chloromethane	74-87-3	5	µg/kg
				Bromomethane	74-83-9	5	µg/kg
				Vinyl Chloride	75-01-4	5	µg/kg
				Chloroethane	75-00-3	5	µg/kg
				Trichlorofluoromethane	75-69-4	5	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/kg
				Methylene Chloride	75-09-2	5	µg/kg
				Acetone	67-64-1	100	µg/kg
				Carbon Disulfide	75-15-0	5	µg/kg
				1,1-Dichloroethene	75-35-4	5	µg/kg
				1,1-Dichloroethane	75-34-3	5	µg/kg
				trans-1,2-Dichloroethene	156-60-5	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2,2-Dichloropropane	594-20-7	5	µg/kg
				cis-1,2-Dichloroethene	156-59-2	5	µg/kg
				Bromochloromethane	74-97-5	5	µg/kg
				Chloroform	67-66-3	5	µg/kg
				1,2-Dichloroethane	107-06-2	5	µg/kg
				2-Butanone	78-93-3	100	µg/kg
				1,1,1-Trichloroethane	71-55-6	5	µg/kg
				Carbon Tetrachloride	56-23-5	5	µg/kg
				Bromodichloromethane	75-27-4	5	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/kg
				1,2-Dichloropropane	78-87-5	5	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	5	µg/kg
				Dibromomethane	74-95-3	5	µg/kg
				Trichloroethene	79-01-6	5	µg/kg
				Dibromochloromethane	124-48-1	5	µg/kg
				1,1,2-Trichloroethane	79-00-5	5	µg/kg
				1,1-Dichloropropene	563-58-6	5	µg/kg
				Benzene	71-43-2	5	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	5	µg/kg
				Bromoform	75-25-2	5	µg/kg
				2-Hexanone	591-78-6	50	µg/kg
				4-Methyl-2pentanone	108-10-1	50	µg/kg
				1,3-Dichloropropane	142-28-9	5	µg/kg
				Tetrachloroethene	127-18-4	5	µg/kg
				Toluene	108-88-3	5	µg/kg
				Chlorobenzene	108-90-7	5	µg/kg
				Ethylbenzene	100-41-4	5	µg/kg
				Styrene	100-42-5	5	µg/kg
				Xylenes (total)	1330-20-7	5	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/kg
				1,2-Dibromoethane	106-93-4	5	µg/kg
				Isopropylbenzene	98-82-8	5	µg/kg
				Bromobenzene	108-86-1	5	µg/kg
				1,2,3-Trichloropropane	96-18-4	5	µg/kg
				n-Propylbenzene	103-65-1	5	µg/kg
				2-Chlorotoluene	95-49-8	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				4-Chlorotoluene	106-43-4	5	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	5	µg/kg
				tert-Butylbenzene	98-06-6	5	µg/kg
				1,2,4-Trimethylbenzene	95-63-6	5	µg/kg
				sec-Butylbenzene	135-98-8	5	µg/kg
				m-Dichlorobenzene	541-73-1	5	µg/kg
				4-Isopropyltoluene	99-87-6	5	µg/kg
				p-Dichlorobenzene	106-46-7	5	µg/kg
				o-Dichlorobenzene	95-50-1	5	µg/kg
				n-Butylbenzene	104-51-8	5	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	5	µg/kg
				Hexachlorobutadiene	87-68-3	5	µg/kg
				Naphthalene	91-20-3	5	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	5	µg/kg
VOA-A-012	VOA - Single Compound	SW-846 8260	Soil/Sediment/Waste				
VOA-A-013	VOA - All Compounds	SW-846 8260B - PREP 5035	Soil	(see VOA-A-10)			
VOA-A-014	VOA - Single Compound	SW-846 8260B - PREP 5035	Soil				
VOA-A-015	VOA Sweep (Screen)	SW-846 8260 Medium Level	Soil/Sediment	Dichlorodifluoromethane	75-71-8	1200	µg/kg
				Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	600	µg/kg
				Trichlorofluoromethane	75-69-4	600	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	600	µg/kg
				Methylene Chloride	75-09-2	600	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	600	µg/kg
				1,1-Dichloroethene	75-35-4	600	µg/kg
				1,1-Dichloroethane	75-34-3	600	µg/kg
				trans-1,2-Dichloroethene	156-60-5	600	µg/kg
				2,2-Dichloropropane	594-20-7	600	µg/kg
				cis-1,2-Dichloroethene	156-59-2	600	µg/kg
				Bromochloromethane	74-97-5	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chloroform	67-66-3	600	µg/kg
				1,2-Dichloroethane	107-06-2	600	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	600	µg/kg
				Carbon Tetrachloride	56-23-5	600	µg/kg
				Bromodichloromethane	75-27-4	600	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	600	µg/kg
				1,2-Dichloropropane	78-87-5	600	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	600	µg/kg
				Dibromomethane	74-95-3	600	µg/kg
				Trichloroethene	79-01-6	600	µg/kg
				Dibromochloromethane	124-48-1	600	µg/kg
				1,1,2-Trichloroethane	79-00-5	600	µg/kg
				1,1-Dichloropropene	563-58-6	600	µg/kg
				Benzene	71-43-2	600	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	600	µg/kg
				Bromoform	75-25-2	600	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				4-Methyl-2pentanone	108-10-1	1200	µg/kg
				1,3-Dichloropropane	142-28-9	600	µg/kg
				Tetrachloroethene	127-18-4	600	µg/kg
				Toluene	108-88-3	600	µg/kg
				Chlorobenzene	108-90-7	600	µg/kg
				Ethylbenzene	100-41-4	600	µg/kg
				Styrene	100-42-5	600	µg/kg
				Xylenes (total)	1330-20-7	600	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	600	µg/kg
				1,2-Dibromoethane	106-93-4	600	µg/kg
				Isopropylbenzene	98-82-8	600	µg/kg
				Bromobenzene	108-86-1	600	µg/kg
				1,2,3-Trichloropropane	96-18-4	600	µg/kg
				n-Propylbenzene	103-65-1	600	µg/kg
				2-Chlorotoluene	95-49-8	600	µg/kg
				4-Chlorotoluene	106-43-4	600	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	600	µg/kg
				tert-Butylbenzene	98-06-6	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				1,2,4-Trimethylbenzene	95-63-6	600	µg/kg
				sec-Butylbenzene	135-98-8	600	µg/kg
				m-Dichlorobenzene	541-73-1	600	µg/kg
				4-Isopropyltoluene	99-87-6	600	µg/kg
				p-Dichlorobenzene	106-46-7	600	µg/kg
				o-Dichlorobenzene	95-50-1	600	µg/kg
				n-Butylbenzene	104-51-8	600	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	600	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	600	µg/kg
				Hexachlorobutadiene	87-68-3	600	µg/kg
				Naphthalene	91-20-3	600	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	600	µg/kg
VOA-A-016	VOA (TCLP Extraction + Analysis)	SW-846 1311/8260	TCLP Extracts	Vinyl Chloride	75-01-4	50	µg/L
				1,1-Dichloroethene	75-35-4	50	µg/L
				Chloroform	67-66-3	50	µg/L
				1,2-Dichloroethane	107-06-2	50	µg/L
				2-Butanone	78-93-3	50	µg/L
				Carbon Tetrachloride	56-23-5	50	µg/L
				Trichloroethene	79-01-6	50	µg/L
				Benzene	71-43-2	50	µg/L
				Tetrachloroethene	127-18-4	50	µg/L
				Chlorobenzene	108-90-7	50	µg/L
				p-Dichlorobenzene	106-46-7	50	µg/L
				o-Dichlorobenzene	95-50-1	50	µg/L
VOA-A-017	VOA - Nonroutine	SW-846 8260	Water	Acrolein	107-02-8	25	µg/L
				Acrylonitrile	107-13-1	25	µg/L
VOA-A-018	VOA-Acetonitrile	SW-846 8033	Water	Acetonitrile	75-05-8	25	µg/L
VOA-A-019	VOA - SW-846 Extended List	SW-846 8260	Water	n-Butyl alcohol	71-36-3	50	µg/L
				Isobutyl alcohol	78-83-1	50	µg/L
				Cyclohexanone	108-94-1	50	µg/L
				Ethyl acetate	141-78-6	50	µg/L
				Ethyl ether	60-29-7	50	µg/L
VOA-A-020	VOA - SW-846 Extended List	SW-846 8260	Soil/Sludge/Waste	n-Butyl alcohol	71-36-3	50	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				1,2,4-Trimethylbenzene	95-63-6	600	µg/kg
				sec-Butylbenzene	135-98-8	600	µg/kg
				m-Dichlorobenzene	541-73-1	600	µg/kg
				4-Isopropyltoluene	99-87-6	600	µg/kg
				p-Dichlorobenzene	106-46-7	600	µg/kg
				o-Dichlorobenzene	95-50-1	600	µg/kg
				n-Butylbenzene	104-51-8	600	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	600	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	600	µg/kg
				Hexachlorobutadiene	87-68-3	600	µg/kg
				Naphthalene	91-20-3	600	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	600	µg/kg
VOA-A-016	VOA (TCLP Extraction + Analysis)	SW-846 1311/8260	TCLP Extracts	Vinyl Chloride	75-01-4	50	µg/L
				1,1-Dichloroethene	75-35-4	50	µg/L
				Chloroform	67-66-3	50	µg/L
				1,2-Dichloroethane	107-06-2	50	µg/L
				2-Butanone	78-93-3	50	µg/L
				Carbon Tetrachloride	56-23-5	50	µg/L
				Trichloroethene	79-01-6	50	µg/L
				Benzene	71-43-2	50	µg/L
				Tetrachloroethene	127-18-4	50	µg/L
				Chlorobenzene	108-90-7	50	µg/L
				p-Dichlorobenzene	106-46-7	50	µg/L
				o-Dichlorobenzene	95-50-1	50	µg/L
VOA-A-017	VOA - Nonroutine	SW-846 8260	Water	Acrolein	107-02-8	25	µg/L
				Acrylonitrile	107-13-1	25	µg/L
VOA-A-018	VOA-Acetonitrile	SW-846 8033	Water	Acetonitrile	75-05-8	25	µg/L
VOA-A-019	VOA - SW-846 Extended List	SW-846 8260	Water	n-Butyl alcohol	71-36-3	50	µg/L
				Isobutyl alcohol	78-83-1	50	µg/L
				Cyclohexanone	108-94-1	50	µg/L
				Ethyl acetate	141-78-6	50	µg/L
				Ethyl ether	60-29-7	50	µg/L
VOA-A-020	VOA - SW-846 Extended List	SW-846 8260	Soil/Sludge/Waste	n-Butyl alcohol	71-36-3	50	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isobutyl alcohol	78-83-1	50	µg/kg
				Cyclohexanone	108-94-1	50	µg/kg
				Ethyl acetate	141-78-6	50	µg/kg
				Ethyl ether	60-29-7	50	µg/kg
VOA-A-021	VOA	SW-846 8015	Water	Methanol	67-56-1	25	µg/L
VOA-A-022	VOA	SW-846 8015	Soil/Sludge/Waste	Methanol	67-56-1	250	µg/kg
VOA-A-023	VOA	EPA 524.2	Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromoform	75-25-2	1	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-024	VOA - Single Compound	EPA 524.2	Water				
VOA-A-025	VOA	EPA 624	Water/Waste Water	Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Dichlorodifluoromethane	75-71-8	1	µg/L
				Vinyl chloride	75-01-4	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				Acetone	67-64-1	10	µg/L
				Carbon Disulfide	75-15-0	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				2-Butanone	78-93-3	10	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L
				Bromoform	75-25-2	1	µg/L
				2-Hexanone	591-78-6	10	µg/L
				4-Methyl-2pentanone	108-10-1	10	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-008	VOA - Single Compound	SW-846 8260 Low Level	Water/Waste Water				
VOA-A-009	Volatile Organics	SW-846 8260	Water/Aqueous Waste	Dichlorodifluoromethane	75-71-8	5	µg/L
				Chloromethane	74-87-3	5	µg/L
				Bromomethane	74-83-9	5	µg/L
				Vinyl Chloride	75-01-4	5	µg/L
				Chloroethane	75-00-3	5	µg/L
				Trichlorofluoromethane	75-69-4	5	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/L
				Methylene Chloride	75-09-2	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Acetone	67-64-1	100	µg/L
				Carbon Disulfide	75-15-0	5	µg/L
				1,1-Dichloroethene	75-35-4	5	µg/L
				1,1-Dichloroethane	75-34-3	5	µg/L
				trans-1,2-Dichloroethene	156-60-5	5	µg/L
				2,2-Dichloropropane	594-20-7	5	µg/L
				cis-1,2-Dichloroethene	156-59-2	5	µg/L
				Bromochloromethane	74-97-5	5	µg/L
				Chloroform	67-66-3	5	µg/L
				1,2-Dichloroethane	107-06-2	5	µg/L
				2-Butanone	78-93-3	100	µg/L
				1,1,1-Trichloroethane	71-55-6	5	µg/L
				Carbon Tetrachloride	56-23-5	5	µg/L
				Bromodichloromethane	75-27-4	5	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L
				1,2-Dichloropropane	78-87-5	5	µg/L
				trans-1,3-Dichloropropene	10061-02-6	5	µg/L
				Dibromomethane	74-95-3	5	µg/L
				Trichloroethene	79-01-6	5	µg/L
				Dibromochloromethane	124-48-1	5	µg/L
				1,1,2-Trichloroethane	79-00-5	5	µg/L
				1,1-Dichloropropene	563-58-6	5	µg/L
				Benzene	71-43-2	5	µg/L
				cis-1,3-Dichloropropene	10061-01-5	5	µg/L
				Bromoform	75-25-2	5	µg/L
				2-Hexanone	591-78-6	50	µg/L
				4-Methyl-2pentanone	108-10-1	50	µg/L
				1,3-Dichloropropane	142-28-9	5	µg/L
				Tetrachloroethene	127-18-4	5	µg/L
				Toluene	108-88-3	5	µg/L
				Chlorobenzene	108-90-7	5	µg/L
				Ethylbenzene	100-41-4	5	µg/L
				Styrene	100-42-5	5	µg/L
				Xylenes (total)	1330-20-7	5	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L
				1,2-Dibromoethane	106-93-4	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				Acetone	67-64-1	10	µg/L
				Carbon Disulfide	75-15-0	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				2-Butanone	78-93-3	10	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L
				Bromoform	75-25-2	1	µg/L
				2-Hexanone	591-78-6	10	µg/L
				4-Methyl-2pentanone	108-10-1	10	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-008	VOA - Single Compound	SW-846 8260 Low Level	Water/Waste Water				
VOA-A-009	Volatile Organics	SW-846 8260	Water/Aqueous Waste	Dichlorodifluoromethane	75-71-8	5	µg/L
				Chloromethane	74-87-3	5	µg/L
				Bromomethane	74-83-9	5	µg/L
				Vinyl Chloride	75-01-4	5	µg/L
				Chloroethane	75-00-3	5	µg/L
				Trichlorofluoromethane	75-69-4	5	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/L
				Methylene Chloride	75-09-2	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Acetone	67-64-1	100	µg/L
				Carbon Disulfide	75-15-0	5	µg/L
				1,1-Dichloroethene	75-35-4	5	µg/L
				1,1-Dichloroethane	75-34-3	5	µg/L
				trans-1,2-Dichloroethene	156-60-5	5	µg/L
				2,2-Dichloropropane	594-20-7	5	µg/L
				cis-1,2-Dichloroethene	156-59-2	5	µg/L
				Bromochloromethane	74-97-5	5	µg/L
				Chloroform	67-66-3	5	µg/L
				1,2-Dichloroethane	107-06-2	5	µg/L
				2-Butanone	78-93-3	100	µg/L
				1,1,1-Trichloroethane	71-55-6	5	µg/L
				Carbon Tetrachloride	56-23-5	5	µg/L
				Bromodichloromethane	75-27-4	5	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L
				1,2-Dichloropropane	78-87-5	5	µg/L
				trans-1,3-Dichloropropene	10061-02-6	5	µg/L
				Dibromomethane	74-95-3	5	µg/L
				Trichloroethene	79-01-6	5	µg/L
				Dibromochloromethane	124-48-1	5	µg/L
				1,1,2-Trichloroethane	79-00-5	5	µg/L
				1,1-Dichloropropene	563-58-6	5	µg/L
				Benzene	71-43-2	5	µg/L
				cis-1,3-Dichloropropene	10061-01-5	5	µg/L
				Bromoform	75-25-2	5	µg/L
				2-Hexanone	591-78-6	50	µg/L
				4-Methyl-2pentanone	108-10-1	50	µg/L
				1,3-Dichloropropane	142-28-9	5	µg/L
				Tetrachloroethene	127-18-4	5	µg/L
				Toluene	108-88-3	5	µg/L
				Chlorobenzene	108-90-7	5	µg/L
				Ethylbenzene	100-41-4	5	µg/L
				Styrene	100-42-5	5	µg/L
				Xylenes (total)	1330-20-7	5	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L
				1,2-Dibromoethane	106-93-4	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isopropylbenzene	98-82-8	5	µg/L
				Bromobenzene	108-86-1	5	µg/L
				1,2,3-Trichloropropane	96-18-4	5	µg/L
				n-Propylbenzene	103-65-1	5	µg/L
				2-Chlorotoluene	95-49-8	5	µg/L
				4-Chlorotoluene	106-43-4	5	µg/L
				1,3,5-Trimethylbenzene	108-67-8	5	µg/L
				tert-Butylbenzene	98-06-6	5	µg/L
				1,2,4-Trimethylbenzene	95-63-6	5	µg/L
				sec-Butylbenzene	135-98-8	5	µg/L
				m-Dichlorobenzene	541-73-1	5	µg/L
				4-Isopropyltoluene	99-87-6	5	µg/L
				p-Dichlorobenzene	106-46-7	5	µg/L
				o-Dichlorobenzene	95-50-1	5	µg/L
				n-Butylbenzene	104-51-8	5	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L
				1,2,4-Trichlorobenzene	120-82-1	5	µg/L
				Hexachlorobutadiene	87-68-3	5	µg/L
				Naphthalene	91-20-3	5	µg/L
				1,2,3-Trichlorobenzene	87-61-6	5	µg/L
VOA-A-010	VOA - Single Compound	SW-846 8260	Water/Aqueous Waste				
VOA-A-011	Volatile Organics	SW-846 8260	Soil/Sediment/Waste	Dichlorodifluoromethane	75-71-8	5	µg/kg
				Chloromethane	74-87-3	5	µg/kg
				Bromomethane	74-83-9	5	µg/kg
				Vinyl Chloride	75-01-4	5	µg/kg
				Chloroethane	75-00-3	5	µg/kg
				Trichlorofluoromethane	75-69-4	5	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/kg
				Methylene Chloride	75-09-2	5	µg/kg
				Acetone	67-64-1	100	µg/kg
				Carbon Disulfide	75-15-0	5	µg/kg
				1,1-Dichloroethene	75-35-4	5	µg/kg
				1,1-Dichloroethane	75-34-3	5	µg/kg
				trans-1,2-Dichloroethene	156-60-5	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2,2-Dichloropropane	594-20-7	5	µg/kg
				cis-1,2-Dichloroethene	156-59-2	5	µg/kg
				Bromochloromethane	74-97-5	5	µg/kg
				Chloroform	67-66-3	5	µg/kg
				1,2-Dichloroethane	107-06-2	5	µg/kg
				2-Butanone	78-93-3	100	µg/kg
				1,1,1-Trichloroethane	71-55-6	5	µg/kg
				Carbon Tetrachloride	56-23-5	5	µg/kg
				Bromodichloromethane	75-27-4	5	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/kg
				1,2-Dichloropropane	78-87-5	5	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	5	µg/kg
				Dibromomethane	74-95-3	5	µg/kg
				Trichloroethene	79-01-6	5	µg/kg
				Dibromochloromethane	124-48-1	5	µg/kg
				1,1,2-Trichloroethane	79-00-5	5	µg/kg
				1,1-Dichloropropene	563-58-6	5	µg/kg
				Benzene	71-43-2	5	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	5	µg/kg
				Bromoform	75-25-2	5	µg/kg
				2-Hexanone	591-78-6	50	µg/kg
				4-Methyl-2pentanone	108-10-1	50	µg/kg
				1,3-Dichloropropane	142-28-9	5	µg/kg
				Tetrachloroethene	127-18-4	5	µg/kg
				Toluene	108-88-3	5	µg/kg
				Chlorobenzene	108-90-7	5	µg/kg
				Ethylbenzene	100-41-4	5	µg/kg
				Styrene	100-42-5	5	µg/kg
				Xylenes (total)	1330-20-7	5	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/kg
				1,2-Dibromoethane	106-93-4	5	µg/kg
				Isopropylbenzene	98-82-8	5	µg/kg
				Bromobenzene	108-86-1	5	µg/kg
				1,2,3-Trichloropropane	96-18-4	5	µg/kg
				n-Propylbenzene	103-65-1	5	µg/kg
				2-Chlorotoluene	95-49-8	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				4-Chlorotoluene	106-43-4	5	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	5	µg/kg
				tert-Butylbenzene	98-06-6	5	µg/kg
				1,2,4-Trimethylbenzene	95-63-6	5	µg/kg
				sec-Butylbenzene	135-98-8	5	µg/kg
				m-Dichlorobenzene	541-73-1	5	µg/kg
				4-Isopropyltoluene	99-87-6	5	µg/kg
				p-Dichlorobenzene	106-46-7	5	µg/kg
				o-Dichlorobenzene	95-50-1	5	µg/kg
				n-Butylbenzene	104-51-8	5	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	5	µg/kg
				Hexachlorobutadiene	87-68-3	5	µg/kg
				Naphthalene	91-20-3	5	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	5	µg/kg
VOA-A-012	VOA - Single Compound	SW-846 8260	Soil/Sediment/Waste				
VOA-A-013	VOA - All Compounds	SW-846 8260B - PREP 5035	Soil	(see VOA-A-10)			
VOA-A-014	VOA - Single Compound	SW-846 8260B - PREP 5035	Soil				
VOA-A-015	VOA Sweep (Screen)	SW-846 8260 Medium Level	Soil/Sediment	Dichlorodifluoromethane	75-71-8	1200	µg/kg
				Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	600	µg/kg
				Trichlorofluoromethane	75-69-4	600	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	600	µg/kg
				Methylene Chloride	75-09-2	600	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	600	µg/kg
				1,1-Dichloroethene	75-35-4	600	µg/kg
				1,1-Dichloroethane	75-34-3	600	µg/kg
				trans-1,2-Dichloroethene	156-60-5	600	µg/kg
				2,2-Dichloropropane	594-20-7	600	µg/kg
				cis-1,2-Dichloroethene	156-59-2	600	µg/kg
				Bromochloromethane	74-97-5	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chloroform	67-66-3	600	µg/kg
				1,2-Dichloroethane	107-06-2	600	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	600	µg/kg
				Carbon Tetrachloride	56-23-5	600	µg/kg
				Bromodichloromethane	75-27-4	600	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	600	µg/kg
				1,2-Dichloropropane	78-87-5	600	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	600	µg/kg
				Dibromomethane	74-95-3	600	µg/kg
				Trichloroethene	79-01-6	600	µg/kg
				Dibromochloromethane	124-48-1	600	µg/kg
				1,1,2-Trichloroethane	79-00-5	600	µg/kg
				1,1-Dichloropropene	563-58-6	600	µg/kg
				Benzene	71-43-2	600	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	600	µg/kg
				Bromoform	75-25-2	600	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				4-Methyl-2pentanone	108-10-1	1200	µg/kg
				1,3-Dichloropropane	142-28-9	600	µg/kg
				Tetrachloroethene	127-18-4	600	µg/kg
				Toluene	108-88-3	600	µg/kg
				Chlorobenzene	108-90-7	600	µg/kg
				Ethylbenzene	100-41-4	600	µg/kg
				Styrene	100-42-5	600	µg/kg
				Xylenes (total)	1330-20-7	600	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	600	µg/kg
				1,2-Dibromoethane	106-93-4	600	µg/kg
				Isopropylbenzene	98-82-8	600	µg/kg
				Bromobenzene	108-86-1	600	µg/kg
				1,2,3-Trichloropropane	96-18-4	600	µg/kg
				n-Propylbenzene	103-65-1	600	µg/kg
				2-Chlorotoluene	95-49-8	600	µg/kg
				4-Chlorotoluene	106-43-4	600	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	600	µg/kg
				tert-Butylbenzene	98-06-6	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				1,2,4-Trimethylbenzene	95-63-6	600	µg/kg
				sec-Butylbenzene	135-98-8	600	µg/kg
				m-Dichlorobenzene	541-73-1	600	µg/kg
				4-Isopropyltoluene	99-87-6	600	µg/kg
				p-Dichlorobenzene	106-46-7	600	µg/kg
				o-Dichlorobenzene	95-50-1	600	µg/kg
				n-Butylbenzene	104-51-8	600	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	600	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	600	µg/kg
				Hexachlorobutadiene	87-68-3	600	µg/kg
				Naphthalene	91-20-3	600	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	600	µg/kg
VOA-A-016	VOA (TCLP Extraction + Analysis)	SW-846 1311/8260	TCLP Extracts	Vinyl Chloride	75-01-4	50	µg/L
				1,1-Dichloroethene	75-35-4	50	µg/L
				Chloroform	67-66-3	50	µg/L
				1,2-Dichloroethane	107-06-2	50	µg/L
				2-Butanone	78-93-3	50	µg/L
				Carbon Tetrachloride	56-23-5	50	µg/L
				Trichloroethene	79-01-6	50	µg/L
				Benzene	71-43-2	50	µg/L
				Tetrachloroethene	127-18-4	50	µg/L
				Chlorobenzene	108-90-7	50	µg/L
				p-Dichlorobenzene	106-46-7	50	µg/L
				o-Dichlorobenzene	95-50-1	50	µg/L
VOA-A-017	VOA - Nonroutine	SW-846 8260	Water	Acrolein	107-02-8	25	µg/L
				Acrylonitrile	107-13-1	25	µg/L
VOA-A-018	VOA-Acetonitrile	SW-846 8033	Water	Acetonitrile	75-05-8	25	µg/L
VOA-A-019	VOA - SW-846 Extended List	SW-846 8260	Water	n-Butyl alcohol	71-36-3	50	µg/L
				Isobutyl alcohol	78-83-1	50	µg/L
				Cyclohexanone	108-94-1	50	µg/L
				Ethyl acetate	141-78-6	50	µg/L
				Ethyl ether	60-29-7	50	µg/L
VOA-A-020	VOA - SW-846 Extended List	SW-846 8260	Soil/Sludge/Waste	n-Butyl alcohol	71-36-3	50	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isobutyl alcohol	78-83-1	50	µg/kg
				Cyclohexanone	108-94-1	50	µg/kg
				Ethyl acetate	141-78-6	50	µg/kg
				Ethyl ether	60-29-7	50	µg/kg
VOA-A-021	VOA	SW-846 8015	Water	Methanol	67-56-1	25	µg/L
VOA-A-022	VOA	SW-846 8015	Soil/Sludge/Waste	Methanol	67-56-1	250	µg/kg
VOA-A-023	VOA	EPA 524.2	Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromoform	75-25-2	1	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-024	VOA - Single Compound	EPA 524.2	Water				
VOA-A-025	VOA	EPA 624	Water/Waste Water	Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Dichlorodifluoromethane	75-71-8	1	µg/L
				Vinyl chloride	75-01-4	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chloroform	67-66-3	600	µg/kg
				1,2-Dichloroethane	107-06-2	600	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	600	µg/kg
				Carbon Tetrachloride	56-23-5	600	µg/kg
				Bromodichloromethane	75-27-4	600	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	600	µg/kg
				1,2-Dichloropropane	78-87-5	600	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	600	µg/kg
				Dibromomethane	74-95-3	600	µg/kg
				Trichloroethene	79-01-6	600	µg/kg
				Dibromochloromethane	124-48-1	600	µg/kg
				1,1,2-Trichloroethane	79-00-5	600	µg/kg
				1,1-Dichloropropene	563-58-6	600	µg/kg
				Benzene	71-43-2	600	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	600	µg/kg
				Bromoform	75-25-2	600	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				4-Methyl-2pentanone	108-10-1	1200	µg/kg
				1,3-Dichloropropane	142-28-9	600	µg/kg
				Tetrachloroethene	127-18-4	600	µg/kg
				Toluene	108-88-3	600	µg/kg
				Chlorobenzene	108-90-7	600	µg/kg
				Ethylbenzene	100-41-4	600	µg/kg
				Styrene	100-42-5	600	µg/kg
				Xylenes (total)	1330-20-7	600	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	600	µg/kg
				1,2-Dibromoethane	106-93-4	600	µg/kg
				Isopropylbenzene	98-82-8	600	µg/kg
				Bromobenzene	108-86-1	600	µg/kg
				1,2,3-Trichloropropane	96-18-4	600	µg/kg
				n-Propylbenzene	103-65-1	600	µg/kg
				2-Chlorotoluene	95-49-8	600	µg/kg
				4-Chlorotoluene	106-43-4	600	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	600	µg/kg
				tert-Butylbenzene	98-06-6	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				1,2,4-Trimethylbenzene	95-63-6	600	µg/kg
				sec-Butylbenzene	135-98-8	600	µg/kg
				m-Dichlorobenzene	541-73-1	600	µg/kg
				4-Isopropyltoluene	99-87-6	600	µg/kg
				p-Dichlorobenzene	106-46-7	600	µg/kg
				o-Dichlorobenzene	95-50-1	600	µg/kg
				n-Butylbenzene	104-51-8	600	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	600	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	600	µg/kg
				Hexachlorobutadiene	87-68-3	600	µg/kg
				Naphthalene	91-20-3	600	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	600	µg/kg
VOA-A-016	VOA (TCLP Extraction + Analysis)	SW-846 1311/8260	TCLP Extracts	Vinyl Chloride	75-01-4	50	µg/L
				1,1-Dichloroethene	75-35-4	50	µg/L
				Chloroform	67-66-3	50	µg/L
				1,2-Dichloroethane	107-06-2	50	µg/L
				2-Butanone	78-93-3	50	µg/L
				Carbon Tetrachloride	56-23-5	50	µg/L
				Trichloroethene	79-01-6	50	µg/L
				Benzene	71-43-2	50	µg/L
				Tetrachloroethene	127-18-4	50	µg/L
				Chlorobenzene	108-90-7	50	µg/L
				p-Dichlorobenzene	106-46-7	50	µg/L
				o-Dichlorobenzene	95-50-1	50	µg/L
VOA-A-017	VOA - Nonroutine	SW-846 8260	Water	Acrolein	107-02-8	25	µg/L
				Acrylonitrile	107-13-1	25	µg/L
VOA-A-018	VOA-Acetonitrile	SW-846 8033	Water	Acetonitrile	75-05-8	25	µg/L
VOA-A-019	VOA - SW-846 Extended List	SW-846 8260	Water	n-Butyl alcohol	71-36-3	50	µg/L
				Isobutyl alcohol	78-83-1	50	µg/L
				Cyclohexanone	108-94-1	50	µg/L
				Ethyl acetate	141-78-6	50	µg/L
				Ethyl ether	60-29-7	50	µg/L
VOA-A-020	VOA - SW-846 Extended List	SW-846 8260	Soil/Sludge/Waste	n-Butyl alcohol	71-36-3	50	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isobutyl alcohol	78-83-1	50	µg/kg
				Cyclohexanone	108-94-1	50	µg/kg
				Ethyl acetate	141-78-6	50	µg/kg
				Ethyl ether	60-29-7	50	µg/kg
VOA-A-021	VOA	SW-846 8015	Water	Methanol	67-56-1	25	µg/L
VOA-A-022	VOA	SW-846 8015	Soil/Sludge/Waste	Methanol	67-56-1	250	µg/kg
VOA-A-023	VOA	EPA 524.2	Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromoform	75-25-2	1	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-024	VOA - Single Compound	EPA 524.2	Water				
VOA-A-025	VOA	EPA 624	Water/Waste Water	Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Dichlorodifluoromethane	75-71-8	1	µg/L
				Vinyl chloride	75-01-4	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				Acetone	67-64-1	10	µg/L
				Carbon Disulfide	75-15-0	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				2-Butanone	78-93-3	10	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L
				Bromoform	75-25-2	1	µg/L
				2-Hexanone	591-78-6	10	µg/L
				4-Methyl-2pentanone	108-10-1	10	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-008	VOA - Single Compound	SW-846 8260 Low Level	Water/Waste Water				
VOA-A-009	Volatile Organics	SW-846 8260	Water/Aqueous Waste	Dichlorodifluoromethane	75-71-8	5	µg/L
				Chloromethane	74-87-3	5	µg/L
				Bromomethane	74-83-9	5	µg/L
				Vinyl Chloride	75-01-4	5	µg/L
				Chloroethane	75-00-3	5	µg/L
				Trichlorofluoromethane	75-69-4	5	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/L
				Methylene Chloride	75-09-2	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Acetone	67-64-1	100	µg/L
				Carbon Disulfide	75-15-0	5	µg/L
				1,1-Dichloroethene	75-35-4	5	µg/L
				1,1-Dichloroethane	75-34-3	5	µg/L
				trans-1,2-Dichloroethene	156-60-5	5	µg/L
				2,2-Dichloropropane	594-20-7	5	µg/L
				cis-1,2-Dichloroethene	156-59-2	5	µg/L
				Bromochloromethane	74-97-5	5	µg/L
				Chloroform	67-66-3	5	µg/L
				1,2-Dichloroethane	107-06-2	5	µg/L
				2-Butanone	78-93-3	100	µg/L
				1,1,1-Trichloroethane	71-55-6	5	µg/L
				Carbon Tetrachloride	56-23-5	5	µg/L
				Bromodichloromethane	75-27-4	5	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L
				1,2-Dichloropropane	78-87-5	5	µg/L
				trans-1,3-Dichloropropene	10061-02-6	5	µg/L
				Dibromomethane	74-95-3	5	µg/L
				Trichloroethene	79-01-6	5	µg/L
				Dibromochloromethane	124-48-1	5	µg/L
				1,1,2-Trichloroethane	79-00-5	5	µg/L
				1,1-Dichloropropene	563-58-6	5	µg/L
				Benzene	71-43-2	5	µg/L
				cis-1,3-Dichloropropene	10061-01-5	5	µg/L
				Bromoform	75-25-2	5	µg/L
				2-Hexanone	591-78-6	50	µg/L
				4-Methyl-2pentanone	108-10-1	50	µg/L
				1,3-Dichloropropane	142-28-9	5	µg/L
				Tetrachloroethene	127-18-4	5	µg/L
				Toluene	108-88-3	5	µg/L
				Chlorobenzene	108-90-7	5	µg/L
				Ethylbenzene	100-41-4	5	µg/L
				Styrene	100-42-5	5	µg/L
				Xylenes (total)	1330-20-7	5	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L
				1,2-Dibromoethane	106-93-4	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isopropylbenzene	98-82-8	5	µg/L
				Bromobenzene	108-86-1	5	µg/L
				1,2,3-Trichloropropane	96-18-4	5	µg/L
				n-Propylbenzene	103-65-1	5	µg/L
				2-Chlorotoluene	95-49-8	5	µg/L
				4-Chlorotoluene	106-43-4	5	µg/L
				1,3,5-Trimethylbenzene	108-67-8	5	µg/L
				tert-Butylbenzene	98-06-6	5	µg/L
				1,2,4-Trimethylbenzene	95-63-6	5	µg/L
				sec-Butylbenzene	135-98-8	5	µg/L
				m-Dichlorobenzene	541-73-1	5	µg/L
				4-Isopropyltoluene	99-87-6	5	µg/L
				p-Dichlorobenzene	106-46-7	5	µg/L
				o-Dichlorobenzene	95-50-1	5	µg/L
				n-Butylbenzene	104-51-8	5	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L
				1,2,4-Trichlorobenzene	120-82-1	5	µg/L
				Hexachlorobutadiene	87-68-3	5	µg/L
				Naphthalene	91-20-3	5	µg/L
				1,2,3-Trichlorobenzene	87-61-6	5	µg/L
VOA-A-010	VOA - Single Compound	SW-846 8260	Water/Aqueous Waste				
VOA-A-011	Volatile Organics	SW-846 8260	Soil/Sediment/Waste	Dichlorodifluoromethane	75-71-8	5	µg/kg
				Chloromethane	74-87-3	5	µg/kg
				Bromomethane	74-83-9	5	µg/kg
				Vinyl Chloride	75-01-4	5	µg/kg
				Chloroethane	75-00-3	5	µg/kg
				Trichlorofluoromethane	75-69-4	5	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/kg
				Methylene Chloride	75-09-2	5	µg/kg
				Acetone	67-64-1	100	µg/kg
				Carbon Disulfide	75-15-0	5	µg/kg
				1,1-Dichloroethene	75-35-4	5	µg/kg
				1,1-Dichloroethane	75-34-3	5	µg/kg
				trans-1,2-Dichloroethene	156-60-5	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2,2-Dichloropropane	594-20-7	5	µg/kg
				cis-1,2-Dichloroethene	156-59-2	5	µg/kg
				Bromochloromethane	74-97-5	5	µg/kg
				Chloroform	67-66-3	5	µg/kg
				1,2-Dichloroethane	107-06-2	5	µg/kg
				2-Butanone	78-93-3	100	µg/kg
				1,1,1-Trichloroethane	71-55-6	5	µg/kg
				Carbon Tetrachloride	56-23-5	5	µg/kg
				Bromodichloromethane	75-27-4	5	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/kg
				1,2-Dichloropropane	78-87-5	5	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	5	µg/kg
				Dibromomethane	74-95-3	5	µg/kg
				Trichloroethene	79-01-6	5	µg/kg
				Dibromochloromethane	124-48-1	5	µg/kg
				1,1,2-Trichloroethane	79-00-5	5	µg/kg
				1,1-Dichloropropene	563-58-6	5	µg/kg
				Benzene	71-43-2	5	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	5	µg/kg
				Bromoform	75-25-2	5	µg/kg
				2-Hexanone	591-78-6	50	µg/kg
				4-Methyl-2pentanone	108-10-1	50	µg/kg
				1,3-Dichloropropane	142-28-9	5	µg/kg
				Tetrachloroethene	127-18-4	5	µg/kg
				Toluene	108-88-3	5	µg/kg
				Chlorobenzene	108-90-7	5	µg/kg
				Ethylbenzene	100-41-4	5	µg/kg
				Styrene	100-42-5	5	µg/kg
				Xylenes (total)	1330-20-7	5	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/kg
				1,2-Dibromoethane	106-93-4	5	µg/kg
				Isopropylbenzene	98-82-8	5	µg/kg
				Bromobenzene	108-86-1	5	µg/kg
				1,2,3-Trichloropropane	96-18-4	5	µg/kg
				n-Propylbenzene	103-65-1	5	µg/kg
				2-Chlorotoluene	95-49-8	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				4-Chlorotoluene	106-43-4	5	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	5	µg/kg
				tert-Butylbenzene	98-06-6	5	µg/kg
				1,2,4-Trimethylbenzene	95-63-6	5	µg/kg
				sec-Butylbenzene	135-98-8	5	µg/kg
				m-Dichlorobenzene	541-73-1	5	µg/kg
				4-Isopropyltoluene	99-87-6	5	µg/kg
				p-Dichlorobenzene	106-46-7	5	µg/kg
				o-Dichlorobenzene	95-50-1	5	µg/kg
				n-Butylbenzene	104-51-8	5	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	5	µg/kg
				Hexachlorobutadiene	87-68-3	5	µg/kg
				Naphthalene	91-20-3	5	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	5	µg/kg
VOA-A-012	VOA - Single Compound	SW-846 8260	Soil/Sediment/Waste				
VOA-A-013	VOA - All Compounds	SW-846 8260B - PREP 5035	Soil	(see VOA-A-10)			
VOA-A-014	VOA - Single Compound	SW-846 8260B - PREP 5035	Soil				
VOA-A-015	VOA Sweep (Screen)	SW-846 8260 Medium Level	Soil/Sediment	Dichlorodifluoromethane	75-71-8	1200	µg/kg
				Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	600	µg/kg
				Trichlorofluoromethane	75-69-4	600	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	600	µg/kg
				Methylene Chloride	75-09-2	600	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	600	µg/kg
				1,1-Dichloroethene	75-35-4	600	µg/kg
				1,1-Dichloroethane	75-34-3	600	µg/kg
				trans-1,2-Dichloroethene	156-60-5	600	µg/kg
				2,2-Dichloropropane	594-20-7	600	µg/kg
				cis-1,2-Dichloroethene	156-59-2	600	µg/kg
				Bromochloromethane	74-97-5	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chloroform	67-66-3	600	µg/kg
				1,2-Dichloroethane	107-06-2	600	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	600	µg/kg
				Carbon Tetrachloride	56-23-5	600	µg/kg
				Bromodichloromethane	75-27-4	600	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	600	µg/kg
				1,2-Dichloropropane	78-87-5	600	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	600	µg/kg
				Dibromomethane	74-95-3	600	µg/kg
				Trichloroethene	79-01-6	600	µg/kg
				Dibromochloromethane	124-48-1	600	µg/kg
				1,1,2-Trichloroethane	79-00-5	600	µg/kg
				1,1-Dichloropropene	563-58-6	600	µg/kg
				Benzene	71-43-2	600	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	600	µg/kg
				Bromoform	75-25-2	600	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				4-Methyl-2pentanone	108-10-1	1200	µg/kg
				1,3-Dichloropropane	142-28-9	600	µg/kg
				Tetrachloroethene	127-18-4	600	µg/kg
				Toluene	108-88-3	600	µg/kg
				Chlorobenzene	108-90-7	600	µg/kg
				Ethylbenzene	100-41-4	600	µg/kg
				Styrene	100-42-5	600	µg/kg
				Xylenes (total)	1330-20-7	600	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	600	µg/kg
				1,2-Dibromoethane	106-93-4	600	µg/kg
				Isopropylbenzene	98-82-8	600	µg/kg
				Bromobenzene	108-86-1	600	µg/kg
				1,2,3-Trichloropropane	96-18-4	600	µg/kg
				n-Propylbenzene	103-65-1	600	µg/kg
				2-Chlorotoluene	95-49-8	600	µg/kg
				4-Chlorotoluene	106-43-4	600	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	600	µg/kg
				tert-Butylbenzene	98-06-6	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				1,2,4-Trimethylbenzene	95-63-6	600	µg/kg
				sec-Butylbenzene	135-98-8	600	µg/kg
				m-Dichlorobenzene	541-73-1	600	µg/kg
				4-Isopropyltoluene	99-87-6	600	µg/kg
				p-Dichlorobenzene	106-46-7	600	µg/kg
				o-Dichlorobenzene	95-50-1	600	µg/kg
				n-Butylbenzene	104-51-8	600	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	600	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	600	µg/kg
				Hexachlorobutadiene	87-68-3	600	µg/kg
				Naphthalene	91-20-3	600	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	600	µg/kg
VOA-A-016	VOA (TCLP Extraction + Analysis)	SW-846 1311/8260	TCLP Extracts	Vinyl Chloride	75-01-4	50	µg/L
				1,1-Dichloroethene	75-35-4	50	µg/L
				Chloroform	67-66-3	50	µg/L
				1,2-Dichloroethane	107-06-2	50	µg/L
				2-Butanone	78-93-3	50	µg/L
				Carbon Tetrachloride	56-23-5	50	µg/L
				Trichloroethene	79-01-6	50	µg/L
				Benzene	71-43-2	50	µg/L
				Tetrachloroethene	127-18-4	50	µg/L
				Chlorobenzene	108-90-7	50	µg/L
				p-Dichlorobenzene	106-46-7	50	µg/L
				o-Dichlorobenzene	95-50-1	50	µg/L
VOA-A-017	VOA - Nonroutine	SW-846 8260	Water	Acrolein	107-02-8	25	µg/L
				Acrylonitrile	107-13-1	25	µg/L
VOA-A-018	VOA-Acetonitrile	SW-846 8033	Water	Acetonitrile	75-05-8	25	µg/L
VOA-A-019	VOA - SW-846 Extended List	SW-846 8260	Water	n-Butyl alcohol	71-36-3	50	µg/L
				Isobutyl alcohol	78-83-1	50	µg/L
				Cyclohexanone	108-94-1	50	µg/L
				Ethyl acetate	141-78-6	50	µg/L
				Ethyl ether	60-29-7	50	µg/L
VOA-A-020	VOA - SW-846 Extended List	SW-846 8260	Soil/Sludge/Waste	n-Butyl alcohol	71-36-3	50	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isobutyl alcohol	78-83-1	50	µg/kg
				Cyclohexanone	108-94-1	50	µg/kg
				Ethyl acetate	141-78-6	50	µg/kg
				Ethyl ether	60-29-7	50	µg/kg
VOA-A-021	VOA	SW-846 8015	Water	Methanol	67-56-1	25	µg/L
VOA-A-022	VOA	SW-846 8015	Soil/Sludge/Waste	Methanol	67-56-1	250	µg/kg
VOA-A-023	VOA	EPA 524.2	Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromoform	75-25-2	1	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-024	VOA - Single Compound	EPA 524.2	Water				
VOA-A-025	VOA	EPA 624	Water/Waste Water	Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Dichlorodifluoromethane	75-71-8	1	µg/L
				Vinyl chloride	75-01-4	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chloroethane	75-00-3	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				2-Chloroethylvinyl ether	100-75-8	1	µg/L
				Bromoform	75-25-2	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				1,3-Dichlorobenzene	541-73-1	1	µg/L
				1,2-Dichlorobenzene	95-50-1	1	µg/L
				Benzene	71-43-2	1	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				1,4-Dichlorobenzene	106-46-7	1	µg/L
VOA-A-026	VOA - Single Compound	EPA 624	Water/Waste Water				
VOA-A-027	VOA - Appendix IX	SW-846	Water/Waste Water	Acetone	67-64-1	10	µg/L
				Acetonitrile	75-5-8	20	µg/L
				Acrolein	107-2-8	5	µg/L
				Acrylonitrile	107-13-1	1	µg/L
				Allyl chloride	107-5-1	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Benzene	71-43-2	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				Bromoform	75-25-2	2	µg/L
				Bromomethane	74-83-9	1	µg/L
				2- Butanone (Methyl ethyl ketone)	78-93-3	10	µg/L
				Carbon Disulfide	75-15-0	5	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Chloroform	67-66-3	1	µg/L
				Chloromethane	74-87-3	5	µg/L
				Chloroprene	126-99-8	5	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				trans-1-4-Dichlor-2-butene	110-57-6	5	µg/L
				Dichlorodifluoromethane	75-71-8	5	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	5	µg/L
				trans-1,3-Dichloropropene	10061-02-6	5	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				2-Hexanone	591-78-6	10	µg/L
				Isobutyl Alcohol	98-82-8	10	µg/L
				Methlyacrylonitrile	126-98-7	1	µg/L
				Methyl Iodide	74-88-4	5	µg/L
				Methyl isobutyl ketone	108-10-1	10	µg/L
				Methyl methacrylate	80-62-6	2	µg/L
				Propionitrile	107-12-0	5	µg/L
				Styrene	100-42-5	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,2,3-Trichloropropane	96-18-4	4	µg/L
				Vinyl Acetate	108-5-4	5	µg/L
				Vinyl Chloride	75-01-4	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
VOA-A-028	VOA - Appendix IX	SW-846	Soil/Solid	Acetone	67-64-1	100	µg/kg
				Acetonitrile	75-5-8	100	µg/kg
				Acrolein	107-2-8	5	µg/kg
				Acrylonitrile	107-13-1	5	µg/kg
				Allyl chloride	107-5-1	5	µg/kg
				Benzene	71-43-2	5	µg/kg
				Bromodichloromethane	75-27-4	5	µg/kg
				Bromoform	75-25-2	5	µg/kg
				Bromomethane	74-83-9	5	µg/kg
				2- Butanone (Methyl ethyl ketone)	78-93-3	100	µg/kg
				Carbon Disulfide	75-15-0	5	µg/kg
				Carbon Tetrachloride	56-23-5	5	µg/kg
				Chlorobenzene	108-90-7	5	µg/kg
				Chloroethane	75-00-3	5	µg/kg
				Chloroform	67-66-3	5	µg/kg
				Chloromethane	74-87-3	5	µg/kg
				Chloroprene	126-99-8	5	µg/kg
				Dibromochloromethane	124-48-1	5	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/kg
				1,2-Dibromoethane	106-93-4	5	µg/kg
				Dibromomethane	74-95-3	5	µg/kg
				trans-1-4-Dichlor-2-butene	110-57-6	5	µg/kg
				Dichlorodifluoromethane	75-71-8	5	µg/kg
				1,1-Dichloroethane	75-34-3	5	µg/kg
				1,2-Dichloroethane	107-06-2	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				1,1-Dichloroethene	75-35-4	5	µg/kg
				trans-1,2-Dichloroethene	156-60-5	5	µg/kg
				1,2-Dichloropropane	78-87-5	5	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	5	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	5	µg/kg
				Ethylbenzene	100-41-4	5	µg/kg
				2-Hexanone	591-78-6	50	µg/kg
				Isobutyl Alcohol	98-82-8	50	µg/kg
				Methlyacrylonitrile	126-98-7	100	µg/kg
				Methyl Iodide	74-88-4	5	µg/kg
				Methyl isobutyl ketone	108-10-1	50	µg/kg
				Methyl methacrylate	80-62-6	5	µg/kg
				Propionitrile	107-12-0	5	µg/kg
				Styrene	100-42-5	5	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/kg
				Tetrachloroethene	127-18-4	5	µg/kg
				Toluene	108-88-3	5	µg/kg
				1,1,1-Trichloroethane	71-55-6	5	µg/kg
				1,1,2-Trichloroethane	79-00-5	5	µg/kg
				Trichloroethene	79-01-6	5	µg/kg
				Trichlorofluoromethane	75-69-4	5	µg/kg
				1,2,3-Trichloropropane	96-18-4	5	µg/kg
				Vinyl Acetate	108-5-4	5	µg/kg
				Vinyl Chloride	75-01-4	5	µg/kg
				Xylenes (total)	1330-20-7	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
SVO-A-001	Semi-Volatile Organics	CLP-SOW	Water/Waste Water	1,2,4-Trichlorobenzene	120-82-1	10	µg/L
				1,2-Dichlorobenzene	95-50-1	10	µg/L
				1,3-Dichlorobenzene	541-73-1	10	µg/L
				1,4-Dichlorobenzene	106-46-7	10	µg/L
				2,2'-oxybis(1-Chloropropane)	108-60-1	10	µg/L
				2,4,5-Trichlorophenol	95-95-4	50	µg/L
				2,4,6-Trichlorophenol	88-06-2	10	µg/L
				2,4-Dichlorophenol	120-83-2	10	µg/L
				2,4-Dimethylphenol	105-67-9	10	µg/L
				2,4-Dinitrophenol	51-28-5	50	µg/L
				2,4-Dinitrotoluene	121-14-2	10	µg/L
				2,6-Dinitrotoluene	606-20-2	10	µg/L
				2-Chloronaphthalene	91-58-7	10	µg/L
				2-Chlorophenol	95-57-8	10	µg/L
				2-Methylnaphthalene	91-57-6	10	µg/L
				2-Methylphenol	95-48-7	10	µg/L
				2-Nitroaniline	88-74-4	50	µg/L
				2-Nitrophenol	88-75-5	10	µg/L
				3,3'-Dichlorobenzidine	91-94-1	10	µg/L
				3-Nitroaniline	99-09-2	50	µg/L
				4,6-Dinitro-2-methylphenol	534-52-1	50	µg/L
				4-Bromophenyl-phenylether	101-55-3	10	µg/L
				4-Chloro-3-methylphenol	59-50-7	10	µg/L
				4-Chloroaniline	106-47-8	10	µg/L
				4-Chlorophenyl-phenyl ether	7005-72-3	10	µg/L
				4-Methylphenol	106-44-5	10	µg/L
				4-Nitroaniline	100-01-6	50	µg/L
				4-Nitrophenol	100-02-7	50	µg/L
				Acenaphthene	83-32-9	10	µg/L
				Acenaphthylene	208-96-8	10	µg/L
				Anthracene	120-12-7	10	µg/L
				Benzo(a)anthracene	56-55-3	10	µg/L
				Benzo(a)pyrene	50-32-8	10	µg/L
				Benzo(b)fluoranthene	205-99-2	10	µg/L
				Benzo(g,h,i)perylene	191-24-2	10	µg/L
				Benzo(k)fluoranthene	207-08-9	10	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				bis(2-Chloroethoxy) methane	111-91-1	10	µg/L
				bis(2-Chloroethyl) ether	111-44-4	10	µg/L
				bis(2-ethylhexyl)phthalate	117-81-7	10	µg/L
				Butylbenzylphthalate	85-68-7	10	µg/L
				Carbazole	86-74-8	10	µg/L
				Chrysene	218-01-9	10	µg/L
				Dibenz(a,h)anthracene	53-70-3	10	µg/L
				Dibenzofuran	132-64-9	10	µg/L
				Diethylphthalate	84-66-2	10	µg/L
				Dimethylphthalate	131-11-3	10	µg/L
				Di-n-butylphthalate	84-74-2	10	µg/L
				Di-n-octylphthalate	117-84-0	10	µg/L
				Fluoranthene	206-44-0	10	µg/L
				Fluorene	86-73-7	10	µg/L
				Hexachlorobenzene	118-74-1	10	µg/L
				Hexachlorobutadiene	87-68-3	10	µg/L
				Hexachlorocyclopentadiene	77-47-4	10	µg/L
				Hexachloroethane	67-72-1	10	µg/L
				Indeno(1,2,3-cd)pyrene	193-39-5	10	µg/L
				Isophorone	78-59-1	10	µg/L
				Naphthalene	91-20-3	10	µg/L
				Nitrobenzene	98-95-3	10	µg/L
				N-Nitroso-di-n-propylamine	621-64-7	10	µg/L
				N-nitrosodiphenylamine	86-30-6	10	µg/L
				Pentachlorophenol	87-86-5	50	µg/L
				Phenanthrene	85-01-8	10	µg/L
				Phenol	108-95-27	10	µg/L
				Pyrene	129-00-0	10	µg/L
SVO-A-002	SVOA - *Single Compound*	CLP-SOW	Water/ Waste Water				
SVO-A-003	Semi-Volatile Organics	CLP-SOW - Soil Method	Soil/Sediment	1,2,4-Trichlorobenzene	120-82-1	330	µg/kg
				1,2-Dichlorobenzene	95-50-1	330	µg/kg
				1,3-Dichlorobenzene	541-73-1	330	µg/kg
				1,4-Dichlorobenzene	106-46-7	330	µg/kg
				2,2'-oxybis(1-Chloropropane)	108-60-1	330	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromomethane	74-83-9	10	µg/kg
				Vinyl Chloride	75-01-4	10	µg/kg
				Chloroethane	75-00-3	10	µg/kg
				Methylene Chloride	75-09-2	10	µg/kg
				Acetone	67-64-1	10	µg/kg
				Carbon Disulfide	75-15-0	10	µg/kg
				1,1-Dichloroethene	75-35-4	10	µg/kg
				1,1-Dichloroethane	75-34-3	10	µg/kg
				1,2-Dichloroethene (total)	540-59-0	10	µg/kg
				Chloroform	67-66-3	10	µg/kg
				1,2-Dichloroethane	107-06-2	10	µg/kg
				2-Butanone	78-93-3	10	µg/kg
				1,1,1-Trichloroethane	71-55-6	10	µg/kg
				Carbon Tetrachloride	56-23-5	10	µg/kg
				Bromodichloromethane	75-27-4	10	µg/kg
				1,2-Dichloropropane	78-87-5	10	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	10	µg/kg
				Trichloroethene	79-01-6	10	µg/kg
				Dibromochloromethane	124-48-1	10	µg/kg
				1,1,2-Trichloroethane	79-00-5	10	µg/kg
				Benzene	71-43-2	10	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	10	µg/kg
				Bromoform	75-25-2	10	µg/kg
				4-Methyl-2-pentanone	108-10-1	10	µg/kg
				2-Hexanone	591-78-6	10	µg/kg
				Tetrachloroethene	127-18-4	10	µg/kg
				Toluene	108-88-3	10	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	10	µg/kg
				Chlorobenzene	108-90-7	10	µg/kg
				Ethyl Benzene	100-41-4	10	µg/kg
				Styrene	100-42-5	10	µg/kg
				Xylenes (Total)	1330-20-7	10	µg/kg
VOA-A-004	VOA - Single Compound	CLP Low Level Soil	Soil/Sediment				
VOA-A-005	Volatile Organics	CLP Medium Level Soil	Soil/Sediment	Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	1200	µg/kg
				Methylene Chloride	75-09-2	1200	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	1200	µg/kg
				1,1-Dichloroethene	75-35-4	1200	µg/kg
				1,1-Dichloroethane	75-34-3	1200	µg/kg
				1,2-Dichloroethene (total)	540-59-0	1200	µg/kg
				Chloroform	67-66-3	1200	µg/kg
				1,2-Dichloroethane	107-06-2	1200	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	1200	µg/kg
				Carbon Tetrachloride	56-23-5	1200	µg/kg
				Bromodichloromethane	75-27-4	1200	µg/kg
				1,2-Dichloropropane	78-87-5	1200	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	1200	µg/kg
				Trichloroethene	79-01-6	1200	µg/kg
				Dibromochloromethane	124-48-1	1200	µg/kg
				1,1,2-Trichloroethane	79-00-5	1200	µg/kg
				Benzene	71-43-2	1200	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	1200	µg/kg
				Bromoform	75-25-2	1200	µg/kg
				4-Methyl-2-pentanone	108-10-1	1200	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				Tetrachloroethene	127-18-4	1200	µg/kg
				Toluene	108-88-3	1200	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	1200	µg/kg
				Chlorobenzene	108-90-7	1200	µg/kg
				Ethyl Benzene	100-41-4	1200	µg/kg
				Styrene	100-42-5	1200	µg/kg
				Xylenes (Total)	1330-20-7	1200	µg/kg
VOA-A-006	VOA - Single Compound	CLP Medium Level Soil	Soil/Sediment				
VOA-A-007	VOA	SW-846 8260 Low Level	Water/Waste Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				Acetone	67-64-1	10	µg/L
				Carbon Disulfide	75-15-0	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				2-Butanone	78-93-3	10	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L
				Bromoform	75-25-2	1	µg/L
				2-Hexanone	591-78-6	10	µg/L
				4-Methyl-2pentanone	108-10-1	10	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-008	VOA - Single Compound	SW-846 8260 Low Level	Water/Waste Water				
VOA-A-009	Volatile Organics	SW-846 8260	Water/Aqueous Waste	Dichlorodifluoromethane	75-71-8	5	µg/L
				Chloromethane	74-87-3	5	µg/L
				Bromomethane	74-83-9	5	µg/L
				Vinyl Chloride	75-01-4	5	µg/L
				Chloroethane	75-00-3	5	µg/L
				Trichlorofluoromethane	75-69-4	5	µg/L
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/L
				Methylene Chloride	75-09-2	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Acetone	67-64-1	100	µg/L
				Carbon Disulfide	75-15-0	5	µg/L
				1,1-Dichloroethene	75-35-4	5	µg/L
				1,1-Dichloroethane	75-34-3	5	µg/L
				trans-1,2-Dichloroethene	156-60-5	5	µg/L
				2,2-Dichloropropane	594-20-7	5	µg/L
				cis-1,2-Dichloroethene	156-59-2	5	µg/L
				Bromochloromethane	74-97-5	5	µg/L
				Chloroform	67-66-3	5	µg/L
				1,2-Dichloroethane	107-06-2	5	µg/L
				2-Butanone	78-93-3	100	µg/L
				1,1,1-Trichloroethane	71-55-6	5	µg/L
				Carbon Tetrachloride	56-23-5	5	µg/L
				Bromodichloromethane	75-27-4	5	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L
				1,2-Dichloropropane	78-87-5	5	µg/L
				trans-1,3-Dichloropropene	10061-02-6	5	µg/L
				Dibromomethane	74-95-3	5	µg/L
				Trichloroethene	79-01-6	5	µg/L
				Dibromochloromethane	124-48-1	5	µg/L
				1,1,2-Trichloroethane	79-00-5	5	µg/L
				1,1-Dichloropropene	563-58-6	5	µg/L
				Benzene	71-43-2	5	µg/L
				cis-1,3-Dichloropropene	10061-01-5	5	µg/L
				Bromoform	75-25-2	5	µg/L
				2-Hexanone	591-78-6	50	µg/L
				4-Methyl-2pentanone	108-10-1	50	µg/L
				1,3-Dichloropropane	142-28-9	5	µg/L
				Tetrachloroethene	127-18-4	5	µg/L
				Toluene	108-88-3	5	µg/L
				Chlorobenzene	108-90-7	5	µg/L
				Ethylbenzene	100-41-4	5	µg/L
				Styrene	100-42-5	5	µg/L
				Xylenes (total)	1330-20-7	5	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L
				1,2-Dibromoethane	106-93-4	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isopropylbenzene	98-82-8	5	µg/L
				Bromobenzene	108-86-1	5	µg/L
				1,2,3-Trichloropropane	96-18-4	5	µg/L
				n-Propylbenzene	103-65-1	5	µg/L
				2-Chlorotoluene	95-49-8	5	µg/L
				4-Chlorotoluene	106-43-4	5	µg/L
				1,3,5-Trimethylbenzene	108-67-8	5	µg/L
				tert-Butylbenzene	98-06-6	5	µg/L
				1,2,4-Trimethylbenzene	95-63-6	5	µg/L
				sec-Butylbenzene	135-98-8	5	µg/L
				m-Dichlorobenzene	541-73-1	5	µg/L
				4-Isopropyltoluene	99-87-6	5	µg/L
				p-Dichlorobenzene	106-46-7	5	µg/L
				o-Dichlorobenzene	95-50-1	5	µg/L
				n-Butylbenzene	104-51-8	5	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L
				1,2,4-Trichlorobenzene	120-82-1	5	µg/L
				Hexachlorobutadiene	87-68-3	5	µg/L
				Naphthalene	91-20-3	5	µg/L
				1,2,3-Trichlorobenzene	87-61-6	5	µg/L
VOA-A-010	VOA - Single Compound	SW-846 8260	Water/Aqueous Waste				
VOA-A-011	Volatile Organics	SW-846 8260	Soil/Sediment/Waste	Dichlorodifluoromethane	75-71-8	5	µg/kg
				Chloromethane	74-87-3	5	µg/kg
				Bromomethane	74-83-9	5	µg/kg
				Vinyl Chloride	75-01-4	5	µg/kg
				Chloroethane	75-00-3	5	µg/kg
				Trichlorofluoromethane	75-69-4	5	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	µg/kg
				Methylene Chloride	75-09-2	5	µg/kg
				Acetone	67-64-1	100	µg/kg
				Carbon Disulfide	75-15-0	5	µg/kg
				1,1-Dichloroethene	75-35-4	5	µg/kg
				1,1-Dichloroethane	75-34-3	5	µg/kg
				trans-1,2-Dichloroethene	156-60-5	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2,2-Dichloropropane	594-20-7	5	µg/kg
				cis-1,2-Dichloroethene	156-59-2	5	µg/kg
				Bromochloromethane	74-97-5	5	µg/kg
				Chloroform	67-66-3	5	µg/kg
				1,2-Dichloroethane	107-06-2	5	µg/kg
				2-Butanone	78-93-3	100	µg/kg
				1,1,1-Trichloroethane	71-55-6	5	µg/kg
				Carbon Tetrachloride	56-23-5	5	µg/kg
				Bromodichloromethane	75-27-4	5	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/kg
				1,2-Dichloropropane	78-87-5	5	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	5	µg/kg
				Dibromomethane	74-95-3	5	µg/kg
				Trichloroethene	79-01-6	5	µg/kg
				Dibromochloromethane	124-48-1	5	µg/kg
				1,1,2-Trichloroethane	79-00-5	5	µg/kg
				1,1-Dichloropropene	563-58-6	5	µg/kg
				Benzene	71-43-2	5	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	5	µg/kg
				Bromoform	75-25-2	5	µg/kg
				2-Hexanone	591-78-6	50	µg/kg
				4-Methyl-2pentanone	108-10-1	50	µg/kg
				1,3-Dichloropropane	142-28-9	5	µg/kg
				Tetrachloroethene	127-18-4	5	µg/kg
				Toluene	108-88-3	5	µg/kg
				Chlorobenzene	108-90-7	5	µg/kg
				Ethylbenzene	100-41-4	5	µg/kg
				Styrene	100-42-5	5	µg/kg
				Xylenes (total)	1330-20-7	5	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/kg
				1,2-Dibromoethane	106-93-4	5	µg/kg
				Isopropylbenzene	98-82-8	5	µg/kg
				Bromobenzene	108-86-1	5	µg/kg
				1,2,3-Trichloropropane	96-18-4	5	µg/kg
				n-Propylbenzene	103-65-1	5	µg/kg
				2-Chlorotoluene	95-49-8	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				4-Chlorotoluene	106-43-4	5	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	5	µg/kg
				tert-Butylbenzene	98-06-6	5	µg/kg
				1,2,4-Trimethylbenzene	95-63-6	5	µg/kg
				sec-Butylbenzene	135-98-8	5	µg/kg
				m-Dichlorobenzene	541-73-1	5	µg/kg
				4-Isopropyltoluene	99-87-6	5	µg/kg
				p-Dichlorobenzene	106-46-7	5	µg/kg
				o-Dichlorobenzene	95-50-1	5	µg/kg
				n-Butylbenzene	104-51-8	5	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	5	µg/kg
				Hexachlorobutadiene	87-68-3	5	µg/kg
				Naphthalene	91-20-3	5	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	5	µg/kg
VOA-A-012	VOA - Single Compound	SW-846 8260	Soil/Sediment/Waste				
VOA-A-013	VOA - All Compounds	SW-846 8260B - PREP 5035	Soil	(see VOA-A-10)			
VOA-A-014	VOA - Single Compound	SW-846 8260B - PREP 5035	Soil				
VOA-A-015	VOA Sweep (Screen)	SW-846 8260 Medium Level	Soil/Sediment	Dichlorodifluoromethane	75-71-8	1200	µg/kg
				Chloromethane	74-87-3	1200	µg/kg
				Bromomethane	74-83-9	1200	µg/kg
				Vinyl Chloride	75-01-4	1200	µg/kg
				Chloroethane	75-00-3	600	µg/kg
				Trichlorofluoromethane	75-69-4	600	µg/kg
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	600	µg/kg
				Methylene Chloride	75-09-2	600	µg/kg
				Acetone	67-64-1	1200	µg/kg
				Carbon Disulfide	75-15-0	600	µg/kg
				1,1-Dichloroethene	75-35-4	600	µg/kg
				1,1-Dichloroethane	75-34-3	600	µg/kg
				trans-1,2-Dichloroethene	156-60-5	600	µg/kg
				2,2-Dichloropropane	594-20-7	600	µg/kg
				cis-1,2-Dichloroethene	156-59-2	600	µg/kg
				Bromochloromethane	74-97-5	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chloroform	67-66-3	600	µg/kg
				1,2-Dichloroethane	107-06-2	600	µg/kg
				2-Butanone	78-93-3	1200	µg/kg
				1,1,1-Trichloroethane	71-55-6	600	µg/kg
				Carbon Tetrachloride	56-23-5	600	µg/kg
				Bromodichloromethane	75-27-4	600	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	600	µg/kg
				1,2-Dichloropropane	78-87-5	600	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	600	µg/kg
				Dibromomethane	74-95-3	600	µg/kg
				Trichloroethene	79-01-6	600	µg/kg
				Dibromochloromethane	124-48-1	600	µg/kg
				1,1,2-Trichloroethane	79-00-5	600	µg/kg
				1,1-Dichloropropene	563-58-6	600	µg/kg
				Benzene	71-43-2	600	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	600	µg/kg
				Bromoform	75-25-2	600	µg/kg
				2-Hexanone	591-78-6	1200	µg/kg
				4-Methyl-2pentanone	108-10-1	1200	µg/kg
				1,3-Dichloropropane	142-28-9	600	µg/kg
				Tetrachloroethene	127-18-4	600	µg/kg
				Toluene	108-88-3	600	µg/kg
				Chlorobenzene	108-90-7	600	µg/kg
				Ethylbenzene	100-41-4	600	µg/kg
				Styrene	100-42-5	600	µg/kg
				Xylenes (total)	1330-20-7	600	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	600	µg/kg
				1,2-Dibromoethane	106-93-4	600	µg/kg
				Isopropylbenzene	98-82-8	600	µg/kg
				Bromobenzene	108-86-1	600	µg/kg
				1,2,3-Trichloropropane	96-18-4	600	µg/kg
				n-Propylbenzene	103-65-1	600	µg/kg
				2-Chlorotoluene	95-49-8	600	µg/kg
				4-Chlorotoluene	106-43-4	600	µg/kg
				1,3,5-Trimethylbenzene	108-67-8	600	µg/kg
				tert-Butylbenzene	98-06-6	600	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				1,2,4-Trimethylbenzene	95-63-6	600	µg/kg
				sec-Butylbenzene	135-98-8	600	µg/kg
				m-Dichlorobenzene	541-73-1	600	µg/kg
				4-Isopropyltoluene	99-87-6	600	µg/kg
				p-Dichlorobenzene	106-46-7	600	µg/kg
				o-Dichlorobenzene	95-50-1	600	µg/kg
				n-Butylbenzene	104-51-8	600	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	600	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	600	µg/kg
				Hexachlorobutadiene	87-68-3	600	µg/kg
				Naphthalene	91-20-3	600	µg/kg
				1,2,3-Trichlorobenzene	87-61-6	600	µg/kg
VOA-A-016	VOA (TCLP Extraction + Analysis)	SW-846 1311/8260	TCLP Extracts	Vinyl Chloride	75-01-4	50	µg/L
				1,1-Dichloroethene	75-35-4	50	µg/L
				Chloroform	67-66-3	50	µg/L
				1,2-Dichloroethane	107-06-2	50	µg/L
				2-Butanone	78-93-3	50	µg/L
				Carbon Tetrachloride	56-23-5	50	µg/L
				Trichloroethene	79-01-6	50	µg/L
				Benzene	71-43-2	50	µg/L
				Tetrachloroethene	127-18-4	50	µg/L
				Chlorobenzene	108-90-7	50	µg/L
				p-Dichlorobenzene	106-46-7	50	µg/L
				o-Dichlorobenzene	95-50-1	50	µg/L
VOA-A-017	VOA - Nonroutine	SW-846 8260	Water	Acrolein	107-02-8	25	µg/L
				Acrylonitrile	107-13-1	25	µg/L
VOA-A-018	VOA-Acetonitrile	SW-846 8033	Water	Acetonitrile	75-05-8	25	µg/L
VOA-A-019	VOA - SW-846 Extended List	SW-846 8260	Water	n-Butyl alcohol	71-36-3	50	µg/L
				Isobutyl alcohol	78-83-1	50	µg/L
				Cyclohexanone	108-94-1	50	µg/L
				Ethyl acetate	141-78-6	50	µg/L
				Ethyl ether	60-29-7	50	µg/L
VOA-A-020	VOA - SW-846 Extended List	SW-846 8260	Soil/Sludge/Waste	n-Butyl alcohol	71-36-3	50	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Isobutyl alcohol	78-83-1	50	µg/kg
				Cyclohexanone	108-94-1	50	µg/kg
				Ethyl acetate	141-78-6	50	µg/kg
				Ethyl ether	60-29-7	50	µg/kg
VOA-A-021	VOA	SW-846 8015	Water	Methanol	67-56-1	25	µg/L
VOA-A-022	VOA	SW-846 8015	Soil/Sludge/Waste	Methanol	67-56-1	250	µg/kg
VOA-A-023	VOA	EPA 524.2	Water	Dichlorodifluoromethane	75-71-8	1	µg/L
				Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Vinyl Chloride	75-01-4	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				2,2-Dichloropropane	594-20-7	1	µg/L
				cis-1,2-Dichloroethene	156-59-2	1	µg/L
				Bromochloromethane	74-97-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				1,1-Dichloropropene	563-58-6	1	µg/L
				Benzene	71-43-2	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Bromoform	75-25-2	1	µg/L
				1,3-Dichloropropane	142-28-9	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				Styrene	100-42-5	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Isopropylbenzene	98-82-8	1	µg/L
				Bromobenzene	108-86-1	1	µg/L
				1,2,3-Trichloropropane	96-18-4	1	µg/L
				n-Propylbenzene	103-65-1	1	µg/L
				2-Chlorotoluene	95-49-8	1	µg/L
				4-Chlorotoluene	106-43-4	1	µg/L
				1,3,5-Trimethylbenzene	108-67-8	1	µg/L
				tert-Butylbenzene	98-06-6	1	µg/L
				1,2,4-Trimethylbenzene	95-63-6	1	µg/L
				sec-Butylbenzene	135-98-8	1	µg/L
				m-Dichlorobenzene	541-73-1	1	µg/L
				4-Isopropyltoluene	99-87-6	1	µg/L
				p-Dichlorobenzene	106-46-7	1	µg/L
				o-Dichlorobenzene	95-50-1	1	µg/L
				n-Butylbenzene	104-51-8	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	1	µg/L
				1,2,4-Trichlorobenzene	120-82-1	1	µg/L
				Hexachlorobutadiene	87-68-3	1	µg/L
				Naphthalene	91-20-3	1	µg/L
				1,2,3-Trichlorobenzene	87-61-6	1	µg/L
VOA-A-024	VOA - Single Compound	EPA 524.2	Water				
VOA-A-025	VOA	EPA 624	Water/Waste Water	Chloromethane	74-87-3	1	µg/L
				Bromomethane	74-83-9	1	µg/L
				Dichlorodifluoromethane	75-71-8	1	µg/L
				Vinyl chloride	75-01-4	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chloroethane	75-00-3	1	µg/L
				Methylene Chloride	75-09-2	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				Chloroform	67-66-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				trans-1,3-Dichloropropene	10061-02-6	1	µg/L
				2-Chloroethylvinyl ether	100-75-8	1	µg/L
				Bromoform	75-25-2	1	µg/L
				Tetrachloroethene	127-18-4	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				1,3-Dichlorobenzene	541-73-1	1	µg/L
				1,2-Dichlorobenzene	95-50-1	1	µg/L
				Benzene	71-43-2	1	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				1,4-Dichlorobenzene	106-46-7	1	µg/L
VOA-A-026	VOA - Single Compound	EPA 624	Water/Waste Water				
VOA-A-027	VOA - Appendix IX	SW-846	Water/Waste Water	Acetone	67-64-1	10	µg/L
				Acetonitrile	75-5-8	20	µg/L
				Acrolein	107-2-8	5	µg/L
				Acrylonitrile	107-13-1	1	µg/L
				Allyl chloride	107-5-1	5	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Benzene	71-43-2	1	µg/L
				Bromodichloromethane	75-27-4	1	µg/L
				Bromoform	75-25-2	2	µg/L
				Bromomethane	74-83-9	1	µg/L
				2- Butanone (Methyl ethyl ketone)	78-93-3	10	µg/L
				Carbon Disulfide	75-15-0	5	µg/L
				Carbon Tetrachloride	56-23-5	1	µg/L
				Chlorobenzene	108-90-7	1	µg/L
				Chloroethane	75-00-3	1	µg/L
				Chloroform	67-66-3	1	µg/L
				Chloromethane	74-87-3	5	µg/L
				Chloroprene	126-99-8	5	µg/L
				Dibromochloromethane	124-48-1	1	µg/L
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L
				1,2-Dibromoethane	106-93-4	1	µg/L
				Dibromomethane	74-95-3	1	µg/L
				trans-1-4-Dichlor-2-butene	110-57-6	5	µg/L
				Dichlorodifluoromethane	75-71-8	5	µg/L
				1,1-Dichloroethane	75-34-3	1	µg/L
				1,2-Dichloroethane	107-06-2	1	µg/L
				1,1-Dichloroethene	75-35-4	1	µg/L
				trans-1,2-Dichloroethene	156-60-5	1	µg/L
				1,2-Dichloropropane	78-87-5	1	µg/L
				cis-1,3-Dichloropropene	10061-01-5	5	µg/L
				trans-1,3-Dichloropropene	10061-02-6	5	µg/L
				Ethylbenzene	100-41-4	1	µg/L
				2-Hexanone	591-78-6	10	µg/L
				Isobutyl Alcohol	98-82-8	10	µg/L
				Methlyacrylonitrile	126-98-7	1	µg/L
				Methyl Iodide	74-88-4	5	µg/L
				Methyl isobutyl ketone	108-10-1	10	µg/L
				Methyl methacrylate	80-62-6	2	µg/L
				Propionitrile	107-12-0	5	µg/L
				Styrene	100-42-5	1	µg/L
				1,1,1,2-Tetrachloroethane	630-20-6	1	µg/L
				1,1,2,2-Tetrachloroethane	79-34-5	1	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Tetrachloroethene	127-18-4	1	µg/L
				Toluene	108-88-3	1	µg/L
				1,1,1-Trichloroethane	71-55-6	1	µg/L
				1,1,2-Trichloroethane	79-00-5	1	µg/L
				Trichloroethene	79-01-6	1	µg/L
				Trichlorofluoromethane	75-69-4	1	µg/L
				1,2,3-Trichloropropane	96-18-4	4	µg/L
				Vinyl Acetate	108-5-4	5	µg/L
				Vinyl Chloride	75-01-4	1	µg/L
				Xylenes (total)	1330-20-7	1	µg/L
VOA-A-028	VOA - Appendix IX	SW-846	Soil/Solid	Acetone	67-64-1	100	µg/kg
				Acetonitrile	75-5-8	100	µg/kg
				Acrolein	107-2-8	5	µg/kg
				Acrylonitrile	107-13-1	5	µg/kg
				Allyl chloride	107-5-1	5	µg/kg
				Benzene	71-43-2	5	µg/kg
				Bromodichloromethane	75-27-4	5	µg/kg
				Bromoform	75-25-2	5	µg/kg
				Bromomethane	74-83-9	5	µg/kg
				2- Butanone (Methyl ethyl ketone)	78-93-3	100	µg/kg
				Carbon Disulfide	75-15-0	5	µg/kg
				Carbon Tetrachloride	56-23-5	5	µg/kg
				Chlorobenzene	108-90-7	5	µg/kg
				Chloroethane	75-00-3	5	µg/kg
				Chloroform	67-66-3	5	µg/kg
				Chloromethane	74-87-3	5	µg/kg
				Chloroprene	126-99-8	5	µg/kg
				Dibromochloromethane	124-48-1	5	µg/kg
				1,2-Dibromo-3-chloropropane	96-12-8	5	µg/kg
				1,2-Dibromoethane	106-93-4	5	µg/kg
				Dibromomethane	74-95-3	5	µg/kg
				trans-1-4-Dichlor-2-butene	110-57-6	5	µg/kg
				Dichlorodifluoromethane	75-71-8	5	µg/kg
				1,1-Dichloroethane	75-34-3	5	µg/kg
				1,2-Dichloroethane	107-06-2	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				1,1-Dichloroethene	75-35-4	5	µg/kg
				trans-1,2-Dichloroethene	156-60-5	5	µg/kg
				1,2-Dichloropropane	78-87-5	5	µg/kg
				cis-1,3-Dichloropropene	10061-01-5	5	µg/kg
				trans-1,3-Dichloropropene	10061-02-6	5	µg/kg
				Ethylbenzene	100-41-4	5	µg/kg
				2-Hexanone	591-78-6	50	µg/kg
				Isobutyl Alcohol	98-82-8	50	µg/kg
				Methlyacrylonitrile	126-98-7	100	µg/kg
				Methyl Iodide	74-88-4	5	µg/kg
				Methyl isobutyl ketone	108-10-1	50	µg/kg
				Methyl methacrylate	80-62-6	5	µg/kg
				Propionitrile	107-12-0	5	µg/kg
				Styrene	100-42-5	5	µg/kg
				1,1,1,2-Tetrachloroethane	630-20-6	5	µg/kg
				1,1,2,2-Tetrachloroethane	79-34-5	5	µg/kg
				Tetrachloroethene	127-18-4	5	µg/kg
				Toluene	108-88-3	5	µg/kg
				1,1,1-Trichloroethane	71-55-6	5	µg/kg
				1,1,2-Trichloroethane	79-00-5	5	µg/kg
				Trichloroethene	79-01-6	5	µg/kg
				Trichlorofluoromethane	75-69-4	5	µg/kg
				1,2,3-Trichloropropane	96-18-4	5	µg/kg
				Vinyl Acetate	108-5-4	5	µg/kg
				Vinyl Chloride	75-01-4	5	µg/kg
				Xylenes (total)	1330-20-7	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
SVO-A-001	Semi-Volatile Organics	CLP-SOW	Water/Waste Water	1,2,4-Trichlorobenzene	120-82-1	10	µg/L
				1,2-Dichlorobenzene	95-50-1	10	µg/L
				1,3-Dichlorobenzene	541-73-1	10	µg/L
				1,4-Dichlorobenzene	106-46-7	10	µg/L
				2,2'-oxybis(1-Chloropropane)	108-60-1	10	µg/L
				2,4,5-Trichlorophenol	95-95-4	50	µg/L
				2,4,6-Trichlorophenol	88-06-2	10	µg/L
				2,4-Dichlorophenol	120-83-2	10	µg/L
				2,4-Dimethylphenol	105-67-9	10	µg/L
				2,4-Dinitrophenol	51-28-5	50	µg/L
				2,4-Dinitrotoluene	121-14-2	10	µg/L
				2,6-Dinitrotoluene	606-20-2	10	µg/L
				2-Chloronaphthalene	91-58-7	10	µg/L
				2-Chlorophenol	95-57-8	10	µg/L
				2-Methylnaphthalene	91-57-6	10	µg/L
				2-Methylphenol	95-48-7	10	µg/L
				2-Nitroaniline	88-74-4	50	µg/L
				2-Nitrophenol	88-75-5	10	µg/L
				3,3'-Dichlorobenzidine	91-94-1	10	µg/L
				3-Nitroaniline	99-09-2	50	µg/L
				4,6-Dinitro-2-methylphenol	534-52-1	50	µg/L
				4-Bromophenyl-phenylether	101-55-3	10	µg/L
				4-Chloro-3-methylphenol	59-50-7	10	µg/L
				4-Chloroaniline	106-47-8	10	µg/L
				4-Chlorophenyl-phenyl ether	7005-72-3	10	µg/L
				4-Methylphenol	106-44-5	10	µg/L
				4-Nitroaniline	100-01-6	50	µg/L
				4-Nitrophenol	100-02-7	50	µg/L
				Acenaphthene	83-32-9	10	µg/L
				Acenaphthylene	208-96-8	10	µg/L
				Anthracene	120-12-7	10	µg/L
				Benzo(a)anthracene	56-55-3	10	µg/L
				Benzo(a)pyrene	50-32-8	10	µg/L
				Benzo(b)fluoranthene	205-99-2	10	µg/L
				Benzo(g,h,i)perylene	191-24-2	10	µg/L
				Benzo(k)fluoranthene	207-08-9	10	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				bis(2-Chloroethoxy) methane	111-91-1	10	µg/L
				bis(2-Chloroethyl) ether	111-44-4	10	µg/L
				bis(2-ethylhexyl)phthalate	117-81-7	10	µg/L
				Butylbenzylphthalate	85-68-7	10	µg/L
				Carbazole	86-74-8	10	µg/L
				Chrysene	218-01-9	10	µg/L
				Dibenz(a,h)anthracene	53-70-3	10	µg/L
				Dibenzofuran	132-64-9	10	µg/L
				Diethylphthalate	84-66-2	10	µg/L
				Dimethylphthalate	131-11-3	10	µg/L
				Di-n-butylphthalate	84-74-2	10	µg/L
				Di-n-octylphthalate	117-84-0	10	µg/L
				Fluoranthene	206-44-0	10	µg/L
				Fluorene	86-73-7	10	µg/L
				Hexachlorobenzene	118-74-1	10	µg/L
				Hexachlorobutadiene	87-68-3	10	µg/L
				Hexachlorocyclopentadiene	77-47-4	10	µg/L
				Hexachloroethane	67-72-1	10	µg/L
				Indeno(1,2,3-cd)pyrene	193-39-5	10	µg/L
				Isophorone	78-59-1	10	µg/L
				Naphthalene	91-20-3	10	µg/L
				Nitrobenzene	98-95-3	10	µg/L
				N-Nitroso-di-n-propylamine	621-64-7	10	µg/L
				N-nitrosodiphenylamine	86-30-6	10	µg/L
				Pentachlorophenol	87-86-5	50	µg/L
				Phenanthrene	85-01-8	10	µg/L
				Phenol	108-95-27	10	µg/L
				Pyrene	129-00-0	10	µg/L
SVO-A-002	SVOA - *Single Compound*	CLP-SOW	Water/ Waste Water				
SVO-A-003	Semi-Volatile Organics	CLP-SOW - Soil Method	Soil/Sediment	1,2,4-Trichlorobenzene	120-82-1	330	µg/kg
				1,2-Dichlorobenzene	95-50-1	330	µg/kg
				1,3-Dichlorobenzene	541-73-1	330	µg/kg
				1,4-Dichlorobenzene	106-46-7	330	µg/kg
				2,2'-oxybis(1-Chloropropane)	108-60-1	330	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2,4,5-Trichlorophenol	95-95-4	1600	µg/kg
				2,4,6-Trichlorophenol	88-06-2	330	µg/kg
				2,4-Dichlorophenol	120-83-2	330	µg/kg
				2,4-Dimethylphenol	105-67-9	330	µg/kg
				2,4-Dinitrophenol	51-28-5	1600	µg/kg
				2,4-Dinitrotoluene	121-14-2	330	µg/kg
				2,6-Dinitrotoluene	606-20-2	330	µg/kg
				2-Chloronaphthalene	91-58-7	330	µg/kg
				2-Chlorophenol	95-57-8	330	µg/kg
				2-Methylnaphthalene	91-57-6	330	µg/kg
				2-Methylphenol	95-48-7	330	µg/kg
				2-Nitroaniline	88-74-4	1600	µg/kg
				2-Nitrophenol	88-75-5	330	µg/kg
				3,3'-Dichlorobenzidine	91-94-1	330	µg/kg
				3-Nitroaniline	99-09-2	1600	µg/kg
				4,6-Dinitro-2-methylphenol	534-52-1	1600	µg/kg
				4-Bromophenyl-phenylether	101-55-3	330	µg/kg
				4-Chloro-3-methylphenol	59-50-7	330	µg/kg
				4-Chloroaniline	106-47-8	330	µg/kg
				4-Chlorophenyl-phenyl ether	7005-72-3	330	µg/kg
				4-Methylphenol	106-44-5	330	µg/kg
				4-Nitroaniline	100-01-6	1600	µg/kg
				4-Nitrophenol	100-02-7	1600	µg/kg
				Acenaphthene	83-32-9	330	µg/kg
				Acenaphthylene	208-96-8	330	µg/kg
				Anthracene	120-12-7	330	µg/kg
				Benzo(a)anthracene	56-55-3	330	µg/kg
				Benzo(a)pyrene	50-32-8	330	µg/kg
				Benzo(b)fluoranthene	205-99-2	330	µg/kg
				Benzo(g,h,i)perylene	191-24-2	330	µg/kg
				Benzo(k)fluoranthene	207-08-9	330	µg/kg
				bis(2-Chloroethoxy) methane	111-91-1	330	µg/kg
				bis(2-Chloroethyl) ether	111-44-4	330	µg/kg
				bis(2-ethylhexyl)phthalate	117-81-7	330	µg/kg
				Butylbenzylphthalate	85-68-7	330	µg/kg
				Carbazole	86-74-8	330	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chrysene	218-01-9	330	µg/kg
				Dibenz(a,h)anthracene	53-70-3	330	µg/kg
				Dibenzofuran	132-64-9	330	µg/kg
				Diethylphthalate	84-66-2	330	µg/kg
				Dimethylphthalate	131-11-3	330	µg/kg
				Di-n-butylphthalate	84-74-2	330	µg/kg
				Di-n-octylphthalate	117-84-0	330	µg/kg
				Fluoranthene	206-44-0	330	µg/kg
				Fluorene	86-73-7	330	µg/kg
				Hexachlorobenzene	118-74-1	330	µg/kg
				Hexachlorobutadiene	87-68-3	330	µg/kg
				Hexachlorocyclopentadiene	77-47-4	330	µg/kg
				Hexachloroethane	67-72-1	330	µg/kg
				Indeno(1,2,3-cd)pyrene	193-39-5	330	µg/kg
				Isophorone	78-59-1	330	µg/kg
				Naphthalene	91-20-3	330	µg/kg
				Nitrobenzene	98-95-3	330	µg/kg
				N-Nitroso-di-n-propylamine	621-64-7	330	µg/kg
				N-nitrosodiphenylamine	86-30-6	330	µg/kg
				Pentachlorophenol	87-86-5	1600	µg/kg
				Phenanthrene	85-01-8	330	µg/kg
				Phenol	108-95-27	330	µg/kg
				Pyrene	129-00-0	330	µg/kg
SVO-A-004	SVOA - Single Compound	CLP-SOW - Soil Method	Soil/Sediment				
SVO-A-005	Semi-Volatile Organics	SW-846 8270B	Water/Waste Water	1,2,4-Trichlorobenzene	120-82-1	10	µg/L
				1,2-Dichlorobenzene	95-50-1	10	µg/L
				1,3-Dichlorobenzene	541-73-1	10	µg/L
				1,4-Dichlorobenzene	106-46-7	10	µg/L
				2,4,5-Trichlorophenol	95-95-4	10	µg/L
				2,4,6-Trichlorophenol	88-06-2	10	µg/L
				2,4-Dichlorophenol	120-83-2	10	µg/L
				2,4-Dimethylphenol	105-67-9	10	µg/L
				2,4-Dinitrophenol	51-28-5	50	µg/L
				2,4-Dinitrotoluene	121-14-2	10	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2,6-Dinitrotoluene	606-20-2	10	µg/L
				2-Chloronaphthalene	91-58-7	10	µg/L
				2-Chlorophenol	95-57-8	10	µg/L
				2-Methylnaphthalene	91-57-6	10	µg/L
				2-Methylphenol	95-48-7	10	µg/L
				2-Nitroaniline	88-74-4	50	µg/L
				2-Nitrophenol	88-75-5	10	µg/L
				3,3'-Dichlorobenzidine	91-94-1	20	µg/L
				3-Nitroaniline	99-09-2	50	µg/L
				4,6-Dinitro-2-methylphenol	534-52-1	50	µg/L
				4-Bromophenyl-phenylether	101-55-3	10	µg/L
				4-Chloro-3-methylphenol	59-50-7	20	µg/L
				4-Chloroaniline	106-47-8	20	µg/L
				4-Chlorophenyl-phenyl ether	7005-72-3	10	µg/L
				4-Methylphenol	106-44-5	10	µg/L
				4-Nitroaniline	100-01-6	50	µg/L
				4-Nitrophenol	100-02-7	50	µg/L
				Acenaphthene	83-32-9	10	µg/L
				Acenaphthylene	208-96-8	10	µg/L
				Anthracene	120-12-7	10	µg/L
				Benyzl Alcohol	100-51-6	20	µg/L
				Benzo(a)anthracene	56-55-3	10	µg/L
				Benzo(a)pyrene	50-32-8	10	µg/L
				Benzo(b)fluoranthene	205-99-2	10	µg/L
				Benzo(g,h,i)perylene	191-24-2	10	µg/L
				Benzo(k)fluoranthene	207-08-9	10	µg/L
				Benzoic Acid	65-85-0	50	µg/L
				bis(2-Chloroethoxy) methane	111-91-1	10	µg/L
				bis(2-Chloroethyl) ether	111-44-4	10	µg/L
				bis(2-Chloroisopropyl) ether	39638-32-9	10	µg/L
				bis(2-ethylhexyl)phthalate	117-81-7	10	µg/L
				Butylbenzylphthalate	85-68-7	10	µg/L
				Chrysene	218-01-9	10	µg/L
				Dibenz(a,h)anthracene	53-70-3	10	µg/L
				Dibenzofuran	132-64-9	10	µg/L
				Diethylphthalate	84-66-2	10	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Dimethylphthalate	131-11-3	10	µg/L
				Di-n-butylphthalate	84-74-2	10	µg/L
				Di-n-octylphthalate	117-84-0	10	µg/L
				Fluoranthene	206-44-0	10	µg/L
				Fluorene	86-73-7	10	µg/L
				Hexachlorobenzene	118-74-1	10	µg/L
				Hexachlorobutadiene	87-68-3	10	µg/L
				Hexachlorocyclopentadiene	77-47-4	10	µg/L
				Hexachloroethane	67-72-1	10	µg/L
				Indeno(1,2,3-cd)pyrene	193-39-5	10	µg/L
				Isophorone	78-59-1	10	µg/L
				Naphthalene	91-20-3	10	µg/L
				Nitrobenzene	98-95-3	10	µg/L
				N-Nitroso-di-n-propylamine	621-64-7	10	µg/L
				N-nitrosodiphenylamine	86-30-6	10	µg/L
				Pentachlorophenol	87-86-5	50	µg/L
				Phenanthrene	85-01-8	10	µg/L
				Phenol	108-95-27	10	µg/L
				Pyrene	129-00-0	10	µg/L
				Tributyl Phosphate	126-73-8	100	µg/L
SVO-A-006	SVOA - Single Compound	SW-846 8270B	Water/Waste Water				
SVO-A-007	Semi-Volatile Organics	SW-846 8270B	Soil/Sediment	1,2,4-Trichlorobenzene	120-82-1	660	µg/kg
				1,2-Dichlorobenzene	95-50-1	660	µg/kg
				1,3-Dichlorobenzene	541-73-1	660	µg/kg
				1,4-Dichlorobenzene	106-46-7	660	µg/kg
				2,4,5-Trichlorophenol	95-95-4	660	µg/kg
				2,4,6-Trichlorophenol	88-06-2	660	µg/kg
				2,4-Dichlorophenol	120-83-2	660	µg/kg
				2,4-Dimethylphenol	105-67-9	660	µg/kg
				2,4-Dinitrophenol	51-28-5	3300	µg/kg
				2,4-Dinitrotoluene	121-14-2	660	µg/kg
				2,6-Dinitrotoluene	606-20-2	660	µg/kg
				2-Chloronaphthalene	91-58-7	660	µg/kg
				2-Chlorophenol	95-57-8	660	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2-Methylnaphthalene	91-57-6	660	µg/kg
				2-Methylphenol	95-48-7	660	µg/kg
				2-Nitroaniline	88-74-4	3300	µg/kg
				2-Nitrophenol	88-75-5	660	µg/kg
				3,3'-Dichlorobenzidine	91-94-1	1300	µg/kg
				3-Nitroaniline	99-09-2	3300	µg/kg
				4,6-Dinitro-2-methylphenol	534-52-1	3300	µg/kg
				4-Bromophenyl-phenylether	101-55-3	660	µg/kg
				4-Chloro-3-methylphenol	59-50-7	1300	µg/kg
				4-Chloroaniline	106-47-8	1300	µg/kg
				4-Chlorophenyl-phenyl ether	7005-72-3	660	µg/kg
				4-Methylphenol	106-44-5	660	µg/kg
				4-Nitroaniline	100-01-6	3300	µg/kg
				4-Nitrophenol	100-02-7	3300	µg/kg
				Acenaphthene	83-32-9	660	µg/kg
				Acenaphthylene	208-96-8	660	µg/kg
				Anthracene	120-12-7	660	µg/kg
				Benyzl Alcohol	100-51-6	1300	µg/kg
				Benzo(a)anthracene	56-55-3	660	µg/kg
				Benzo(a)pyrene	50-32-8	660	µg/kg
				Benzo(b)fluoranthene	205-99-2	660	µg/kg
				Benzo(g,h,i)perylene	191-24-2	660	µg/kg
				Benzo(k)fluoranthene	207-08-9	660	µg/kg
				Benzoic Acid	65-85-0	3300	µg/kg
				bis(2-Chloroethoxy) methane	111-91-1	660	µg/kg
				bis(2-Chloroethyl) ether	111-44-4	660	µg/kg
				bis(2-Chloroisopropyl) ether	39638-32-9	660	µg/kg
				bis(2-ethylhexyl)phthalate	117-81-7	660	µg/kg
				Butylbenzylphthalate	85-68-7	660	µg/kg
				Chrysene	218-01-9	660	µg/kg
				Dibenz(a,h)anthracene	53-70-3	660	µg/kg
				Dibenzofuran	132-64-9	660	µg/kg
				Diethylphthalate	84-66-2	660	µg/kg
				Dimethylphthalate	131-11-3	660	µg/kg
				Di-n-butylphthalate	84-74-2	660	µg/kg
				Di-n-octylphthalate	117-84-0	660	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Fluoranthene	206-44-0	660	µg/kg
				Fluorene	86-73-7	660	µg/kg
				Hexachlorobenzene	118-74-1	660	µg/kg
				Hexachlorobutadiene	87-68-3	660	µg/kg
				Hexachlorocyclopentadiene	77-47-4	660	µg/kg
				Hexachloroethane	67-72-1	660	µg/kg
				Indeno(1,2,3-cd)pyrene	193-39-5	660	µg/kg
				Isophorone	78-59-1	660	µg/kg
				Naphthalene	91-20-3	660	µg/kg
				Nitrobenzene	98-95-3	660	µg/kg
				N-Nitroso-di-n-propylamine	621-64-7	660	µg/kg
				N-nitrosodiphenylamine	86-30-6	660	µg/kg
				Pentachlorophenol	87-86-5	3300	µg/kg
				Phenanthrene	85-01-8	660	µg/kg
				Phenol	108-95-27	660	µg/kg
				Pyrene	129-00-0	660	µg/kg
				Tributyl Phosphate	126-73-8	3300	µg/kg
SVO-A-008	SVOA - Single Compound	SW-846 8270B	Soil/Sediment				
SVO-A-009	SVOA-Appendix IX	SW-846 8270B	Water/Waste Water	Acenaphthene	83-32-9	10	µg/L
				Acenaphthylene	208-96-8	10	µg/L
				Acetophenone	98-86-2	10	µg/L
				2-Acetylaminofluorene; 2-AAF	53-96-3	20	µg/L
				4-Aminobiphenyl	92-67-1	20	µg/L
				Anthracene	120-12-7	10	µg/L
				Aramite	140-57-8	20	µg/L
				Benzo[a]anthracene	56-55-3	10	µg/L
				Benzo[b]fluoranthene	205-99-2	10	µg/L
				Benzo[k]fluoranthene	207-08-9	10	µg/L
				Benzo[ghi]perylene	191-24-2	10	µg/L
				Benzo[a]pyrene	50-32-8	10	µg/L
				Benzyl alcohol	100-51-6	20	µg/L
				4-Bromophenyl phenyl ether	101-55-3	10	µg/L
				Butylbenzylphthalate	85-68-7	10	µg/L
				4-Chloroaniline	106-47-8	20	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chlorobenzilate	510-15-6	10	µg/L
				p-Chloro-m-cresol	59-50-7	20	µg/L
				2-Chloronaphthalene	91-58-7	10	µg/L
				2-Chlorophenol	95-57-8	10	µg/L
				4-Chlorophenyl phenyl ether	7005-72-3	10	µg/L
				Chrysene	218-01-9	10	µg/L
				Diallate	2303-16-4	10	µg/L
				Dibenz[a,h]anthracene	53-70-3	10	µg/L
				Dibenzofuran	132-64-9	10	µg/L
				Di-n-butyl phthalate	84-74-2	10	µg/L
				o-Dichlorobenzene	95-50-1	10	µg/L
				m-Dichlorobenzene	541-73-1	10	µg/L
				p-Dichlorobenzene	106-46-7	10	µg/L
				3,3'-Dichlorobenzidine	91-94-1	20	µg/L
				2,4-Dichlorophenol	120-83-2	10	µg/L
				2,6-Dichlorophenol	87-65-0	10	µg/L
				Diethyl phthalate	84-66-2	10	µg/L
				lO,O-Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	ND	µg/L
				Dimethoate	60-51-5	20	µg/L
				p-(Dimethylamino)azobenzene	60-11-7	10	µg/L
				7,12-Dimethylbenz[a]anthracene	57-97-6	10	µg/L
				3,3'-Dimethylbenzidine	119-93-7	10	µg/L
				alpha, alpha-Dimethylphenethylamine	122-09-8	ND	µg/L
				2,4-Dimethylphenol	105-67-9	10	µg/L
				Dimethyl phthalate	131-11-3	10	µg/L
				m-Dinitrobenzene	99-65-0	20	µg/L
				4,6-Dinitro-o-cresol	534-52-1	50	µg/L
				2,4-Dinitrophenol	51-28-5	50	µg/L
				2,4-Dinitrotoluene	121-14-2	10	µg/L
				2,6-Dinitrotoluene	606-20-2	10	µg/L
				Di-n-octyl phthalate	117-84-0	10	µg/L
				Diphenylamine	122-39-4	50	µg/L
				Disulfoton	298-04-4	10	µg/L
				Ethyl methanesulfonate	62-50-0	20	µg/L
				Famphur	52-85-7	20	µg/L
				Fluoranthene	206-44-0	10	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Fluorene	86-73-7	10	µg/L
				Hexachlorobenzene	118-74-1	10	µg/L
				Hexachlorobutadiene	87-68-3	10	µg/L
				Hexachlorocyclopentadiene	77-47-4	10	µg/L
				Hexachloroethane	67-72-1	10	µg/L
				Hexachlorophene	70-30-4	50	µg/L
				Hexachloropropene	1888-71-7	10	µg/L
				Indeno(1,2,3-cd)pyrene	193-39-5	10	µg/L
				Isodrin	465-73-6	20	µg/L
				Isophorone	78-59-1	10	µg/L
				Isosafrole	120-58-1	10	µg/L
				Kepone	143-50-0	20	µg/L
				Methapyrilene	91-80-5	100	µg/L
				3-Methylcholanthrene	56-49-5	10	µg/L
				Methyl methanesulfonate	66-27-3	10	µg/L
				2-Methylnaphthalene	91-57-6	10	µg/L
				Methyl parathion; Parathion methyl	298-00-0	10	µg/L
				Naphthalene	91-20-3	10	µg/L
				1,4-Naphthoquinone	130-15-4	10	µg/L
				1-Naphthylamine	134-32-7	10	µg/L
				2-Naphthylamine	91-59-8	10	µg/L
				o-Nitroaniline	88-74-4	50	µg/L
				m-Nitroaniline	99-09-2	50	µg/L
				p-Nitroaniline	100-01-6	50	µg/L
				Nitrobenzene	98-95-3	10	µg/L
				o-Nitrophenol	88-75-5	10	µg/L
				p-Nitrophenol	100-02-7	50	µg/L
				4-Nitroquinoline 1-oxide	56-57-5	40	µg/L
				N-Nitrosodi-n-butylamine	924-16-3	10	µg/L
				N-Nitrosodiethylamine	55-18-5	20	µg/L
				N-Nitrosodimethylamine	62-75-9	ND	µg/L
				N-Nitrosodiphenylamine	86-30-6	10	µg/L
				N-Nitrosodipropylamine; Di-n-propylnitrosamine	621-64-7	10	µg/L
				N-Nitrosomethylethylamine	10595-95-6	ND	µg/L
				N-Nitrosomorpholine	59-89-2	ND	µg/L
				N-Nitrosopiperidine	100-75-4	20	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				N-Nitrosopyrrolidine	930-55-2	40	µg/L
				5-Nitro-o-toluidine	99-55-8	10	µg/L
				Parathion	56-38-2	10	µg/L
				Pentachlorobenzene	608-93-5	10	µg/L
				Pentachloronitrobenzene	82-68-8	20	µg/L
				Pentachlorophenol	87-86-5	50	µg/L
				Phenacetin	62-44-2	20	µg/L
				Phenanthrene	85-01-8	10	µg/L
				Phenol	108-95-2	10	µg/L
				p-Phenylenediamine	106-50-3	10	µg/L
				Phorate	298-02-2	10	µg/L
				2-Picoline	109-06-8	ND	µg/L
				Pronamide	23950-58-5	10	µg/L
				Pyrene	129-00-0	10	µg/L
				Safrole	94-59-7	10	µg/L
				1,2,4,5-Tetrachlorobenzene	95-94-3	10	µg/L
				2,3,4,6-Tetrachlorophenol	58-90-2	10	µg/L
				Tetraethyl dithiopyrophosphate; Sulfotepp	3689-24-5	40	µg/L
				o-Toluidine	95-53-4	10	µg/L
				1,2,4-Trichlorobenzene	120-82-1	10	µg/L
				2,4,5-Trichlorophenol	95-95-4	10	µg/L
				2,4,6-Trichlorophenol	88-06-2	10	µg/L
				O,O,O-Triethyl phosphorothioate	126-68-1	ND	µg/L
				sym-Trinitrobenzene	99-35-4	10	µg/L
SVO-A-010	SVOA - APP. IX - Single Compound	SW-846 8270B	Water/Waste Water				
SVO-A-011	SVOA-Appendix IX	SW-846 8270B	Soil/Sediment/Waste	Acenaphthene	83-32-9	660	µg/kg
				Acenaphthylene	208-96-8	660	µg/kg
				Acetophenone	98-86-2	ND	µg/kg
				2-Acetylaminofluorene; 2-AAF	53-96-3	ND	µg/kg
				4-Aminobiphenyl	92-67-1	ND	µg/kg
				Anthracene	120-12-7	660	µg/kg
				Aramite	140-57-8	ND	µg/kg
				Benzo[a]anthracene	56-55-3	660	µg/kg
				Benzo[b]fluoranthene	205-99-2	660	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Benzo[k]fluoranthene	207-08-9	660	µg/kg
				Benzo[ghi]perylene	191-24-2	660	µg/kg
				Benzo[a]pyrene	50-32-8	660	µg/kg
				Benzyl alcohol	100-51-6	1300	µg/kg
				4-Bromophenyl phenyl ether	101-55-3	660	µg/kg
				Butylbenzylphthalate	85-68-7	660	µg/kg
				4-Chloroaniline	106-47-8	1300	µg/kg
				Chlorobenzilate	510-15-6	ND	µg/kg
				p-Chloro-m-cresol	59-50-7	1300	µg/kg
				2-Chloronaphthalene	91-58-7	660	µg/kg
				2-Chlorophenol	95-57-8	660	µg/kg
				4-Chlorophenyl phenyl ether	7005-72-3	660	µg/kg
				Chrysene	218-01-9	660	µg/kg
				Diallate	2303-16-4	ND	µg/kg
				Dibenz[a,h]anthracene	53-70-3	660	µg/kg
				Dibenzofuran	132-64-9	660	µg/kg
				Di-n-butyl phthalate	84-74-2	ND	µg/kg
				o-Dichlorobenzene	95-50-1	660	µg/kg
				m-Dichlorobenzene	541-73-1	660	µg/kg
				p-Dichlorobenzene	106-46-7	660	µg/kg
				3,3'-Dichlorobenzidine	91-94-1	1300	µg/kg
				2,4-Dichlorophenol	120-83-2	660	µg/kg
				2,6-Dichlorophenol	87-65-0	ND	µg/kg
				Diethyl phthalate	84-66-2	660	µg/kg
				lO,O-Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	ND	µg/kg
				Dimethoate	60-51-5	ND	µg/kg
				p-(Dimethylamino)azobenzene	60-11-7	ND	µg/kg
				7,12-Dimethylbenz[a]anthracene	57-97-6	ND	µg/kg
				3,3'-Dimethylbenzidine	119-93-7	ND	µg/kg
				alpha, alpha-Dimethylphenethylamine	122-09-8	ND	µg/kg
				2,4-Dimethylphenol	105-67-9	660	µg/kg
				Dimethyl phthalate	131-11-3	660	µg/kg
				m-Dinitrobenzene	99-65-0	ND	µg/kg
				4,6-Dinitro-o-cresol	534-52-1	3300	µg/kg
				2,4-Dinitrophenol	51-28-5	3300	µg/kg
				2,4-Dinitrotoluene	121-14-2	660	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2,6-Dinitrotoluene	606-20-2	660	µg/kg
				Di-n-octyl phthalate	117-84-0	660	µg/kg
				Diphenylamine	122-39-4	ND	µg/kg
				Disulfoton	298-04-4	ND	µg/kg
				Ethyl methanesulfonate	62-50-0	ND	µg/kg
				Famphur	52-85-7	ND	µg/kg
				Fluoranthene	206-44-0	660	µg/kg
				Fluorene	86-73-7	660	µg/kg
				Hexachlorobenzene	118-74-1	660	µg/kg
				Hexachlorobutadiene	87-68-3	660	µg/kg
				Hexachlorocyclopentadiene	77-47-4	660	µg/kg
				Hexachloroethane	67-72-1	660	µg/kg
				Hexachlorophene	70-30-4	ND	µg/kg
				Hexachloropropene	1888-71-7	ND	µg/kg
				Indeno(1,2,3-cd)pyrene	193-39-5	660	µg/kg
				Isodrin	465-73-6	ND	µg/kg
				Isophorone	78-59-1	660	µg/kg
				Isosafrole	120-58-1	ND	µg/kg
				Kepone	143-50-0	ND	µg/kg
				Methapyrilene	91-80-5	ND	µg/kg
				3-Methylcholanthrene	56-49-5	ND	µg/kg
				Methyl methanesulfonate	66-27-3	ND	µg/kg
				2-Methylnaphthalene	91-57-6	660	µg/kg
				Methyl parathion; Parathion methyl	298-00-0	ND	µg/kg
				Naphthalene	91-20-3	660	µg/kg
				1,4-Naphthoquinone	130-15-4	ND	µg/kg
				1-Naphthylamine	134-32-7	ND	µg/kg
				2-Naphthylamine	91-59-8	ND	µg/kg
				o-Nitroaniline	88-74-4	3300	µg/kg
				m-Nitroaniline	99-09-2	3300	µg/kg
				p-Nitroaniline	100-01-6	ND	µg/kg
				Nitrobenzene	98-95-3	660	µg/kg
				o-Nitrophenol	88-75-5	660	µg/kg
				p-Nitrophenol	100-02-7	3300	µg/kg
				4-Nitroquinoline 1-oxide	56-57-5	ND	µg/kg
				N-Nitrosodi-n-butylamine	924-16-3	ND	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				N-Nitrosodiethylamine	55-18-5	ND	µg/kg
				N-Nitrosodimethylamine	62-75-9	ND	µg/kg
				N-Nitrosodiphenylamine	86-30-6	660	µg/kg
				N-Nitrosodipropylamine; Di-n-propylnitrosamine	621-64-7	660	µg/kg
				N-Nitrosomethylethylamine	10595-95-6	ND	µg/kg
				N-Nitrosomorpholine	59-89-2	ND	µg/kg
				N-Nitrosopiperidine	100-75-4	ND	µg/kg
				N-Nitrosopyrrolidine	930-55-2	ND	µg/kg
				5-Nitro-o-toluidine	99-55-8	ND	µg/kg
				Parathion	56-38-2	ND	µg/kg
				Pentachlorobenzene	608-93-5	ND	µg/kg
				Pentachloronitrobenzene	82-68-8	ND	µg/kg
				Pentachlorophenol	87-86-5	3300	µg/kg
				Phenacetin	62-44-2	ND	µg/kg
				Phenanthrene	85-01-8	660	µg/kg
				Phenol	108-95-2	660	µg/kg
				p-Phenylenediamine	106-50-3	ND	µg/kg
				Phorate	298-02-2	ND	µg/kg
				2-Picoline	109-06-8	ND	µg/kg
				Pronamide	23950-58-5	ND	µg/kg
				Pyrene	129-00-0	660	µg/kg
				Safrole	94-59-7	ND	µg/kg
				1,2,4,5-Tetrachlorobenzene	95-94-3	ND	µg/kg
				2,3,4,6-Tetrachlorophenol	58-90-2	ND	µg/kg
				Tetraethyl dithiopyrophosphate; Sulfotepp	3689-24-5	ND	µg/kg
				o-Toluidine	95-53-4	ND	µg/kg
				1,2,4-Trichlorobenzene	120-82-1	660	µg/kg
				2,4,5-Trichlorophenol	95-95-4	660	µg/kg
				2,4,6-Trichlorophenol	88-06-2	660	µg/kg
				O,O,O-Triethyl phosphorothioate	126-68-1	ND	µg/kg
				sym-Trinitrobenzene	99-35-4	ND	µg/kg
SVO-A-012	SVOA - APP. IX - Single Compound	SW-846 8270B	Soil/Sediment/Waste				
SVO-A-013	SVOA (TCLP Extraction + Analysis)	SW-846 1311/8270B	TCLP Extracts	Pyridine	110-86-1	50	µg/L
				1,4-Dichlorobenzene	106-46-7	50	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				2-Methylphenol	95-48-7	50	µg/L
				3-Methylphenol	108-39-4	50	µg/L
				4-Methylphenol	106-44-5	50	µg/L
				Hexachloroethane	67-72-1	50	µg/L
				Nitrobenzene	98-95-3	50	µg/L
				2,4,6-Trichlorophenol	88-06-2	50	µg/L
				2,4,5-Trichlorophenol	95-95-4	250	µg/L
				2,4-Dinitrotoluene	121-14-2	50	µg/L
				Hexachlorobenzene	118-74-1	50	µg/L
				Pentachlorophenol	87-86-5	250	µg/L
				Hexachlorobutadiene	87-68-3	50	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
PEP-A-001	Pesticides/PCB's	CLP SOW	Water	alpha-BHC	319-84-6	0.05	µg/L
				beta-BHC	319-85-7	0.05	µg/L
				delta-BHC	319-86-8	0.05	µg/L
				gamma-BHC (Lindane)	58-89-9	0.05	µg/L
				Heptachlor	76-44-8	0.05	µg/L
				Aldrin	309-00-2	0.05	µg/L
				Heptachlor epoxide	1024-57-3	0.05	µg/L
				Endosulfan I	959-98-8	0.05	µg/L
				Dieldrin	60-57-1	0.1	µg/L
				4,4'-DDE	72-55-9	0.1	µg/L
				Endrin	72-20-8	0.1	µg/L
				Endosulfan II	33213-65-9	0.1	µg/L
				4,4'-DDD	72-54-8	0.1	µg/L
				Endosulfan sulfate	1031-07-8	0.1	µg/L
				4,4'-DDT	50-29-3	0.1	µg/L
				Methoxychlor	72-43-5	0.5	µg/L
				Endrin ketone	53494-70-5	0.1	µg/L
				Endrin aldehyde	7421-93-4	0.1	µg/L
				alpha-Chlordane	5103-71-9	0.05	µg/L
				gamma-Chlordane	5103-74-2	0.05	µg/L
				Toxaphene	8001-35-2	5	µg/L
				Aroclor-1016	12674-11-2	1	µg/L
				Aroclor-1221	11104-28-2	2	µg/L
				Aroclor-1232	11141-16-5	1	µg/L
				Aroclor-1242	53469-21-9	1	µg/L
				Aroclor-1248	12672-29-6	1	µg/L
				Aroclor-1254	11097-69-1	1	µg/L
				Aroclor-1260	11096-82-5	1	µg/L
PEP-A-002	Pesticides/PCB's	CLP SOW	Soil	alpha-BHC	319-84-6	1.7	µg/kg
				beta-BHC	319-85-7	1.7	µg/kg
				delta-BHC	319-86-8	1.7	µg/kg
				gamma-BHC (Lindane)	58-89-9	1.7	µg/kg
				Heptachlor	76-44-8	1.7	µg/kg
				Aldrin	309-00-2	1.7	µg/kg
				Heptachlor epoxide	1024-57-3	1.7	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Endosulfan I	959-98-8	1.7	µg/kg
				Dieldrin	60-57-1	3.3	µg/kg
				4,4'-DDE	72-55-9	3.3	µg/kg
				Endrin	72-20-8	3.3	µg/kg
				Endosulfan II	33213-65-9	3.3	µg/kg
				4,4'-DDD	72-54-8	3.3	µg/kg
				Endosulfan sulfate	1031-07-8	3.3	µg/kg
				4,4'-DDT	50-29-3	3.3	µg/kg
				Methoxychlor	72-43-5	17	µg/kg
				Endrin ketone	53494-70-5	3.3	µg/kg
				Endrin aldehyde	7421-93-4	3.3	µg/kg
				alpha-Chlordane	5103-71-9	1.7	µg/kg
				gamma-Chlordane	5103-74-2	1.7	µg/kg
				Toxaphene	8001-35-2	170	µg/kg
				Aroclor-1016	12674-11-2	33	µg/kg
				Aroclor-1221	11104-28-2	67	µg/kg
				Aroclor-1232	11141-16-5	33	µg/kg
				Aroclor-1242	53469-21-9	33	µg/kg
				Aroclor-1248	12672-29-6	33	µg/kg
				Aroclor-1254	11097-69-1	33	µg/kg
				Aroclor-1260	11096-82-5	33	µg/kg
PEP-A-003	Pesticides Only	SW-846 8081A	Water	alpha-BHC	319-84-6	0.03	µg/L
				beta-BHC	319-85-7	0.06	µg/L
				delta-BHC	319-86-8	0.09	µg/L
				gamma-BHC (Lindane)	58-89-9	0.04	µg/L
				Heptachlor	76-44-8	0.03	µg/L
				Aldrin	309-00-2	0.04	µg/L
				Heptachlor epoxide	1024-57-3	0.08	µg/L
				Endosulfan I	959-98-8	0.02	µg/L
				Dieldrin	60-57-1	0.02	µg/L
				4,4'-DDE	72-55-9	0.04	µg/L
				Endrin	72-20-8	0.06	µg/L
				Endosulfan II	33213-65-9	0.04	µg/L
				4,4'-DDD	72-54-8	0.11	µg/L
				Endosulfan sulfate	1031-07-8	0.66	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				4,4'-DDT	50-29-3	0.12	µg/L
				Methoxychlor	72-43-5	1.8	µg/L
				Endrin aldehyde	7421-93-4	0.23	µg/L
				Chlordane (technical)	12789-03-6	0.14	µg/L
				Toxaphene	8001-35-2	2.5	µg/L
PEP-A-004	Pesticides Only	SW-846 8081A	Soil/Sludge/Waste	alpha-BHC	319-84-6	20	µg/kg
				beta-BHC	319-85-7	40	µg/kg
				delta-BHC	319-86-8	60	µg/kg
				gamma-BHC (Lindane)	58-89-9	27	µg/kg
				Heptachlor	76-44-8	20	µg/kg
				Aldrin	309-00-2	27	µg/kg
				Heptachlor epoxide	1024-57-3	54	µg/kg
				Endosulfan I	959-98-8	14	µg/kg
				Dieldrin	60-57-1	14	µg/kg
				4,4?-DDE	72-55-9	27	µg/kg
				Endrin	72-20-8	40	µg/kg
				Endosulfan II	33213-65-9	27	µg/kg
				4,4?-DDD	72-54-8	75	µg/kg
				Endosulfan sulfate	1031-07-8	450	µg/kg
				4,4?-DDT	50-29-3	80	µg/kg
				Methoxychlor	72-43-5	1200	µg/kg
				Endrin aldehyde	7421-93-4	155	µg/kg
				Chlordane (technical)	12789-03-6	95	µg/kg
				Toxaphene	8001-35-2	1700	µg/kg
PEP-A-005	Pesticides (TCLP Extraction + Analysis)	SW-846 1311/8081A	TCLP Extracts	alpha-BHC	319-84-6	0.3	µg/L
				beta-BHC	319-85-7	0.6	µg/L
				delta-BHC	319-86-8	0.9	µg/L
				gamma-BHC (Lindane)	58-89-9	40	µg/L
				Heptachlor	76-44-8	0.3	µg/L
				Aldrin	309-00-2	0.4	µg/L
				Heptachlor epoxide	1024-57-3	0.8	µg/L
				Endosulfan I	959-98-8	0.2	µg/L
				Dieldrin	60-57-1	0.2	µg/L
				4,4'-DDE	72-55-9	0.4	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Endrin	72-20-8	0.6	µg/L
				Endosulfan II	33213-65-9	0.4	µg/L
				4,4'-DDD	72-54-8	1.1	µg/L
				Endosulfan sulfate	1031-07-8	6.6	µg/L
				4,4'-DDT	50-29-3	1.2	µg/L
				Methoxychlor	72-43-5	18	µg/L
				Endrin aldehyde	7421-93-4	2.3	µg/L
				Chlordane (technical)	12789-03-6	1.4	µg/L
				Toxaphene	8001-35-2	25	µg/L
PEP-A-006	PCB Only	SW-846 8082	Water	Aroclor-1016	12674-11-2	0.5	µg/L
				Aroclor-1221	11104-28-2	0.5	µg/L
				Aroclor-1232	11141-16-5	0.5	µg/L
				Aroclor-1242	53469-21-9	0.5	µg/L
				Aroclor-1248	12672-29-6	0.5	µg/L
				Aroclor-1254	11097-69-1	0.5	µg/L
				Aroclor-1260	11096-82-5	0.5	µg/L
PEP-A-007	PCB Only	SW-846 8082	Soil/Sludge/Waste	Aroclor-1016	12674-11-2	350	µg/kg
				Aroclor-1221	11104-28-2	350	µg/kg
				Aroclor-1232	11141-16-5	350	µg/kg
				Aroclor-1242	53469-21-9	350	µg/kg
				Aroclor-1248	12672-29-6	350	µg/kg
				Aroclor-1254	11097-69-1	350	µg/kg
				Aroclor-1260	11096-82-5	350	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
DXF-A-001	Dioxins/Furans	SW-846 - 8280	Water/Waste Water	2378-TCDD	1746-01-6	10	ng/L
				12378-PeCDD	40321-76-4	25	ng/L
				123478-HxCDD	39227-28-6	25	ng/L
				123678-HxCDD	57653-85-7	25	ng/L
				123789-HxCDD	19408-74-3	25	ng/L
				2378-TCDF	51207-31-9	10	ng/L
				12378-PeCDF	57117-41-6	25	ng/L
				23478-PeCDF	57117-31-4	25	ng/L
				123478-HxCDF	70648-26-9	25	ng/L
				123678-HxCDF	57117-44-9	25	ng/L
				234678-HxCDF	60851-34-5	25	ng/L
				123789-HxCDF	72918-21-9	25	ng/L
				1234678-HpCDD	35822-46-9	25	ng/L
				OCDD	3268-87-9	50	ng/L
				1234678-HpCDF	67562-39-4	25	ng/L
				1234789-HpCDF	55673-89-7	25	ng/L
				OCDF	39001-02-0	50	ng/L
DXF-A-002	Dioxins/Furans	SW-846 - 8280	Soil/Sediment/Sludge/Waste	2378-TCDD	1746-01-6	1	µg/kg
				12378-PeCDD	40321-76-4	2.5	µg/kg
				123478-HxCDD	39227-28-6	2.5	µg/kg
				123678-HxCDD	57653-85-7	2.5	µg/kg
				123789-HxCDD	19408-74-3	2.5	µg/kg
				2378-TCDF	51207-31-9	1	µg/kg
				12378-PeCDF	57117-41-6	2.5	µg/kg
				23478-PeCDF	57117-31-4	2.5	µg/kg
				123478-HxCDF	70648-26-9	2.5	µg/kg
				123678-HxCDF	57117-44-9	2.5	µg/kg
				234678-HxCDF	60851-34-5	2.5	µg/kg
				123789-HxCDF	72918-21-9	2.5	µg/kg
				1234678-HpCDD	35822-46-9	2.5	µg/kg
				OCDD	3268-87-9	5	µg/kg
				1234678-HpCDF	67562-39-4	2.5	µg/kg
				1234789-HpCDF	55673-89-7	2.5	µg/kg
				OCDF	39001-02-0	5	µg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
HER-A-001	Herbicides	SW-846 8151A	Water	2,4-D	94-75-7	2.5	µg/L
				2,4-DB	94-82-6	4.5	µg/L
				2,4,5-TP (Silvex)	93-72-1	0.5	µg/L
				2,4,5-T	93-76-5	0.8	µg/L
				Dalapon	75-99-0	8	µg/L
				Dicamba	1918-00-9	1	µg/L
				Dichloroprop	120-36-5	1.5	µg/L
				Dinoseb	88-85-7	1	µg/L
				MCPA	94-74-6	100	µg/L
				MCPP	93-65-2	70	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
MET-A-001	Metals	CLP - SOW	Aqueous - RDL1	Aluminum	7429-90-5	17	µg/L
				Antimony	7440-36-0	3	µg/L
				Arsenic	7440-38-2	5	µg/L
				Barium	7440-39-3	100	µg/L
				Beryllium	7440-41-7	1	µg/L
				Cadmium	7440-43-9	1	µg/L
				Calcium	7440-70-2	5000	µg/L
				Chromium	7440-47-3	2	µg/L
				Cobalt	7440-48-4	50	µg/L
				Copper	7440-50-8	3	µg/L
				Iron	7439-89-6	100	µg/L
				Lead	7439-92-1	2	µg/L
				Lithium	7439-93-2	100	µg/L
				Magnesium	7439-95-4	5000	µg/L
				Manganese	7439-96-5	15	µg/L
				Mercury	7439-97-6	0.1	µg/L
				Molybdenum	7439-98-7	30	µg/L
				Nickel	7440-02-0	20	µg/L
				Potassium	7440-09-7	5000	µg/L
				Selenium	7782-49-2	3	µg/L
				Silver	7440-22-4	1	µg/L
				Sodium	7440-23-5	5000	µg/L
				Strontium	7440-24-6	200	µg/L
				Thallium	7440-28-0	4	µg/L
				Tin	7440-31-5	200	µg/L
				Uranium	11-09-6	NR	µg/L
				Vanadium	7440-62-2	40	µg/L
				Zinc	7440-66-6	20	µg/L
MET-A-002	Metals - Single Element	CLP - SOW	Aqueous - RDL1				
MET-A-003	Metals	CLP - SOW	Aqueous - RDL2	Aluminum	7429-90-5	200	µg/L
				Antimony	7440-36-0	60	µg/L
				Arsenic	7440-38-2	10	µg/L
				Barium	7440-39-3	100	µg/L
				Beryllium	7440-41-7	0.8	µg/L
				Cadmium	7440-43-9	5	µg/L
				Calcium	7440-70-2	5000	µg/L
				Chromium	7440-47-3	2	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Cobalt	7440-48-4	50	µg/L
				Copper	7440-50-8	25	µg/L
				Iron	7439-89-6	100	µg/L
				Lead	7439-92-1	3	µg/L
				Lithium	7439-93-2	100	µg/L
				Magnesium	7439-95-4	5000	µg/L
				Manganese	7439-96-5	15	µg/L
				Mercury	7439-97-6	0.1	µg/L
				Molybdenum	7439-98-7	30	µg/L
				Nickel	7440-02-0	40	µg/L
				Potassium	7440-09-7	5000	µg/L
				Selenium	7782-49-2	5	µg/L
				Silver	7440-22-4	0.3	µg/L
				Sodium	7440-23-5	5000	µg/L
				Strontium	7440-24-6	200	µg/L
				Thallium	7440-28-0	10	µg/L
				Tin	7440-31-5	200	µg/L
				Uranium	11-09-6	200	µg/L
				Vanadium	7440-62-2	40	µg/L
				Zinc	7440-66-6	20	µg/L
MET-A-004	Metals - Single Element	CLP - SOW	Aqueous - RDL2				
MET-A-005	Metals	CLP - SOW	Aqueous - RDL3	Aluminum	7429-90-5	200	µg/L
				Antimony	7440-36-0	60	µg/L
				Arsenic	7440-38-2	50	µg/L
				Barium	7440-39-3	100	µg/L
				Beryllium	7440-41-7	0.8	µg/L
				Cadmium	7440-43-9	5	µg/L
				Calcium	7440-70-2	5000	µg/L
				Chromium	7440-47-3	10	µg/L
				Cobalt	7440-48-4	50	µg/L
				Copper	7440-50-8	25	µg/L
				Iron	7439-89-6	100	µg/L
				Lead	7439-92-1	50	µg/L
				Lithium	7439-93-2	100	µg/L
				Magnesium	7439-95-4	5000	µg/L
				Manganese	7439-96-5	15	µg/L
				Mercury (2)	7439-97-6	0.1	µg/L
				Molybdenum	7439-98-7	200	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Nickel	7440-02-0	40	µg/L
				Potassium	7440-09-7	5000	µg/L
				Selenium	7782-49-2	80	µg/L
				Silver	7440-22-4	5	µg/L
				Sodium	7440-23-5	5000	µg/L
				Strontium	7440-24-6	200	µg/L
				Thallium	7440-28-0	40	µg/L
				Tin	7440-31-5	200	µg/L
				Uranium	11-09-6	200	µg/L
				Vanadium	7440-62-2	40	µg/L
				Zinc	7440-66-6	20	µg/L
MET-A-006	Metals - Single Element	CLP - SOW	Aqueous - RDL3				
MET-A-007	Metals	CLP - SOW	Solid - RDL1	Aluminum	7429-90-5	3	mg/kg
				Antimony	7440-36-0	1	mg/kg
				Arsenic	7440-38-2	0.7	mg/kg
				Barium	7440-39-3	20	mg/kg
				Beryllium	7440-41-7	0.2	mg/kg
				Cadmium	7440-43-9	0.1	mg/kg
				Calcium	7440-70-2	1000	mg/kg
				Chromium	7440-47-3	0.4	mg/kg
				Cobalt	7440-48-4	10	mg/kg
				Copper	7440-50-8	0.6	mg/kg
				Iron	7439-89-6	20	mg/kg
				Lead	7439-92-1	0.4	mg/kg
				Lithium	7439-93-2	20	mg/kg
				Magnesium	7439-95-4	1000	mg/kg
				Manganese	7439-96-5	3	mg/kg
				Mercury (2)	7439-97-6	0.2	mg/kg
				Molybdenum	7439-98-7	6	mg/kg
				Nickel	7440-02-0	5	mg/kg
				Potassium	7440-09-7	1000	mg/kg
				Selenium	7782-49-2	2	mg/kg
				Silver	7440-22-4	0.5	mg/kg
				Sodium	7440-23-5	1000	mg/kg
				Strontium	7440-24-6	40	mg/kg
				Thallium	7440-28-0	2	mg/kg
				Tin	7440-31-5	40	mg/kg
				Uranium	11-09-6	40	mg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Vanadium	7440-62-2	8	mg/kg
				Zinc	7440-66-6	4	mg/kg
MET-A-008	Metals - Single Element	CLP - SOW	Solid - RDL1				
MET-A-009	Metals	CLP - SOW	Solid - RDL2				
				Aluminum	7429-90-5	40	mg/kg
				Antimony	7440-36-0	12	mg/kg
				Arsenic	7440-38-2	2	mg/kg
				Barium	7440-39-3	20	mg/kg
				Beryllium	7440-41-7	0.2	mg/kg
				Cadmium	7440-43-9	1	mg/kg
				Calcium	7440-70-2	1000	mg/kg
				Chromium	7440-47-3	0.4	mg/kg
				Cobalt	7440-48-4	10	mg/kg
				Copper	7440-50-8	5	mg/kg
				Iron	7439-89-6	20	mg/kg
				Lead	7439-92-1	0.6	mg/kg
				Lithium	7439-93-2	20	mg/kg
				Magnesium	7439-95-4	1000	mg/kg
				Manganese	7439-96-5	3	mg/kg
				Mercury (2)	7439-97-6	0.2	mg/kg
				Molybdenum	7439-98-7	6	mg/kg
				Nickel	7440-02-0	8	mg/kg
				Potassium	7440-09-7	1000	mg/kg
				Selenium	7782-49-2	1	mg/kg
				Silver	7440-22-4	1	mg/kg
				Sodium	7440-23-5	1000	mg/kg
				Strontium	7440-24-6	40	mg/kg
				Thallium	7440-28-0	2	mg/kg
				Tin	7440-31-5	40	mg/kg
				Uranium	11-09-6	40	mg/kg
				Vanadium	7440-62-2	8	mg/kg
				Zinc	7440-66-6	4	mg/kg
MET-A-010	Metals - Single Element	CLP - SOW	Solid - RDL2				
MET-A-011	Metals	CLP - SOW	Solid - RDL3				
				Aluminum	7429-90-5	40	mg/kg
				Antimony	7440-36-0	12	mg/kg
				Arsenic	7440-38-2	10	mg/kg
				Barium	7440-39-3	20	mg/kg
				Beryllium	7440-41-7	0.2	mg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Cadmium	7440-43-9	1	mg/kg
				Calcium	7440-70-2	1000	mg/kg
				Chromium	7440-47-3	2	mg/kg
				Cobalt	7440-48-4	10	mg/kg
				Copper	7440-50-8	5	mg/kg
				Iron	7439-89-6	20	mg/kg
				Lead	7439-92-1	10	mg/kg
				Lithium	7439-93-2	20	mg/kg
				Magnesium	7439-95-4	1000	mg/kg
				Manganese	7439-96-5	3	mg/kg
				Mercury (2)	7439-97-6	0.2	mg/kg
				Molybdenum	7439-98-7	40	mg/kg
				Nickel	7440-02-0	8	mg/kg
				Potassium	7440-09-7	1000	mg/kg
				Selenium	7782-49-2	16	mg/kg
				Silver	7440-22-4	1	mg/kg
				Sodium	7440-23-5	1000	mg/kg
				Strontium	7440-24-6	40	mg/kg
				Thallium	7440-28-0	8	mg/kg
				Tin	7440-31-5	40	mg/kg
				Uranium	11-09-6	40	mg/kg
				Vanadium	7440-62-2	8	mg/kg
				Zinc	7440-66-6	4	mg/kg
MET-A-012	Metals - Single Element	CLP - SOW	Solid - RDL3				
MET-A-013	Metals - Recoverable	EPA 600	Aqueous - RDL1	Aluminum	7429-90-5	17	µg/L
				Antimony	7440-36-0	3	µg/L
				Arsenic	7440-38-2	5	µg/L
				Barium	7440-39-3	100	µg/L
				Beryllium	7440-41-7	1	µg/L
				Cadmium	7440-43-9	1	µg/L
				Calcium	7440-70-2	5000	µg/L
				Chromium	7440-47-3	2	µg/L
				Cobalt	7440-48-4	50	µg/L
				Copper	7440-50-8	3	µg/L
				Iron	7439-89-6	100	µg/L
				Lead	7439-92-1	2	µg/L
				Lithium	7439-93-2	100	µg/L
				Magnesium	7439-95-4	5000	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Manganese	7439-96-5	15	µg/L
				Mercury (2)	7439-97-6	0.1	µg/L
				Molybdenum	7439-98-7	30	µg/L
				Nickel	7440-02-0	20	µg/L
				Potassium	7440-09-7	5000	µg/L
				Selenium	7782-49-2	3	µg/L
				Silver	7440-22-4	1	µg/L
				Sodium	7440-23-5	5000	µg/L
				Strontium	7440-24-6	200	µg/L
				Thallium	7440-28-0	4	µg/L
				Tin	7440-31-5	200	µg/L
				Uranium	11-09-6	NR	µg/L
				Vanadium	7440-62-2	40	µg/L
				Zinc	7440-66-6	20	µg/L
MET-A-014	METALS - Recoverable - Single Element	EPA 600	Aqueous - RDL1				
MET-A-015	Metals - Recoverable	EPA 600	Aqueous - RDL2	Aluminum	7429-90-5	200	µg/L
				Antimony	7440-36-0	60	µg/L
				Arsenic	7440-38-2	10	µg/L
				Barium	7440-39-3	100	µg/L
				Beryllium	7440-41-7	0.8	µg/L
				Cadmium	7440-43-9	5	µg/L
				Calcium	7440-70-2	5000	µg/L
				Chromium	7440-47-3	2	µg/L
				Cobalt	7440-48-4	50	µg/L
				Copper	7440-50-8	25	µg/L
				Iron	7439-89-6	100	µg/L
				Lead	7439-92-1	3	µg/L
				Lithium	7439-93-2	100	µg/L
				Magnesium	7439-95-4	5000	µg/L
				Manganese	7439-96-5	15	µg/L
				Mercury (2)	7439-97-6	0.1	µg/L
				Molybdenum	7439-98-7	30	µg/L
				Nickel	7440-02-0	40	µg/L
				Potassium	7440-09-7	5000	µg/L
				Selenium	7782-49-2	5	µg/L
				Silver	7440-22-4	0.3	µg/L
				Sodium	7440-23-5	5000	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Strontium	7440-24-6	200	µg/L
				Thallium	7440-28-0	10	µg/L
				Tin	7440-31-5	200	µg/L
				Uranium	11-09-6	200	µg/L
				Vanadium	7440-62-2	40	µg/L
				Zinc	7440-66-6	20	µg/L
MET-A-016	METALS - Recoverable - Single Element	EPA 600	Aqueous - RDL2				
MET-A-017	Metals	SW-846 6010/6010B	Aqueous - RDL2	Aluminum	7429-90-5	200	µg/L
				Antimony	7440-36-0	60	µg/L
				Arsenic	7440-38-2	10	µg/L
				Barium	7440-39-3	100	µg/L
				Beryllium	7440-41-7	0.8	µg/L
				Boron	7440-42-8	30	µg/L
				Cadmium	7440-43-9	5	µg/L
				Calcium	7440-70-2	5000	µg/L
				Chromium	7440-47-3	2	µg/L
				Cobalt	7440-48-4	50	µg/L
				Copper	7440-50-8	25	µg/L
				Iron	7439-89-6	100	µg/L
				Lead	7439-92-1	3	µg/L
				Lithium	7439-93-2	100	µg/L
				Magnesium	7439-95-4	5000	µg/L
				Manganese	7439-96-5	15	µg/L
				Mercury (2)	7439-97-6	0.1	µg/L
				Molybdenum	7439-98-7	30	µg/L
				Nickel	7440-02-0	40	µg/L
				Potassium	7440-09-7	5000	µg/L
				Selenium	7782-49-2	5	µg/L
				Silica	7631-86-9	100	µg/L
				Silver	7440-22-4	0.3	µg/L
				Sodium	7440-23-5	5000	µg/L
				Strontium	7440-24-6	200	µg/L
				Thallium	7440-28-0	10	µg/L
				Tin	7440-31-5	200	µg/L
				Titanium	7440-32-6	4	µg/L
				Uranium	11-09-6	200	µg/L
				Vanadium	7440-62-2	40	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Zinc	7440-66-6	20	µg/L
MET-A-018	METALS - Recoverable - Single Element	EPA 600	Aqueous - RDL3				
MET-A-019	Metals	SW-846 - 6010/6010B	Aqueous	Aluminum	7429-90-5	200	µg/L
				Antimony	7440-36-0	60	µg/L
				Arsenic	7440-38-2	50	µg/L
				Barium	7440-39-3	100	µg/L
				Beryllium	7440-41-7	0.8	µg/L
				Boron	7440-42-8	30	µg/L
				Cadmium	7440-43-9	5	µg/L
				Calcium	7440-70-2	5000	µg/L
				Chromium	7440-47-3	10	µg/L
				Cobalt	7440-48-4	50	µg/L
				Copper	7440-50-8	25	µg/L
				Iron	7439-89-6	100	µg/L
				Lead	7439-92-1	50	µg/L
				Lithium	7439-93-2	100	µg/L
				Magnesium	7439-95-4	5000	µg/L
				Manganese	7439-96-5	15	µg/L
				Mercury (2)	7439-97-6	0.1	µg/L
				Molybdenum	7439-98-7	200	µg/L
				Nickel	7440-02-0	40	µg/L
				Potassium	7440-09-7	5000	µg/L
				Selenium	7782-49-2	80	µg/L
				Silica	7631-86-9	100	µg/L
				Silver	7440-22-4	5	µg/L
				Sodium	7440-23-5	5000	µg/L
				Strontium	7440-24-6	200	µg/L
				Thallium	7440-28-0	40	µg/L
				Tin	7440-31-5	200	µg/L
				Titanium	7440-32-6	4	µg/L
				Uranium	11-09-6	200	µg/L
				Vanadium	7440-62-2	40	µg/L
				Zinc	7440-66-6	20	µg/L
MET-A-020	Metals - Single Element	SW-846 - 6010/6010B	Aqueous				
MET-A-021	Metals	SW-846 - 6010/6010B	Solid - RDL2	Aluminum	7429-90-5	40	mg/kg
				Antimony	7440-36-0	12	mg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Arsenic	7440-38-2	2	mg/kg
				Barium	7440-39-3	20	mg/kg
				Beryllium	7440-41-7	0.2	mg/kg
				Boron	7440-42-8	1.5	mg/kg
				Cadmium	7440-43-9	1	mg/kg
				Calcium	7440-70-2	1000	mg/kg
				Chromium	7440-47-3	0.4	mg/kg
				Cobalt	7440-48-4	10	mg/kg
				Copper	7440-50-8	5	mg/kg
				Iron	7439-89-6	20	mg/kg
				Lead	7439-92-1	0.6	mg/kg
				Lithium	7439-93-2	20	mg/kg
				Magnesium	7439-95-4	1000	mg/kg
				Manganese	7439-96-5	3	mg/kg
				Mercury (2)	7439-97-6	0.2	mg/kg
				Molybdenum	7439-98-7	6	mg/kg
				Nickel	7440-02-0	8	mg/kg
				Potassium	7440-09-7	1000	mg/kg
				Selenium	7782-49-2	1	mg/kg
				Silica	7631-86-9	5	mg/kg
				Silver	7440-22-4	1	mg/kg
				Sodium	7440-23-5	1000	mg/kg
				Strontium	7440-24-6	40	mg/kg
				Thallium	7440-28-0	2	mg/kg
				Tin	7440-31-5	40	mg/kg
				Titanium	7440-32-6	0.2	mg/kg
				Uranium	11-09-6	40	mg/kg
				Vanadium	7440-62-2	8	mg/kg
				Zinc	7440-66-6	4	mg/kg
MET-A-022	Metals - Single Element	SW-846 - 6010/6010B	Solid - RDL2				
MET-A-023	Metals	SW-846 - 6010/6010B	Solid - RDL3	Aluminum	7429-90-5	40	mg/kg
				Antimony	7440-36-0	12	mg/kg
				Arsenic	7440-38-2	10	mg/kg
				Barium	7440-39-3	20	mg/kg
				Beryllium	7440-41-7	0.2	mg/kg
				Boron	7440-42-8	1.5	mg/kg
				Cadmium	7440-43-9	1	mg/kg
				Calcium	7440-70-2	1000	mg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Chromium	7440-47-3	2	mg/kg
				Cobalt	7440-48-4	10	mg/kg
				Copper	7440-50-8	5	mg/kg
				Iron	7439-89-6	20	mg/kg
				Lead	7439-92-1	10	mg/kg
				Lithium	7439-93-2	20	mg/kg
				Magnesium	7439-95-4	1000	mg/kg
				Manganese	7439-96-5	3	mg/kg
				Mercury	7439-97-6	0.2	mg/kg
				Molybdenum	7439-98-7	40	mg/kg
				Nickel	7440-02-0	8	mg/kg
				Potassium	7440-09-7	1000	mg/kg
				Selenium	7782-49-2	16	mg/kg
				Silica	7631-86-9	5	mg/kg
				Silver	7440-22-4	1	mg/kg
				Sodium	7440-23-5	1000	mg/kg
				Strontium	7440-24-6	40	mg/kg
				Thallium	7440-28-0	8	mg/kg
				Tin	7440-31-5	40	mg/kg
				Titanium	7440-32-6	0.2	mg/kg
				Uranium	11-09-6	40	mg/kg
				Vanadium	7440-62-2	8	mg/kg
				Zinc	7440-66-6	4	mg/kg
MET-A-024	Metals - Single Element	SW-846 - 6010/6010B	Solid - RDL3				
MET-A-025	Metals	SW-846 6020	Aqueous	Aluminum	7429-90-5	17	µg/L
				Antimony	7440-36-0	3	µg/L
				Arsenic	7440-38-2	5	µg/L
				Barium	7440-39-3	20	µg/L
				Beryllium	7440-41-7	1	µg/L
				Cadmium	7440-43-9	1	µg/L
				Chromium	7440-47-3	2	µg/L
				Cobalt	7440-48-4	50	µg/L
				Copper	7440-50-8	3	µg/L
				Lead	7439-92-1	2	µg/L
-				Manganese	7439-96-5	15	µg/L
				Nickel	7440-02-0	20	µg/L
				Silver	7440-22-4	1	µg/L
				Thallium	7440-28-0	4	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				Zinc	7440-66-6	20	µg/L
MET-A-026	*Metals - Single Element*	*SW-846 6020*	*Aqueous*				
MET-A-027	Metals	SW-846 6020	Solid	Aluminum	7429-90-5	3	mg/kg
				Antimony	7440-36-0	1	mg/kg
				Arsenic	7440-38-2	0.7	mg/kg
				Barium	7440-39-3	20	mg/kg
				Beryllium	7440-41-7	0.2	mg/kg
				Cadmium	7440-43-9	0.1	mg/kg
				Chromium	7440-47-3	0.4	mg/kg
				Cobalt	7440-48-4	10	mg/kg
				Copper	7440-50-8	0.6	mg/kg
				Lead	7439-92-1	0.4	mg/kg
				Manganese	7439-96-5	3	mg/kg
				Nickel	7440-02-0	5	mg/kg
				Silver	7440-22-4	0.5	mg/kg
				Thallium	7440-28-0	2	mg/kg
				Zinc	7440-66-6	4	mg/kg
MET-A-028	Metals - Single Element	SW-846 6020	Solid				
MET-A-029	RCRA Metals	SW-846 6010, 7470A, 7000A	Aqueous	Arsenic	7440-38-2	0.045	µg/L
				Barium	7440-39-3	2600	µg/L
				Cadmium	7440-43-9	18	µg/L
				Chromium	7440-47-3	180	µg/L
				Lead	7439-92-1	4	µg/L
				Mercury	7439-97-6	11	µg/L
				Selenium	7782-49-2	180	µg/L
				Silver	7440-22-4	180	µg/L
MET-A-030	RCRA Metals	SW-846 6010, 7471A, 7000A	Solid	Arsenic	7440-38-2	0.43	mg/kg
				Barium	7440-39-3	5500	mg/kg
				Cadmium	7440-43-9	39	mg/kg
				Chromium	7440-47-3	390	mg/kg
				Lead	7439-92-1	400	mg/kg
				Mercury	7439-97-6	23	mg/kg
				Selenium	7782-49-2	390	mg/kg
				Silver	7440-22-4	390	mg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
MET-A-031	Metals (TCLP Extraction + Analysis)	SW-846	TCLP Extracts	Assenic	7440-38-2	0.5000	mg/l
				Barium	7440-39-3	2.1000	mg/l
				Cadmium	7440-43-9	0.0110	mg/l
				Chromium (Total)	7440-47-3	0.0600	mg/l
				Lead	7439-92-1	0.0750	mg/l
				Mercury	7439-97-6	0.0025	mg/l
				Selenium	7782-49-2	0.5700	mg/l
				Silver	7440-22-4	0.1400	mg/l

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
WCH-A-001	Acidity	EPA 305.1, SM 2310	Water		10-70-8	10	mg/L
WCH-A-002	Alkalinity, Total as CaCO3	EPA 310.1, 310.2, SM2320 B	Water		T-005	10	mg/L
WCH-A-003	Alkalinity, Bicarbonate (HCO3) as CaCO3	EPA 310.1, 310.2, SM2320 B	Water		71-52-3	10	mg/L
WCH-A-004	Alkalinity, Carbonate (CO3) as CaCO3	EPA 310.1, 310.2, SM2320 B	Water		3812-32-6	10	mg/L
WCH-A-005	Ammonia as N	EPA 350.1, SM4500 - NH3 - H	Water		7727-37-9	0.1	mg/L
WCH-A-006	Ammonia as N	EPA 350.3, SM4500 - NH3 - F,G	Water		7727-37-9	0.1	mg/L
WCH-A-007	Biochemical Oxygen Demand (BOD5)	EPA 405.1, SM 5210 B with HACH Graphical Calculation	Water		10-26-4	2	mg/L
WCH-A-008	Bromide	EPA 300.0, EPA 320.1	Water		24959-67-9	2	mg/L
WCH-A-009	Carbonaceous Biochemical Oxygen Demand (CBOD5)	EPA 405.1, SM 5210 B with HACH Graphical Calculation	Water		11-03-0	2	mg/L
WCH-A-010	Chemical Oxygen Demand (COD)	EPA 410.4, SM 5220 D	Water		C-004	5	mg/L
WCH-A-011	Chloride	EPA 300.0, EPA 325.3	Water		16887-00-6	0.5	mg/L
WCH-A-012	Chromium VI (Hexavalent Cr)	EPA 218.4, SM3500-Cr D, SW-846 7196 A	Water		18540-29-9	0.02	mg/L
WCH-A-013	Cyanide, Total	EPA 335.3, 335.4, SM4500-CN C, E	Water		57-12-5	0.005	mg/L
WCH-A-014	Cyanide, Total, for RCRA Compliance	SW-846 9010, 9012	Water		57-12-5	0.005	mg/L
WCH-A-015	Cyanide, Amenable to Chlorination	EPA 335.1, SM4500-CN G	Water		10-87-7	0.005	mg/L
WCH-A-016	Cyanide, Amenable to Chlorination, for RCRA Compliance	SW-846 9010, 9012	Water		10-87-7	0.005	mg/L
WCH-A-017	Cyanide, Releasable, for RCRA Compliance	SW-846 Chapter 7 SW-846 9010, 9012	Water		10-71-9	0.005	mg/L
WCH-A-018	Fluoride	EPA 300.0, EPA 340.2, SM4500-F - B, C	Water		16984-48-8	0.5	mg/L
WCH-A-019	Hardness as CaCO3	EPA 130.2, SM 2340C	Water		11-02-9	10	mg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
WCH-A-020	Nitrate as N	EPA 300.0, EPA 352.1, EPA 353.1, 353.2	Water		14797-55-8	0.5	mg/L
WCH-A-021	Nitrite as N	EPA 300.0, EPA 354.1, SM4500-NO_2 - B, EPA 353.1, 353.2, SM4500-NO_3 - E, H	Water		14797-65-0	0.5	mg/L
WCH-A-022	Nitrate/Nitrite as N (Total Nitrate/Nitrite as N)	EPA 353.1, SM4500-NO_3 - H, EPA 353.2, SM4500-NO_3 - E	Water		C-005	0.05	mg/L
WCH-A-023	Oil and Grease, Total Recoverable	EPA 413.1, EPA 413.2	Water		10-30-0	5	mg/L
WCH-A-024	Organic Carbon, Dissolved (DOC)	EPA 415.1	Water		11-59-6	1	mg/L
WCH-A-025	Organic Carbon, Total (TOC)	EPA 415.1, SM5310 B, C, D	Water		10-35-5	1	mg/L
WCH-A-026	pH (Hydrogen Ion)	EPA 150.1, SM4500-H^+ B, SW-846 9040	Water		10-29-7	0.1	S.U. at 25°C
WCH-A-027	Phenol	EPA 420.1, SM 5530D	Water		108-95-2	0.1	mg/L
WCH-A-028	Phosphate (ortho) as P (Ortho Phosphate)	EPA 365.1, .2, .3, SM4500-P F, E, EPA 300.0	Water		14265-44-2	0.01	mg/L
WCH-A-029	Phosphate (total)as P	EPA 365.1, .2, .3, SM4500-P B,5	Water		7723-14-0	0.01	mg/L
WCH-A-030	Silica as SiO2, Dissolved	EPA 370.1	Water		7631-86-9	5	mg/L
WCH-A-031	Solids, Non-Volatile Suspended (NVSS)	EPA 160.4, SM2540 E	Water		11-06-3	5	mg/L
WCH-A-032	Solids, Total (TS) (Total Residue at 103°C to 105°C)	EPA 160.3 SM2540 B	Water		C-008	10	mg/L
WCH-A-033	Solids, Total Dissolved Solids (TDS), (Filterable Residue at 180°C)	EPA 160.1 SM2540 C	Water		10-33-3	10	mg/L
WCH-A-034	Solids, Total Suspended (TSS) (Non-Filterable Residue at 103°C to 105°C)	EPA 160.2 SM2540 D	Water		10-32-2	5	mg/L
WCH-A-035	Specific Conductance (Conductivity)	EPA 120.1, SM 2510 B	Water		10-34-4	10	mmho/cm at 25°C

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
WCH-A-036	Sulfate as SO4	EPA 375.1, EPA 375.2, SW846-9035 & 9036, EPA 300.0	Water		14808-79-8	5	mg/L
WCH-A-037	Sulfide as H_2S, Releasable, for RCRA Compliance	SW846 Chapter 7 SW-846 9030A	Water		RFS-RS-97	1	mg/L
WCH-A-038	Sulfide as S	EPA 376.1, .2, SM4500-S- E	Water		18496-25-8	0.002	mg/L
WCH-A-039	Total Kjeldahl Nitrogen (TKN) (Organic Nitrogen as N)	EPA 351.1, 351.2, 351.3, 351.4 SM4500-NH_3	Water		7727-37-9	0.2	mg/L
WCH-A-040	Total Organic Halides (TOX)	SW-846 9020	Water		59473-04-0	1	mg/L
WCH-A-041	Total Petroleum Hydrocarbons (TPH)	EPA 418.1, SM 5520 F	Water		10-90-2	1	mg/L
WCH-A-042	Turbidity	EPA 180.1, SM2130 B	Water		10-08-02	1	NTU

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
MIS-A-001	Characteristic of Ignitability for liquid waste per 40CFR§261.21(a)(1)	SW-846 Method 1010 or SW-846 Method 1020A (if applicable to the sample matrix)	Liquid	N/A		Method Specific	
MIS-A-002	Characteristic of Ignitability for solid waste per 40CFR§261.21(a)(2) and 40CFR§260.11(a)(11)	SW-846 Method 1030 or SW-846 Method 1020A (if applicable to the sample matrix)	Solid	N/A		Method Specific	
MIS-A-003	pH of Aqueous & Multiphasic wastes (>20% water) for the 40CFR§261.22(a)(1)	SW-846 Method 9040B as specified in SW-846 Chapter Seven.	Liquid	N/A		Method Specific	
MIS-A-004	pH of Solid wastes (<20% water) for the 40CFR§261.22(a)(1)	SW-846 Method 9045C as specified in SW-846 Chapter Seven. ASTM-D4972-95	Solid	N/A		Method Specific	
MIS-A-005	Corrosivity Toward Steel for the Characteristic of Corrosivity per 40CFR§261.22(a)(2)	SW-846 Method 1110	Solid	N/A		Method Specific	
MIS-A-006	Cyanide Reactivity for Characteristic of Reactivity, test for Cyanide only per 40CFR§261.23(a)(5)	SW-846 Chapter Seven Section 7.3.3, Interim Guidance for Reactive Cyanide and analysis by Method 9010.	Solid	HCN		25	mgkg
MIS-A-007	Sulfide Reactivity for Characteristic of Reactivity, test for Sulfide only per 40CFR§261.23(a)(5)	SW-846 Chapter Seven Section 7.3.4, Interim Guidance for Reactive Sulfide and analysis by Method 9030.	Solid	H_2S		50	mg/kg
MIS-A-008	TCLP-Toxicity Characteristic of Inorganics (including Mercury)	Test Method 1311				Method Specific	µg/L
MIS-A-009	TCLP-Total Metals Blank (Excluding Mercury)	Test Method 1311				Method Specific	µg/L
MIS-A-010	TCLP-Total Metals Blank (Including Mercury) that meets UTS limits per 40CFR§268.48	Test Method 1311				Method Specific	µg/L
MIS-A-011	TCLP-Total Metals Blank (Excluding Mercury) that meets UTS limits per 40CFR§268.48	Test Method 1311				Method Specific	µg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
MIS-A-012	Acid Soluble Sulfides in wastes (Total Sulfides)	Distillation by SW-846 Method 9030B with analysis by SW-846 Method 9034 or Method 9215				25	mg/kg
MIS-A-013	Cyanide, Total in solid wastes	SW-846 Method 9010B or 9012A	Solid		57-12-5	O.25	mg/kg
MIS-A-014	Cyanide, Amenable in solid wastes	SW-846 Method 9010B or 9012A	Solid		10-87-7	O.25	mg/kg
MIS-A-015	Cyanide, Total in liquid wastes	SW-846 Method 9010B or 9012A	Liquid		57-12-5	5	µg/L
MIS-A-016	Cyanide, Amenable in liquid wastes	SW-846 Method 9010B or 9012A	Liquid		10-87-7	5	µg/L
MIS-A-017	Paint Filter Liquids Test for compliance with 40 CFR 264.314 and 265.314	SW-846 Method 9095A	Solid				
MIS-A-018	Percent Moisture Content	ASTM D2216	Solid				
MIS-A-019	Particle-Size analysis of Soils with sieve and hydrometer	ASTM D422	Solid				
MIS-A-020	Total Organic Carbon (TOC) in soils or solid wastes	SW-846 Method 9060 or EPA 415.1	Solid		10-35-5	25	mg/kg
MIS-A-021	Total Organic Carbon (TOC) in liquid wastes	SW-846 Method 9060 or EPA 415.1	Liquid		10-35-5	1	mg/L
MIS-A-022	**Anion (Bromide)** Prep by EPA Method 300.0 Section 11.7	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Bromide	24959-67-9	5	mg/kg
MIS-A-023	**Anion (Chloride)** Prep by EPA Method 300.0 Section 11.7	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Chloride	16887-00-6	5	mg/kg
MIS-A-024	**Anion (Fluoride)** Prep by EPA Method 300.0 Section 11.7	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Fluoride	16984-48-8	5	mg/kg
MIS-A-025	**Anion (Nitrate - N)** Prep by EPA Method 300.0 Section 11.7	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Nitrate - N	14797-55-8	5	mg/kg
MIS-A-026	**Anion (Nitrite - N)** Prep by EPA Method 300.0 Section 11.7	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Nitrite - N	14797-65-0	5	mg/kg
MIS-A-027	**Anion (ortho-Phosphate - P)** Prep by EPA Method 300.0 Section 11.7	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	ortho-Phosphate - P	14265-44-2	5	mg/kg
MIS-A-028	**Anion (Sulfate)** Prep by EPA Method 300.0 Section 11.7	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Sulfate	14808-79-8	5	mg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
MIS-A-029	**Any 1 Anion (Other as Specified)** Prep by EPA Method 300.0 Section 11.7	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	As specified		As specified	mg/kg
MIS-A-030	**Anion (Bromide)** Prep by SW-846 Method 5050	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Bromide	24959-67-9	5	mg/kg
MIS-A-031	**Anion (Chloride)** Prep by SW-846 Method 5050	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Chloride	16887-00-6	5	mg/kg
MIS-A-032	**Anion (Fluoride)** Prep by SW-846 Method 5050	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Fluoride	16984-48-8	5	mg/kg
MIS-A-033	**Anion (Nitrate - N)** Prep by SW-846 Method 5050	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Nitrate - N	14797-55-8	5	mg/kg
MIS-A-034	**Anion (Nitrite - N)** Prep by SW-846 Method 5050	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Nitrite - N	14797-65-0	5	mg/kg
MIS-A-035	**Anion (ortho-Phosphate - P)** Prep by SW-846 Method 5050	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	ortho-Phosphate - P	14265-44-2	5	mg/kg
MIS-A-036	**Anion (Sulfate)** Prep by SW-846 Method 5050	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	Sulfate	14808-79-8	5	mg/kg
MIS-A-037	**Any 1 Anion (Other as Specified)** Prep by SW-846 Method 5050	SW-846 Method 9056 or EPA Method 300.0	Soils/Solid Waste	As specified		As specified	mg/kg
MIS-A-038	**Anion (Bromide)**	SW-846 Method 9056 or EPA Method 300.0	Liquid/liquid wastes	Bromide	24959-67-9	0.5	mg/L
MIS-A-039	**Anion (Chloride)**	SW-846 Method 9056 or EPA Method 300.0	Liquid/liquid wastes	Chloride	16887-00-6	0.5	mg/L
MIS-A-040	**Anion (Fluoride)**	SW-846 Method 9056 or EPA Method 300.0	Liquid/liquid wastes	Fluoride	16984-48-8	0.5	mg/L
MIS-A-041	**Anion (Nitrate - N)**	SW-846 Method 9056 or EPA Method 300.0	Liquid/liquid wastes	Nitrate - N	14797-55-8	0.5	mg/L
MIS-A-042	**Anion (Nitrite - N)**	SW-846 Method 9056 or EPA Method 300.0	Liquid/liquid wastes	Nitrite - N	14797-65-0	0.5	mg/L
MIS-A-043	**Anion (ortho-Phosphate - P)**	SW-846 Method 9056 or EPA Method 300.0	Liquid/liquid wastes	ortho-Phosphate - P	14265-44-2	0.5	mg/L
MIS-A-044	**Anion (Sulfate)**	SW-846 Method 9056 or EPA Method 300.0	Liquid/liquid wastes	Sulfate	14808-79-8	0.5	mg/L
MIS-A-045	**Any 1 Anion (Other as Specified)**	SW-846 Method 9056 or EPA Method 300.0	Liquid/liquid wastes	As specified		As specified	mg/L
MIS-A-046	Total Recoverable Petroleum Hydrocarbons (TRPH) in Waters and Liquid Wastes	EPA Method 418.1	Liquid		10-90-2	1	mg/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
MIS-A-047	Total Petroleum Hydrocarbons (TPH) in Soils and solid Wastes	SW 846 Method 8015A	Solid		10-90-2	20	mg/kg
MIS-A-048	Total Recoverable Petroleum Hydrocarbons (TRPHs) in Soils and Solid Wastes by IR Spectrophotometry	Analysis by SW 846 Method 8440 following preparation by SW 846 Method 3560 (9)	Solid		10-90-2	20	mg/kg
MIS-A-049	Chromium VI	SW-846 7196	Soil/Solid	Chromium VI	18540-29-9	500	µg/kg
MIS-A-050	Bulk Density	ASTM-D2937-94	Soil/Solid	N/A		Method Specific	
MIS-A-051	Particle Size/Settling Velocity	ASTM-D421-85	Soil/Solid	N/A		Method Specific	
MIS-A-052	Atterberg Limits	ASTM-D4318-95	Soil/Solid	N/A		Method Specific	
MIS-A-053	Ash Value in Waste	ASTM-D5468-93	Soil/Solid	N/A		Method Specific	
MIS-A-054	Porosity	ASTM-D5856-95	Soil/Solid	N/A		Method Specific	
MIS-A-055	Std. Proctor Test	ASTM-D698-91	Soil/Solid	N/A		Method Specific	
MIS-A-056	Specific Gravity of Soils	ASTM-D854-92	Soil/Solid	N/A		Method Specific	
MIS-A-057	Fusability of Coal & Coke (Ash Fusion Temp.)	ASTM-D1857-87	Solid	N/A		Method Specific	
MIS-A-058	Ash	ASTM-D3174-93	Solid	N/A		Method Specific	
MIS-A-059	Gross Caloric Value of Coal & Coke	ASTM-D3285-91	Solid	N/A		Method Specific	
MIS-A-060	Ash /content from Petroleum Products	ASTM-D482-87	Solid	N/A		Method Specific	
MIS-A-061	Bulk Density of Waste & Screening of Specific Gravity	ASTM-D5057-90	Solid	N/A		Method Specific	
MIS-A-062	Total Organic Halides	SW846-9020A	Soil/Solid	N/A	59473-04-0	Method Specific	
MIS-A-063	Total Organic Halides	SW846-9020B	Soil/Solid	N/A	59473-04-0	Method Specific	
MIS-A-064	Asbestos, Visual Est.	EPA-600/M4-82-020	Solid	N/A	132207-33-1	Method Specific	

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
MIS-A-065	TCLP-Toxicity Characteristic for metals, volatile organic and semivolatile organic compounds	Test Method 1311	Solid	N/A		Method Specific	µg/L
MIS-A-066	Full TAL/TCL list with TICs	CLP-SOW	Aqueous	N/A		Method Specific	µg/L
MIS-A-067	Full TAL/TCL list with TICs	CLP-SOW	Solid	N/A		Method Specific	mg/kg
MIS-A-068	Full Appendix IX	SW846	Aqueous	N/A		Method Specific	µg/L
MIS-A-069	Full Appendix IX	SW846	Solid	N/A		Method Specific	mg/kg

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
UTS-A-001	Universal Treatment Standard List (UTS)	As necessary	Wastewater	As specified in 40 CFR 268.48		One order of magnitued less that concentrations specified in 40 CFR 268.48	
UTS-A-002	Universal Treatment Standard List (UTS)	As necessary	Non-wastewater	As specified in 40 CFR 268.48		One order of magnitued less that concentrations specified in 40 CFR 268.48	
UTS-A-003	Universal Teatment Standard List (Metals only)	SW-846	TCLP Extracts	Antimony	7440-36-0	0.1150	mg/l
				Arsenic	7440-38-2	0.5000	mg/l
				Barium	7440-39-3	2.1000	mg/l
				Beryllium	7440-41-7	0.1220	mg/l
				Cadmium	7440-43-9	0.0110	mg/l
				Chromium (Total)	7440-47-3	0.0600	mg/l
				Lead	7439-92-1	0.0750	mg/l
				Mercury	7439-97-6	0.0025	mg/l
				Nickel	7440-02-0	1.1000	mg/l
				Selenium	7782-49-2	0.5700	mg/l
				Silver	7440-22-4	0.0140	mg/l
				Thallium	7440-28-0	0.0200	mg/l
				Vanadium	7440-62-2	0.1600	mg/l
				Zinc	7440-66-6	0.4300	mg/l

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
ASP-A-001	Americium, Plutonium, Uranium (^{241}Am, $^{239, 240}Pu$, $^{233, 234}U$, ^{235}U, ^{238}U)	Alpha Spec.	Water	^{241}Am	14596-10-2	0.03	pCi/L
				$^{239, 240}Pu$	10-12-8	0.03	pCi/L
				$^{233, 234}U$	11-08-5	1	pCi/L
				^{235}U	15117-96-1	1	pCi/L
				^{238}U	7440-61-1	1	pCi/L
ASP-A-002	Americium, Plutonium, Uranium (^{241}Am, $^{239, 240}Pu$, $^{233, 234}U$, ^{235}U, ^{238}U)	Alpha Spec.	Liquid Waste	^{241}Am	14596-10-2	0.3	pCi/L
				$^{239, 240}Pu$	10-12-8	0.3	pCi/L
				$^{233, 234}U$	11-08-5	1	pCi/L
				^{235}U	15117-96-1	1	pCi/L
				^{238}U	7440-61-1	1	pCi/L
ASP-A-003	Americium, Plutonium, Uranium (^{241}Am, $^{239, 240}Pu$, $^{233, 234}U$, ^{235}U, ^{238}U)	Alpha Spec.	Solid Waste	^{241}Am	14596-10-2	0.3	pCi/g
				$^{239, 240}Pu$	10-12-8	0.3	pCi/g
				$^{233, 234}U$	11-08-5	1	pCi/g
				^{235}U	15117-96-1	1	pCi/g
				^{238}U	7440-61-1	1	pCi/g
ASP-A-004	Americium, Plutonium, Uranium (^{241}Am, $^{239, 240}Pu$, $^{233, 234}U$, ^{235}U, ^{238}U)	Alpha Spec.	Soil	^{241}Am	14596-10-2	0.3	pCi/g
				$^{239, 240}Pu$	10-12-8	0.3	pCi/g
				$^{233, 234}U$	11-08-5	1	pCi/g
				^{235}U	15117-96-1	1	pCi/g
				^{238}U	7440-61-1	1	pCi/g
ASP-A-005	Americium, Plutonium, Uranium (^{241}Am, $^{239, 240}Pu$, $^{233, 234}U$, ^{235}U, ^{238}U)	Alpha Spec.	Filter Socks	^{241}Am	14596-10-2	0.07	pCi/g
				$^{239, 240}Pu$	10-12-8	0.07	pCi/g
				$^{233, 234}U$	11-08-5	0.1	pCi/g
				^{235}U	15117-96-1	0.05	pCi/g
				^{238}U	7440-61-1	0.1	pCi/g
ASP-A-006	Americium, Plutonium, Uranium (^{241}Am, $^{239, 240}Pu$, $^{233, 234}U$, ^{235}U, ^{238}U)	Alpha Spec.	Air Filters	^{241}Am	14596-10-2	0.4	dpm

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
				$^{239,240}Pu$	10-12-8	0.3	dpm
				$^{233,234}U$	11-08-5	1.3	dpm
				^{235}U	15117-96-1	1.3	dpm
				^{238}U	7440-61-1	1.3	dpm
ASP-A-007	^{243}Americium	Alpha Spec.	Soil, Sludge, Waste Sediment	^{243}Am	7440-35-9	1	pCi/g
ASP-A-008	Thorium	Alpha Spec.	Water	^{228}Th	14274-82-9	1	pCi/L
				^{230}Th	14269-63-7	1	pCi/L
				^{232}Th	7440-29-1	1	pCi/L
ASP-A-009	Thorium	Alpha Spec.	Soil	^{228}Th	14274-82-9	1	pCi/g
				^{230}Th	14269-63-7	1	pCi/g
				^{232}Th	7440-29-1	1	pCi/g
ASP-A-010	Curium	Alpha Spec.	Water	^{244}Cm	13981-15-2	1	pCi/L
				^{242}Cm	15510-73-3	1	pCi/L
				$^{243,244}Cm$	13981-15-2	1	pCi/L
				$^{245,246}Cm$	7440-51-9	1	pCi/L
ASP-A-011	Curium	Alpha Spec.	Soil, Sludge, Waste, Sediment	^{244}Cm	13981-15-2	1	pCi/g
				^{242}Cm	15510-73-3	1	pCi/g
				$^{243,244}Cm$	13981-15-2	1	pCi/g
				$^{245,246}Cm$	7440-51-9	1	pCi/g
ASP-A-012	Radon	Alpha Spec.	Water	^{222}Rn	10043-92-2	1	pCi/L
ASP-A-013	Radon	Alpha Spec.	Soil	^{222}Rn	10043-92-2	1	pCi/g
ASP-A-014	Neptunium	Alpha Spec.	Water	^{237}Np	13994-20-2	1	pCi/L
ASP-A-015	Neptunium	Alpha Spec.	Soil	^{237}Np	13994-20-2	1	pCi/L
ASP-A-016	Radium	Alpha Spec.	Water	^{226}Ra	10031-23-9	1	pCi/L
ASP-A-017	Radium	Alpha Spec.	Soil	^{228}Ra	10031-23-9	1	pCi/g
ASP-A-018	Polonium	Alpha Spec.	Water	^{210}Po	13981-52-7	1	pCi/L
ASP-A-019	Polonium	Alpha Spec.	Soil/Solid	^{210}Po	13981-52-7	1	pCi/g
ASP-A-020	Americium (^{241}Am)	Alpha Spec	Water	^{241}Am	14596-10-2	0.03	pCi/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
ASP-A-021	Americium (^{241}Am)	Alpha Spec	Soil, Waste, Sludge, Sediment	^{241}Am	14596-10-2	0.3	pCi/L
ASP-A-022	Plutonium (^{239,240}Pu)	Alpha Spec	Water	^{239,240}Pu	10-12-8	0.03	pCi/L
ASP-A-023	Plutonium (^{239,240}Pu)	Alpha Spec	Soil, Waste, Sludge, Sediment	^{239,240}Pu	10-12-8	0.3	pCi/L
ASP-A-024	Uranium (^{233,234}U, ^{235}U, ^{238}U)	Alpha Spec	Water	^{233,234}U	11-08-5	1	pCi/L
				^{235}U	15117-96-1	1	pCi/L
				^{238}U	7440-61-1	1	pCi/L
ASP-A-025	Uranium (^{233,234}U, ^{235}U, ^{238}U)	Alpha Spec	Soil, Waste, Sludge, Sediment	^{233,234}U	11-08-5	1	pCi/L
				^{235}U	15117-96-1	1	pCi/L
				^{238}U	7440-61-1	1	pCi/L

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
GAM-A-001	Isotopic Specific (19 Analytes)	Gamma Spec	Aqueous	^{241}Am	14596-10-2	100	pCi/L
				^{235}U	15117-96-1	100	pCi/L
				^{238}U	7440-61-1	1000	pCi/L
				^{228}Ac	7440-34-8		pCi/L
				^{125}Sb	14234-35-6		pCi/L
				^{144}Ce	14762-78-8		pCi/L
				^{134}Cs	13967-70-9	10	pCi/L
				^{137}Cs	10045-97-3	10	pCi/L
				^{60}Co	10198-40-0		pCi/L
				^{152}Eu	14683-23-9		pCi/L
				^{154}Eu	15585-10-1		pCi/L
				^{155}Eu	14391-16-3		pCi/L
				^{212}Pb	7439-92-1		pCi/L
				^{40}K	13966-0-2		pCi/L
				^{144}Pm	7440-12-2		pCi/L
				^{146}Pm	7440-12-2		pCi/L
				^{106}Ru	13967-48-1		pCi/L
				^{234}Th	7440-29-1		pCi/L
				^{88}Y	13982-36-0		pCi/L
GAM-A-002	Isotopic Specific (19 Analytes)	Gamma Spec	Liquid Waste	^{241}Am	14596-10-2	125	pCi/L
				^{235}U	15117-96-1	125	pCi/L
				^{238}U	7440-61-1	1250	pCi/L
				^{228}Ac	7440-34-8		pCi/L
				^{125}Sb	14234-35-6		pCi/L
				^{144}Ce	14762-78-8		pCi/L
				^{134}Cs	13967-70-9	20	pCi/L
				^{137}Cs	10045-97-3	20	pCi/L
				^{60}Co	10198-40-0		pCi/L
				^{152}Eu	14683-23-9		pCi/L
				^{154}Eu	15585-10-1		pCi/L
				^{155}Eu	14391-16-3		pCi/L
				^{212}Pb	7439-92-1		pCi/L
				^{40}K	13966-0-2		pCi/L

				^{144}Pm	7440-12-2		pCi/L
				^{146}Pm	7440-12-2		pCi/L
				^{106}Ru	13967-48-1		pCi/L
				^{234}Th	7440-29-1		pCi/L
				^{88}Y	13982-36-0		pCi/L
GAM-A-003	Isotopic Specific (^{241}Am, ^{235}U, ^{238}U)	Gamma Spec	Filters	^{241}Am	14596-10-2	5	pCi/filter
				^{235}U	15117-96-1	50	pCi/filter
				^{238}U	7440-61-1	100	pCi/filter
GAM-A-004	Isotopic Specific (^{241}Am, ^{235}U, ^{238}U)	Gamma Spec	Soil	^{241}Am	14596-10-2	0.1	pCi/g
				^{235}U	15117-96-1	0.1	pCi/g
				^{238}U	7440-61-1	1	pCi/g
GAM-A-005	Isotopic Specific (^{241}Am, ^{235}U, ^{238}U)	Gamma Spec	Activated Carbon	^{241}Am	14596-10-2	0.1	pCi/g
				^{235}U	15117-96-1	0.1	pCi/g
				^{238}U	7440-61-1	1	pCi/g
GAM-A-006	Isotopic Specific (^{241}Am, ^{235}U, ^{238}U)	Gamma Spec	Solid	^{241}Am	14596-10-2	25	pCi/g
				^{235}U	15117-96-1	25	pCi/g
				^{238}U	7440-61-1	100	pCi/g
GAM-A-007	Isotopic Specific (^{22}NA, ^{75}Se, ^{57}Co, ^{109}Cd, ^{54}Mn, ^{133}Ba)	Gamma Spec	Smears & Swipes	^{22}Na	13966-32-0	5000	DPM/SAMPLE
				^{75}Se	14265-71-5	5000	DPM/SAMPLE
				^{57}Co	13981-50-5	5000	DPM/SAMPLE
				^{109}Cd	14109-32-1	5000	DPM/SAMPLE
				^{54}Mn	13966-31-9	5000	DPM/SAMPLE
				^{133}Ba	7440-39-3_133	5000	DPM/SAMPLE
GAM-A-008	Gross Gamma	Gamma Spec	Water		*		
GAM-A-009	Gross Gamma	Gamma Spec	Solid		*		
GAM-A-010	Extended Range Gamma (^{59}Ni, ^{129}I)	X-Ray Detector	Aqueous	^{59}Ni	7440-02-0	1	pCi/g
				^{129}I	15046-84-1	1	pCi/g
GAM-A-011	Extended Range Gamma (^{59}Ni, ^{129}I)	X-Ray Detector	Soil/Sediment	^{59}Ni	7440-02-0	1	pCi/g
				^{129}I	15046-84-1	1	pCi/g

*Use CAS No. for isotopes found as listed in GAM-A-001

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
GPC-A-001	Gross Alpha/Beta	Gas Proportional Counter	Water	Gross Alpha	12587-46-1	2	pCi/L
				Gross Beta	12587-47-2	4	pCi/L
GPC-A-002	Gross Alpha/Beta	Gas Proportional Counter	Biota	Gross Alpha	12587-46-1	0.1	pCi/g
				Gross Beta	12587-47-2	0.2	pCi/g
GPC-A-003	Gross Alpha/Beta	Gas Proportional Counter	Soil	Gross Alpha	12587-46-1	5	pCi/g
				Gross Beta	12587-47-2	10	pCi/g
GPC-A-004	Gross Alpha/Beta	Gas Proportional Counter	Filter Socks	Gross Alpha	12587-46-1	5	pCi/g
				Gross Beta	12587-47-2	10	pCi/g
GPC-A-005	Gross Alpha/Beta	Gas Proportional Counter	Waste	Gross Alpha	12587-46-1	0.3	pCi/g
				Gross Beta	12587-47-2	0.6	pCi/g
GPC-A-006	Gross Alpha/Beta	Gas Proportional Counter	Leached Waste	Gross Alpha	12587-46-1	0.3	pCi/g
				Gross Beta	12587-47-2	0.6	pCi/g
GPC-A-007	Total Rad Strontium	Gas Proportional Counter	Water	$^{89/90}Sr$	11-10-9	1	pCi/L
GPC-A-008	Strontium-89	Gas Proportional Counter	Water	^{89}Sr	14158-27-1	5	pCi/L
GPC-A-009	Strontium-90	Gas Proportional Counter	Water	^{90}Sr	10098-97-2	1	pCi/L
GPC-A-010	Total Rad Strontium	Gas Proportional Counter	Soil	$^{89/90}Sr$	11-10-9	1	pCi/g
GPC-A-011	Strontium-89	Gas Proportional Counter	Soil	^{89}Sr	14158-27-1	1	pCi/g
GPC-A-012	Strontium-90	Gas Proportional Counter	Soil	^{90}Sr	10098-97-2	1	pCi/g
GPC-A-013	Total Rad Strontium	Gas Proportional Counter	Waste	$^{89/90}Sr$	11-10-9	1	pCi/g
GPC-A-014	Strontium-89	Gas Proportional Counter	Waste	^{89}Sr	14158-27-1	1	pCi/g
GPC-A-015	Strontium-90	Gas Proportional Counter	Waste	^{90}Sr	10098-97-2	1	pCi/g
GPC-A-016	Plutonium-241	Gas Proportional Counter	Water	^{241}Pu	1411932-5	15	pCi/L
GPC-A-017	Plutonium-241	Gas Proportional Counter	Soil	^{241}Pu	1411932-5	1	pCi/g
GPC-A-018	Radium-226	Gas Proportional Counter	Water	^{226}Ra	10031-23-9	1	pCi/L
GPC-A-019	Radium-226	Gas Proportional Counter	Soil	^{226}Ra	10031-23-9	1	pCi/g
GPC-A-020	Radium-228	Gas Proportional Counter	Water	^{228}Ra	15262-20-1	1	pCi/L
GPC-A-021	RADIUM-228	Gas Proportional Counter	Soil	^{228}Ra	15262-20-1	1	pCi/g
GPC-A-022	Lead-210	Gas Proportional Counter	Water	^{210}Pb	14255-4-0	1	pCi/L
GPC-A-023	Lead-210	Gas Proportional Counter	Soil	^{210}Pb	14255-4-0	1	pCi/g

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
GPC-A-024	Technitium-99	Gas Proportional Counter	Water	^{99}Tc	14133-76-7	1	pCi/L
GPC-A-025	Technitium-99	Gas Proportional Counter	Soil	^{99}Tc	14133-76-7	1	pCi/g

LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
LSC-A-001	Tritium	Liquid Scintillation Counter	Water, Soil, Waste	^{3}H	10028-17-8	400	pCi/l
LSC-A-002	Tritium	Liquid Scintillation Counter	Solid	^{3}H	10028-17-8	400	pCi/g
LSC-A-003	Tritium	Liquid Scintillation Counter	Air Bubblers	^{3}H	10028-17-8	0.8	dpm/ml
LSC-A-004	Tritium	Liquid Scintillation Counter	Smears & Swipes	^{3}H	10028-17-8	5000	DPM/SAMPLE
LSC-A-005	Iron-55	Liquid Scintillation Counter	Smears & Swipes	^{55}Fe	14681-59-5	5000	DPM/SAMPLE
LSC-A-006	Promethium-147	Liquid Scintillation Counter	Water	Promethium-147	14380-75-7	1	pCi/l
LSC-A-007	Promethium-147	Liquid Scintillation Counter	Solid	Promethium-147	14380-75-7	1	pCi/g
LSC-A-008	Promethium-147	Liquid Scintillation Counter	Smears & Swipes	Promethium-147	14380-75-7	5000	DPM/SAMPLE
LSC-A-009	Nickel-63	Liquid Scintillation Counter	Water	^{63}Ni	13981-37-2	700	pCi/l
LSC-A-010	Nickel-63	Liquid Scintillation Counter	Solid	^{63}Ni	13981-37-2	700	pCi/g
LSC-A-011	Nickel-63	Liquid Scintillation Counter	Smears & Swipes	^{63}Ni	13981-37-2	5000	DPM/SAMPLE
LSC-A-012	Carbon-14	Liquid Scintillation Counter	Water	^{14}C	14762-75-5	200	pCi/l
LSC-A-013	Carbon-14	Liquid Scintillation Counter	Solid	^{14}C	14762-75-5	50	pCi/g
LSC-A-014	Carbon-14	Liquid Scintillation Counter	Smears & Swipes	^{14}C	14762-75-5	5000	DPM/SAMPLE
LSC-A-015	Technitium-99	Liquid Scintillation Counter	Water	^{99}Tc	14133-76-7	15	pCi/l
LSC-A-016	Technitium-99	Liquid Scintillation Counter	Solid	^{99}Tc	14133-76-7	15	pCi/g
LSC-A-017	Iodine-131	Liquid Scintillation Counter	Water	^{131}I	10043-66-0	15	pCi/l
LSC-A-018	Iodine-131	Liquid Scintillation Counter	Solid	^{131}I	10043-66-0	15	pCi/g
LSC-A-019	Lead-210	Liquid Scintillation Counter	Water	^{210}Pb	14255-4-0		
LSC-A-020	Lead-210	Liquid Scintillation Counter	Solid	^{210}Pb	14255-4-0		

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LINE ITEM CODE	TITLE	METHOD	MATRIX	ANALYTE	CAS. NO	RDL	UNITS
KPA-A-001	Total Uranium	KPA	Water	URANIUM	11-09-6	1	µg/l
KPA-A-002	Total Uranium	KPA	Soil	URANIUM	11-09-7	1	µg/g