

CCP-TP-188

Revision 2

CCP

Analytical Data Recording, Review, and Reporting

EFFECTIVE DATE: 12/29/2010

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PRINTED NAME

APPROVED FOR USE

RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	05/02/2007	Initial Issue.
1	06/19/2009	Removed references to procedure CCP-TP-174 and related batch data reports (BDRs). Added BDR content and example independent technical review (ITR) checklists and reporting forms for CCP-TP-196, <i>Determination of Formaldehyde by High Performance Liquid Chromatography</i> , and CCP-TP-197, <i>Determination of Hydrazine by High Performance Liquid Chromatography</i> . Updated example checklists for other Resource Conservation and Recovery Act (RCRA) characterization methods. Made various editorial corrections and clarifications.
2	12/29/2010	Revised to implement the renewal changes of the <i>Waste Isolation Pilot Plant Hazardous Waste Facility Permit</i> .

1. INTRODUCTION

1.1 Purpose

This Central Characterization Project (CCP) procedure provides instructions for recording, reviewing, and reporting transuranic (TRU) waste characterization analytical data by the Idaho National Laboratory (INL) and the Idaho Cleanup Project (ICP) analytical laboratories at the INL Site operating under the CCP quality system.

1.2 Scope and Applicability

Standard procedures for data recording, data review, and data reporting are required to ensure that *data integrity* (see def.) is maintained, authentic data are routinely generated, unintentional release of nonauthentic data is prevented, and analytical data are traceable. All sample-related activities follow a logical sequence of events that is traceable through the documented laboratory data. All sample preparation and analysis activities must be documented and traceable to the method or procedure used.

Data integrity, *data authenticity* (see def.), and *traceability* (see def.) are critical for data demonstrating compliance with the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*, Attachments C-C6, *Waste Analysis Plan* (WIPP-WAP), which potentially could be subject to legal scrutiny and hence must be legally defensible.

This procedure applies to all analytical work performed by the INL Environmental Chemistry Laboratory (ECL) and the ICP Analytical Laboratory (formerly known as the Analytical Laboratories Department [ALD]) in support of CCP. This procedure functions as an ICP/INL Use Type 3 administrative document for performing operations within the INL Site facilities. Therefore, the steps in Section 4, Instructions, may be performed in an iterative order as long as the independent technical review (ITR) is completed and documented on the final data.

Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan*, prior to performing this procedure.

2. RESPONSIBILITIES

Performer	Responsibilities
Data Generator	Record data for each analytical task. Review, sign/initial, and date all raw data generated.
Laboratory Supervision	Initiate and maintain a staff signature list.
Independent Technical Reviewer	Review all data generated and any associated reporting forms for technical accuracy and completeness against method and project requirements and deliverables. Provide signature release of all data prior to reporting.
Data Reporting Personnel	Assemble data into reporting and packaging format required by the project. Obtain laboratory-required release authorizations. Submit <i>batch data reports</i> (BDRs) (see def.) and <i>supporting data packages</i> (SDPs) (see def.) to CCP Records.
ICP Laboratory Personnel	Enter data into the Analytical Computer System (ACS).
ECL Technical Lead	Notify responsible client Site Program/Project Managers of needle assembly equipment blank results.

3. PREREQUISITES

None

4. INSTRUCTIONS

4.1 Data Recording

- 4.1.1 Data Generator: Record data for each analytical task in analytical logbooks or on instrument printouts.
- 4.1.2 ICP Laboratory Personnel: Record, to the extent practical, the data generated during the course of analysis in the ACS.
- 4.1.3 Data Generator: Group samples and associated quality control (QC) into analytical batches for data analysis recording, review and reporting purposes.
 - 4.1.3.1 Identify Analytical Batches for Headspace Gas Analyses by the lowest Receiving Group Number (see CCP-TP-177, *CCP Sample Receipt, Custody, and Storage*) associated with any field sample in the Analytical Batch plus a suffix indicating the analysis type. The suffix "G" is appended to the lowest Receiving Group number for gas chromatography

(GC) volatile organic compound (VOC) analytical batches (e.g., "ECL09025G") and "M" is appended for gas chromatography mass spectrometer (GCMS) analytical batches (e.g., "ECL09025M"). If a Sample Receiving Group needs to be split into separate analytical batches, add the suffix "A," "B," "C," etc., before the "G" or "M" (e.g., "ECL09025AM").

4.1.3.2 Assign the lowest analytical log number associated with the samples as the analytical batch number for Resource Conservation and Recovery Act (RCRA) solids analysis.

4.1.4 Data Generator: Record all raw data at the time of data collection.

4.1.5 Data Generator: Record all pertinent data collected in the course of an analytical task.

4.1.5.1 Record the following minimum information for each analytical task:

- A. The analytical method or procedure used
- B. Sample identity
- C. Date of analysis
- D. Signature or initials.

4.1.5.2 Document other information as necessary to allow reconstruction of all analytical activities that produced the data, including, but not limited to:

- A. Instrument used and calibration date
- B. Source and quantity of standards or reagents used
- C. Concentrations of calibration standards
- D. Amount of spiking solutions or surrogates added
- E. Initial and final sample weights and volumes
- F. Sample dilutions
- G. Sample raw data and final results
- H. Analytical conditions
- I. All associated QC analyses and results
- J. Calculations.

NOTE 1: *Some of this information may be documented by reference to other analytical logbooks or laboratory procedures.*

- NOTE 2:** *Appendix A, Checklist for Generating Legally Defensible Data, provides guidance on the type of information to record to generate legally defensible data.*
- 4.1.5.3 Clearly document any variance from routine CCP analytical methods due to sample matrix or as low as reasonably achievable (ALARA) concerns.
- 4.1.5.3.1 Provide justification (i.e., rationale) for the variance.
- 4.1.5.3.2 If the variance cannot be adequately described and justified on the raw data, submit proposed changes to CCP Document Services, per CCP-QP-010, *CCP Document Preparation, Approval and Control*.
- 4.1.5.4 Record any pertinent observations concerning unusual sample appearance (e.g., multiple phases when only one is expected) or sample behavior during analysis (e.g., white precipitate formed upon addition of base) that might be useful for troubleshooting or data qualification.
- 4.1.5.5 Record results of real-time QC checks and any actions taken to correct out-of-control situations.
- 4.1.6 Data Generator: Document information clearly and legibly to allow reconstruction and verification of the analysis process by another party at a later date.
- 4.1.6.1 Record entries in logbooks or other documentation in chronological order, with the run sequence evident for instrumental analyses. Include time of analysis as necessary to verify the run sequence.
- 4.1.6.2 Record data clearly and legibly with indelible, preferably black, ink.

NOTE 1: *Medium point pens are recommended because they produce entries that are more legibly copied than do fine point pens.*

- 4.1.6.2.1 Ensure that the following are NOT used for analytical data recording:
 - A. Pencil
 - B. Erasable ink
 - C. Correction fluid
 - D. Highlighters.
- 4.1.6.2.2 Check felt-tip and roller-ball pen ink for permanency before using them for analytical data recording. If the ink smears after rubbing an entry with a damp fingertip, do not use the pen.
- 4.1.6.3 Verify the computer clock time for accuracy before starting any analyses that use a computer clock for a date/time stamp.
- 4.1.6.4 Maintain data confidentiality by recording only laboratory-assigned identifiers (e.g., laboratory sample ID, log number, analytical batch number) on raw data or in logbooks that are not project- or customer-specific and that may contain information for multiple customers.
- 4.1.6.5 Clearly identify reportable results on the analytical raw data.
 - 4.1.6.5.1 Explain (i.e., justify) any reanalyses, and indicate if the original analysis, the reanalysis, or both are to be reported.
 - 4.1.6.5.2 If multiple dilutions of the same sample are analyzed, clearly indicate which dilution(s) is to be reported.
 - 4.1.6.5.3 When performing multianalyte methods, indicate which analyte is to be reported from which dilution or reanalysis.
- 4.1.6.6 Use the following steps to correct any errors or omissions on hard copy (i.e., paper) data:
 - 4.1.6.6.1 Draw a single line through the error and enter the correct information near the line-out.
 - 4.1.6.6.2 Initial and date all changes, including additions.

- 4.1.6.6.3 If necessary, add a brief explanation to clarify the reason for the change.
 - 4.1.6.6.4 Do not overwrite or obliterate erroneous entries.
 - 4.1.6.6.5 Ensure that any corrections made to hard copy data are also made to any associated computer-resident data whenever possible.
 - 4.1.6.6.6 If it is not possible to correct computer-resident data, note this on the associated paper-copy data.
 - 4.1.6.6.7 If the error or omission is identified on a photocopy of the original data (e.g., during review or reporting), correct the error on the original data and recopy it.
- 4.1.7 Data Generator: Use the following rounding rules when recording or reporting data:
- 4.1.7.1 If the figure following the one to be retained is less than 5, drop it (round down).
 - 4.1.7.2 If the figure following the one to be retained is greater than 5, drop it and increase the last digit to be retained by 1 (round up).
 - 4.1.7.3 If the figure following the last digit to be retained equals 5 and there are no digits to the right of the 5, or all digits to the right of the 5 equal zero, round up if the digit to be retained is odd, or round down if that digit is even. If there are digits other than zero to the right of the 5, round up.
 - 4.1.7.4 If a series of multiple operations is to be performed (e.g., add, subtract, divide, multiply), carry all figures through the calculations and then round the final answer to the proper number of significant figures.
- 4.1.8 Data Generator: Assemble data for review and reporting:
- 4.1.8.1 If pieces of paper or instrument readouts are taped onto an analytical logbook, sign the logbook page so that the signature overlaps from the logbook page onto the taped-in paper.
 - 4.1.8.2 Date all taped additions, and do not tape over any data recorded on the logbook page.

4.1.8.3 When possible, use binder clips or paper clips to hold raw data together instead of staples.

NOTE: *Holes and ragged corners left after removing staples often cause copy machines or scanners to jam when documents are copied or scanned for data reports (see def.) or data packages (see def.).*

4.1.9 Data Generator: Date and sign or initial all logbooks, computer printouts, or other raw data which you generate (indicating your satisfactory review, per Section 4.2.3).

NOTE: *In instances where the large volume of paper produced by instrument printouts makes signing every single page impractical, the front page of the printout is dated and signed or initialed, the printout is paginated, and an indication is given that the signature applies to the rest of the printout.*

4.1.10 Laboratory Supervision: Ensure that all data are traceable to the person generating the data by initiating and maintaining a staff signature list.

4.1.10.1 Initiate a list of staff members in the following example format:

STAFF SIGNATURE LIST {date}			
Typed Name	Typed Initials	Written Name (Signature)	Written Initials
John Q. Doe	JQD		

4.1.10.2 Obtain signatures and written initials from all staff members.

4.1.10.3 Obtain signatures and initials of new staff members (including subcontractors) as they are hired.

4.1.10.4 Obtain new signatures and initials of staff members who change their legal name.

4.1.10.5 Update the list at least every two years to add, change, and delete names as required.

4.2 Data Review

NOTE: *At any time in the data review process, the ICP Analytical Laboratory Quality Assurance (QA) Officer or ECL Technical Lead may require additional reviews as necessary to ensure data quality.*

- 4.2.1 Data Generator: Review all data generated for accuracy and completeness real-time and before passing it on for the next level of review or reporting. At a minimum, check the following:
- A. Data are present for all requested samples and analytes
 - B. Data are accurately reduced to the units and significant figures requested for reporting (unless a validated software program is being used to generate the report, see MCP-2009, “Analytical Software Control”)
 - C. All QC samples required by the analytical method and/or the requestor have been analyzed, and results have been compared to defined acceptance criteria
 - D. All corrections to data are properly made according to Step 4.1.6.6
 - E. Deviations are documented and justified
 - F. Data are traceable by inclusion or reference to instrument calibrations, sample preparation methods, sources, and preparation of calibration and QC samples.
- 4.2.2 Data Generator: Evaluate data sets (e.g., method detection limit [MDL] or precision and accuracy demonstrations, surrogate control limit determinations) for potential statistical outliers.
- 4.2.2.1 If potential statistical outliers are identified, evaluate them for rejection using an established statistical rejection test (e.g., Q-Test or Grubbs Test) and document results of the evaluation.
- 4.2.3 Data Generator: Document this review by signing or initialing, and dating the generated analytical data per Step 4.1.9, and by completing and signing a Data Generator Checklist (see examples in Appendix C, Data Generation Level Checklists) for BDRs.

NOTE: *Data generator checklists are not used for headspace gas VOC analyses of needle assembly equipment blanks.*

- 4.2.4 *Independent Technical Reviewer* (see def): Review all data generated (100%) and any associated reporting forms for technical accuracy and completeness against method and project requirements and deliverables. Check the following at a minimum:
- A. Data generation and reduction are technically correct in accordance with the methods used (procedure with revision)
 - B. Sample data are reported in the proper units and correct number of significant figures
 - C. Calculations have been verified by a valid calculation program (see MCP-2009), a spot check of verified calculation programs, and/or 100% check of all hand calculations (including calculations performed by unvalidated calculation programs)
 - D. Data have been checked for transcription and data entry errors
 - E. QC data are complete, accurate, and compliant, or data have been qualified as appropriate
 - F. Reporting flags are correctly assigned, if required
- NOTE:** *Appendix B, Data Qualifier Flags, provides definitions for data reporting flags.*
- G. Sample holding times and in-house preservation requirements (e.g., refrigerated storage) were met if applicable, or exceptions documented
 - H. Raw analytical data and supporting documentation are complete (may include, as appropriate, calibration documentation [or reference to them], chain-of-custody [COC] documentation, calculation documentation, computer or instrument printouts, copies of logbook pages, as required by Appendix K, Batch Data Report Formats and Content, tables)
 - I. Method deviations, if any, are documented per Step 4.1.5.3 and appropriately justified
 - J. Any final reported data that may be suspect due to unjustified method deviations, QC failures, or integrity issues are identified.
 - K. Data QA objectives have been met per CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*, or failures documented.

- 4.2.4.1 Ensure that a report *narrative* (see def.) is generated, which includes the following minimum information:
- A. Analysis method used, and its regulatory basis, if appropriate
 - B. Any unusual conditions or out-of-control events, and the corrective action that was taken
 - C. Any method modifications/deviations made due to sample size, matrix, or ALARA concerns
 - D. Any deviation from requirements set forth by the customer
 - E. Any QC failures
 - F. Any deficiencies in sample integrity or COC
 - G. Any nonconformance reports (NCRs) associated with the samples or data.
- 4.2.4.2 Notify the data generator of all errors or omissions found during the review.
- 4.2.4.3 Recheck the data after the errors or omissions have been rectified.
- 4.2.4.4 Document the final result of independent technical review and provide signature release using a checklist (see examples in Appendix D, Independent Technical Review (ITR) Checklists).
- 4.2.4.5 Ensure that the completed checklist is filed with the data report or data package.
- 4.2.4.6 If the work being reviewed was performed at the ICP Analytical Laboratory, approve each index for the analysis in the ACS log.

NOTE: *The laboratory manager or designee may perform this step at any time prior to issuance of the BDR.*

4.3 Data Reporting for Waste Drum Characterization Samples

NOTE: *This section provides reporting instructions for drum headspace gas samples and homogeneous solids and soil/gravel samples. Reporting processes for gas VOC analyses of needle assembly equipment blanks are addressed in Section 4.4.*

4.3.1 ICP Laboratory Personnel: Provide the following minimum sample analysis information in the ACS:

- A. Log number
- B. Laboratory sample ID
- C. Method number
- D. Sample results and units, or reference to their location
- E. Analyst's identification
- F. Approval information.

4.3.2 Data Reporting Personnel: Generate reporting forms per applicable Appendices **E–J**.

4.3.3 Data Reporting Personnel: Assemble the BDR and associated SDP in the format specified in Appendix K.

4.3.3.1 Assign unique report numbers to every data report as follows:

Analyte	Method(s)	Data Report Number*
Headspace Gas VOCs by GC/MS	CCP-TP-175	ECLYYnnnM**
Headspace Gas VOCs by GC/FID	CCP-TP-173	ECLYYnnnG**
Total VOCs	CCP-TP-184	ALDYYnnnV
Total NHVOCs	CCP-TP-186	ALDYYnnnN
Total SVOCs	CCP-TP-185 CCP-TP-187	ALDYYnnnS
Total Metals	CCP-TP-181 CCP-TP-182 CCP-TP-183	ALDYYnnnM
Formaldehyde	CCP-TP-196	ALDYYnnnF
Hydrazine	CCP-TP-197	ALDYYnnnH

* where "YY" represents the last two digits of the calendar year and "nnn" is a serially-assigned number.

** The suffix "A," "B," "C," etc., is added before the "M" or the "G" suffix when a sample receiving group is split into multiple analytical batches, or when an analytical batch is split into multiple BDRs.

- 4.3.3.2 Verify that all calibration data and standards preparation information are present in the data package or referenced to the associated records, as required.
- 4.3.3.3 Ensure that all pages of the BDR and associated data package are legible. If edges of pages are cut off, recopy the original.
- 4.3.3.4 Ensure that completed independent technical review checklists are included in the BDR.
- 4.3.3.5 Paginate the BDR.
- NOTE:** *Paginating the BDR with colored ink (e.g., red, blue, or green) is recommended to distinguish the original report from a photocopy, provided that a copy test indicates the colored ink copies legibly.*
- 4.3.4 Data Reporting Personnel: Obtain any laboratory-required release authorization signatures.
- NOTE:** *The CCP-required signature release from the independent technical reviewer is located on the ITR checklists.*
- 4.3.5 Laboratory Supervision: If BDRs cannot be delivered by the agreed-upon due dates, ensure that the customer is notified.
- 4.3.6 Data Reporting Personnel: Submit the BDR and associated SDP, if not part of the BDR, to CCP records.
- 4.3.6.1 Use CCP-QP-008, *CCP Records Management*, Attachment 2, CCP Records – Transmittal/Receiving Form, to transmit the BDR or SDP to CCP Records.
- NOTE:** *CCP Records will forward BDRs and SDPs for non-CCP waste generator client sites (e.g., Advanced Mixed Waste Treatment Project [AMWTP]) to the appropriate site program/project manager or records center.*
- 4.3.7 Data Reporting Personnel: If errors or omissions are identified either by the laboratory or the customer after a BDR or SDP has been accepted by CCP Records, submit corrections to BDRs or SDPs to CCP Records.
- 4.3.7.1 Obtain pages needing corrections from CCP Records.
- 4.3.7.2 Ensure needed corrections are made per CCP-QP-008.
- 4.3.7.3 Assign a sequential change number to the corrections.

- 4.3.7.4 Obtain the same level of review for a correction to technical content as was obtained for the original.
- 4.3.7.5 Obtain the same level of signature release for the correction as was obtained for the original.
- 4.3.7.6 Submit the correction to CCP Records using CCP-QP-008, Attachment 2.

4.4 Reporting for Needle Assembly Equipment Blanks

- 4.4.1 ECL Technical Lead: Submit written notification (e.g., e-mail) of needle assembly equipment blank analysis results (acceptability) to the responsible client site program/project manager upon completion of analyses.
- 4.4.2 Transmit the completed COC, completed Sample Tags, and supporting analytical data for the needle assembly equipment blank(s) to CCP Records.

5. RECORDS

Records generated during the performance of this procedure are maintained as QA records in accordance with CCP-QP-008. The records are the following:

QA/Lifetime:

- Batch Data Reports
 - Headspace Gas VOCs by GC/MS (CCP-TP-175)
 - Headspace Gas VOCs by GC/FID (CCP-TP-173)
 - Total VOCs (CCP-TP-184)
 - Total NHVOCs (CCP-TP-186)
 - Total SVOCs (CCP-TP-185 and CCP-TP-187)
 - Total Metals (CCP-TP-181, CCP-TP-182, and CCP-TP-183)
 - Formaldehyde (CCP-TP-196)
 - Hydrazine (CCP-TP-197)

QA/Nonpermanent:

- Needle Assembly Equipment Blank release notification
- Needle Assembly Equipment Blank data (completed COC, completed Sample Tags, and Supporting Analytical Data)
- Staff Signature Lists
 - ECL
 - ICP Analytical Laboratory
- Supporting Data Packages
 - Total VOCs (CCP-TP-184)
 - Total NHVOCs (CCP-TP-186)
 - Total SVOCs (CCP-TP-185 and CCP-TP-187)
 - Total Metals (CCP-TP-181, CCP-TP-182, and CCP-TP-183)
 - Formaldehyde (CCP-TP-196)
 - Hydrazine (CCP-TP-197)

6. DEFINITIONS

Batch Data Report (BDR). That sample information provided to the customer to report results of sample analyses. The BDR also includes QC results, sample custody documentation, and data review checklists (see Appendix K).

Data authenticity. The data are what they purport to be (i.e., the true results of the analyses). Data can be nonauthentic as the result of either one of two practices: 1) accidental reporting of incorrect data as the result of an error in procedure (e.g., data entry or poor logbook recording), or 2) intentional reporting of incorrect data by an individual or as the result of a conspiracy involving several individuals.

Data integrity. Data has integrity if data are reported as the result of procedures that ensured the proper sampling and analyses methods were selected, methods were followed correctly, results were not compromised as a result of intentional or accidental reporting of incorrect values, and records are maintained that document compliance with the procedures.

Independent technical reviewer. A qualified individual not involved in the generation or recording of the data under review.

Narrative. A textual summary of the analysis procedure that is included in the data report for a group of samples. The narrative should include a discussion of: the analysis method used, and its regulatory basis, if appropriate; any unusual conditions or out-of-control events and corrective actions that were taken; any method modifications or deviations made due to sample size or matrix; any deviation from requirements set forth by customer, and; any deficiencies in sample integrity or COC. Additional content of the narrative may be specified on a project-specific basis.

Supporting Data Package (SDP). A compilation of all raw data, either by reference or inclusion, needed to support reported data and demonstrate data authenticity. Contents of data packages may include: sample preparation documentation, standard preparation documentation, benchsheets, instrument printouts, calibration data, sample data, QC sample data, run logs, and calculations. For headspace gas, the SDP is included in the BDR.

Traceability. The ability to trace the history, application, or location of an entity by means of recorded identification. In a data collection sense, it relates calculations and data generated throughout the project back to the requirements for quality of the project by being able to follow a standardized chain of events with standardized documentation.

7. REFERENCES

CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*

CCP-QP-002, *CCP Training and Qualification Plan*

CCP-QP-008, *CCP Records Management*

CCP-QP-010, *CCP Document Preparation, Approval and Control*

CCP-TP-173, *CCP Analysis of Gas Samples for VOCs by GC/FID*

CCP-TP-175, *CCP Analysis of Gas Samples for VOCs by GC/MS*

CCP-TP-177, *CCP Sample Receipt, Custody, and Storage*

CCP-TP-180, *CCP Analytical Sample Management*

CCP-TP-181, *CCP Determination of Mercury by CVAA for TRU Waste Characterization*

CCP-TP-182, *CCP Determination of Metals by ICP-AES for TRU Waste Characterization*

CCP-TP-183, *CCP Microwave Assisted Digestion of Homogeneous Solids and Soil/Gravel*

CCP-TP-184, *CCP Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry*

CCP-TP-185, *CCP Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry*

CCP-TP-186, *CCP Determination of Nonhalogenated Volatile Organics by Gas Chromatography*

CCP-TP-187, *CCP Sample Preparation for Semivolatile Organic Compounds*

CCP-TP-196, *CCP Determination of Formaldehyde by High Performance Liquid Chromatography*

CCP-TP-197, *CCP Determination of Hydrazine by High Performance Liquid Chromatography*

MCP-2009, "Analytical Software Control"

| *Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Attachments C-C6, Waste Analysis Plan, EPA No. NM4890139088, New Mexico Environment Department, Santa Fe, New Mexico*

8. APPENDIXES

Appendix A, Checklist for Generating Legally Defensible Data

Appendix B, Data Qualifier Flags

Appendix C, Data Generation Level Checklists

Appendix D, Independent Technical Review (ITR) Checklists

Appendix E, Headspace Gas Data Reporting Forms

Appendix F, Total VOC Data Reporting Forms

Appendix G, Total NHVOC Data Reporting Forms

Appendix H, Total SVOC Data Reporting Forms

Appendix I, Total Metals Data Reporting Forms

Appendix J, HPLC Data Reporting Forms (Formaldehyde and Hydrazine)

Appendix K, Batch Data Report Formats and Content

Appendix A

CHECKLIST FOR GENERATING LEGALLY DEFENSIBLE DATA**I. DOCUMENTATION**

- o A. Logbooks and records controlled
- o B. Pages numbered sequentially
- o C. Unused pages or sections crossed out
- o D. All entries chronological and in permanent ink—no pencil or felt tip pens
- o E. Minimum required information included who, what, when and how.
 - o 1. Sample ID indicated
 - o 2. Procedure identified
 - o 3. Date and time recorded
 - o 4. Initials/signature recorded and match signature list
 - o 5. Sample specific information included
- o F. Error correction acceptable single line, dated and initialed
- o G. No obliterated or overwritten entries—no White Out
- o H. Data and reports reviewed and approved by supervisory personnel
- o I. All sample-related records available
- o J. Records complete and authentic.

II. SAMPLE COLLECTION

- o A. Sampling plan documented and approved for use at specific site.
- o B. Field QA Samples Included
 - o 1. Blanks
 - o 2. Replicates
 - o 3. Performance-evaluation samples/splits
- o C. Sample collection activities fully documented in field logs
 - o 1. Sampler name
 - o 2. Sample ID and description
 - o 3. Sample-collection date and time
 - o 4. Sample location (horizontal and vertical points)
 - o 5. Sampling equipment and procedure used, including sample container
 - o 6. Collection or inclusion of QA samples
 - o 7. Field measurements, if performed
 - o 8. Site conditions/observations
 - o 9. Deviations from sampling plan
- o D. Sample preservation, including icing at 4°C, performed and documented
- o E. Labels/seals attached to sample bottles and shipping cooler
 - o 1. Sample ID included
 - o 2. Analysis specified
 - o 3. Preservative indicated
 - o 4. Custody seals used on bottles and cooler
 - o 5. Shipment air bill and hazard label, if applicable

III. SAMPLE CUSTODY

- o A. Chain of custody record used for sample transfers
- o B. Each sample transfer documented with signature date and time
- o C. Sample access and handling controlled and documented

IV. SAMPLE RECEIPT/CONDITION

- o A. Custody Seals intact on shipping cooler and sample containers
- o B. Chain-of-custody record matches sample labels
- o C. Sample containers intact and appropriate for the target analyte(s)
- o D. Samples received and maintained at 4°C for parameters/matrices requiring refrigeration
- o E. pH preservation verified
- o F. No headspace present for volatile samples
- o G. Client notified if preservation/condition not acceptable

V. STANDARDS TRACEABILITY

- o A. Standards traceable to certified reference materials
- o B. Standards preparation fully documented
 - o 1. Standards ID
 - o 2. Analyte concentrations
 - o 3. Starting materials, including concentration amount used and lot number
 - o 4. Date prepared
 - o 5. Expiration date
 - o 6. Preparer's initials/signature

VI. INSTRUMENT CALIBRATION AND MAINTENANCE

- o A. Calibration and maintenance performed
- o B. Calibration and maintenance records maintained

VII. SAMPLE PREPARATION AND ANALYSIS

- o A. Holding times met for sample preparation and analysis
- o B. Preparation and analysis performed according to approved methods or SOPs
- o C. Preparation and analysis fully documented
 - o 1. Sample/standard ID
 - o 2. Date/time
 - o 3. Parameter/analytes
 - o 4. Weights/volumes used
 - o 5. Reagents/spikes added
 - o 6. QC samples
 - o 7. Dilutions/concentrations
 - o 8. Calculations

VII. QUALITY CONTROL

- o A. QC analyses performed at required frequency and within acceptance criteria
 - o 1. Instrument calibrations
 - o 2. Calibration verification
 - o 3. Laboratory control samples
 - o 4. Blanks
 - o 5. Spikes
 - o 6. Duplicates
 - o 7. Surrogates and internal standards
- o B. Data review and approval performed and documented
- o C. Raw data correlates with reported data

Appendix B

Data Qualifier Flags

Table B.1. Organic Totals Analyses and Headspace Gas Analysis Flags

Data Qualifier	Description
B	Analyte detected in blank
E	Analyte exceeds the calibration curve
J	Analyte less than PRQL, but \geq MDL
U	Analyte was not detected (report sample-specific MDL)
D	Analyte was quantitated from a secondary dilution (For CCP-TP-175, <i>Analysis of Gas Samples for VOCs by GC/MS</i> , D may also indicate that the analyte was quantitated from a reduced volume sample aliquot.)
Z	One or more QC samples do not meet acceptance criteria
H	Holding time exceeded (Holding times are not applicable to headspace gas analyses.)
N	Indicates presumptive evidence of a compound, based on a mass spectral library search (GC/MS TICs only)

Table B.2. Metals Analysis Flags

Data Qualifier	Description
B	Analyte blank concentration (laboratory or calibration verification) $\geq 20\%$ of sample concentration prior to dilution correction
J	Analyte \geq IDL but $< 5 \times$ IDL before dilution correction
U	Analyte was not detected (report sample-specific IDL)
Z	One or more QC samples do not meet acceptance criteria
H	Holding time exceeded

Appendix C

Data Generation Level Checklists

Environmental Chemistry Laboratory
Data Generator Checklist

CCP-TP-175 (GC/MS VOCs)

Analytical Batch#:	Procedure Revision:
Analyst Signature:	Analysis Date:

Criteria	Yes	No	N/A	Comments
1. Samples analyzed in accordance with CCP-TP-175 requirements.				
2. BFB tune analyzed at the beginning of the run (once every 12 hours of instrument operation), and meets acceptance criteria.				
3. CCAL analyzed at the beginning of the run (once every 12 hours of instrument operation), and meets acceptance criteria.				
4. LB analyzed after the CCAL, and meets acceptance criteria.				
5. Analytical batch QC (LCS, laboratory duplicate or LCS duplicate) analyzed if appropriate, and meet acceptance criteria. [N/A if these analyses are performed on another day within the batch.]				
6. All samples quantitated within the calibration range for all target analytes, diluted and reanalyzed, or scheduled for reanalysis within the batch.				
7. All non-target analyte peaks having total ion areas >0.5% of the nearest internal standard evaluated against a NIST Appendix VIII VOC mass spectral library for tentative identification.				
8. All TICs identified using criteria defined in CCP-TP-175.				
9. All logbook entries completed in accordance with CCP-TP-188.				
10. All raw data corrections made per CCP-TP-188 requirements [lined out, initialed, dated, and justified (as necessary)].				
11. All raw data evaluated, signed/initialed and dated in indelible black ink.				
12. Raw data reviewed for completeness and accuracy.				

Figure C-1. Example of headspace gas analysis data generator checklist

ICP Analytical Laboratory
Data Generator Checklist for CCP

Data Report Number: ALDxyyyym	Analytical Batch:
Analysis Procedure: CCP-TP-xxx	Procedure Revision: 0
Analysis Date(s):	
Data Generator Signature:	

Criteria	Yes	No	Comments
1. Samples analyzed in accordance with cited analytical method.			
2. All logbook entries completed in accordance with CCP-QP-011.			
3. All data entry and corrections made in accordance with CCP-TP-188.			
4. All raw data signed/initialed and dated in indelible black ink.			
5. Data reviewed for completeness and accuracy.			

Figure C-2. Example of RCRA solids data generator checklist

Appendix D

Independent Technical Review (ITR) Checklists

Environmental Chemistry Laboratory Independent Technical Review (ITR) Checklist

Analytical Batch:	Data Report Number:	Method : CCP-TP-173
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Run#	Analysis Date	Data Generator	ITR Signature	Sections Reviewed	Date of Review
1					
2					
3					
4					

Final Independent Technical Reviewer Release Signature: _____ Sections Reviewed: _____ Date: _____

Instructions: Complete one checklist per analytical batch. If more than four instrument runs were needed to complete the batch analysis, use a second checklist. Enter the appropriate response for each question. Each "No" response requires explanation.

Requirement	Run #1		Run #2		Run #3		Run #4		Comments
	Yes	No	Yes	No	Yes	No	Yes	No	
1. Continuing Calibration Verification (CCAL)									
a. Was a CCV analyzed each day prior to analysis of samples?	///	///	///	///	///	///	///	///	
b. Is the raw data present, and signed/initialed and dated, by the analyst for each CCV?									
c. Does the percent recovery (%R) for each analyte fall within 15% of the true value (85 ≤ %R ≤ 115%)?									
d. Do the retention times of each analyte fall within the current RT windows on both columns?									
2. Laboratory Blanks (LBs)									
a. Was a laboratory blank analyzed daily after the CCAL and prior to analysis of samples?	///	///	///	///	///	///	///	///	
b. Are all laboratory blank results ≤3 times the program-required MDLs for each analyte ?									
3. Samples (Including LCSs, Blanks and Duplicates)									
a. Are the raw data present, and signed/initialed and dated by the analyst, for all samples listed on the Analysis Request Form, and for all associated LCSs, blanks, & duplicates?	///	///	///	///	///	///	///	///	
b. Were all samples analyzed within 12 hours of the daily CCV?									
c. Are all reported hits within the RT windows on both columns?									
d. Are all reported hits confirmed by similar chromatography and quantitation on the second column?									
e. Are all analytes showing discrepancies between columns 1 and 2 (interferences) quantitated from the column with the least interference?									
f. Are analyte retention time windows checked for multiple peaks falling within the RT windows?									
g. Have peak baselines been checked for correct integration?									
h. Were the appropriate quantitation routines used for each column?									
i. Are all chromatograms consistent with their associated External Standard Report?									
j. Are peak areas proportionally consistent with those of the CCV?									
k. Were all samples having analytes detected in amounts exceeding the calibration range reanalyzed on a dilution?									
l. For composited samples, were equal-volume sample aliquots used to form the composite?									

Figure D-1. Example of headspace gas GC/FID VOC ITR checklist

Environmental Chemistry Laboratory Independent Technical Review (ITR) Checklist			
Analytical Batch:	Data Report Number:	Method : CCP-TP-173	
Requirement	Yes	No	Comments
4. Initial Calibration			
a. Was the initial calibration performed using a minimum of five external standards, analyzed on both columns?	///	///	
b. Is the %R determined from the regression equation between 70% and 130% for all target analytes in all standards on both columns?			
c. Is at least one of the calibration standards at a concentration below the PRQL?			
d. Was a first-order (linear) regression used for quantitation for all target analytes on both columns?			
e. Is the regression coefficient (r) ≥ 0.99 for all target analytes on both columns?			
f. Are retention time (RT) windows calculated correctly for all target analytes on both columns?			
g. Is the ICAL raw data signed/initialed and dated by the analyst, and does it include method printouts, regression plots, external standard reports for all standards?			
h. Is the Initial Calibration Form present, complete, and accurate for each analyte?			
5. Initial Calibration Verification (ICV)			
a. Was an ICV analyzed after the initial calibration and prior to analysis of any samples?			
b. Are the recoveries for each target analyte in the ICV between 85% and 115% on both columns?			
c. Are the RTs for each target analyte in the ICV within the RT windows determined from the ICAL on both columns?			
d. Is the ICV standard second-source to the initial calibration standards?			
e. Is the ICV raw data signed/initialed and dated by the analyst?			
f. Is the ICV Form present, complete and accurate?			
6. Laboratory Control Samples (LCSs)			
b. Is the LCS second-source from the ICAL standard source?			
c. Do the recoveries for all target analytes in each LCS fall between 70% and 130%?			
d. IF a duplicate LCS was analyzed, are all RPDs for all analytes greater than the PRQL $\leq 25\%$?			
6. Duplicate Sample			
a. Was at least one field sample from the analytical batch analyzed in duplicate?			
b. Do the RPDs for analytes above the PRQL meet the $\leq 25\%$ precision requirement?			
7. Sample Integrity Verification			
a. Is COC documentation complete and accurate for all reported samples?			
b. Was physical integrity of all samples maintained?			
c. Were all samples stored at temperatures between 0 and 40° C?			
8. Instrument, Method and Personnel Qualification Verification			
a. Were all analyses conducted by analysts having current CCP qualification records on file?			
b. Was acceptable demonstration of precision, accuracy, and MDLs performed within the last 6 months?			

Figure D-1. Example of headspace gas GC/FID VOC ITR checklist (continued)

Environmental Chemistry Laboratory Independent Technical Review (ITR) Checklist

Analytical Batch:	Data Report Number:	Method : CCP-TP-173
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Requirement	Yes	No	Comments
9. Data Report Validation and Completeness	///	///	
a. Are all changes to original data or forms made by a single line through of incorrect data, initialed/signed and dated by the person making the change?			
b. Does the report contain a Cover Page with Table of Contents?			
c. Does the report contain a Sample Number Cross-Reference Table?			
d. Does the report contain copies of the COC and Gas Sample Canister Tags?			
e. Are Analysis Data Sheets present and accurate for all samples in the analytical batch?			
f. Are Lab Blank Summary/Results Forms present for all lab blanks associated with the reported samples?			
g. Are Initial Calibration Forms present for all Initial Calibrations associated with the reported samples?			
h. Are Continuing Calibration Forms present for each Continuing Calibration associated with the reported samples?			
i. Are Lab Control Sample Forms present for each LCS associated with the reported samples?			
j. Are Lab Duplicate Forms present for each duplicate analysis associated with the reported samples?			
k. Does the report contain an MDL reporting form?			
l. Does the report contain External Standard Reports for every standard, sample, and QC sample reported?			
m. Are copies of Gas Transfer Manifold logs showing all sample pressurizations/dilutions included for all reported samples?			
n. Are copies of analysis run logs for every standard, sample and QC sample present and accurate?			
o. Are U, J, B, D, E, H, Z, and N qualifying flags correctly assigned on the reporting forms?			
p. Are copies of all COC documentation included?			
q. Are all data reporting forms completely and correctly filled out (e.g., correct batch numbers, analyst IDs, analysis times and dates, dilution factors, sample ID numbers and file IDs)?			
r. If there were any NCRs associated with the data are copies included?			
s. Are the analyte concentrations on the Analysis Data Sheets reported in units of ppm, and correctly rounded to 2 significant figures?			
t. Have all data received documented data generator review and signature?			
u. Were all calculations verified by a valid calculation program or a spot check of verified calculation programs?			
v. Have the data been reviewed for transcription errors?			
w. Are all pages in the data report legible and correctly paginated?			

Figure D-1. Example of headspace gas GC/FID VOC ITR checklist (continued)

Environmental Chemistry Laboratory Independent Technical Review (ITR) Checklist

Analytical Batch:	Data Report Number:	Method : CCP-TP-175
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Run#	Analysis Date	Data Generator	ITR Signature	Sections Reviewed	Date of Review
1					
2					
3					
4					

Final Independent Technical Reviewer Release Signature: _____ Sections Reviewed: _____ Date: _____

Instructions: Complete one checklist per analytical batch. If more than four instrument runs were needed to complete the batch analysis, use a second checklist. Enter the appropriate response for each question. Each "No" response requires explanation.

Requirement	Run #1		Run #2		Run #3		Run #4		Comments
	Yes	No	Yes	No	Yes	No	Yes	No	
1. Instrument Performance Check (BFB Tune)	///	///	///	///	///	///	///	///	
a. Was a BFB tune performed each day prior to analysis of samples?									
b. Is the raw data present, and signed/initialed and dated by the analyst, for each BFB tune?									
c. Do all the BFB tunes meet CCP-TP-175 requirements?									
2. Continuing Calibration Verification (CCAL)	///	///	///	///	///	///	///	///	
a. Was a CCAL performed each day after the BFB tune and prior to analysis of samples?									
b. Is the raw data present, and signed/initialed and dated by the analyst, for each CCAL?									
c. Is the %D less than or equal to 30% for all target analytes?									
d. Are the retention times of the internal standards within 30 seconds of those in the associated ICAL?									
e. Are the internal standard areas within a factor of 2 (i.e., 50 to 200%) of those in the associated ICAL?									
3. Laboratory Blanks (LBs)	///	///	///	///	///	///	///	///	
a. Was a laboratory blank analyzed daily after the CCAL and prior to analysis of samples?									
b. Are all laboratory blank results ≤3 times the program-required MDLs for all target analytes?									
4. Samples (Including LCSs, Blanks and Duplicates)	///	///	///	///	///	///	///	///	
a. Are the raw data present, and signed/initialed and dated by the analyst, for all samples listed on the Analysis Request Form, and for all associated LCSs, blanks and duplicates?									
b. Are the internal standard areas within a factor of 2 (i.e., 50% to 200%) of those in the associated CCAL?									
c. Do the sample component RRT's compare within ± 0.06 RRT units of the standard component in the continuing calibration?									
d. Are all analytes found below the MDLs marked with an "X" to the right or left of the concentration on the Quant Report and marked with "No, <MDL", initialed and dated on the following spectral data sheets?									
e. Are all positive hits identified by a "Yes", initialed and dated on the spectral data sheets?									
f. Are negative hits identified by an "X" on the Quant Report, and by "No", justified, initialed and dated on the data sheets?									
g. Were all samples analyzed within 12 hours of the daily BFB tune?									
h. In your opinion, do the sample spectra for positive hits match the reference spectra?									
i. Was a TIC search conducted on each sample, blank, duplicate and LCS in the batch, using a NIST library containing Appendix VIII VOCs?									
j. Were the TICs reviewed and identified using the guidelines defined in CCP-TP-175, initialed and dated?									
k. Were all samples having analytes detected in amounts exceeding the upper calibration range reanalyzed at a different dilution or at a lower volume?									
l. For composited samples, were equal-volume aliquots used to form the composite?									

Figure D-2. Example of headspace gas GC/MS VOC ITR checklist

Environmental Chemistry Laboratory Independent Technical Review (ITR) Checklist			
Analytical Batch:	Data Report Number:	Method : CCP-TP-175	
Requirement	Yes	No	Comments
5. Initial Calibration			
a. Does the BFB tune meet CCP-TP-175 requirements?	///	///	
b. Are the %RSDs less than 35% for all target analytes?			
c. Is at least one of the calibration standards at a concentration below the PRQL?			
d. Are the correct ions used for quantitation?			
e. Is the ICAL raw data signed/initialed and dated by the analyst and included, or referenced, as appropriate for the report?			
f. Does the ICAL use at least 5 points (at least one below the PRQL), with %RSD < 35% for all target analytes?			
6. Laboratory Control Samples (LCSs)			
a. Was at least one unique LCS analyzed with the analytical batch?	///	///	
b. Is the LCS second-source from the ICAL standard source?			
c. Do the recoveries for all target analytes in each LCS fall between 70% and 130%?			
d. IF a duplicate LCS was analyzed, are all RPDs for all analytes greater than the PRQL ≤25%?			
7. Duplicate Sample			
a. Was at least one field sample from the analytical batch analyzed in duplicate?	///	///	
b. Do the RPDs for analytes above the PRQL meet the ≤25% precision requirement?			
8. Sample Integrity Verification			
a. Is COC documentation complete and accurate for all reported samples?	///	///	
b. Was physical integrity of all samples maintained?			
c. Were all samples stored at temperatures between 0 and 40° C?			
9. Instrument, Method and Personnel Qualification Verification			
a. Were all analyses conducted by analysts having current CCP qualification records on file?	///	///	
b. Was acceptable demonstration of precision, accuracy, and MDLs performed within the last 6 months?			
10. Data Report Validation and Completeness			
a. Are all changes to original data or forms made by a single line through of incorrect data, initialed/signed and dated by the person making the change?	///	///	
b. Does the report contain a Cover Page with Table of Contents?			
c. Does the report contain a Sample Number Cross-Reference Table?			
d. Does the report contain copies of the COC and Gas Sample Canister Tags?			
e. Are Analysis Data Sheets and TIC Analysis Data Sheets present and accurate for all samples in the analytical batch?			
f. Are Lab Blank Summary Forms present for all lab blanks associated with the reported samples?			
g. Are Lab Blank Results Forms present for all lab blanks associated with the reported samples?			
h. Are BFB Tune Reports present for each continuing calibration associated with the reported samples?			
i. Are Initial Calibration Forms present for all Initial Calibrations associated with the reported samples?			
j. Are Continuing Calibration Forms present for each Continuing Calibration associated with the reported samples?			
k. Are Internal Standard Area Summary Forms present for each daily calibration and associated sample analyses?			
l. Are Lab Control Sample Forms present for each LCS associated with the reported samples?			
m. Are Lab Duplicate Forms present for each duplicate analysis associated with the reported samples?			
n. Does the report contain an MDL reporting form?			
o. Does the report contain Quantitation Reports for every standard, sample, and QC sample reported?			
p. Are Mass Spectra for all detected analytes and reported TICs present?			
q. Are copies of Gas Transfer Manifold logs showing all sample pressurizations/dilutions included for all reported samples?			

Figure D-2. Example of headspace gas GC/MS VOC ITR checklist (continued)

Environmental Chemistry Laboratory Independent Technical Review (ITR) Checklist

Analytical Batch:	Data Report Number:	Method : CCP-TP-175
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Requirement	Yes	No	Comments
r. Are copies of analysis run logs for every standard, sample and QC sample present and accurate?			
s. Are U, J, B, D, E, H, Z, and N qualifying flags correctly assigned on the reporting forms?			
t. Are all data reporting forms completely and correctly filled out (e.g., correct batch numbers, analyst IDs, analysis times and dates, dilution factors, sample ID numbers and file IDs)?			
u. If there were any NCRs associated with the data are copies included?			
v. Are the analyte concentrations on the Analysis Data Sheets reported in units of ppm, and correctly rounded to 2 significant figures?			
w. Have all data received documented data generator review and signature?			
x. Were all calculations verified by a valid calculation program or a spot check of verified calculation programs?			
y. Have the data been reviewed for transcription errors?			
z. Are all pages in the data report legible and correctly paginated?			

Figure D-2. Example of headspace gas GC/MS VOC ITR checklist (continued)

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total VOCs in Homogeneous Solids and Soil/Gravel by GC/MS
Initial Calibration (ICAL) Review

ICAL Identifier:			Method: CCP-TP-184	
Analysis Date	Data Generator	ITR Review Date	ITR Release Signature	ITR Release Date

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
1. Instrument Performance Check (BFB Tune)				
a. Was a BFB tune performed at the beginning of the 12-hour analytical shift, before analysis of standards?	///	///	///	
b. Does the BFB tune meet CCP-TP-184 acceptance criteria?			///	
2. Initial Calibration (ICAL)				
a. Were at least 5 standards used to construct the ICAL?	///	///	///	
b. Is the concentration of at least one calibration standard below the PRQL?			///	
c. Are the correct primary ions used to quantitate all compounds, or secondary-ion use appropriately justified?			///	
d. Is each analyte RRF calculated using the internal standard nearest in retention time?			///	
e. Is the %RSD ≤ 30 for all CCCs?			///	
f. Is the average RRF ≥ 0.300 for SPCCs chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.100 for all other SPCCs, and ≥ 0.01 for all non-SPCCs?			///	
g. Are compounds having %RSD ≤ 15 quantitated using the average RRF?			///	
h. Are compounds with %RSD > 15 quantitated using a linear regression with a correlation coefficient ≥ 0.990 or a quadratic regression (minimum of 6 standards) with a coefficient of determination ≥ 0.990 ?				
3. Raw Data				
a. Are copies of all sample analysis logs included in the raw data package?	///	///	///	
b. Are copies of all standard preparation documentation included in the raw data package?			///	
c. Are all raw data and instrument printouts signed/initialed and dated by the operator, and included in the raw data package?			///	
d. Were all associated data generated by personnel having current program qualifications?			///	
e. Were all calculations performed using validated software or 100% manually-verified?			///	
f. Have the data been reviewed for transcription errors?			///	

Figure D-3. Example of Total VOC ICAL ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total VOCs in Homogeneous Solids and Soil/Gravel by GC/MS

Analytical Batch		Data Report:		Method: CCP-TP-184	
Analysis Date(s)	Data Generator(s)	ITR Review Date	ITR Release Signature	ITR Release Date	
Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)	
1. Instrument Performance Check (BFB Tune)					
a. Was a BFB tune performed at the beginning of each 12-hour analytical shift, before analysis of standards or samples?	///	///	///	///	
b. Does the BFB tune meet CCP-TP-184 acceptance criteria?					
2. Initial Calibration (ICAL)					
a. Have all ICALs used with this analytical batch been verified to meet specifications and approved for use as documented by a completed Initial Calibration Independent Technical Review Checklist?	///	///	///	///	
3. Continuing Calibration Verification (CCAL)					
a. Was a CCAL standard analyzed at the beginning of each 12-hour analytical shift, after the BFB tune but before sample analysis?					
b. Are all CCC RRF or concentration (for modeled compounds) %Ds ≤ 20 ?					
c. Are the RRFs ≥ 0.300 for SPCCs chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.100 for all other SPCCs, and ≥ 0.01 for non-SPCCs?					
d. Are internal standard areas within 50 to 200% of the areas in the last daily calibration standard (CCAL or midpoint ICAL standard)?					
e. Are internal standard retention times (RTs) within 30 seconds of the RT in the last daily calibration standard (CCAL or midpoint ICAL standard)?					
4. Samples (including LCSs, Blanks, MS and MSDe)					
a. Are the internal standard areas within 50 to 200% of those in the associated CCAL?					
b. Are the internal standard retention times within 30 seconds of those in the associated CCAL?					
c. Do all surrogate compound recoveries meet CCP-TP-184 acceptance criteria?					
d. Were all samples having analytes detected in amounts exceeding the calibration range reanalyzed on a dilution?					
e. Are detected target analyte RRTs within 0.06 RRT units of the associated CCAL RRT, or is the qualitative identification justified by the operator?					
f. In your opinion, do the sample spectra for positive hits match the reference spectra?					
g. In your opinion, are the quantitation ion peak areas correctly integrated?					
h. Was a TIC search conducted on each sample and blank in the analytical batch?					
i. Are TIC identities appropriately assigned per the identification criteria of CCP-TP-184?					
5. Blanks					
a. Was at least one unique laboratory blank extracted and analyzed with the analytical batch?	///	///	///	///	
b. Was a blank (method or laboratory) analyzed daily prior to analysis of samples?					
c. Are all laboratory and method blank results $\leq 3 \times$ program-required MDLs for all target analytes?					
6. Laboratory Control Samples (LCSs)					
a. Was at least one unique LCS extracted and analyzed with the analytical batch?	///	///	///	///	
b. Are all LCSs prepared from a standard source different from that used for the ICAL standards?					
c. Do percent recoveries for all spiked analytes in each LCS meet CCP-TP-184 acceptance criteria?					

Figure D-4. Example of Total VOC ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total VOCs in Homogeneous Solids and Soil/Gravel by GC/MS

Analytical Batch	Data Report:	Method: CCP-TP-184		
Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
7. Matrix Spike and Matrix Spike Duplicate Samples (MS/MSD)				
a. Was at least one matrix spike sample (MS) analyzed with the analytical batch?	///	///	///	///
b. Was at least one matrix spike duplicate sample (MSD) analyzed with the analytical batch?				
c. Do all percent recoveries for the MS and MSD meet CCP-TP-184 acceptance criteria?				
d. Do the RPDs between the MS and MSD meet CCP-TP-184 acceptance criteria?				
8. Sample Integrity Verification				
a. Is COC documentation complete and accurate for all reported samples?	///	///	///	///
b. Was physical integrity of all samples verified as satisfactory at VTSR?				
c. Were all samples and associated extracts stored at 4 ± 2 °C between receipt and analysis?				
d. Were all samples extracted within 14 days of collection and analyzed (including dilutions and reanalyses) within 40 days of extraction?				
9. Instrument, Method and Personnel Qualification Verification				
a. Were all analytical tasks, including sample analysis and supporting method performance and ICALs, conducted by personnel having current program qualifications?	///	///	///	///
b. Was acceptable demonstration of precision, accuracy, and MDLs performed within the last 6 months?				
10. Supporting Data Package Completeness				
a. Are all raw data and instrument printouts signed/initialed and dated by the operator and included in the supporting data package?	///	///	///	///
b. Are copies of all extraction/preparation and sample run log books for the analytical batch included in the supporting data package?				
c. Are standard certificates and QC Lab preparation records present and accurate for all working, intermediate and stock standard solutions used?				
d. Are all changes to original data made by line-out of incorrect data, initialed/signed and dated by the person making the change?				
11. Batch Data Report Completeness				
a. Does the report contain a Data Report Narrative that addresses, at a minimum: 1) any deviations from CCP-TP-184 due to sample matrix or ALARA concerns and the justification for the deviations; 2) any QC samples that failed the acceptance criteria, and their impact on data quality; 3) any NCRs associated with the reported samples; and 4) any problems or unusual conditions encountered during the analysis?	///	///	///	///
b. Are copies of any NCRs associated with the data included?				
c. Are Analysis Data Sheets and TIC Analysis Data Sheets present and accurate for all samples in the analytical batch?				
d. Are the analyte concentrations on the Analysis Data Sheets reported in units of mg/kg and correctly rounded to 2 significant figures?				
e. Are U, J, B, D, E, H, Z, and N qualifying flags correctly assigned on the reporting forms?				
f. Are reporting forms present and accurate for surrogate recoveries, MS/MSDs, LRs, MBs, ISA&RTs, LCSS, BFB tunes, ICALs, CCALs, CCAL ISA&RTs, and MDLs?				
g. Are copies of all COC documentation included?				
h. Have all data received documented data generator review and signature?				
i. Were all calculations performed using validated software or 100% manually-verified?				
j. Have the data been reviewed for transcription errors?				
k. Are all pages in the data report legible and correctly paginated?				

Figure D-4. Example of Total VOC ITR checklist (continued)

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total NHVOCs in Homogenous Solids and Soil/Gravel by GC/FID
Retention Time Window (RTW) Determination and Initial Calibration (ICAL) Review

RTW Identifier:		ICAL Identifier:		Method: CCP-TP-186	
Analysis Date(s)	Data Generator(s)	ITR Review Date	ITR Release Signature	ITR Release Date	

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
1. Retention Time (RT) Windows	///	///	///	///
a. Are the retention time windows established at ± 3 standard deviations of the mean absolute RT of a minimum of three standards analyzed over a 72-hour period for each target analyte and surrogate peak on each column?				
2. Initial Calibration (ICAL)	///	///	///	///
a. Were at least 5 standards used to construct ICALs for each analyte on each column?				
b. Is the concentration of at least one calibration standard below the PRQL?				
c. Are all ICAL standard RTs within the determined RT windows on both columns?				
d. Are linear regressions established (regression not forced through the origin and the origin excluded as a data point) for all target analytes and surrogate on each column?				
e. Are all correlation coefficients ≥ 0.990 ?				
3. Raw Data	///	///	///	///
a. Are copies of all sample analysis logs included in the raw data package?			///	
b. Are copies of all standard preparation documentation included in the raw data package?			///	
c. Are all raw data and instrument printouts signed/initialed and dated by the operator and present in the raw data package?			///	
d. Were all associated data generated by personnel having current program qualifications?			///	
e. Were all calculations performed using validated software or 100% manually verified?			///	

Figure D-5. Example of Total NHVOC ICAL and RT Window ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total NHVOCs in Homogenous Solids and Soil/Gravel by GC/FID

Analytical Batch:		Data Report:		Method: CCP-TP-186	
Analysis Date(s)	Data Generator(s)	ITR Review Date	ITR Release Signature	ITR Release Date	
Requirement		Yes	No	N/A	Comments (Entries are required ONLY if "No" is checked)
1. Retention Time (RT) Windows		///	///	///	///
a. Have all RT windows used with this analytical batch been verified and approved for use as documented by a completed RT Window Determination and Initial Calibration Independent Technical Review Checklist?					
2. Initial Calibration (ICAL)		///	///	///	///
a. Have all ICALs used with this analytical batch been verified to meet specifications and approved for use as documented by a completed RT Window Determination and Initial Calibration Independent Technical Review Checklist?					
3. Continuing Calibration Verification (CCV)		///	///	///	///
a. Were CCV standards analyzed at the beginning of each 12-hour analytical shift (before analysis of samples), and at the end of the shift (after sample analysis and within 12 hours of the beginning CCV)?					
b. Are all target analyte peaks within the initial RT windows for the beginning CCV?					
c. Are all target analyte peaks within the daily RT (centered around beginning CCV RTs) windows for the ending CCV?					
d. Are the measured concentration %D ≤15 for each target analyte on both analytical columns for the beginning and ending CCVs?					
4. Samples (Including LCSs, Blanks, MS and MSDs)		///	///	///	///
a. Are all detected target analytes identified on both the quantitation and confirmation column with peaks within the daily RT windows and in concentrations ≥MDL?					
b. Were all samples having analytes detected in amounts exceeding the calibration range reanalyzed on a dilution?					
c. Do all surrogate compound recoveries meet CCP-TP-186 acceptance criteria?					
d. Are all analytes showing discrepancies (interferences) between columns quantitated per CCP-TP-186?					
e. Are analyte retention time windows checked for multiple peaks falling within the RT windows?					
f. Have peak baselines been checked for correct integration?					
g. Were the correct quantitation routines used for each column?					
h. Are peak areas proportionally consistent with those of the CCV?					
5. Blanks		///	///	///	///
a. Was at least one unique laboratory blank extracted and analyzed with the analytical batch?					
b. Was a blank (laboratory or method) analyzed daily prior to the analysis of samples?					
c. Are all blank results ≤3 x program-required MDLs for all target analytes?					
6. Laboratory Control Samples (LCSs)		///	///	///	///
a. Was at least one unique LCS extracted and analyzed with the analytical batch?					
b. Are all LCSs prepared from a standard source different from that used for the calibration standards?					
c. Does the LCS contain all of the NHVOC target analytes?					
d. Are the percent recoveries for each target analyte in each LCS between 60% and 150%?					

Figure D-6. Example of Total NHVOC ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total NHVOCs in Homogenous Solids and Soil/Gravel by GC/FID

Analytical Batch:	Data Report:	Method: CCP-TP-186		
Requirement	Yes	No	N/A	Comments (Entries are required ONLY if "No" is checked)
7. Matrix Spike and Matrix Spike Duplicate Samples (MS/MSD)	///	///	///	///
a. Was at least one matrix spike sample (MS) analyzed with the analytical batch?				
b. Was at least one matrix spike duplicate sample (MSD) analyzed with the analytical batch?				
c. Are all percent recoveries for the MS and MSD between 60% and 150%?				
d. Are all RPDs between the MS and MSD ≤ 50 ?				
8. Sample Integrity Verification	///	///	///	///
a. Is COC documentation complete and accurate for all reported samples?				
b. Was physical integrity of all samples verified as satisfactory at VTSR?				
c. Were all samples and associated extracts stored at 4 ± 2 °C between receipt and analysis?				
d. Were all samples (including dilutions and reanalyses) analyzed within 14 days of collection?				
9. Instrument, Method and Personnel Qualification Verification	///	///	///	///
a. Were all analytical tasks, including sample analysis and supporting method performance and ICALs, conducted by personnel having current program qualifications?				
b. Was acceptable demonstration of precision, accuracy, and MDLs performed within the last 6 months?				
10. Supporting Data Package Completeness	///	///	///	///
a. Are all raw data and instrument printouts signed/initialed (in permanent black ink) and dated by the operator and included in the supporting data package?				
b. Are copies of all extraction/preparation and analysis run log books for the analytical batch included in the supporting data package?				
c. Are standard certificates and QC Lab preparation records present and accurate for all working, intermediate and stock standard solutions used?				
d. Are all changes to original data made by line-out of incorrect data, initialed/signed and dated by the person making the change?				
11. Batch Data Report Completeness	///	///	///	///
a. Does the report contain a Data Report Narrative that addresses, at a minimum: 1) any deviations from CCP-TP-186 due to sample matrix or ALARA concerns and the justification for the deviations; 2) any QC samples that failed the acceptance criteria, and their impact on data quality; 3) any NCRs associated with the reported samples; and 4) any problems or unusual conditions encountered during the analysis?				
b. Are copies of any NCRs associated with the data included?				
c. Are Analysis Data Sheets present and accurate for all samples in the analytical batch?				
d. Are the analyte concentrations on the Analysis Data Sheets reported in units of mg/kg and correctly rounded to 2 significant figures?				
e. Are U, J, B, D, E, H, and Z data qualifying flags correctly assigned on the reporting forms?				
f. Are reporting forms present and accurate for surrogate recoveries, MS/MSDs, LRs, LCSs, ICALs, CCVs, MBLs and Analyte Identification?				
g. Are copies of all COC documentation included?				
h. Have all data received documented data generator review and signature?				
i. Were all calculations performed using validated software or 100% manually verified?				
j. Have the data been reviewed for transcription errors?				
k. Are all pages in the data report legible and correctly paginated?				

Figure D-6. Example of Total NHVOC ITR checklist (continued)

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total SVOCs in Homogeneous Solids and Soil/Gravel by GC/MS
Initial Calibration (ICAL) Review

ICAL Identifier:			Method: CCP-TP-185	
Analysis Date	Data Generator	ITR Review Date	ITR Signature Release	ITR Release Date

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
1. Instrument Performance Check (DFTPP Tune)	///	///	///	
a. Was a DFTPP tune performed at the beginning of the 12-hour analytical shift, before analysis of standards?			///	
b. Does the DFTPP tune meet CCP-TP-185 acceptance criteria?			///	
2. Initial Calibration (ICAL)	///	///	///	
a. Were at least 5 standards used to construct the ICAL?			///	
b. Is the concentration of at least one calibration standard below the PRQL?			///	
c. Are the correct primary ions used to quantitate all compounds, or secondary-ion use appropriately justified?			///	
d. Is each analyte RRF calculated using the internal standard nearest in retention time?			///	
e. Is the %RSD ≤ 30 for all CCCs?			///	
f. Is the average RRF ≥ 0.050 all SPCCs and ≥ 0.01 for all non-SPCCs?			///	
g. Are compounds having %RSD ≤ 15 quantitated using the average RRF?			///	
h. Are compounds with %RSD > 15 quantitated using a linear regression with a correlation coefficient ≥ 0.990 or a quadratic regression (minimum of 6 standards) with a coefficient of determination ≥ 0.990 ?			///	
3. Raw Data	///	///	///	
a. Are copies of all sample analysis logs included in the raw data package?			///	
b. Are copies of all standard preparation documentation included in the raw data package:			///	
c. Are all raw data and instrument printouts signed/initialed and dated by the operator, and included in the raw data package?			///	
d. Were all associated data generated by personnel having current program qualifications?			///	
e. Were all calculations performed using validated software or 100% manually-verified?			///	
f. Have the data been reviewed for transcription errors?			///	

Figure D-7. Example of Total SVOC ICAL ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total SVOCs in Homogeneous Solids and Soil/Gravel by GC/MS

Analytical Batch:	Data Report:	Methods: CCP-TP-185 and CCP-TP-187
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Analysis Date(s)	Data Generator(s)	ITR Review Date	ITR Signature Release	ITR Release Date

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
1. Instrument Performance Check (DFTPP Tune)				
a. Was a DFTPP tune performed at the beginning of each 12-hour analytical shift, before analysis of standards or samples?	///	///	///	///
b. Does the DFTPP tune meet CCP-TP-185 acceptance criteria?				
2. Initial Calibration (ICAL)				
a. Have all ICALs used with this analytical batch been verified to meet specifications and approved for use as documented by a completed Initial Calibration Independent Technical Review Checklist?	///	///	///	///
3. Continuing Calibration Verification (CCAL)				
a. Was a CCAL standard analyzed at the beginning of each 12-hour analytical shift, after the DFTPP tune but before sample analysis?				
b. Are all CCC RRF or concentration (for modeled compounds) %Ds ≤20?				
c. Are the RRFs ≥0.050 for all SPCCs and ≥ 0.01 for non-SPCCs?				
d. Are internal standard areas within 50 to 200% of the areas in the last daily calibration standard (CCAL or midpoint ICAL standard)?				
e. Are internal standard retention times (RTs) within 30 seconds of the RT in the last daily calibration standard (CCAL or midpoint ICAL standard)?				
4. Samples (Including LCSs, Blanks, MS and MSDs)				
a. Are the internal standard areas within 50 to 200% of those in the associated CCAL?				
b. Are the internal standard retention times within 30 seconds of those in the associated CCAL?				
c. Do all surrogate compound recoveries meet CCP-TP-185 acceptance criteria?				
d. Were all samples having analytes detected in amounts exceeding the calibration range reanalyzed on a dilution?				
e. Are detected target analyte RRTs within 0.06 RRT units of the associated CCAL RRT, or is the qualitative identification justified by the operator?				
f. In your opinion, do the sample spectra for positive hits match the reference spectra?				
g. In your opinion, are the quantitation ion peak areas correctly integrated?				
h. Was a TIC search conducted on each sample and blank in the analytical batch?				
i. Are TIC identities appropriately assigned per the identification criteria of CCP-TP-185?				
5. Blanks				
a. Was at least one unique laboratory blank extracted and analyzed with the analytical batch?	///	///	///	///
b. Are all laboratory blank results ≤3 × program-required MDLs for all target analytes?				
6. Laboratory Control Samples (LCSs)				
a. Was at least one unique LCS extracted and analyzed with the analytical batch?				
b. Are all LCSs prepared from a standard source different from that used for the ICAL standards?				
c. Do percent recoveries for all spiked analytes in each LCS meet CCP-TP-185 acceptance criteria?				
7. Matrix Spike and Matrix Spike Duplicate Samples (MS/MSD)				
a. Was at least one matrix spike sample (MS) analyzed with the analytical batch?	///	///	///	///
b. Was at least one matrix spike duplicate sample (MSD) analyzed with the analytical batch?				
c. Do all percent recoveries for the MS and MSD meet CCP-TP-185 acceptance criteria?				
d. Do the RPDs between the MS and MSD meet CCP-TP-185 acceptance criteria?				

Form Date: 05/01/09

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Figure D-8. Example of Total SVOC ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total SVOCs in Homogeneous Solids and Soil/Gravel by GC/MS

Analytical Batch:	Data Report:	Methods: CCP-TP-185 and CCP-TP-187		
Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
8. Sample Integrity Verification				
a. Is COC documentation complete and accurate for all reported samples?	///	///	///	///
b. Was physical integrity of all samples verified as satisfactory at VTSR?				
c. Were all samples stored at 4 ± 2 °C between receipt and analysis?				
d. Were all extracts stored at < -10 °C between preparation and analysis?				
e. Were all samples extracted within 14 days of collection and analyzed (including dilutions and reanalyses) within 40 days of extraction?				
9. Instrument, Method and Personnel Qualification Verification				
a. Were all analytical tasks, including sample analysis and supporting method performance and ICALs, conducted by personnel having current program qualifications?				
b. Was acceptable demonstration of precision, accuracy, and MDLs performed within the last 6 months?				
10. Supporting Data Package Completeness				
a. Are all raw data and instrument printouts signed/initialed (in permanent black ink) and dated by the operator and included in the supporting data package?	///	///	///	///
b. Are copies of all extraction/preparation and analysis run log books for the analytical batch included in the supporting data package?				
c. Are standard certificates and QC Lab preparation records present and accurate for all working, intermediate and stock standard solutions used?				
d. Are all changes to original data made by line-out of incorrect data, initialed/signed and dated by the person making the change?				
11. Batch Data Report Completeness				
a. Does the report contain a Data Report Narrative that addresses, at a minimum: 1) any deviations from CCP-TP-185 or CCP-TP-187 due to sample matrix or ALARA concerns and the justification for the deviations; 2) any QC samples that failed the acceptance criteria, and their impact on data quality; 3) any NCRs associated with the reported samples; and 4) any problems or unusual conditions encountered during the analysis?	///	///	///	///
b. Are copies of any NCRs associated with the data included?				
c. Are Analysis Data Sheets and TIC Analysis Data Sheets present and accurate for all samples in the analytical batch?				
d. Are the analyte concentrations on the Analysis Data Sheets reported in units of mg/kg and correctly rounded to 2 significant figures?				
e. Are U, J, B, D, E, H, Z, and N qualifying flags correctly assigned on the reporting forms?				
f. Are reporting forms present and accurate for surrogate recoveries, MS/MSDs, LBS, MBs, ISA&RTs, LCSs, DFTPP tunes, ICALs, CCALs, CCAL ISA&RTs, and MDLs?				
g. Are copies of all COC documentation included?				
h. Have all data received documented data generator review and signature?				
i. Were all calculations performed using validated software or 100% manually verified?				
j. Have the data been reviewed for transcription errors?				
k. Are all pages in the data report legible and correctly paginated?				

Figure D-8. Example of Total SVOC ITR checklist (continued)

**ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total Metals in Homogeneous Solids and Soil/Gravel by ICP-AES**

Analytical Batch:	Data Report:	Methods: CCP-TP-182 & CCP-TP-183
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Analysis Date(s)	Data Generator	ITR Review Date	ITR Signature Release	ITR Release Date

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
1. Initial Calibration	///	///	///	///
a. Was the initial calibration performed using a minimum of 1 standard and a blank?				
2. Initial Calibration Verification (ICV)	///	///	///	///
a. Was an ICV analyzed after the initial calibration and prior to analysis of any samples?				
b. Are the recoveries for each reported analyte in the ICV between 90% and 110%?				
c. Is the ICV standard from a different source than the initial calibration standards?				
3. Continuing Calibration Verification (CCV)	///	///	///	///
a. Was the CCV solution analyzed (as ICV) prior to the analysis of samples?				
b. Is the percent recovery of each reported analyte between 90% and 110%?				
c. Was a compliant CCV analyzed for reported analytes at the completion of the analytical run?				
d. Were every 10 samples bracketed by compliant CCVs or ICV/CCV pair for reported analytes?				
4. Low Level Concentration Check Standard (LLC)	///	///	///	///
a. Was the LLC solution analyzed prior to the analysis of samples?				
b. Is the percent recovery of each reported analyte between 80% and 120%?				
5. Blanks	///	///	///	///
a. Was at least one laboratory blank digested and analyzed with the analytical batch?				
b. Are the laboratory blank results $\leq 3 \times \text{PRDL}$ for all reported analytes?				
c. Was an ICB analyzed immediately after the ICV?				
d. Was a CCB analyzed immediately after each CCV?				
e. Are each of the ICB and CCB results \leq the PRDL for all reported analytes?				
6. Laboratory Control Samples (LCS)	///	///	///	///
a. Was at least one LCS digested and analyzed with the analytical batch?				
b. Is %R for all reported analytes between 80% and 120% for aqueous LCSs, or within manufacturer or statistical control limits for solid LCSs?				
7. Matrix Spikes (MS) and Matrix Spike Duplicates (MSD)	///	///	///	///
a. Were a MS and a MSD performed on at least one field sample from the analytical batch?				
b. Is the MS/MSD RPD ≤ 30 for all analytes?				
c. Is %R between 80% to 120% for all analytes in the MS and MSD?				

Figure D-9. Example of Total Metals by ICP-AES ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total Metals in Homogeneous Solids and Soil/Gravel by ICP-AES

Analytical Batch:	Data Report:	Methods: CCP-TP-182 & CCP-TP-183		
Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
8. Background Correction and Interference Check Samples	///	///	///	///
a. Was background correction used during the analysis and applied correctly?				
b. Were the interfering elements monitored during the analysis and interelement correction factors correctly applied where necessary?				
c. Were the ICSA and ICSAB solutions analyzed within prescribed limits at both the beginning and end of the analytical run, or twice per 8 hour shift, whichever is more frequent?				
9. Samples [Including MS, MSD, Post Digestion Spike (PDS) and Serial Dilution (SD)]	///	///	///	///
a. Were all samples having analytes detected in amounts exceeding the Documented Linear Range reanalyzed with a dilution?				
b. Was at least one serial dilution analysis per matrix performed in the analytical batch?				
c. For all analytes > 50x IDL in the initial sample, are serial dilution results ≤ 10 %D of initial value?				
d. Was at least one post-digestion spike (PDS) analysis performed in the analytical batch if MS, MSD, or SD failed (see 7c and 9c)?				
e. If a PDS was analyzed, was the PDS recovery within the required range of 75% to 125%?				
f. Are any corrective actions taken during the analysis documented in the raw data?				
10. Sample Integrity Verification	///	///	///	///
a. Is COC documentation complete and accurate for all reported samples?				
b. Was physical integrity of all samples verified as satisfactory at VTSR?				
c. Were all samples stored at 4 ± 2 °C between receipt and analysis?				
d. Were all samples prepared and analyzed (including dilutions) within 180 days of collection?				
11. Instrument, Method and Personnel Qualification Verification	///	///	///	///
a. Were all analytical tasks, including sample analysis and supporting method performance, conducted by personnel having current program qualifications?				
b. Was acceptable demonstration of precision, accuracy, and IDLs performed within the last 6 months?				
12. Supporting Data Package Completeness	///	///	///	///
a. Are all instrument and computer system printouts present and accurate for every reported standard, sample and QC sample?				
b. Are copies of preparation log books for all digested samples and QC samples present and accurate?				
c. Are standard certificates and QC Lab preparation records present and accurate for all working and intermediate standards used?				
d. Are all raw data initialed/signed by the operator in permanent black ink?				
e. Are all changes to original data made by line-out of incorrect data, initialed/signed and dated by the person making the change?				
13. Batch Data Report Completeness	///	///	///	///
a. Does the report contain a Data Report Narrative that addresses, at a minimum: 1) any deviations from CCP-TP-182 or CCP-TP-183 due to sample matrix or ALARA concerns and the justification for the deviations; 2) any QC samples that failed the acceptance criteria, and their impact on data quality; 3) any NCRs associated with the reported samples; and 4) any problems or unusual conditions encountered during the analysis?				
b. Are copies of any NCRs associated with the data included?				

Figure D-9. Example of Total Metals by ICP-AES ITR checklist (continued)

**ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total Metals in Homogeneous Solids and Soil/Gravel by ICP-AES**

Analytical Batch:	Data Report:	Methods: CCP-TP-182 & CCP-TP-183
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Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
c. Are Analysis Data Sheets present and accurate for all samples in the analytical batch?				
d. Are analyte concentrations on the Analysis Data Sheets reported in units of mg/kg and correctly rounded to 2 significant figures?				
e. Are U, J, B, H and Z data qualifying flags correctly assigned on the reporting forms?				
f. Are reporting forms present and accurate for MS/MSD %R and RPD, LCSs, ICB/CCB/LBs, ICV/CCVs, LLCs, ICSA/ICSABs, SDs, linear range, and IDLs? PDSs as required?				
g. Are copies of all COC documentation included?				
h. Have all data received documented data generator review and signature?				
i. Were all calculations performed using validated software or 100% manually verified?				
j. Have the data been reviewed for transcription errors?				
k. Are all pages in the data report legible and correctly paginated?				

Figure D-9. Example of Total Metals by ICP-AES ITR checklist (continued)

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total Mercury in Homogeneous Solids and Soil/Gravel by CVAA

Analytical Batch:	Data Report:	Method: CCP-TP-181
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Analysis Date(s)	Data Generator	ITR Review Date	ITR Release Signature	ITR Release Date

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
1. Initial Calibration	///	///	///	///
a. Was the initial calibration performed using a minimum of 5 standards and a blank?				
b. Is the regression coefficient (r) ≥ 0.995 ?				
2. Initial Calibration Verification (ICV)	///	///	///	///
a. Was an ICV analyzed after the initial calibration and prior to analysis of any samples?				
b. Is the recovery of the ICV between 80% and 120%?				
c. Is the ICV standard prepared from a different source than that of the initial calibration standards?				
3. Continuing Calibration Verification (CCV)	///	///	///	///
a. Was the CCV analyzed prior to the analysis of samples?				
b. Is the percent recovery for the CCV between 80% and 120%?				
c. Was a compliant CCV (%R between 80% and 120%) analyzed at the completion of the analytical run?				
d. Were every ten samples bracketed by compliant CCVs?				
4. Blanks	///	///	///	///
a. Was at least one laboratory blank (LB) digested and analyzed with the analytical batch?				
b. Are all laboratory blank results $\leq 3 \times \text{PRDL}$?				
c. Was an ICB analyzed immediately after the ICV?				
d. Was a CCB analyzed immediately after each CCV?				
e. Is each of the ICB and CCB results $\leq \text{PRDL}$?				
5. Laboratory Control Sample (LCS)	///	///	///	///
a. Was at least one LCS digested and analyzed with the analytical batch?				
b. Is the recovery within the manufacturer/statistical control limits for LCSs?				
6. Matrix Spikes (MS) and Matrix Spike Duplicates (MSD)	///	///	///	///
a. Were a MS and a MSD performed on at least one sample from the analytical batch?				
b. Is the MS/MSD RPD ≤ 30 ?				
c. Are percent recoveries (%R) between 80% and 120% for the MS and MSD?				

Figure D-10. Example of Total Mercury ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total Mercury in Homogeneous Solids and Soil/Gravel by CVAA

Analytical Batch:	Data Report:	Method: CCP-TP-181
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Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
7. Samples (Including MS, MSD, Post Digestion Spike (PDS) and Serial Dilution (SD))	///	///	///	///
a. Were all samples and QC samples with mercury readings exceeding the calibration range reanalyzed with a dilution?				
b. Was a SD analyzed in the analytical batch if 6c is NO and at least one sample concentration exceeded 10xIDL?				
c. If a SD was analyzed, is %D ≤10?				
d. IF 6c is NO AND 7c is NO or N/A, was a PDS performed in the analytical batch?				
e. IF 7d is YES was the PDS spike recovery between 85% and 115%?				
f. Was MSA used for quantitation if PDS was required AND did not meet the acceptance criteria?				
g. Are any corrective actions taken during the analysis documented in the raw data?				
8. Sample Integrity Verification	///	///	///	///
a. Is COC documentation complete and accurate for all reported samples?				
b. Was physical integrity of all samples verified as satisfactory at VTSR?				
c. Were all samples stored at 4 ± 2 °C between receipt and analysis?				
d. Were all samples prepared and analyzed (including dilutions) within 28 days of collection?				
9. Instrument, Method and Personnel Qualification Verification	///	///	///	///
a. Were all analytical tasks, including sample analysis and supporting method performance, conducted by personnel having current program qualifications?				
b. Was acceptable demonstration of precision, accuracy, and IDLs performed within the last 6 months?				
10. Supporting Data Package Completeness	///	///	///	///
a. Are all instrument and computer system printouts present and accurate for every reported standard, sample and QC sample?				
b. Are copies of preparation and analysis run log books for all samples and QC samples present and accurate?				
c. Are standard certificates and QC Lab preparation records present and accurate for all working and intermediate standards used?				
d. Are all raw data initialed/signed by the operator in permanent black ink?				
e. Are all changes to original data made by line-out of incorrect data, initialed/signed and dated by the person making the change?				
11. Batch Data Report Completeness	///	///	///	///
a. Does the report contain a Data Report Narrative that addresses, at a minimum: 1) any deviations from CCP-TP-181 due to sample matrix or ALARA concerns and the justification for the deviations; 2) any QC samples that failed the acceptance criteria, and their impact on data quality; 3) any NCRs associated with the reported samples; and 4) any problems or unusual conditions encountered during the analysis?				

Figure D-10. Example of Total Mercury ITR checklist (continued)

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Total Mercury in Homogeneous Solids and Soil/Gravel by CVAA

Analytical Batch:	Data Report:	Method: CCP-TP-181
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Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
b. Are copies of any NCRs associated with the data included?				
c. Are Analysis Data Sheets present and accurate for all samples in the analytical batch?				
d. Are analyte concentrations on the Analysis Data Sheets reported in units of mg/kg and correctly rounded to 2 significant figures?				
e. Are U, J, B, H and Z data qualifying flags correctly assigned on the reporting forms?				
f. Are reporting forms present and accurate for MS/MSD %R and RPD, LCSs, ICB/CCB/LBs, ICV/CCVs, and IDLs? SDs, PDSs, and MSA if required?				
g. Are copies of all COC documentation included?				
h. Have all data received documented data generator review and signature?				
i. Were all calculations performed using validated software or 100% manually verified?				
j. Have the data been reviewed for transcription errors?				
k. Are all pages in the data report legible and correctly paginated?				

Figure D-10 Example of Total Mercury ITR checklist (continued)

**ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Formaldehyde by High Performance Liquid Chromatography (HPLC)**

Analytical Batch:	Data Report:	Methods: CCP-TP-196
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Analysis Date(s)	Data Generator	ITR Review Date	ITR Signature Release	ITR Release Date

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
1. Retention Time (RT) Window	///	///	///	///
a. Has the RT window for formaldehyde been established at ± 3 standard deviations of the mean absolute RT of at least three standard injections analyzed over a minimum 72-hour period?				
2. Initial Calibration (ICAL)	///	///	///	///
a. Was an initial calibration performed daily with use using a minimum of 5 standards and a blank?				
b. Is the concentration of at least one ICAL standard below the PRQL?				
c. Is each calibration established as a linear regression, with the regression not forced through the origin and the origin excluded as a data point?				
d. Is the linear regression coefficient (r) ≥ 0.990 for each ICAL used for the analytical batch?				
e. Are the RTs of all ICAL standards within the determined RT window?				
3. Initial Calibration Verification	///	///	///	///
a. Was an ICV analyzed after each ICAL and prior to analysis of any samples?				
b. Is the ICV standard from a different source than the ICAL?				
c. Are the recoveries of all ICVs between 85% and 115%?				
d. Are the RTs of all ICVs within the determined RT window?				
4. Continuing Calibration Verification (CCV)	///	///	///	///
a. Was a CCV solution analyzed (as ICV) after each ICAL and prior to the analysis of samples?				
b. Was a CCV solution analyzed at a minimum frequency of every 10 analytical sample injections and at the end of each daily run?				
c. Are the percent recoveries of each CCV between 85% and 115%?				
d. Are the RTs of all CCVs within the determined RT window?				
5. Initial and Continuing Calibration Blank Verification (ICB/CCB)	///	///	///	///
a. Was an ICB analyzed immediately after every ICV?				
b. Was a CCB analyzed immediately after every CCV?				
c. Are the results for every ICB and CCB $\leq 3 \times$ the solution equivalent of the program-required MDL?				
6. Laboratory Blanks (LB)	///	///	///	///
a. Was at least one laboratory blank prepared and analyzed with the analytical batch?				
b. Are all laboratory blank results $\leq 3 \times$ program-required MDL?				
7. Laboratory Control Samples (LCS)	///	///	///	///
a. Was at least one unique LCS prepared and analyzed with the analytical batch?				
b. Are all LCSs prepared from a standard source different from that used for the ICAL?				
c. Are all recoveries of all LCSs between 60% and 150%?				
d. Are the RTs of all LCSs within the determined RT window?				

Figure D-11 Example of Formaldehyde ITR checklist

**ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Formaldehyde by High Performance Liquid Chromatography (HPLC)**

Analytical Batch:	Data Report:	Methods: CCP-TP-196
-------------------	--------------	---------------------

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
8. Matrix Spikes (MS) and Matrix Spike Duplicates (MSD)	///	///	///	///
a. Were a MS and a MSD performed on at least one field sample from the analytical batch?				
b. Is the MS recovery between 80% and 150%?				
c. Is the MSD recovery between 80% and 150%?				
d. Is the MS/MSD RPD ≤50?				
9. Samples [Including LCSs, LBs, MS, MSD]	///	///	///	///
a. Were all samples having concentrations exceeding the calibration range reanalyzed on a dilution?				
b. Is a derivatizing agent artifact peak present in all sample chromatograms?				
c. Are all detected analyte peaks within the established RT window?				
d. If RT alone is insufficient to identify formaldehyde due to poor resolution or coeluting interferences, was the sample extract spiked and reanalyzed to verify the target analyte peak identity?				
e. Are all target analyte peaks correctly integrated?				
10. Sample Integrity Verification	///	///	///	///
a. Is COC documentation complete and accurate for all reported samples?				
b. Was physical integrity of all samples verified as satisfactory at VTSR?				
c. Were all samples and associated extracts stored at 4 ± 2 °C between receipt and analysis?				
d. Were all samples extracted within 14 days of collection?				
e. Were all samples extracts derivatized within 3 days of extraction?				
f. Were all derivatized samples analyzed within 3 days of derivatization?				
11. Instrument, Method and Personnel Qualification Verification	///	///	///	///
a. Were all analytical tasks, including sample analysis and supporting method performance, conducted by personnel having current program qualifications?				
b. Was acceptable demonstration of precision, accuracy, and MDLs performed within the last 6 months?				
12. Supporting Data Package Completeness	///	///	///	///
a. Are all instrument and computer system printouts present and accurate for every reported standard, sample and QC sample?				
b. Are copies of all extraction/preparation and analysis log book pages for the analytical batch present and accurate?				
c. Are standard certificates and QC Lab preparation records present and accurate for all working, intermediate, and stock standards used?				
d. Are all raw data initialed/signed and dated by the operator in permanent black ink?				
e. Are all changes to original data made by line-out of incorrect data, initialed/signed and dated by the person making the change?				
f. Are any corrective actions taken during the analysis documented in the raw data?				

Figure D-11 Example of Formaldehyde ITR checklist (continued)

**ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Formaldehyde by High Performance Liquid Chromatography (HPLC)**

Analytical Batch:	Data Report:	Methods: CCP-TP-196
-------------------	--------------	---------------------

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
13. Batch Data Report Completeness	///	///	///	///
a. Does the report contain a Data Report Narrative that addresses, at a minimum: 1) any deviations from CCP-TP-196 due to sample matrix or ALARA concerns and the justification for the deviations; 2) any QC samples that failed the acceptance criteria, and their impact on data quality; 3) any NCRs associated with the reported samples; and 4) any problems or unusual conditions encountered during the analysis?				
b. Are copies of any NCRs associated with the data included?				
c. Are Analysis Data Sheets present and accurate for all samples in the analytical batch?				
d. Are analyte concentrations on the Analysis Data Sheets reported in units of mg/kg and correctly rounded to 2 significant figures?				
e. Are U, J, B, D, E, H and Z data qualifying flags correctly assigned on the reporting forms?				
f. Are QC reporting forms present and accurate for MS/MSD %R and RPD, LCSs, LBs, ICALs, ICV/CCVs, ICB/CCBs, and MDLs?				
g. Are copies of all COC documentation included?				
h. Have all data received documented data generator review and signature?				
i. Were all calculations performed using validated software or 100% manually verified?				
j. Have the data been reviewed for transcription errors?				
k. Are all pages in the data report legible and correctly paginated?				

Figure D-11 Example of Formaldehyde ITR checklist (continued)

**ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Hydrazine by High Performance Liquid Chromatography (HPLC)**

Analytical Batch:	Data Report:	Methods: CCP-TP-197
-------------------	--------------	---------------------

Analysis Date(s)	Data Generator	ITR Review Date	ITR Signature Release	ITR Release Date

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
1. Retention Time (RT) Window	///	///	///	///
a. Has the RT window for hydrazine been established at ± 3 standard deviations of the mean absolute RT of at least three standard injections analyzed over a minimum 72-hour period?				
2. Initial Calibration (ICAL)	///	///	///	///
a. Was an initial calibration performed daily with use using a minimum of 5 standards and a blank?				
b. Is the concentration of at least one ICAL standard below the PRQL?				
c. Is each calibration established as a linear regression, with the regression not forced through the origin and the origin excluded as a data point?				
d. Is the linear regression coefficient (r) ≥ 0.990 for each ICAL used for the analytical batch?				
e. Are the RTs of all ICAL standards within the determined RT window?				
3. Initial Calibration Verification	///	///	///	///
a. Was an ICV analyzed after each ICAL and prior to analysis of any samples?				
b. Is the ICV standard from a different source than the ICAL?				
c. Are the recoveries of all ICVs between 85% and 115%?				
d. Are the RTs of all ICVs within the determined RT window?				
4. Continuing Calibration Verification (CCV)	///	///	///	///
a. Was a CCV solution analyzed (as ICV) after each ICAL and prior to the analysis of samples?				
b. Was a CCV solution analyzed at a minimum frequency of every 10 analytical sample injections and at the end of each daily run?				
c. Are the percent recoveries of each CCV between 85% and 115%?				
d. Are the RTs of all CCVs within the determined RT window?				
5. Initial and Continuing Calibration Blank Verification (ICB/CCB)	///	///	///	///
a. Was an ICB analyzed immediately after every ICV?				
b. Was a CCB analyzed immediately after every CCV?				
c. Are the results for every ICB and CCB $\leq 3 \times$ the solution equivalent of the program-required MDL?				
6. Laboratory Blanks (LB)	///	///	///	///
a. Was at least one laboratory blank prepared and analyzed with the analytical batch?				
b. Are all laboratory blank results $\leq 3 \times$ program-required MDL?				
7. Laboratory Control Samples (LCS)	///	///	///	///
a. Was at least one unique LCS prepared and analyzed with the analytical batch?				
b. Are all LCSs prepared from a standard source different from that used for the ICAL?				
c. Are all recoveries of all LCSs between 60% and 150%?				
d. Are the RTs of all LCSs within the determined RT window?				

Figure D-12 Example of Hydrazine ITR checklist

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Hydrazine by High Performance Liquid Chromatography (HPLC)

Analytical Batch:	Data Report:	Methods: CCP-TP-197
-------------------	--------------	---------------------

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
8. Matrix Spikes (MS) and Matrix Spike Duplicates (MSD)	///	///	///	///
a. Were a MS and a MSD performed on at least one field sample from the analytical batch?				
b. Is the MS recovery between 60% and 150%?				
c. Is the MSD recovery between 60% and 150%?				
d. Is the MS/MSD RPD ≤50?				
9. Samples [Including LCs, LBs, MS, MSD]	///	///	///	///
a. Were all samples having concentrations exceeding the calibration range reanalyzed on a dilution?				
b. Is a derivatizing agent artifact peak present in all sample chromatograms?				
c. Are all detected analyte peaks within the established RT window?				
d. If RT alone is insufficient to identify hydrazine due to poor resolution or coeluting interferences, was the sample extract spiked and reanalyzed to verify the target analyte peak identity?				
e. Are all target analyte peaks correctly integrated?				
10. Sample Integrity Verification	///	///	///	///
a. Is COC documentation complete and accurate for all reported samples?				
b. Was physical integrity of all samples verified as satisfactory at VTSR?				
c. Were all samples and associated extracts stored at 4 ± 2 °C between receipt and analysis?				
d. Were all samples extracted within 14 days of collection?				
e. Were all samples extracts derivatized within 3 days of extraction?				
f. Were all derivatized samples analyzed within 3 days of derivatization?				
11. Instrument, Method and Personnel Qualification Verification	///	///	///	///
a. Were all analytical tasks, including sample analysis and supporting method performance, conducted by personnel having current program qualifications?				
b. Was acceptable demonstration of precision, accuracy, and MDLs performed within the last 6 months?				
12. Supporting Data Package Completeness	///	///	///	///
a. Are all instrument and computer system printouts present and accurate for every reported standard, sample and QC sample?				
b. Are copies of all extraction/preparation and analysis log book pages for the analytical batch present and accurate?				
c. Are standard certificates and QC Lab preparation records present and accurate for all working, intermediate, and stock standards used?				
d. Are all raw data initialed/signed and dated by the operator in permanent black ink?				
e. Are all changes to original data made by line-out of incorrect data, initialed/signed and dated by the person making the change?				
f. Are any corrective actions taken during the analysis documented in the raw data?				

Figure D-12 Example of Hydrazine ITR checklist (continued)

ICP Analytical Laboratory
Independent Technical Review (ITR) Checklist for CCP
Hydrazine by High Performance Liquid Chromatography (HPLC)

Analytical Batch:	Data Report:	Methods: CCP-TP-197
-------------------	--------------	---------------------

Requirement	Yes	No	N/A	Comments (Entries required ONLY if "No" is checked)
13. Batch Data Report Completeness	///	///	///	///
a. Does the report contain a Data Report Narrative that addresses, at a minimum: 1) any deviations from CCP-TP-197 due to sample matrix or ALARA concerns and the justification for the deviations; 2) any QC samples that failed the acceptance criteria, and their impact on data quality; 3) any NCRs associated with the reported samples; and 4) any problems or unusual conditions encountered during the analysis?				
b. Are copies of any NCRs associated with the data included?				
c. Are Analysis Data Sheets present and accurate for all samples in the analytical batch?				
d. Are analyte concentrations on the Analysis Data Sheets reported in units of mg/kg and correctly rounded to 2 significant figures?				
e. Are U, J, B, D, E, H and Z data qualifying flags correctly assigned on the reporting forms?				
f. Are QC reporting forms present and accurate for MS/MSD %R and RPD, LCSs, LBs, ICALs, ICV/CCVs, ICB/CCBs, and MDLs?				
g. Are copies of all COC documentation included?				
h. Have all data received documented data generator review and signature?				
i. Were all calculations performed using validated software or 100% manually verified?				
j. Have the data been reviewed for transcription errors?				
k. Are all pages in the data report legible and correctly paginated?				

Figure D-12 Example of Hydrazine ITR checklist (continued)

Appendix E

Headspace Gas Data Reporting Forms

An example of the batch data report cover page used for headspace gas analyses batch data reports is provided below. Examples of all other reporting forms used for headspace gas analyses are included in the respective analytical methods (CCP-TP-173 and CCP-TP-175).



Analytical Chemistry and Instrumentation Department
Environmental Chemistry Laboratory

Central Characterization Project

Gas Headspace Analysis Data Report

ISSUED TO:

Records Coordinator
Central Characterization Program
LANL

REPORT IDENTIFICATION:

Report Number:
Analysis Method:
Analyte: VOCs
Revision Number:
Change Number:
Issue Date:

SUMMARY:

Report Content:

Section	Content	Page #
1.0	Sample Identification Table/Analysis Request Form	
2.0	Sample Custody Documents and Sample Tags	
3.0	Analysis Results	
4.0	Quality Control Measurements Results	
5.0	Calibration Results	
6.0	Data Review Checklists	
7.0	GC VOC Raw Data	
8.0	Miscellaneous Supporting Data	

Release Authorization:

Name & Position	Signature	Date
Catherine A. Crowder ECL Group/Technical Leader		

Figure E-1. Example of headspace gas batch data report cover page

Appendix F

Total VOC Data Reporting Forms



TRU Analytical Laboratory

Idaho Cleanup Project

Central Characterization Project

RCRA Analysis Data Report

Batch Data Report Number: ALD090xxV Analytical Method: CCP-TP-184
 Revision Number: 0 Analyte(s): VOCs
 Change Number: 0
 Issue Date: MM/DD/YY
 Waste Generator Site: AMWTP

Summary: This data report contains analysis results for n samples and n trip blanks from Sampling Batch SSCxx-yyyyy.

Report Content:

Section	Content	Pages
1	Sample Identification Table	00xx – 00xx
2	Sample Custody and Tracking Documents	00xx – 00xx
3	Analysis Results	00xx – 00xx
4	Batch QC Sample Results	00xx – 00xx
5	Instrument QC Data	00xx – 00xx
6	Data Review Checklists	00xx – 00xx

Laboratory Release Authorization:

Name & Position	Signature	Date
Jeffrey S. Laug Laboratory Manager		
Shelly J. Sailer Laboratory Quality Assurance Officer		

Figure F-1. Example of Total VOC batch data report cover page

**TOTAL VOC ANALYSIS
SAMPLE CROSS-REFERENCE TABLE**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Preparation Method:

Data Report Number:

Analytical Method:

Analytical Batch ID:

Field Sample ID	Lab Sample ID

Figure F-2. Example of Total VOC sample identification table

TOTAL VOC ANALYSIS DATA SHEET

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Field Sample ID:	Lab Sample ID:
Sampling Batch No:	Lab File ID:
Date Sampled:	Data Report Number:
Date Extracted:	Analytical Batch ID:
Extraction Holding Time:	
Date/Time Analyzed:	Instrument ID:
Analysis Holding Time:	Matrix:
Preparation Method:	Dilution Factor:
Analytical Method:	

CAS NUMBER	TARGET ANALYTE	CONCENTRATION mg/kg	Q
71-43-2	Benzene		
75-25-2	Bromoform		
75-15-0	Carbon Disulfide		
56-23-5	Carbon Tetrachloride		
108-90-7	Chlorobenzene		
67-66-3	Chloroform		
75-35-4	1,1-Dichloroethene		
107-06-2	1,2-Dichloroethane		
100-41-4	Ethylbenzene		
75-09-2	Methylene Chloride		
1330-20-7	m-Xylene and p-Xylene mix		
95-47-6	o-Xylene		
79-34-5	1,1,2,2-Tetrachloroethane		
127-18-4	Tetrachloroethene		
108-88-3	Toluene		
156-60-5	trans-1,2-Dichloroethene		
71-55-6	1,1,1-Trichloroethane		
79-01-6	Trichloroethene		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane		
79-00-5	1,1,2-Trichloroethane		
75-69-4	Trichlorofluoromethane		
75-01-4	Vinyl Chloride		

Figure F-3. Example to Total VOC analysis data sheet

**TOTAL VOC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Field Sample ID:	Lab Sample ID:
Sampling Batch No:	Lab File ID:
Date Sampled:	Data Report Number:
Date Extracted:	Analytical Batch ID:
Extraction Holding Time:	
Date/Time Analyzed:	Instrument ID:
Analysis Holding Time:	Matrix:
Preparation Method:	Dilution Factor:
Analytical Method:	

Number of TICs Found:

	CAS Number	Tentatively Identified VOCs	Concentration mg/kg	Q	Retention Time (min)
1					

Figure F-4. Example of Total VOC TIC analysis data sheet

**TOTAL VOC ANALYSIS
SURROGATE RECOVERY FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Preparation Method:

Data Report Number:

Analytical Method:

Analytical Batch ID:

Instrument ID:

Matrix:

	LAB SAMPLE ID	SMC1 %R (BFB)	SMC2 %R (DCE)	SMC3 %R (TOL)	TOTAL OUT
1					
2					
3					
4					
5					
6					
7					

Control Limits for samples (%R)

Solids

S1 (BFB) = 4-Bromofluorobenzene 75 - 127
S2 (DCE) = 1,2-Dichloroethane-d4 76 - 121
S3 (TOL) = Toluene-d8 71 - 133

Z = Values outside of acceptance criteria
D = Surrogates diluted out

Figure F-5. Example of Total VOC surrogate recovery report form

**TOTAL VOC ANALYSIS
MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORTING FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Preparation Method:		Data Report Number:	
Analytical Method:		Analytical Batch ID:	
Instrument ID:		Matrix:	
Lab Sample ID:	MS Lab Sample ID:	MSD Lab Sample ID:	
Field Sample ID:	MS Field Sample ID:	MSD Field Sample ID:	
Lab File ID:	MS Lab File ID:	MSD Lab File ID:	
Date Analyzed:	MS Date Analyzed:	MSD Date Analyzed:	

TARGET ANALYTE	SPIKE ADDED mg/kg	SAMPLE CONCENTRATION mg/kg	SPIKED SAMPLE CONCENTRATION mg/kg	MS % RECOVERY	ACCEPTANCE CRITERIA % RECOVERY
Benzene					37 - 151
Chlorobenzene					37 - 160
1,1-Dichloroethene					D - 234
Toluene					47 - 150
Trichloroethene					71 - 157

TARGET ANALYTE	SPIKE ADDED mg/kg	DUPLICATE SPIKED SAMPLE CONCENTRATION mg/kg	MSD % RECOVERY	RPD	ACCEPTANCE CRITERIA RPD
Benzene					≤ 45
Chlorobenzene					≤ 38
1,1-Dichloroethene					≤ 250
Toluene					≤ 29
Trichloroethene					≤ 36

Z = Did not meet acceptance criteria
D = Spiked Analytes Diluted out

RPD: out of outside limits
Spike Recovery: out of outside limits

Figure F-6. Example of Total VOC MS/MSD report form

**TOTAL VOC ANALYSIS
LABORATORY CONTROL SAMPLE FORM
(QC REFERENCE CHECK)**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date Extracted:
Date/Time Analyzed:
Preparation Method:
Analytical Method:

Lab Sample ID:
Lab File ID:
Data Report Number:
Analytical Batch ID:
Instrument ID:
Matrix:

TARGET ANALYTE	MEASURED CONCENTRATION (mg/kg)	KNOWN CONCENTRATION (mg/kg)	PERCENT RECOVERY	ACCEPTANCE CRITERIA %RECOVERY
Benzene				37 - 151
Chlorobenzene				37 - 160
1,1-Dichloroethene				D - 234
Toluene				47 - 150
Trichloroethene				71 - 157

Z = Did not meet acceptance criteria

Figure F-9. Example of Total VOC LCS report form

**TOTAL VOC ANALYSIS
INTERNAL STANDARD AREA AND RT SUMMARY**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date/Time Analyzed:
Analytical Method:
Heated Purge (yes/no):

Daily CCAL Sample ID
Daily CCAL Lab File ID:
Data Report Number:
Analytical Batch ID:
Instrument ID:

	IS1 (BCM) Area	RT MIN.	IS2 (DFB) Area	RT MIN.	IS3 (CBZ) Area	RT MIN.
12 HOUR STANDARD						
UPPER LIMIT						
LOWER LIMIT						
Lab Sample ID						
1						
2						
3						
4						

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene-d4
IS3 (CBZ) = Chlorobenzene-d5
Z = Values outside of Acceptance Criteria

Area upper limit = +100% of internal standard area
Area lower limit = -50% of internal standard area
RT upper limit = +30 seconds of internal standard RT
RT lower limit = -30 seconds of internal standard RT

Figure F-10. Example of Total VOC internal standard area and RT summary report form

**TOTAL VOC ANALYSIS
INITIAL CALIBRATION DATA**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Calibration Dates/Times:
Analytical Method:
Heated Purge (yes/no):

ICAL File ID:
Data Report Number:
Analytical Batch ID:
Instrument ID:

LAB FILE ID	RRF 1 =	RRF 3 =	RRF 5 =						
	RRF 2 =	RRF 4 =							
TARGET ANALYTE	RRF 1	RRF 2	RRF 3	RRF 4	RRF 5	AVE RRF	% RSD	#	
Benzene									
4-Bromofluorobenzene									
Bromoform **									
Carbon Disulfide									
Carbon Tetrachloride									
Chlorobenzene **									
Chloroform *									
Chloromethane **									
1,1-Dichloroethane **									
1,1-Dichloroethene *									
1,2-Dichloroethane									
1,2-Dichloroethane-d4									
1,2-Dichloropropane *									
Ethylbenzene *									
Methylene Chloride									
m-Xylene and p-Xylene mix									
o-Xylene									
1,1,2,2-Tetrachloroethane **									
Tetrachloroethane									
Toluene *									
Toluene-d8									
trans-1,2-Dichloroethene									
1,1,1-Trichloroethane									
Trichloroethene									
1,1,2-Trichloro-1,2,2-trifluoroethane									
1,1,2-Trichloroethane									
Trichlorofluoromethane									
Vinyl Chloride *									

%CCC RSD ≤ 30%

CCC - Calibration Check Compounds (*)

SPCC - System Performance Check Compounds(**)

Column used to flag modeled compounds

M = Modeled compound.

Z = Did not meet acceptance criteria

SPCC RRF

Chloromethane ≥ 0.10

1,1 - Dichloroethane ≥ 0.10

Bromoform ≥ 0.10

Chlorobenzene ≥ 0.30

1,1,2,2-Tetrachloroethane ≥ 0.30

All Other Analytes ≥ 0.01

Figure F-12. Example of Total VOC ICAL report form

**TOTAL VOC ANALYSIS
MODELED COMPOUND REPORT**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Calibration Date/Time:	Lab Sample ID:
Analytical Method:	Lab File ID:
Heated Purge (yes/no):	Data Report Number:
Initial Calibration Date(s):	Analytical Batch ID:
	Instrument ID:

TARGET ANALYTE	CCAL RRF	CALCULATED RESULT (ug/L)	KNOWN CONCENTRATION (ug/L)	%D
Bromoform **				

CCC %D ≤ 20%

CCC - Calibration Check Compounds (*)
SPCC - System Performance Check Compounds(**)
Z = Did not meet acceptance criteria

SPCC RRF

Chloromethane	≥ 0.10
1,1 - Dichloroethane	≥ 0.10
Bromoform	≥ 0.10
Chlorobenzene	≥ 0.30
1,1,2,2-Tetrachloroethane	≥ 0.30
All Other Analytes	≥ 0.01

Figure F-14. Example of Total VOC CCAL modeled compound report form

**TOTAL VOC ANALYSIS
CCAL INTERNAL STANDARD AREA AND RT SUMMARY**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date/Time Analyzed:	Daily CCAL Sample ID
Analytical Method:	Daily CCAL Lab File ID:
Heated Purge (yes/no):	Data Report Number:
ICAL/CCAL Sample ID	Analytical Batch ID:
ICAL/CCAL Lab File ID:	Instrument ID:
Date Analyzed:	

		IS1 (BCM) Area	RT MIN.	IS2 (DFB) Area	RT MIN.	IS3 (CBZ) Area	RT MIN.
Previous ICAL/CCAL	12 HOUR STANDARD						
	UPPER LIMIT						
	LOWER LIMIT						
Continuing Calibration Check							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene-d4
IS3 (CBZ) = Chlorobenzene-d5

Z = Values outside of Acceptance Criteria

Area upper limit = +100% of internal standard area
Area lower limit = -50% of internal standard area

RT upper limit = +30 seconds of internal standard RT
RT lower limit = -30 seconds of internal standard RT

Figure F-15. Example of Total VOC CCAL internal standard area & RT report form

**TOTAL VOC ANALYSIS
MDL REPORTING FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

MDL Determination Date:

Instrument ID:

Preparation Method:

Matrix:

Analytical Method:

TARGET ANALYTE	Reported MDL mg/kg	PROGRAM REQUIRED MDL mg/kg	PRQL mg/kg
Benzene		1	10
4-Bromofluorobenzene		1	10
Bromoform		1	10
Carbon Disulfide		1	10
Carbon Tetrachloride		1	10
Chlorobenzene		1	10
Chloroform		1	10
1,1-Dichloroethene		1	10
1,2-Dichloroethane		1	10
1,2-Dichloroethane-d4		1	10
Ethylbenzene		1	10
Methylene Chloride		1	10
m-Xylene and p-Xylene mix		1	10
o-Xylene		1	10
1,1,2,2-Tetrachloroethane		1	10
Tetrachloroethene		1	10
Toluene		1	10
Toluene-d8		1	10
trans-1,2-Dichloroethene		1	10
1,1,1-Trichloroethane		1	10
Trichloroethene		1	10
1,1,2-Trichloro-1,2,2-trifluoroethane		1	10
1,1,2-Trichloroethane		1	10
Trichlorofluoromethane		1	10
Vinyl Chloride		1	4

SOLIDS: MDLs calculated assuming 3.00g sample and 10mL extraction volume.

Figure F-16. Example of Total VOC MDL report form

Appendix G

Total NHVOC Data Reporting Forms



TRU Analytical Laboratory

Idaho Cleanup Project

Central Characterization Project

RCRA Analysis Data Report

Batch Data Report Number: ALD090xxN Analytical Method: CCP-TP-186
 Revision Number: 0 Analyte(s): NHVOCs
 Change Number: 0
 Issue Date: MM/DD/YY
 Waste Generator Site: AMWTP

Summary: This data report contains analysis results for x samples and x trip blanks from Sampling Batch SSCxx-yyyyyy.

Report Content:

Section	Content	Pages
1	Sample Identification Table	00xx – 00xx
2	Sample Custody and Tracking Documents	00xx – 00xx
3	Analysis Results	00xx – 00xx
4	Batch QC Sample Results	00xx – 00xx
5	Instrument QC Data	00xx – 00xx
6	Data Review Checklists	00xx – 00xx

Laboratory Release Authorization:

Name & Position	Signature	Date
Jeffrey S. Laug Laboratory Manager		
Shelly J. Sailer Laboratory Quality Assurance Officer		

Figure G.1. Example to Total NHVOC batch data report cover page

**TOTAL NHVOC ANALYSIS
SURROGATE RECOVERY FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Preparation Method:
Analytical Method:

Data Report Number:
Analytical Batch No:
Instrument ID:
Matrix:

	LAB SAMPLE ID	Isopropanol-d8 %R		TOTAL OUT
		COLUMN A	COLUMN B	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

%R Acceptance Criteria 49 - 161

Z = Values does not meet acceptance criteria
D = Surrogate Diluted out

10/2/2006

Prog. Ver.: .09

FORM II NHVOC

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REV 01/2003

Figure G-4. Example to Total NHVOC surrogate recovery report form

TOTAL NHVOC ANALYSIS
MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORTING FORM

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Preparation Method:		Data Report Number:	
Analytical Method:		Analytical Batch ID:	
Instrument ID:		Sample Matrix:	
Lab Sample ID:	MS Lab Sample ID:	MSD Lab Sample ID:	
Field Sample ID:	MS Field Sample ID:	MSD Field Sample ID:	
Lab File ID:	MS Lab File ID:	MSD Lab File ID:	
Date Analyzed:	MS Date Analyzed:	MSD Date Analyzed:	

COLUMN A ID: DB-624

TARGET ANALYTE	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	SPIKED SAMPLE CONCENTRATION (mg/kg)	MS % RECOVERY	ACCEPTANCE CRITERIA % RECOVERY
Acetone					60 - 150
Butanol					60 - 150
Methanol					60 - 150
Methyl ethyl ketone					60 - 150
Ethyl ether					60 - 150
Isobutanol					60 - 150
Pyridine					60 - 150

TARGET ANALYTE	SPIKE ADDED (mg/kg)	DUPLICATE SAMPLE CONCENTRATION (mg/kg)	%RPD	MSD % RECOVERY	ACCEPTANCE CRITERIA RPD
Acetone					≤ 50
Butanol					< 50
Methanol					≤ 50
Methyl ethyl ketone					≤ 50
Ethyl ether					≤ 50
Isobutanol					≤ 50
Pyridine					≤ 50

Z = Values outside of QC limits

RPD: out of outside acceptance criteria
Spike Recovery: out of outside acceptance criteria

Figure G-5. Example of Total NHVOC MS/MSD report form

**TOTAL NHVOC ANALYSIS
BLANK FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date/Time Analyzed:
Preparation Method:
Analytical Method:

Lab Sample ID:
Lab File ID:
Data Report Number:
Analytical Batch ID:
Instrument ID:
Sample Matrix:

Column A ID: DB-624

CAS NUMBER	TARGET ANALYTE	CONCENTRATION mg/kg	Q
67-64-1	Acetone		
71-36-3	Butanol		
67-56-1	Methanol		
78-93-3	Methyl ethyl ketone		
60-29-7	Ethyl ether		
78-83-1	Isobutanol		
110-86-1	Pyridine		

Column B ID: DB-1

CAS NUMBER	TARGET ANALYTE	CONCENTRATION mg/kg	Q
67-64-1	Acetone		
71-36-3	Butanol		
67-56-1	Methanol		
78-93-3	Methyl ethyl ketone		
60-29-7	Ethyl ether		
78-83-1	Isobutanol		
110-86-1	Pyridine		

Acceptance Criteria: \leq 3MDL

Figure G-6. Example of Total NHVOC laboratory blank report form

**TOTAL NHVOC ANALYSIS
LABORATORY BLANK SUMMARY**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date/Time Analyzed:

Preparation Method:

Analytical Method:

Lab Sample ID:

Lab File ID:

Data Report Number:

Analytical Batch ID:

Instrument ID:

Sample Matrix:

THIS BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, AND STANDARDS

FIELD ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED

Figure G-7. Example of Total NHVOC blank summary report form

**TOTAL NHVOC ANALYSIS
ANALYTE IDENTIFICATION FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Field Sample ID:
Date/Time Analyzed:
Preparation Method:
Analytical Method:

Lab File ID:
Lab Sample ID:
Data Report Number:
Analytical Batch ID:
Instrument ID:
Sample Matrix:

TARGET ANALYTE	COLUMN	RETENTION TIME (min)	RT WINDOW (min)		CONCENTRATION mg/kg	RPD
			From	To		
Acetone	A					
	B					
Butanol	A					
	B					
Methanol	A					
	B					
Methyl ethyl ketone	A					
	B					
Ethyl ether	A					
	B					
Isobutanol	A					
	B					
Pyridine	A					
	B					

* = column used for final report

Figure G-9. Example of Total NHVOC analyte identification form

TOTAL NHVOC ANALYSIS
Initial Calibration Data

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Analytical Method:

Data Report Number:

ICAL ID:

Analytical Batch ID:

Instrument ID:

GC Column A: ID: DB-624

ICAL Std Conc (ug/mL)	15	125	200	5	75	RT WINDOW (min)		CORRELATION COEFFICIENT (r)
TARGET ANALYTE	RT	RT	RT	RT	RT	FROM	TO	
Isopropanol-d8								
Acetone								
Butanol								
Methanol								
Methyl ethyl ketone								
Ethyl ether								
Isobutanol								
Pyridine								

GC Column B: ID: DB-1

ICAL Std Conc (ug/mL)	15	125	200	5	75	RT WINDOW (min)		CORRELATION COEFFICIENT (r)
TARGET ANALYTE	RT	RT	RT	RT	RT	FROM	TO	
Isopropanol-d8								
Acetone								
Butanol								
Methanol								
Methyl ethyl ketone								
Ethyl ether								
Isobutanol								
Pyridine								

Acceptance Criteria: $r \geq 0.990$
Retention Time within RT Window

Z = Value outside Acceptance Criteria
! = Mean Retention Time outside RT Window

Figure G-10. Example of Total NHVOC ICAL report form

**TOTAL NHVOC ANALYSIS
MDL REPORTING FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Preparation Method: Instrument ID
Analysis Method: Sample Matrix:
MDL Determination Date:

COLUMN A ID: DB-624

TARGET ANALYTE	REPORTED MDL (mg/kg)	PROGRAM REQUIRED MDL (mg/kg)	PRQL (mg/kg)
Isopropanol-d8		10	100
Acetone		10	100
Butanol		10	100
Methanol		10	100
Methyl ethyl ketone		10	100
Ethyl ether		10	100
Isobutanol		10	100
Pyridine		10	100

COLUMN B ID: DB-1

TARGET ANALYTE	REPORTED MDL (mg/kg)	Program Required MDL (mg/kg)	PRQL (mg/kg)
Isopropanol-d8		10	100
Acetone		10	100
Butanol		10	100
Methanol		10	100
Methyl ethyl ketone		10	100
Ethyl ether		10	100
Isobutanol		10	100
Pyridine		10	100

SOLIDS: MDLs calculated assuming 3.00 gram sample and 22mL extraction volume

Figure G-12. Example of Total NHVOC MDL report form

Appendix H

Total SVOC Data Reporting Forms



TRU Analytical Laboratory

Idaho Cleanup Project

Central Characterization Project

RCRA Analysis Data Report

Batch Data Report Number: ALD090xxS Analytical Methods: CCP-TP-185
 Revision Number: 0 CCP-TP-187
 Change Number: 0 Analyte(s): SVOCs
 Issue Date: MM/DD/YY
 Waste Generator Site: AMWTP

Summary: This data report contains analysis results for n samples from Sampling Batch SSCxx-yyyyy.

Report Content:

Section	Content	Pages
1	Sample Identification Table	00xx – 00xx
2	Sample Custody and Tracking Documents	00xx – 00xx
3	Analysis Results	00xx – 00xx
4	Batch QC Sample Results	00xx – 00xx
5	Instrument QC Data	00xx – 00xx
6	Data Review Checklists	00xx – 00xx

Laboratory Release Authorization:

Name & Position	Signature	Date
Jeffrey S. Laug Laboratory Manager		
Shelly J. Sailer Laboratory Quality Assurance Officer		

Figure H.1. Example of Total SVOC batch data report cover page

TOTAL SVOC ANALYSIS DATA SHEET

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Field Sample ID:	Lab Sample ID:
Sampling Batch No:	Lab File ID:
Date Sampled:	Data Report Number:
Date Extracted:	Analytical Batch ID:
Extraction Holding Time:	
Date/Time Analyzed:	Instrument ID:
Analysis Holding Time:	Matrix:
Preparation Method:	Dilution Factor:
Analytical Method:	

CAS #	TARGET ANALYTE	CONCENTRATION mg/kg	Q
95-50-1	1,2-Dichlorobenzene		
106-46-7	1,4-Dichlorobenzene		
51-28-5	2,4-Dinitrophenol		
121-14-2	2,4-Dinitrotoluene		
118-74-1	Hexachlorobenzene		
67-72-1	Hexachloroethane		
95-48-7	2-Methylphenol		
106-44-5	3&4-Methylphenol		
98-95-3	Nitrobenzene		
87-86-5	Pentachlorophenol		

Figure H-3. Example of Total SVOC analysis data sheet

**TOTAL SVOC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Field Sample ID:	Lab Sample ID:
Sampling Batch No:	Lab File ID:
Date Sampled:	Data Report Number:
Date Extracted:	Analytical Batch ID:
Extraction Holding Time:	
Date/Time Analyzed:	Instrument ID:
Analysis Holding Time:	Matrix:
Preparation Method:	Dilution Factor:
Analytical Method:	

Number of TICs Found:

	CAS Number	Tentatively Identified SVOCs	Concentration mg/kg	Q	Retention Time (min)
1					

Figure H-4. Example of Total SVOC TIC analysis data sheet

**TOTAL SVOC ANALYSIS
SURROGATE RECOVERY FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Preparation Method:
Analytical Method:

Data Report Number:
Analytical Batch ID:
Instrument ID:
Sample Matrix:

LAB SAMPLE ID	SMC1 %R (2FP)	SMC2 %R (PHL)	SMC3 %R (NBZ)	SMC4 %R (FBP)	SMC5 %R (TBP)	SMC6 %R (TPH)	TOTAL OUT
1							
2							
3							
4							
5							
6							
7							

Acceptance Criteria

S1 (2FP) = 2-Fluorophenol 11 - 116
 S2 (PHL) = Phenol-d6 39 - 111
 S3 (NBZ) = Nitrobenzene-d5 Detected - 111
 S4 (FBP) = 2-Fluorobiphenyl Detected - 114
 S5 (TBP) = 2,4,6-Tribromophenol Detected - 130
 S6 (TPH) = p-Terphenyl-d14 1 - 141

Z = Values Outside of Acceptance Criteria
 D = Surrogates diluted out

Figure H-5. Example of Total SVOC surrogate recovery report form

**TOTAL SVOC ANALYSIS
MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORTING FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Preparation Method: _____ Data Report Number: _____
 Analytical Method: _____ Analytical Batch ID: _____
 Instrument ID: _____ Matrix: _____
 Lab Sample ID: _____ MS Lab Sample ID: _____ MSD Lab Sample ID: _____
 Field Sample ID: _____ MS Field Sample ID: _____ MSD Field Sample ID: _____
 Lab File ID: _____ MS Lab File ID: _____ MSD Lab File ID: _____
 Date Analyzed: _____ MS Date Analyzed: _____ MSD Date Analyzed: _____

TARGET ANALYTE	SPIKE ADDED mg/kg	SAMPLE CONCENTRATION mg/kg	SPIKED SAMPLE CONCENTRATION mg/kg	MS % RECOVERY	ACCEPTANCE CRITERIA % RECOVERY
1,4-Dichlorobenzene					20 - 124
2,4-Dinitrotoluene					39 - 139
Pentachlorophenol					14 - 176
Phenol					5 - 112

TARGET ANALYTE	SPIKE ADDED mg/kg	DUPLICATE SPIKED SAMPLE CONCENTRATION mg/kg	%RPD	MSD % RECOVERY	QC LIMITS RPD
1,4-Dichlorobenzene					≤ 86
2,4-Dinitrotoluene					≤ 46
Pentachlorophenol					≤ 128
Phenol					≤ 55

Z = Values Outside of Acceptance Criteria
D = Spiked Analytes Diluted Out

RPD: out of outside limits
Spike Recovery: out of outside limits

Figure H-6. Example of Total SVOC MS/MSD report form

**TOTAL SVOC ANALYSIS
INTERNAL STANDARD AREA AND RT SUMMARY**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date/Time Analyzed:

Analytical Method:

Daily CCAL Sample ID

Daily CCAL Lab File ID:

Data Report Number:

Analytical Batch ID:

Instrument ID:

	IS1 (DCB) Area	RT (min.)	IS2 (NPT) Area	RT (min.)	IS3 (ANT) Area	RT (min.)
12 HOUR STANDARD						
UPPER LIMIT						
LOWER LIMIT						

Lab Sample ID						
1						
2						
3						
4						
5						
6						
7						

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

Z = Values outside of Acceptance Criteria

Area upper limit = +100% of internal standard area
Area lower limit = -50% of internal standard area

RT upper limit = +30 seconds of internal standard RT
RT lower limit = -30 seconds of internal standard RT

Figure H-9. Example of Total SVOC internal standard area & RT report form

**TOTAL SVOC ANALYSIS
INTERNAL STANDARD AREA AND RT SUMMARY**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date/Time Analyzed:

Analytical Method:

Daily CCAL Sample ID

Daily CCAL Lab File ID:

Data Report Number:

Analytical Batch ID:

Instrument ID:

	IS4 (PHN) Area	RT (min.)	IS5 (CRY) Area	RT (min.)	IS6 (PRY) Area	RT (min.)
12 HOUR STANDARD						
UPPER LIMIT						
LOWER LIMIT						

Lab Sample ID						
1						
2						
3						
4						
5						
6						
7						

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

Z = Values outside of Acceptance Criteria

Area upper limit = +100% of internal standard area

Area lower limit = -50% of internal standard area

RT upper limit = +30 seconds of internal standard RT

RT lower limit = -30 seconds of internal standard RT

Figure H-9. Example of Total SVOC internal standard area & RT report form (continued)

**TOTAL SVOC ANALYSIS
INSTRUMENT PERFORMANCE CHECK**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

DFTPP Injection Date/Time

Lab Sample ID:

Analytical Method:

Lab File ID:

Data Report Number:

Analytical Batch ID:

Instrument ID:

m/z	Ion Abundance Criteria	% Rel Abundance
51	30.0 - 60.0% of mass 198	
68	Less than 2.0% of mass 69	(1)
69	Mass 69 relative abundance	
70	Less than 2.0% of mass 69	(1)
127	40.0 - 60.0% of mass 198	
197	Less than 1.0% of mass 198	
198	Base Peak, 100% relative abundance	
199	5.0 - 9.0% of mass 198	
275	10.0 - 30.0% of mass 198	
365	Greater than 1.0% of mass 198	
441	Present, but less than mass 443	(3)
442	Greater than 40.0% of mass 198	
443	17.0 - 23.0% of mass 442	(2)

1 - Value is % mass 69 2 - Value is % mass 442 3 - Value is % mass 443

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS

FIELD ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED

Figure H-10. Example of Total SVOC instrument performance check report form

**TOTAL SVOC ANALYSIS
INITIAL CALIBRATION DATA**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Calibration Dates/Times:
Analytical Method:

ICAL File ID:
Data Report Number:
Analytical Batch ID:
Instrument ID:

LAB FILE ID	RRF 1 =	RRF 3 =			RRF 5 =					
	RRF 2 =	RRF 4 =			RRF 6 =					
TARGET ANALYTE	RRF 1	RRF 2	RRF 3	RRF 4	RRF 5	RRF 6	AVE RRF	% RSD	#	
2-Fluorophenol										
Phenol-d6										
Phenol *										
1,4-Dichlorobenzene *										
1,2-Dichlorobenzene										
2-Methylphenol										
3&4-Methylphenol										
N-Nitroso-di-n-propylamine **										
Hexachloroethane										
Nitrobenzene-d5										
Nitrobenzene										
2-Nitrophenol *										
2,4-Dichlorophenol *										
Hexachlorobutadiene *										
4-Chloro-3-methylphenol *										
Hexachlorocyclopentadiene **										
2,4,6-Trichlorophenol *										
2-Fluorobiphenyl										
Acenaphthene *										
2,4-Dinitrophenol **										
4-Nitrophenol **										
2,4-Dinitrotoluene										
N-Nitrosodiphenylamine *										
2,4,6-Tribromophenol										
Hexachlorobenzene										
Pentachlorophenol *										
Fluoranthene *										
Terphenyl-d14										
bis(2-Ethylhexyl)phthalate										
Di-n-octylphthalate *										
Benzo(a)pyrene *										

CCC %RSD ≤ 30%

SPCC Average RRF ≥ 0.050

* = CCC - Calibration Check Compounds

Non-SPCC Average RRF ≥ 0.010

** = SPCC - System Performance Check Compounds

Column used to flag modeled compounds

M = Modeled compound.

Z = Values Outside of Acceptance Criteria

Figure H-11. Example of Total SVOC ICAL report form

**TOTAL SVOC ANALYSIS
MODELED COMPOUND REPORT**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Calibration Date/Time

Analytical Method:

Initial Calibration Date/Time

Lab Sample ID:

Lab File ID:

Data Report Number:

Analytical Batch ID:

Instrument ID:

Matrix:

COMPOUND	CCAL RRF	CALCULATED RESULT ug/mL	KNOWN CONC. ug/mL	%D
2,4-Dinitrotoluene				
Di-n-octylphthalate *				

CCC %D \leq 20%

* = CCC - Calibration Check Compounds

** = SPCC - System Performance Check Compounds

Z = Values Outside of Acceptance Criteria

SPCC Average RRF \geq 0.050

Non-SPCC Average RRF \geq 0.010

Figure H-13. Example of Total SVOC CCAL modeled compound report form

**TOTAL SVOC ANALYSIS
CCAL INTERNAL STANDARD AREA AND RT SUMMARY**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date/Time Analyzed:	Daily CCAL Sample ID
Analytical Method:	Daily CCAL Lab File ID:
ICAL/CCAL Sample ID	Data Report Number:
ICAL/CCAL Lab File ID:	Analytical Batch ID:
Date Analyzed:	Instrument ID:

		IS1 (DCB) Area	RT (MIN)	IS2 (NPT) Area	RT (MIN)	IS3 (ANT) Area	RT (MIN)
Previous ICAL/CCAL	12 HOUR STANDARD						
	UPPER LIMIT						
	LOWER LIMIT						
Continuing Calibration Check							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

Z = Values outside of Acceptance Criteria

Area upper limit = +100% of internal standard area
Area lower limit = -50% of internal standard area

RT upper limit = +30 seconds of internal standard RT
RT lower limit = -30 seconds of internal standard RT

Figure H-14. Example of Total SVOC CCAL internal standard area & RT report form

**TOTAL SVOC ANALYSIS
CCAL INTERNAL STANDARD AREA AND RT SUMMARY**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

Date/Time Analyzed:	Daily CCAL Sample ID
Analytical Method:	Daily CCAL Lab File ID:
ICAL/CCAL Sample ID	Data Report Number:
ICAL/CCAL Lab File ID:	Analytical Batch ID:
Date Analyzed:	Instrument ID:

		IS4 (PHN) Area	RT (MIN)	IS5 (CRY) Area	RT (MIN)	IS6 (PRY) Area	RT (MIN)
Previous ICAL/CCAL	12 HOUR STANDARD						
	UPPER LIMIT						
	LOWER LIMIT						
Continuing Calibration Check							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

Area upper limit = +100% of internal standard area
Area lower limit = -50% of internal standard area

RT upper limit = +30 seconds of internal standard RT
RT lower limit = -30 seconds of internal standard RT

Z = Values outside of Acceptance Criteria

Figure H-14. Example of Total SVOC CCAL internal standard area & RT report form (continued)

**TOTAL SVOC ANALYSIS
MDL REPORTING FORM**

Idaho Cleanup Project
Analytical Laboratories Department
Central Characterization Project

MDL Determination Date:
Preparation Method:
Analytical Method:

Instrument ID:
Matrix:

TARGET ANALYTE	Reported MDL mg/kg	Program Required MDL mg/kg	PRQL mg/kg
bis(2-Ethylhexyl)phthalate		5	40
1,2-Dichlorobenzene		5	40
1,4-Dichlorobenzene		5	40
2,4-Dinitrophenol		5	40
2,4-Dinitrotoluene		0.3	2.6
Fluoranthene		5	40
Hexachlorobenzene		0.3	2.6
Hexachloroethane		5	40
2-Methylphenol		5	40
3&4-Methylphenol		5	40
Nitrobenzene		5	40
Pentachlorophenol		5	40
Phenol		5	40

Figure H-15. Example of Total SVOC MDL report form

Appendix I

Total Metals Data Reporting Forms



TRU Analytical Laboratory

Idaho Cleanup Project

Central Characterization Project

RCRA Analysis Data Report

Batch Data Report Number: ALD09xxxM Analytical Methods: CCP-TP-181
 Revision Number: 0 CCP-TP-182
 Change Number: 0 CCP-TP-183
 Issue Date: MM/DD/YY Analyte(s): Metals
 Waste Generator Site: AMWTP

Summary: This data report contains analysis results for x samples from Sampling Batch SSCxx-yyyyy.

Report Content:

Section	Content	Pages
1	Sample Identification Table	00xx – 00xx
2	Sample Custody and Tracking Documents	00xx – 00xx
3	Analysis Results	00xx – 00xx
4	Batch QC Sample Results	00xx – 00xx
5	Instrument QC Data	00xx – 00xx
6	Data Review Checklists	00xx – 00xx

Laboratory Release Authorization:

Name & Position	Signature	Date
Jeffrey S. Laug Laboratory Manager		
Shelly J. Sailer Laboratory Quality Assurance Officer		

Figure I.1. Example of Total Metals batch data report cover page

TOTAL METALS SAMPLE CROSS-REFERENCE TABLE

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Method, CVAA:

Data Report Number:

Method, ICP-AES Prep.:

Analytical Batch ID:

Method, ICP-AES Analysis:

Field Sample ID	Lab Sample ID

Form XRef - Metals

Data Updated:

Figure I-2. Example of Total Metals sample identification table

TOTAL METALS ANALYSIS DATA SHEET

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Field Sample ID:	Lab Sample ID:
Sampling Batch No.:	Data Report No. :
Date Sampled:	Analytical Batch ID:
Date Digested, ICP:	Date Digested, CVAA:
Method, CVAA:	Instrument ID, CVAA:
Method, ICP-AES Prep.:	Microwave Digester ID:
Method, ICP-AES Analysis:	Instrument ID, ICP-AES:

Concentration Units: mg/kg

CAS No.	Analyte	Concentration	C	Q	Date and Time of Analysis	Holding Time, Days	M
7440-36-0	Antimony						P
7440-38-2	Arsenic						P
7440-39-3	Barium						P
7440-41-7	Beryllium						P
7440-43-9	Cadmium						P
7440-47-3	Chromium						P
7439-92-1	Lead						P
7439-97-6	Mercury						V
7440-02-0	Nickel						P
7782-49-2	Selenium						P
7440-22-4	Silver						P
7440-28-0	Thallium						P
7440-62-2	Vanadium						P
7440-66-6	Zinc						P

C = concentration qualifier; Q = data qualifier; M = method code;

Comments:

Form 1 - Metals

Data Updated:

Figure I-3. Example of Total Metals analysis data sheet

LABORATORY CONTROL SAMPLE
IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

LCS Source, CVAA: Data Report Number :
LCS Source, ICP-AES: Analytical Batch ID:
Method, CVAA: LCS ID, CVAA:
Method, ICP-AES Prep.: LCS ID, ICP-AES:
Method, ICP-AES Analysis:

Concentration Units: mg/kg

Analyte	True	Found	C	Control Limits		%R	M
				Low	High		
Antimony							P
Arsenic							P
Barium							P
Beryllium							P
Cadmium							P
Chromium							P
Lead							P
Mercury							V
Nickel							P
Selenium							P
Silver							P
Thallium							P
Vanadium							P
Zinc							P

C = concentration qualifier; M = method code

Form 9 - Metals

Data Updated:

Figure I-4. Example of Total Metals LCS report form

MATRIX SPIKE RECOVERY

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Field Sample ID #:

Lab Sample ID:

Method, CVAA:

Data Report Number:

Method, ICP-AES Prep.:

Analytical Batch ID:

Method, ICP-AES Analysis :

Concentration Units: mg/kg

Analyte	Spike Sample Result	C	Sample Result	C	Spike Added	%R	Q	M
Antimony								P
Arsenic								P
Barium								P
Beryllium								P
Cadmium								P
Chromium								P
Lead								P
Mercury								V
Nickel								P
Selenium								P
Silver								P
Thallium								P
Vanadium								P
Zinc								P

C = concentration qualifier; Q = data qualifier; M = method code

Comments:

Form 6 - Metals

Data Updated:

Figure I-5. Example of Total Metals matrix spike recovery report form

POST DIGESTION SPIKE RECOVERY

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Field Sample ID:
Method, CVAA:
Method, ICP-AES Prep.:
Method, ICP-AES Analysis :

Lab Sample ID:
Data Report Number:
Analytical Batch ID:

Concentration Units: ug/L

Analyte	Spiked Sample Result	C	Sample Result	C	Spike Added	%R	Q	M
Antimony								P
Arsenic								P
Barium								P
Beryllium								P
Cadmium								P
Chromium								P
Lead								P
Mercury								V
Nickel								P
Selenium								P
Silver								P
Thallium								P
Vanadium								P
Zinc								P

C = concentration qualifier; Q = data qualifier; M = method code

Comments:

Form 7 - Metals

Data Updated:

Figure I-7. Example of Total Metals post-digestion spike recovery report form

INITIAL AND CONTINUING CALIBRATION VERIFICATION

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Data Report Number: Analytical Batch ID:
 Method, CVAA: Instrument ID, CVAA:
 Method, ICP-AES: Instrument ID, ICP-AES:
 Calibration Source, ICP-AES:
 ICV Source, ICP-AES:
 CCV Source, ICP-AES:
 Calibration Source, CVAA:
 ICV Source, CVAA:
 CCV Source, CVAA:

Concentration Units: ug/L

Analyte	Initial Calibration Verification			Continuing Calibration Verification					M
	True	Found	%R	True	Found	%R(1)	Found	%R(2)	
Antimony									P
Arsenic									P
Barium									P
Beryllium									P
Cadmium									P
Chromium									P
Lead									P
Mercury									V
Nickel									P
Selenium									P
Silver									P
Thallium									P
Vanadium									P
Zinc									P

Form 2 - Metals, Page 1 of 1

Data Updated:

Figure I-9. Example of Total Metals ICV/CCV report form

LOW LEVEL CONCENTRATION CHECK STANDARD, ICP-AES

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Instrument ID, ICP-AES:
Method, ICP-AES:

Data Report Number:
Analytical Batch ID:

Concentration Units: ug/L

Analyte	True	Found	%R
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Chromium			
Lead			
Nickel			
Selenium			
Silver			
Thallium			
Vanadium			
Zinc			

Form 2b - Metals, Page 1 of 1

Data Updated:

Figure I-10. Example of Total Metals ICP-AES low-level concentration check standard report form

BLANKS

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Instrument ID, CVAA:	Data Report Number:
Instrument ID, ICP-AES:	Analytical Batch ID:
Method, CVAA:	Lab Blank ID, CVAA:
Method, ICP-AES Prep.:	Lab Blank ID, ICP-AES:
Method, ICP-AES Analysis:	

Analyte	Initial Calibration Blank, ug/L		Continuing Calibration Blank, ug/L						Laboratory Blank, mg/kg		M
		C	1	C	2	C	3	C		C	
Antimony											P
Arsenic											P
Barium											P
Beryllium											P
Cadmium											P
Chromium											P
Lead											P
Mercury											V
Nickel											P
Selenium											P
Silver											P
Thallium											P
Vanadium											P
Zinc											P

C = concentration qualifier; M = method code;

Form 4 - Metals, Page 1 of 1

Data Updated:

Figure I-11. Example of Total Metals Blanks report form

INTERFERENCE CHECK SAMPLE, ICP-AES

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Instrument ID, ICP-AES:

Data Report Number:

Method, ICP-AES Analysis:

Analytical Batch ID:

Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Solution A	Solution AB	Sol. A	Sol. AB	%R	Sol. A	Sol. AB	%R
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Chromium								
Lead								
Nickel								
Selenium								
Silver								
Thallium								
Vanadium								
Zinc								

Form 5 - Metals, Page 1 of 1

Data Updated:

Figure I-12. Example of Total Metals ICP-AES interference check sample report form

INSTRUMENT DETECTION LIMITS

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Instrument ID, CVAA:

Data Report Number:

Instrument ID, ICP-AES:

Analytical Batch ID:

Method, CVAA:

Method, ICP-AES Analysis :

Analyte	Wavelength (nm)	IDL (ug/L)	IDL Effective Date	M
Antimony	206.83			P
Arsenic	189.04			P
Barium	233.53			P
Beryllium	234.86			P
Cadmium	226.50			P
Chromium	205.55			P
Lead	182.15			P
Mercury	253.70			V
Nickel	231.60			P
Selenium	196.09			P
Silver	338.29			P
Thallium	190.86			P
Vanadium	292.40			P
Zinc	213.86			P

IDL = instrument detection limit; M = method code

Form 11 - Metals

Data Updated:

Figure I-13. Example of Total Metals IDL report form

LINEAR RANGES, ICP-AES

IDAHO CLEANUP PROJECT
ANALYTICAL LABORATORIES DEPARTMENT
CENTRAL CHARACTERIZATION PROJECT

Instrument ID, ICP-AES:
Method, ICP-AES Analysis :

Data Report Number:
Analytical Batch ID:

Analyte	Wavelength (nm)	Linear Range (ug/L)	Linear Range Effective Date
Aluminum	237.31		
Antimony	206.83		
Arsenic	189.04		
Barium	233.53		
Beryllium	234.86		
Cadmium	226.50		
Calcium	317.93		
Chromium	205.55		
Iron	238.20		
Lead	182.15		
Magnesium	279.08		
Nickel	231.60		
Selenium	196.09		
Silver	338.29		
Thallium	190.86		
Uranium	263.55		
Vanadium	292.40		
Zinc	213.86		

Form 12 - Metals

Data Updated:

Figure I-14. Example of Total Metals ICP-AES linear ranges report form

Appendix J

HPLC Data Reporting Forms (Formaldehyde and Hydrazine)



TRU Analytical Laboratory

Idaho Cleanup Project

Central Characterization Project

RCRA Analysis Data Report

Batch Data Report Number: ALD090xxF Analytical Method: CCP-TP-196
 Revision Number: 0 Analyte(s): Formaldehyde
 Change Number: 0
 Issue Date: MM/DD/YY
 Waste Generator Site: CCP-SRS

Summary: This data report contains analysis results for x samples and x trip blanks from Sampling Batch SSCxx-yyyyyy.

Report Content:

Section	Content	Pages
1	Sample Identification Table	00xx – 00xx
2	Sample Custody and Tracking Documents	00xx – 00xx
3	Analysis Results	00xx – 00xx
4	Batch QC Sample Results	00xx – 00xx
5	Instrument QC Data	00xx – 00xx
6	Data Review Checklists	00xx – 00xx

Laboratory Release Authorization:

Name & Position	Signature	Date
Jeffrey S. Laug Laboratory Manager		
Shelly J. Sailer Laboratory Quality Assurance Officer		

Figure J-1. Example of Formaldehyde batch data report cover page



TRU Analytical Laboratory

Idaho Cleanup Project

Central Characterization Project

RCRA Analysis Data Report

Batch Data Report Number: ALD090xxH Analytical Method: CCP-TP-196
 Revision Number: 0 Analyte(s): Hydrazine
 Change Number: 0
 Issue Date: MM/DD/YY
 Waste Generator Site: CCP-SRS

Summary: This data report contains analysis results for x samples and x trip blanks from Sampling Batch SSCxx-yyyyyy.

Report Content:

Section	Content	Pages
1	Sample Identification Table	00xx – 00xx
2	Sample Custody and Tracking Documents	00xx – 00xx
3	Analysis Results	00xx – 00xx
4	Batch QC Sample Results	00xx – 00xx
5	Instrument QC Data	00xx – 00xx
6	Data Review Checklists	00xx – 00xx

Laboratory Release Authorization:

Name & Position	Signature	Date
Jeffrey S. Laug Laboratory Manager		
Shelly J. Sailer Laboratory Quality Assurance Officer		

Figure J-2. Example of Hydrazine batch data report cover page

HPLC ANALYSIS DATA SHEET

**Idaho Cleanup Project
TRU Analytical Laboratory
Central Characterization Project**

Field Sample ID:		Lab Sample ID:	
Sampling Batch No.:		Lab File ID:	
Date Sampled:		Data Report Number:	ALDyynnm
Date Extracted:		Analytical Batch ID:	
Extraction Holding Time:	days	Preparation Method:	CCP-TP-19x R 0
Date Derivatized:		Analytical Method:	CCP-TP-19x R 0
Derivatization Holding Time:	days	Sample Matrix:	Solid
Date/Time Analyzed:		Instrument ID:	HPLC-1
Analysis Holding Time:	days	Dilution Factor:	

CAS Number	Target Analyte	Concentration (mg/kg)	Q

Figure J-4. Example of HPLC analysis data sheet for formaldehyde or hydrazine

HPLC MATRIX SPIKE/MATRIX SPIKE DUPLICATE REPORTING FORM

**Idaho Cleanup Project
TRU Analytical Laboratory
Central Characterization Project**

Preparation Method: CCP-TP-19x R0 Data Report Number: ALDyynnmm
 Analytical Method: CCP-TP-19x R0 Analytical Batch ID:
 Instrument ID: HPLC-1 Sample Matrix: Solid

Lab Sample ID: MS Lab Sample ID: MSD Lab Sample ID:
 Field Sample ID: MS Field Sample ID: MSD Field Sample ID:
 Lab File ID: MS Lab File ID: MSD Lab File ID:
 Date Analyzed MS Date Analyzed: MS Date Analyzed:

Target Analyte	Spike Added (mg/kg)	Sample Concentration (mg/kg)	Spiked Sample Concentration (mg/kg)	MS % Recovery	Acceptance Criteria % Recovery
					60-150

Target Analyte	Spike Added (mg/kg)	Duplicate Spiked Sample Concentration (mg/kg)	MSD %Recovery	RPD	Acceptance Criteria RPD
					≤50

Z = Did not meet acceptance criteria
 D = Spiked analyte diluted out

Figure J-5. Example of HPLC MS/MSD report form for formaldehyde or hydrazine

HPLC INITIAL CALIBRATION DATA

**Idaho Cleanup Project
TRU Analytical Laboratory
Central Characterization Project**

ICAL Date/Times: _____ Data Report Number: _____
 Analytical Method: CCP-TP-19x R0 Instrument ID: HPLC-1
 Target Analyte: _____ ICAL Standard Source: _____

Standard ID	Concentration (mg/L)	Absorbance	Retention Time (minutes)	RT Window (minutes)	
				From	To
Correlation coefficient (r):			(Acceptance criteria: $r \geq 0.990$)		

Figure J-8. Example of HPLC ICAL data report form for formaldehyde or hydrazine

HPLC INITIAL CALIBRATION VERIFICATION DATA

**Idaho Cleanup Project
TRU Analytical Laboratory
Central Characterization Project**

ICAL Date/Times: _____ Data Report Number: _____
 Analytical Method: CCP-TP-19x R0 Instrument ID: HPLC-1
 Target Analyte: _____ ICV Standard Source: _____
 ICV Lab ID: _____ ICB Lab ID: _____
 ICV File ID: _____ ICB File ID: _____

ICV Measured Concentration (mg/L)	ICV Known Concentration (mg/L)	ICV % Recovery	ICV Retention Time (minutes)	RT Window (minutes)	
				From	To

ICV %R Acceptance Criteria: 85–115%

ICB Measured Concentration (mg/L)	ICB Acceptance Criteria (mg/L)
	<

Figure J-9. Example of HPLC initial calibration verification data form for formaldehyde or hydrazine

HPLC CONTINUING CALIBRATION VERIFICATION DATA

**Idaho Cleanup Project
TRU Analytical Laboratory
Central Characterization Project**

ICAL Date/Times: _____ Data Report Number: _____
 Analytical Method: CCP-TP-19x R0 Instrument ID: HPLC-1
 Target Analyte: _____

CCV Lab ID: _____ CCB Lab ID: _____
 CCV File ID: _____ CCB File ID: _____

CCV Measured Concentration (mg/L)	CCV Known Concentration (mg/L)	CCV % Recovery	CCV Retention Time (minutes)	RT Window (minutes)	
				From	To

CCV %R Acceptance Criteria: 85-115%

CCB Measured Concentration (mg/L)	CCB Acceptance Criteria (mg/L)
	<

Figure J-10. Example of HPLC continuing calibration verification data form for formaldehyde or hydrazine

HPLC MDL REPORTING FORM

**Idaho Cleanup Project
TRU Analytical Laboratory
Central Characterization Project**

MDL Determination Date: Instrument ID: HPLC-1
Preparation Method: CCP-TP-19x R0 Sample Matrix: Solid
Analytical Method: CCP-TP-19x R0

Target Analyte	Reported MDL (mg/kg)	Program-Required MDL (mg/kg)	PRQL (mg/kg)
		10	100

Figure J-11. Example of HPLC MDL report form for formaldehyde or hydrazine

Appendix K

Batch Data Report Formats and Content

Table K.1. BDR format and required content for headspace gas analyses

Report Section	GC/FID VOCs (CCP-TP-173)	GC/MS VOCs (CCP-TP-175)
<u>Cover Page</u>	(See Figure E-1) <ul style="list-style-type: none"> Laboratory name Data report number Revision number Change number Issue date Waste generator site ID Summary statement (narrative) Table of contents Laboratory release authorization signature(s) 	(See Figure E-1) <ul style="list-style-type: none"> Laboratory name Data report number Revision number Change number Issue date Waste generator site ID Summary statement (narrative) Table of contents Laboratory release authorization signature(s)
<u>Section 1</u> Sample Identification Table/Analytical Request Form	<ul style="list-style-type: none"> Cross-reference of field and laboratory sample IDs (see example of analytical request form in CCP-TP-177) 	<ul style="list-style-type: none"> Cross-reference of field and laboratory sample IDs (see example of analytical request form in CCP-TP-177)
<u>Section 2</u> Sample Custody Documents and Sample Tags	<ul style="list-style-type: none"> COC forms Sample tags 	<ul style="list-style-type: none"> COC forms Sample tags
<u>Section 3</u> Analysis Results	<ul style="list-style-type: none"> Analysis data sheet for each sample, including: analytical batch number; field and laboratory sample IDs; method number; results in ppmv to 2 significant figures; date/time of analysis; reporting flags 	<ul style="list-style-type: none"> Analysis data sheet and TIC analysis data sheet for each sample, including: analytical batch number; field and laboratory sample IDs; method number; results in ppmv to 2 significant figures; date/time of analysis; reporting flags; TIC retention times

Report Section	GC/FID VOCs (CCP-TP-173)	GC/MS VOCs (CCP-TP-175)
<u>Section 4</u> QC Measurement Results^a	<ul style="list-style-type: none"> • LCSs • Laboratory duplicates • LBs • Analyte ID forms (for samples with detectable target analytes) 	<ul style="list-style-type: none"> • LCSs • Laboratory duplicates • LBs • Internal standard areas and RTs
<u>Section 5</u> Calibration Results^a	<ul style="list-style-type: none"> • ICALs • CCVs • MDLs 	<ul style="list-style-type: none"> • ICALs • CCALs • Instrument tunes • MDLs
<u>Section 6</u> Data Review Checklists	<ul style="list-style-type: none"> • Sample Custody Review Checklist (see example in CCP-TP-177) • Data Generator Checklist (includes operator signature and procedure revision, see example in Figure C-1) • ITR Checklist (contains sample preservation verification and data release authorization, see Figure D-1) 	<ul style="list-style-type: none"> • Sample Custody Review Checklist (see example in CCP-TP-177) • Data Generator Checklist (includes operator signature and procedure revision, see example in Figure C-1) • ITR Checklist (contains sample preservation verification and data release authorization, see Figure D-2)
<u>Section 7</u> Raw Data	<ul style="list-style-type: none"> • GC/FID raw data 	<ul style="list-style-type: none"> • GC/MS raw data
<u>Section 8</u> Miscellaneous Supporting Data	<ul style="list-style-type: none"> • Copies of associated NCRs • Copies of sample preparation logs 	<ul style="list-style-type: none"> • Copies of associated NCRs • Copies of sample preparation logs

^a Designation of QC samples is indicated through the assigned sample identification code

Table K.2. BDR format and required content for RCRA solids analyses

Report Section	Total VOCs (CCP-TP-184)	Total NHVOCs (CCP-TP-186)	Total SVOCs (CCP-TP-185 & CCP-TP-187)	Total Metals (CCP-TP-181, CCP-TP- 182, CCP-TP-183)
Cover Page	(See Figure F-1) <ul style="list-style-type: none"> Laboratory name Data report number Revision number Change number Issue date Waste generator site ID Table of contents Laboratory release signatures 	(See Figure G-1) <ul style="list-style-type: none"> Laboratory name Data report number Revision number Change number Issue date Waste generator site ID Table of contents Laboratory release signatures 	(See Figure H-1) <ul style="list-style-type: none"> Laboratory name Data report number Revision number Change number Issue date Waste generator site ID Table of contents Laboratory release signatures 	(See Figure I-1) <ul style="list-style-type: none"> Laboratory name Data report number Revision number Change number Issue date Waste generator site ID Table of contents Laboratory release signatures
Section 1 Sample Identification Table	<ul style="list-style-type: none"> Cross-reference of field and laboratory sample IDs (see Figure F-2) 	<ul style="list-style-type: none"> Cross-reference of field and laboratory sample IDs (see Figure G-2) 	<ul style="list-style-type: none"> Cross-reference of field and laboratory sample IDs (see Figure H-2) 	<ul style="list-style-type: none"> Cross-reference of field and laboratory sample IDs (see Figure I-2)
Section 2 Sample Custody and Tracking Documents	<ul style="list-style-type: none"> Copies of Field COC forms ACS Sample Container Weight Information printouts^a Sample Container cleanliness certificates^a 	<ul style="list-style-type: none"> Copies of Field COC forms ACS Sample Container Weight Information printouts^a Sample Container cleanliness certificates^a 	<ul style="list-style-type: none"> Copies of Field COC forms ACS Sample Container Weight Information printouts^a Sample Container cleanliness certificates^a 	<ul style="list-style-type: none"> Copies of Field COC forms ACS Sample Container Weight Information printouts^a Sample Container cleanliness certificates^a
Section 3 Analysis Results	<ul style="list-style-type: none"> Report narrative (includes copies of associated NCRs) Analysis data sheet (see Figure F-3) and TIC analysis data sheet (see Figure F-4) for each sample, including: analytical batch number; field and laboratory sample IDs; method number and revision; holding times; results in mg/kg wet weight to 2 significant figures; date/time of analysis; reporting flags; TIC retention times 	<ul style="list-style-type: none"> Report narrative (includes copies of associated NCRs) Analysis data sheet (see Figure G-3) for each sample, including: analytical batch number; field and laboratory sample IDs; method number and revision; holding times; results in mg/kg wet weight to 2 significant figures; date/time of analysis; reporting flags 	<ul style="list-style-type: none"> Report narrative (includes copies of associated NCRs) Analysis data sheet (see Figure H-3) and TIC analysis data sheet (see Figure H-4) for each sample, including: analytical batch number; field and laboratory sample IDs; method number and revision; holding times; results in mg/kg wet weight to 2 significant figures; date/time of analysis; reporting flags; TIC retention times 	<ul style="list-style-type: none"> Report narrative (includes copies of associated NCRs) Analysis data sheet (see Figure I-3) for each sample, including: analytical batch number; field and laboratory sample IDs; method number and revision; holding times; results in mg/kg wet weight to 2 significant figures; date/time of analysis; reporting flags

Report Section	Total VOCs (CCP-TP-184)	Total NHVOCs (CCP-TP-186)	Total SVOCs (CCP-TP-185 & CCP-TP-187)	Total Metals (CCP-TP-181, CCP-TP- 182, CCP-TP-183)
Section 4 Batch QC Sample Results^b	<ul style="list-style-type: none"> • Surrogate results (see Figure F-5) • MS/MSD results (see Figure F-6) • LB/MB results (see Figures F-3 and F-4) • LB/MB summaries (see Figures F-7 and F-8) • LCS results (see Figure F-9) • Internal standard areas and RTs (see Figure F-10) 	<ul style="list-style-type: none"> • Surrogate results (see Figure G-4) • MS/MSD results (see Figure G-5) • LB results (see Figure G-6) • LB summaries (see Figure G-7) • LCS results (see Figure G-8) • Analyte ID confirmation for samples with detected analytes (see Figure G-9) 	<ul style="list-style-type: none"> • Surrogate results (see Figure H-5) • MS/MSD results (see Figure H-6) • LB results (see Figures H-3 and H-4) • LB summaries (see Figure H-7) • LCS results (see Figure H-8) • Internal standard areas and RTs (see Figure H-9) 	<ul style="list-style-type: none"> • LCSs (see Figure I-4) • MS and MSD recoveries (see Figure I-5) • MS/MSD RPD (see Figure I-6) • Post-digestion spike results (see Figure I-7) • Serial dilution results (see Figure I-8)
Section 5 Instrument QC^b Data	<ul style="list-style-type: none"> • Instrument tune results (see Figure F-11) • ICAL results (see Figure F-12) • CCAL results (see Figures F-13, F-14 and F-15) • MDLs (see Figure F-16) 	<ul style="list-style-type: none"> • ICAL results (see Figure G-10) • CCV results (see Figure G-11) • MDLs (see Figure G-12) 	<ul style="list-style-type: none"> • Instrument tune results (see Figure H-10) • ICAL results (see Figure H-11) • CCAL results (see Figures H-12, H-13, and H-14) • MDLs (see Figure H-15) 	<ul style="list-style-type: none"> • ICV/CCVs (see Figure I-9) • LLC (see Figure I-10) • Blanks (see Figure I-11) • IECFs (see Figure I-12) • IDLs (see Figure I-13) • Linear ranges (see Figure I-14)
Section 6 Data Review Checklists	<ul style="list-style-type: none"> • Sample Receiving and Custody review checklist (example in CCP-TP-180) • Data Generator Checklist (contains operator signature, see Figure C-2) • ITR checklist (contains sample preservation verification and data release authorization, see Figure D-4) 	<ul style="list-style-type: none"> • Sample Receiving and Custody review checklist (example in CCP-TP-180) • Data Generator Checklist (contains operator signature, see Figure C-2) • ITR checklist (contains sample preservation verification and data release authorization, see Figure D-6) 	<ul style="list-style-type: none"> • Sample Receiving and Custody review checklist (example in CCP-TP-180) • Data Generator Checklist (contains operator signature, see Figure C-2) • ITR checklist (contains sample preservation verification and data release authorization, see Figure D-8) 	<ul style="list-style-type: none"> • Sample Receiving and Custody review checklist (example in CCP-TP-180) • Data Generator Checklist (contains operator signature, see Figure C-2) • ITR checklists (contains sample preservation verification and data release authorization, see Figures D-9 and D-10)

^a Included only when laboratory provides pre-weighed sample containers.

^b The designation of QC samples is indicated through the assigned sample identification codes.

Table K.3. SDP^a content (minimum) for RCRA solids analyses

<p>Total VOCs (CCP-TP-184)</p>	<p>Total NHVOCs (CCP-TP-186)</p>	<p>Total SVOCs (CCP-TP-185 & CCP-TP-187)</p>	<p>Total Metals (CCP-TP-181, CCP-TP-182, CCP-TP-183)</p>
<ul style="list-style-type: none"> • ACS sample cross-reference for each log • Copies of VOC sample preparation logbook • Copies of VOC sample run logbook • Copies of standard certificates • GC/MS instrument raw data printouts for all samples and associated batch and instrument QC, in chronological order 	<ul style="list-style-type: none"> • ACS sample cross-reference for each log • Copies of NHVOC sample preparation Logbook • Copies of NHVOC sample run logbook • Copies of standard certificates • GC/FID instrument raw data printouts for all samples and associated batch and instrument QC, in chronological order 	<ul style="list-style-type: none"> • ACS sample cross-reference for each log • Copies of SVOC sample preparation Logbook • Copies of SVOC sample run logbook • Copies of standard certificates • GC/MS instrument raw data printouts for all samples and associated batch and instrument QC, in chronological order 	<ul style="list-style-type: none"> • Copies of mercury batch preparation record(s) • Copies of mercury CVAA run log(s) • Copies of mercury standard certificates • CVAA instrument raw data printouts for all samples and associated batch and instrument QC, in chronological order • ACS printouts for mercury analysis • Copies of microwave digestion record(s) • Copies of digestion standard certificates • Microwave method printout(s) • Microwave pressure/time profile(s) • ACS printouts for microwave digestion • Copies of ICP standard preparation record(s) • Copies of ICP-AES metals standard certificates • Copies of ICP-AES interelement correction threshold values • Copies of ICP-AES interelement correction factors • ICP-AES instrument raw data printouts for all samples and associated batch and instrument QC, in chronological order • ACS printouts for ICP-AES analysis • ACS sample cross-reference for each log

^a SDP is assigned the same number (“ALDYYnnnX”) as the associated BDR

Table K.4. BDR format and required content for site-specific formaldehyde and hydrazine RCRA solids analysis

Report Section	Formaldehyde (CCP-TP-196) (See Figure J-1)	Hydrazine (CCP-TP-197) (See Figure J-2)
<u>Cover Page</u>	<ul style="list-style-type: none"> • Laboratory name • Data report number • Revision number • Change number • Issue date • Waste generator site ID • Table of contents • Laboratory release signatures 	<ul style="list-style-type: none"> • Laboratory name • Data report number • Revision number • Change number • Issue date • Waste generator site ID • Table of contents • Laboratory release signatures
<u>Section 1 Sample Identification Table</u>	<ul style="list-style-type: none"> • Cross-reference of field and laboratory sample IDs (see Figure J-3) 	<ul style="list-style-type: none"> • Cross-reference of field and laboratory sample IDs (see Figure J-3)
<u>Section 2 Sample Custody and Tracking Documents</u>	<ul style="list-style-type: none"> • Copies of Field COC forms 	<ul style="list-style-type: none"> • Copies of Field COC forms
<u>Section 3 Analysis Results</u>	<ul style="list-style-type: none"> • Report narrative (includes copies of associated NCRs) • Analysis data sheet (see Figure J-4) for each sample, including: analytical batch number, field and laboratory sample IDs, method number and revision, holding times, results in mg/kg wet weight to 2 significant figures, date/time of analysis, reporting flags 	<ul style="list-style-type: none"> • Report narrative (includes copies of associated NCRs) • Analysis data sheet (see Figure J-4) for each sample, including: analytical batch number, field and laboratory sample IDs, method number and revision, holding times, results in mg/kg wet weight to 2 significant figures, date/time of analysis, reporting flags
<u>Section 4 Batch QC Sample Results^a</u>	<ul style="list-style-type: none"> • MS/MSD results (see Figure J-5) • LB results and summary (see Figure J-6) • LCS results (see Figure J-7) 	<ul style="list-style-type: none"> • MS/MSD results (see Figure J-5) • LB results and summary (see Figure J-6) • LCS results (see Figure J-7)
<u>Section 5 Instrument QC^a Data</u>	<ul style="list-style-type: none"> • ICAL data (see figure J-8) • ICV/ICB results (see Figure J-9) • CCV/CCB results (see Figure J-10) • MDLs (see Figure J-11) 	<ul style="list-style-type: none"> • ICAL data (see Figure J-8) • ICV/ICB results (see Figure J-9) • CCV/CCB results (see Figure J-10) • MDLs (see Figure J-11)
<u>Section 6 Data Review Checklists</u>	<ul style="list-style-type: none"> • Sample Receiving and Custody review checklist (example in CCP-TP-180) • Data Generator Checklist (contains operator signature, see Figure C-2) • ITR checklist (contains sample preservation verification and data release authorization, see Figure D-11) 	<ul style="list-style-type: none"> • Sample Receiving and Custody review checklist (example in CCP-TP-180) • Data Generator Checklist (contains operator signature, see Figure C-2) • ITR checklist (contains sample preservation verification and data release authorization, see Figure D-12)

^a The designation of QC samples is indicated through the assigned sample identification codes.

Table K-5. SDP^a content (minimum) for site-specific hydrazine and formaldehyde RCRA solids analyses

<p align="center">Formaldehyde (CCP-TP-196)</p>	<p align="center">Hydrazine (CCP-TP-197)</p>
<ul style="list-style-type: none"> • ACS sample cross-reference for each log • Copies of formaldehyde extraction logbook • Copies of formaldehyde derivatization logbook • Copies of HPLC standard preparation logbook • Copies of standard certificates • Copies of HPLC run logbook • HPLC instrument raw data printouts for all samples and associated batch and instrument QC, in chronological order 	<ul style="list-style-type: none"> • ACS sample cross-reference for each log • Copies of hydrazine extraction logbook • Copies of hydrazine derivatization logbook • Copies of HPLC standard preparation logbook • Copies of standard certificates • Copies of HPLC run logbook • HPLC instrument raw data printouts for all samples and associated batch and instrument QC, in chronological order

^a SDP is assigned the same number (“ALDYYnnnX”) as the associated BDR