0079003

SAF-RC-029
Remaining Sites Confirmation Sampling - Soil
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Kathy Wendt (2) H4-21

RECEIVED
NOV 03 2008
EDMC

COMMENTS:

SDG K1310 **SAF-RC-029**

Waste Site: 128-H-3

Date: 17 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-3
Subject: Wet Chemistry - Data Package No. K1310-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1310 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J178T0	8/27/08	Soil	C	See note 1
J178T1	8/27/08	Soil	C	See note 1
J178T2	8/27/08	Soil	C	See note 1
J178T3	8/27/08	Soil	C	See note 1
J178T4	8/27/08	Soil	C	See note 1
J178T5	8/27/08	Soil	C	See note 1

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If

the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J178T4/J178T5) were submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package K1310 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services.*

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K1310	REVIEWER: ELR	Project: 128-H-3	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/10/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J178T0	% Solids	98.9	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-002	J178T1	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-003	J178T2	% Solids	99.5	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-004	J178T3	% Solids	99.1	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-005	J178T4	% Solids	97.3	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-006	J178T5	% Solids	88.2	%	0.01	1.0
		Chromium VI	0.23 u	MG/KG	0.23	1.0
-007	J178T6	% Solids	100	%	0.01	1.0

10/16/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-029 K1310
LVL#: 0808L145

W.O.#: 60049-001-001-0001-00
Date Received: 08-29-08

INORGANIC NARRATIVE

1. This narrative covers the analyses of 7 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

   LvLI is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blank for Chromium VI was within the method criteria.

6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.

7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for soil samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/15/08
Date

njp\i08-145

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford

lector Welch - Koallings	Company Contact Matt Perrott / Telephone No. 372-9088	Project Coordinator KESSNER, JH	Price Code 8C / Data Turnaround 15 Days
ject Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location 128-H-3	SAF No. RC-029	
Chest No. SAWS - 10	Field Logbook No. EL-1601-2 / COA C128H31W00	Method of Shipment FedEx	
pped To EBERLINE SERVICES - LIONVILLE	Offsite Property No. A080319	Bill of Lading/Air Bill No. See OPC	

OSSIBLE SAMPLE HAZARDS/REMARKS

ecial Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G	G/P	aG	aG	G	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	120mL	250mL	250mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1					
Sample No. / Matrix * / Sample Date / Sample Time											
78T0	SOIL	8/27/08	0840	X	X	X	X	X	X		
78T1	SOIL	8/27/08	0905	X	X	X	X	X	X		
78T2	SOIL	8/27/08	0915	X	X	X	X	X	X		
78T3	SOIL	8/27/08	0945	X	X	X	X	X	X		
78T4	SOIL	8/27/08	1005	X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Welch Koeanic	8/27/08 1102	BHUDSON BHudson	8/27/08 1102
HUDSON BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
60 #3C	8-28-08 1000	Barry Lawrence	8-28-08 1000
Barry Lawrence	8-28-08 1000	FED EX	
FED EX	8/29/08 0945		8/29/08 0945

SPECIAL INSTRUCTIONS

TOTAL METALS 6010

(1) Metals by ICP ~~(TCLP) - 1311/6010~~ [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury (TCLP) - 1311/7470 BH 8/27/08

mercury OEB 8-28-08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *: S=Soil, SE=Sediment, SO=Solid, Sl=Sludge, W = Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, Wi=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

H-EE-011

000012

000000011

llector Welch-Koelling	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH	Price Code 8C / Data Turnaround 15 Days
ıject Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location 128-H-3		SAF No. RC-029	
Chest No. SAWS- ERC-02-406	Field Logbook No. EL-1601-2	COA C128H31W00	Method of Shipment FedEx	
ipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A080319		Bill of Lading/Air Bill No. SCE OSPC	

OSSIBLE SAMPLE ~~HAZARDS~~/REMARKS

ecial Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G	G/P	aG	aG	G	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	120mL	250mL	250mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1					
Sample No.	Matrix *	Sample Date	Sample Time								
78T5 ✓	SOIL	8/27/08	~~1005~~ 1006	X	X	X	X	X	X		
78T6 ✓	SOIL	8/27/08	1000	X	~~X~~	~~X~~	X	X	~~X~~ BH 8/27/08		
78T7	SOIL					BH 8/27/08					
78T8	SOIL										
78T9	SOIL										

CHAIN OF POSSESSION	Sign/Print Names	
quished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Welch-Koelling	8/27/08 11:02	BILL HUDSON	1102
quished By/Removed From	Date/Time	Received By/Stored In	Date/Time
HUDSON	8/27/08 1810	1060 #3C	8/27/08 1810
quished By/Removed From	Date/Time	Received By/Stored In	Date/Time
060 #3C	8-28-08 1000	Barry Lawrence	8-28-08 1000
quished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Barry Lawrence	8-28-08	FED EX	
quished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EX	8/29/08 0945		8/29/08 0945
quished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

TOTAL METALS 6010 TR

(1) Metals by ICP (TCLP) ~~1311/6010~~ [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury (TCLP) - 1311/7470

mercury

BH 8/27/08

SWB 8/28-08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

BORATORY SECTION	Received By	Title	Date/Time
AL SAMPLE SPOSITION	Disposal Method	Disposed By	Date/Time

H-EE-011

000000012

0000013

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	128-H-3		DATA PACKAGE:	K1310	
VALIDATOR:	ELR	LAB: LLI		DATE: 10/13/08	
			SDG: K1310		

ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX
J178T0 J178T1 J178T2 J178T3 J178T4
J178T5
Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Sike standards NIST traceable? (Levels D, E) ..... Yes No N/A

Spike standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: no PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/10/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LVI061-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/10/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-006	J178T5	Soluble Chromium VI	4.6	0.23u	4.5	105.2	1.0
		Insoluble Chromium VI	1620	0.23u	1320	123.4	100
BLANK10	08LVI061-MB1	Soluble Chromium VI	3.8	0.20u	4.0	96.2	1.0
		Insoluble Chromium VI	1450	0.20u	1260	115.1	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/10/08

CLIENT: WC-HANFORD RC-029 K1310

LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J178T0	% Solids	98.9	98.8	0.061	1.0
-006REP	J178T5	Chromium VI	0.23u	0.23u	NC	1.0

Date: 17 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-3
Subject: Inorganics - Data Package No. K1310-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1310 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J178T0	8/27/08	Soil	C	See note 1
J178T1	8/27/08	Soil	C	See note 1
J178T2	8/27/08	Soil	C	See note 1
J178T3	8/27/08	Soil	C	See note 1
J178T4	8/27/08	Soil	C	See note 1
J178T5	8/27/08	Soil	C	See note 1
J178T6	8/27/08	Soil	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, the calcium, magnesium & sodium result in sample J178T6 was qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J178T6) was submitted for analysis. Aluminum, barium, chromium, iron, manganese, silicon and zinc were detected in the equipment blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recoveries outside QC limits, all antimony (52.2%) and silicon (293.1%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (36.1%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J178T4/J178T5) were submitted for analysis. Field Duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. K1310 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the calcium, magnesium & sodium result in sample J178T6 was qualified as undetected and flagged "UJ".
- Due to a matrix spike recoveries outside QC limits, all antimony (52.2%) and silicon (293.1%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (36.1%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K1310	REVIEWER: ELR	Project 128-H-3	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Calcium Magnesium Sodium	UJ	J178T6	Method blank contamination
Antimony Silicon	J	All	MS recovery
Silicon	J	All	LCS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J178T0	Silver, Total	0.23 u	MG/KG	0.23	3.0
		Aluminum, Total	5990	MG/KG	9.3	3.0
		Arsenic, Total	4.5	MG/KG	1.2	3.0
		Boron, Total	1.6	MG/KG	1.2	3.0
		Barium, Total	44.5	MG/KG	0.23	3.0
		Beryllium, Total	0.22	MG/KG	0.12	3.0
		Calcium, Total	8550	MG/KG	9.3	3.0
		Cadmium, Total	0.12 u	MG/KG	0.12	3.0
		Cobalt, Total	5.1	MG/KG	0.46	3.0
		Chromium, Total	12.4	MG/KG	0.46	3.0
		Copper, Total	12.5	MG/KG	0.46	3.0
		Iron, Total	14500	MG/KG	10.4	3.0
		Mercury, Total	0.008	MG/KG	0.008	1.0
		Potassium, Total	864	MG/KG	38.0	1.0
		Magnesium, Total	4480	MG/KG	5.8	3.0
		Manganese, Total	254	MG/KG	0.09	3.0
		Molybdenum, Total	0.69 u	MG/KG	0.69	3.0
		Sodium, Total	176	MG/KG	1.5	1.0
		Nickel, Total	11.3	MG/KG	0.46	3.0
		Lead, Total	3.0	MG/KG	0.69	3.0
		Antimony, Total	0.69 u J	MG/KG	0.69	3.0
		Selenium, Total	1.4 u	MG/KG	1.4	3.0
		Silicon, Total	222 J	MG/KG	9.3	3.0
		Vanadium, Total	34.0	MG/KG	0.32	3.0
		Zinc, Total	33.3	MG/KG	1.4	3.0

10/14/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J178T1	Silver, Total	0.21 u	MG/KG	0.21	3.0
		Aluminum, Total	8540	MG/KG	8.5	3.0
		Arsenic, Total	7.9	MG/KG	1.1	3.0
		Boron, Total	3.1	MG/KG	1.1	3.0
		Barium, Total	72.9	MG/KG	0.21	3.0
		Beryllium, Total	0.34	MG/KG	0.11	3.0
		Calcium, Total	13300	MG/KG	8.5	3.0
		Cadmium, Total	0.11 u	MG/KG	0.11	3.0
		Cobalt, Total	6.5	MG/KG	0.42	3.0
		Chromium, Total	12.9	MG/KG	0.42	3.0
		Copper, Total	15.5	MG/KG	0.42	3.0
		Iron, Total	18600	MG/KG	9.5	3.0
		Mercury, Total	0.04	MG/KG	0.009	1.0
		Potassium, Total	1440	MG/KG	34.7	1.0
		Magnesium, Total	4730	MG/KG	5.3	3.0
		Manganese, Total	319	MG/KG	0.08	3.0
		Molybdenum, Total	0.63 u	MG/KG	0.63	3.0
		Sodium, Total	166	MG/KG	1.4	1.0
		Nickel, Total	12.5	MG/KG	0.42	3.0
		Lead, Total	48.0	MG/KG	0.63	3.0
		Antimony, Total	0.63 u J	MG/KG	0.63	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	152 J	MG/KG	8.5	3.0
		Vanadium, Total	39.5	MG/KG	0.30	3.0
		Zinc, Total	42.1	MG/KG	1.3	3.0

10/16/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J178T2	Silver, Total	0.22 u	MG/KG	0.22	3.0
		Aluminum, Total	9750	MG/KG	9.0	3.0
		Arsenic, Total	11.0	MG/KG	1.1	3.0
		Boron, Total	3.7	MG/KG	1.1	3.0
		Barium, Total	81.8	MG/KG	0.22	3.0
		Beryllium, Total	0.36	MG/KG	0.11	3.0
		Calcium, Total	10800	MG/KG	9.0	3.0
		Cadmium, Total	0.11 u	MG/KG	0.11	3.0
		Cobalt, Total	8.2	MG/KG	0.45	3.0
		Chromium, Total	16.9	MG/KG	0.45	3.0
		Copper, Total	19.8	MG/KG	0.45	3.0
		Iron, Total	21700	MG/KG	10.1	3.0
		Mercury, Total	0.02	MG/KG	0.009	1.0
		Potassium, Total	1740	MG/KG	36.9	1.0
		Magnesium, Total	5680	MG/KG	5.6	3.0
		Manganese, Total	360	MG/KG	0.09	3.0
		Molybdenum, Total	0.68 u	MG/KG	0.68	3.0
		Sodium, Total	217	MG/KG	1.5	1.0
		Nickel, Total	15.4	MG/KG	0.45	3.0
		Lead, Total	94.1	MG/KG	0.68	3.0
		Antimony, Total	0.68 u J	MG/KG	0.68	3.0
		Selenium, Total	1.4 u	MG/KG	1.4	3.0
		Silicon, Total	175 J	MG/KG	9.0	3.0
		Vanadium, Total	47.0	MG/KG	0.32	3.0
		Zinc, Total	49.8	MG/KG	1.4	3.0

10/14/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310

LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J178T3	Silver, Total	0.23 u	MG/KG	0.23	3.0
		Aluminum, Total	7410	MG/KG	9.4	3.0
		Arsenic, Total	3.6	MG/KG	1.2	3.0
		Boron, Total	2.1	MG/KG	1.2	3.0
		Barium, Total	71.5	MG/KG	0.23	3.0
		Beryllium, Total	0.32	MG/KG	0.12	3.0
		Calcium, Total	5730	MG/KG	9.4	3.0
		Cadmium, Total	0.12 u	MG/KG	0.12	3.0
		Cobalt, Total	8.4	MG/KG	0.47	3.0
		Chromium, Total	10.3	MG/KG	0.47	3.0
		Copper, Total	15.6	MG/KG	0.47	3.0
		Iron, Total	23600	MG/KG	10.6	3.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Potassium, Total	976	MG/KG	38.5	1.0
		Magnesium, Total	4410	MG/KG	5.9	3.0
		Manganese, Total	326	MG/KG	0.09	3.0
		Molybdenum, Total	0.70 u	MG/KG	0.70	3.0
		Sodium, Total	179	MG/KG	1.6	1.0
		Nickel, Total	12.2	MG/KG	0.47	3.0
		Lead, Total	8.5	MG/KG	0.70	3.0
		Antimony, Total	0.70 u J	MG/KG	0.70	3.0
		Selenium, Total	1.4 u	MG/KG	1.4	3.0
		Silicon, Total	167 J	MG/KG	9.4	3.0
		Vanadium, Total	60.5	MG/KG	0.33	3.0
		Zinc, Total	47.7	MG/KG	1.4	3.0

10/16/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANPORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J178T4	Silver, Total	0.23 u	MG/KG	0.23	3.0
		Aluminum, Total	5170	MG/KG	9.2	3.0
		Arsenic, Total	2.0	MG/KG	1.2	3.0
		Boron, Total	1.6	MG/KG	1.2	3.0
		Barium, Total	51.7	MG/KG	0.23	3.0
		Beryllium, Total	0.20	MG/KG	0.12	3.0
		Calcium, Total	6160	MG/KG	9.2	3.0
		Cadmium, Total	0.12 u	MG/KG	0.12	3.0
		Cobalt, Total	5.8	MG/KG	0.46	3.0
		Chromium, Total	9.3	MG/KG	0.46	3.0
		Copper, Total	11.7	MG/KG	0.46	3.0
		Iron, Total	16400	MG/KG	10.4	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	683	MG/KG	37.8	1.0
		Magnesium, Total	3430	MG/KG	5.8	3.0
		Manganese, Total	258	MG/KG	0.09	3.0
		Molybdenum, Total	0.69 u	MG/KG	0.69	3.0
		Sodium, Total	179	MG/KG	1.5	1.0
		Nickel, Total	9.1	MG/KG	0.46	3.0
		Lead, Total	2.9	MG/KG	0.69	3.0
		Antimony, Total	0.69 u J	MG/KG	0.69	3.0
		Selenium, Total	1.4 u	MG/KG	1.4	3.0
		Silicon, Total	128 J	MG/KG	9.2	3.0
		Vanadium, Total	41.4	MG/KG	0.32	3.0
		Zinc, Total	34.4	MG/KG	1.4	3.0

10/16/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J178T5	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Aluminum, Total	6240	MG/KG	10.5	3.0
		Arsenic, Total	3.8	MG/KG	1.3	3.0
		Boron, Total	1.3 u	MG/KG	1.3	3.0
		Barium, Total	59.2	MG/KG	0.26	3.0
		Beryllium, Total	0.30	MG/KG	0.13	3.0
		Calcium, Total	7260	MG/KG	10.5	3.0
		Cadmium, Total	0.13 u	MG/KG	0.13	3.0
		Cobalt, Total	7.0	MG/KG	0.52	3.0
		Chromium, Total	8.5	MG/KG	0.52	3.0
		Copper, Total	15.9	MG/KG	0.52	3.0
		Iron, Total	19200	MG/KG	11.8	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	795	MG/KG	43.0	1.0
		Magnesium, Total	4150	MG/KG	6.5	3.0
		Manganese, Total	280	MG/KG	0.10	3.0
		Molybdenum, Total	0.78 u	MG/KG	0.78	3.0
		Sodium, Total	249	MG/KG	1.7	1.0
		Nickel, Total	9.7	MG/KG	0.52	3.0
		Lead, Total	4.0	MG/KG	0.78	3.0
		Antimony, Total	0.78 u J	MG/KG	0.78	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Silicon, Total	155 J	MG/KG	10.5	3.0
		Vanadium, Total	43.8	MG/KG	0.37	3.0
		Zinc, Total	39.2	MG/KG	1.6	3.0

10/16/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J178T6	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	62.7	MG/KG	2.8	1.0
		Arsenic, Total	0.36	MG/KG	0.35	1.0
		Boron, Total	0.35 u	MG/KG	0.35	1.0
		Barium, Total	1.3	MG/KG	0.07	1.0
		Beryllium, Total	0.03 u	MG/KG	0.03	1.0
		Calcium, Total	18.5 UJ	MG/KG	2.8	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.14 u	MG/KG	0.14	1.0
		Chromium, Total	0.21	MG/KG	0.14	1.0
		Copper, Total	0.14 u	MG/KG	0.14	1.0
		Iron, Total	140	MG/KG	3.1	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	34.4 u	MG/KG	34.4	1.0
		Magnesium, Total	10.6 UJ	MG/KG	1.7	1.0
		Manganese, Total	3.8	MG/KG	0.03	1.0
		Molybdenum, Total	0.21 u	MG/KG	0.21	1.0
		Sodium, Total	8.9 UJ	MG/KG	1.4	1.0
		Nickel, Total	0.14 u	MG/KG	0.14	1.0
		Lead, Total	0.29	MG/KG	0.21	1.0
		Antimony, Total	0.21 u J	MG/KG	0.21	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
		Silicon, Total	46.7 J	MG/KG	2.8	1.0
		Vanadium, Total	0.1 u	MG/KG	0.1	1.0
		Zinc, Total	0.72	MG/KG	0.42	1.0

10/16/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-029
LVL#: 0808L145
SDG/SAF#: K1310/RC-029

W.O.#: 11343-606-001-9999-00
Date Received: 08-29-08

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analyses of 7 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

   All samples, with the exception of sample J178T6, were reported with 3-fold dilutions for ICP metals due to sample matrix.

3. All analyses were performed within the required holding times.

4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury) with the exception of Potassium and Sodium in file TA0909A. The samples were rerun, without dilution, for Potassium and Sodium in file PS0911A

5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).

6. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

7. All ICP Interference Check Standards were within control limits.

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 36.1%. Refer to the Inorganics Laboratory Control Standards Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 30 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Associated sample results may be biased low for Silicon.

9. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

10. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J178T0	Aluminum	60,000	97.3
	Iron	60,000	112.9
	Antimony	300	106.7
	Silicon	3,300	99.9

11. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

13. LvLI is NELAP accredited by the state of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Jain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/15/08
Date

jjw/m08-145

LVLI
LIONVILLE LABORATORY INC.

lector Welch – Koellings	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 15 Days
ject Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location 128-H-3		SAF No. RC-029	
Chest No. SACWS - 10	Field Logbook No. EL-1601-2	COA C128H31W00	Method of Shipment FedEx	
nned To EBERLINE SERVICES/LIONVILLE	Offsite Property No. A080319		Bill of Lading/Air Bill No. See OSPC	

OSSIBLE SAMPLE HAZARDS/REMARKS

pecial Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G	G/P	aG	aG	G	G				
No. of Container(s)	1	1	1	1	1	1				
Volume	60mL	120mL	250mL	250mL	60mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1				

000020

Sample No.	Matrix *	Sample Date	Sample Time									
78T0	SOIL	8/27/08	0840	X	X	X	X	X	X			
78T1	SOIL	8/27/08	0905	X	X	X	X	X	X			
78T2	SOIL	8/27/08	0915	X	X	X	X	X	X			
78T3	SOIL	8/27/08	0945	X	X	X	X	X	X			
78T4	SOIL	8/27/08	1005	X	X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names	
inquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
ll West Lorenic	8/27/08 11:02	BHUDSON BHudson	8/27/08 1102
inquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
HUDSON BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
inquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
160 #3C	8-28-08 1000	Barry Lawrence	8-28-08 1000
inquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
arry Lawrence	8-28-08 1000	FED EX	
inquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	8/29/08 0945		8/29/08 0945
inquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

TOTAL METALS 6010

(1) Metals by ICP ~~(TCLP) - 1311/6010~~ (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury (TCLP) - 1311/7470 mercury

BH 8/27/08 OES 8-28-08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

MB

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

ABORATORY SECTION	Received By	Title	Date/Time
NAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

CH-EE-011

000000028

llector Welch-Koelling	Company Contact Matt Perrott / Telephone No. 372-9088	Project Coordinator KESSNER, JH	Price Code 8C / Data Turnaround 15 Days
ɔject Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location 128-H-3	SAF No. RC-029	
Chest No. SAWS- ERC-02-406	Field Logbook No. EL-1601-2 / COA C128H31W00	Method of Shipment FedEx	
ipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A080319	Bill of Lading/Air Bill No. SCC OSPC	

OSSIBLE SAMPLE ~~HAZARDS~~/REMARKS

pecial Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G	G/P	aG	aG	G	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	120mL	250mL	250mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1					
Sample No. / Matrix * / Sample Date / Sample Time											
78T5 ✓ / SOIL / 8/27/08 / ~~1000~~ 1006	X	X	X	X	X	X					
78T6 ✓ / SOIL / 8/27/08 / 1000	X	~~X~~	~~X~~ BH 8/27/08	X	X	~~X~~ BH 8/27/08					
78T7 / SOIL											
78T8 / SOIL											
78T9 / SOIL											

000021

CHAIN OF POSSESSION	Sign/Print Names	
inquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
Welch-Koelling	8/27/08 11:02	Bill Hudson 8/27/08 1102
inquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
Hudson	8/27/08 1810	1060 #3C 8/27/08 1810
inquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
060 #3C	8-28-08 1000	Barry Lawrence 8-28-08 1000
inquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
Barry Lawrence	8-28-08 1000	FED EX
inquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
FED EX	8/29/08 0945	8/29/08 0945
inquished By/Removed From	Date/Time	Received By/Stored In / Date/Time

SPECIAL INSTRUCTIONS

TOTAL METALS 6010 TR

(1) Metals by ICP ~~(TCLP)~~ ~~1311/6010~~ [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury (TCLP) - 1311/7470 mercury

BH 8/27/08

SWB 8/28-08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

ABORATORY SECTION	Received By	Title	Date/Time
NAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

CH-EE-011

000000029

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-H-3			DATA PACKAGE: K1310		
VALIDATOR: FLR		LAB: LLI		DATE: 10/13/08	
			SDG: K1310		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J178T0 J178T1 J178T2 J178T3					
J178T4 J178T5 J178T6					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: TB – calcium, magnesium, sodium – UJ all

FB – al, barium, chromium, iron, manganese, silicon + zinc

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments:

MS – antimony (52.2%) – J all no pts

MS – silicon (293.1%) – J all

LCS – Silicon (36.1%) – J all

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

MSA performed as required? ..... Yes No N/A

MSA results acceptable? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0325-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	4.0 u	MG/KG	4.0	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Boron, Total	0.50 u	MG/KG	0.50	1.0
		Barium, Total	0.14	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	5.1	MG/KG	4.0	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.20 u	MG/KG	0.20	1.0
		Iron, Total	4.5 u	MG/KG	4.5	1.0
		Potassium, Total	49.3 u	MG/KG	49.3	1.0
		Magnesium, Total	3.9	MG/KG	2.5	1.0
		Manganese, Total	0.06	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Sodium, Total	8.2	MG/KG	2.0	1.0
		Nickel, Total	0.20 u	MG/KG	0.20	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.60 u	MG/KG	0.60	1.0
		Silicon, Total	4.0 u	MG/KG	4.0	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	0.60 u	MG/KG	0.60	1.0
BLANK1	08C0155-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J178T0	Silver, Total	3.6	0.23u	3.8	94.7	3.0
		Aluminum, Total	6070	5990	153	55.0*	3.0
		Arsenic, Total	149	4.5	153	94.6	3.0
		Boron, Total	70.5	1.6	76.6	89.9	3.0
		Barium, Total	186	44.5	153	92.4	3.0
		Beryllium, Total	3.9	0.22	3.8	96.7	3.0
		Calcium, Total	10100	8550	1920	78.4*	3.0
		Cadmium, Total	4.5	0.12u	3.8	118.4	3.0
		Cobalt, Total	42.1	5.1	38.3	96.6	3.0
		Chromium, Total	26.7	12.4	15.3	93.5	3.0
		Copper, Total	29.7	12.5	19.2	89.6	3.0
		Iron, Total	13900	14500	76.6	-730. *	3.0
		Mercury, Total	0.14	0.008	0.13	107.1	1.0
		Potassium, Total	2510	864	1920	85.8	1.0
		Magnesium, Total	6110	4480	1920	85.0	3.0
		Manganese, Total	283	254	38.3	77.3*	3.0
		Molybdenum, Total	71.8	0.69u	76.6	93.7	3.0
		Sodium, Total	1980	176	1920	94.4	1.0
		Nickel, Total	47.4	11.3	38.3	94.3	3.0
		Lead, Total	39.9	3.0	38.3	96.3	3.0
		Antimony, Total	20.0	0.69u	38.3	52.2	3.0
		Selenium, Total	127	1.4 u	153	83.2	3.0
		Silicon, Total	447	222	76.6	293.1	3.0
		Vanadium, Total	69.3	34.0	38.3	92.2	3.0
		Zinc, Total	69.3	33.3	38.3	94.0	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J178T0	Silver, Total	0.23u	0.23u	NC	3.0
		Aluminum, Total	5990	6150	2.6	3.0
		Arsenic, Total	4.5	3.9	14.3	3.0
		Boron, Total	1.6	1.3	20.7	3.0
		Barium, Total	44.5	43.5	2.3	3.0
		Beryllium, Total	0.22	0.22	3.3	3.0
		Calcium, Total	8550	8720	1.9	3.0
		Cadmium, Total	0.12u	0.11u	NC	3.0
		Cobalt, Total	5.1	5.4	5.7	3.0
		Chromium, Total	12.4	13.2	6.2	3.0
		Copper, Total	12.5	12.6	0.80	3.0
		Iron, Total	14500	15000	3.7	3.0
		Mercury, Total	0.008	0.01u	~~NC~~ RPD corrected value MW 9/12/08	1.0
		Potassium, Total	864	843	2.4	1.0
		Magnesium, Total	4480	4560	1.7	3.0
		Manganese, Total	254	256	0.94	3.0
		Molybdenum, Total	0.69u	0.68u	NC	3.0
		Sodium, Total	176	184	4.6	1.0
		Nickel, Total	11.3	12.0	6.0	3.0
		Lead, Total	3.0	3.5	15.4	3.0
		Antimony, Total	0.69u	0.68u	NC	3.0
		Selenium, Total	1.4 u	1.4 u	NC	3.0
		Silicon, Total	222	213	4.2	3.0
		Vanadium, Total	34.0	35.2	3.5	3.0
		Zinc, Total	33.3	32.9	1.2	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1310 LVL LOT #: 0808L145

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0325-LC1	Silver, LCS	48.8	50.0	MG/KG	97.6
		Aluminum, LCS	492	500	MG/KG	98.5
		Arsenic, LCS	942	1000	MG/KG	94.2
		Boron, LCS	463	500	MG/KG	92.6
		Barium, LCS	482	500	MG/KG	96.4
		Beryllium, LCS	24.2	25.0	MG/KG	96.8
		Calcium, LCS	2440	2500	MG/KG	97.7
		Cadmium, LCS	23.5	25.0	MG/KG	94.0
		Cobalt, LCS	238	250	MG/KG	95.2
		Chromium, LCS	48.3	50.0	MG/KG	96.6
		Copper, LCS	122	125	MG/KG	97.9
		Iron, LCS	484	500	MG/KG	96.7
		Potassium, LCS	2380	2500	MG/KG	95.3
		Magnesium, LCS	2380	2500	MG/KG	95.3
		Manganese, LCS	73.4	75.0	MG/KG	97.9
		Molybdenum, LCS	476	500	MG/KG	95.2
		Sodium, LCS	2420	2500	MG/KG	96.7
		Nickel, LCS	193	200	MG/KG	96.4
		Lead, LCS	240	250	MG/KG	96.2
		Antimony, LCS	283	300	MG/KG	94.3
		Selenium, LCS	921	1000	MG/KG	92.1
		Silicon, LCS	180	500	MG/KG	36.1
		Vanadium, LCS	241	250	MG/KG	96.4
		Zinc, LCS	96.6	100	MG/KG	96.6
LCS1	08C0155-LC1	Mercury, LCS	5.0	4.7	MG/KG	106.3

Date: 17 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-3
Subject: Pesticide/PCB - Data Package No. K1310-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1310 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J178T0	8/27/08	Soil	C	See note 1
J178T1	8/27/08	Soil	C	See note 1
J178T2	8/27/08	Soil	C	See note 1
J178T3	8/27/08	Soil	C	See note 1
J178T4	8/27/08	Soil	C	See note 1
J178T5	8/27/08	Soil	C	See note 1

1 – PCBs by 8082 & pesticides by 8081.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated

detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been

established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

Field Duplicate Samples

One set of field duplicates (J178T4/J178T5) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data Package No. K1310 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

- Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K1310	REVIEWER: ELR	Project: 128-H-3	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS analysis

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

PCBs by GC

Report Date: 09/08/08 10:50

RFW Batch Number: 0808L145 Client: WC-HANFORD RC-029 Work Order: 60049001001 Page: 1

	Cust ID:	J178T0	J178T0	J178T0	J178T1	J178T2	J178T3
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	93 %	87 %	92 %	90 %	98 %	91 %
	Decachlorobiphenyl	103 %	109 %	108 %	111 %	108 %	109 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	93 %	95 %	13 U	13 U	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	143 %	144 %	13 U	13 U	13 U

	Cust ID:	J178T4	J178T5	PBLKUH	PBLKUH BS
Sample Information	RFW#:	005	006	08LE0414-MB1	08LE0414-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	100 %	92 %	76 %	86 %
	Decachlorobiphenyl	118 %	111 %	84 %	100 %
		fl	fl	fl	fl
Aroclor-1016		14 U	15 U	13 U	89 %
Aroclor-1221		14 U	15 U	13 U	13 U
Aroclor-1232		14 U	15 U	13 U	13 U
Aroclor-1242		14 U	15 U	13 U	13 U
Aroclor-1248		14 U	15 U	13 U	13 U
Aroclor-1254		14 U	15 U	13 U	13 U
Aroclor-1260		14 U	15 U	13 U	131 %

10/10/08

000010

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Pesticide/PCBs by GC, CLP List Report Date: 09/08/08 11:18

RFW Batch Number: 0808L145 Client: WC-HANFORD RC-029 Work Order: 60049001001 Page: 1

	Cust ID:	J178T0	J178T0	J178T0	J178T1	J178T2	J178T3
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	128 %	119 %	116 %	112 %	120 %	116 %
	Decachlorobiphenyl	122 %	112 %	108 %	108 %	110 %	104 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.3 U	118 %	116 %	1.3 U	1.3 U	1.3 U
gamma-BHC (Lindane)		1.3 U	120 %	117 %	1.3 U	1.3 U	1.3 U
Beta-BHC		1.3 U	122 %	118 %	1.3 U	1.3 U	1.3 U
Heptachlor		1.3 U	127 %	125 %	1.3 U	1.3 U	1.3 U
Delta-BHC		1.3 U	95 %	92 %	1.3 U	1.3 U	1.3 U
Aldrin		1.3 U	125 %	123 %	1.3 U	1.3 U	1.3 U
Heptachlor epoxide		1.3 U	121 %	118 %	1.3 U	1.3 U	1.3 U
gamma-Chlordane		1.3 U	126 %	123 %	1.3 U	1.3 U	1.3 U
Endosulfan I		1.3 U	127 %	124 %	1.3 U	1.3 U	1.3 U
alpha-Chlordane		1.3 U	126 %	122 %	1.3 U	1.3 U	1.3 U
4,4'-DDE		1.3 U	128 %	121 %	1.3 U	1.7 J	1.3 U
Dieldrin		1.3 U	129 %	123 %	1.3 U	1.3 U	1.3 U
Endrin		1.3 U	134 %	129 %	1.3 U	1.3 U	1.3 U
4,4'-DDD		1.3 U	128 %	123 %	1.3 U	1.3 U	1.3 U
Endosulfan II		1.3 U	130 %	124 %	1.3 U	1.3 U	1.3 U
4,4'-DDT		1.3 U	101 %	94 %	1.3 U	1.3 U	1.3 U
Endrin aldehyde		1.3 U	115 %	115 %	1.3 U	1.3 U	1.3 U
Endosulfan sulfate		1.3 U	120 %	115 %	1.3 U	1.3 U	1.3 U
Methoxychlor		1.3 U	124 %	136 %	1.3 U	1.3 U	1.3 U
Endrin ketone		1.3 U	128 %	122 %	1.3 U	1.3 U	1.3 U
Toxaphene		13 U	13 U	13 U	13 U	13 U	13 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

10/16/08

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	Cust ID:	J178T4		J178T5		PBLKUH		PBLKUH BS	
Sample Information	RFW#:	005		006		08LE0414-MB1		08LE0414-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	4.00		4.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	118	%	116	%	86	%	85	%
	Decachlorobiphenyl	110	%	110	%	91	%	92	%
Alpha-BHC		1.4	U	1.5	U	0.33	U	93	%
gamma-BHC (Lindane)		1.4	U	1.5	U	0.33	U	93	%
Beta-BHC		1.4	U	1.5	U	0.33	U	90	%
Heptachlor		1.4	U	1.5	U	0.33	U	96	%
Delta-BHC		1.4	U	1.5	U	0.33	U	75	%
Aldrin		1.4	U	1.5	U	0.33	U	97	%
Heptachlor epoxide		1.4	U	1.5	U	0.33	U	93	%
gamma-Chlordane		1.4	U	1.5	U	0.33	U	101	%
Endosulfan I		1.4	U	1.5	U	0.33	U	100	%
alpha-Chlordane		1.4	U	1.5	U	0.33	U	99	%
4,4'-DDE		1.4	U	1.5	U	0.33	U	104	%
Dieldrin		1.4	U	1.5	U	0.33	U	102	%
Endrin		1.4	U	1.5	U	0.33	U	105	%
4,4'-DDD		1.4	U	1.5	U	0.33	U	106	%
Endosulfan II		1.4	U	1.5	U	0.33	U	104	%
4,4'-DDT		1.4	U	1.5	U	0.33	U	111	%
Endrin aldehyde		1.4	U	1.5	U	0.33	U	89	%
Endosulfan sulfate		1.4	U	1.5	U	0.33	U	98	%
Methoxychlor		1.4	U	1.5	U	0.33	U	114	%
Endrin ketone		1.4	U	1.5	U	0.33	U	103	%
Toxaphene		14	U	15	U	3.3	U	3.3	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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10/10/08

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-029
LVL #: 0808L145
SDG/SAF # K1310 / RC-029

W.O. #: 60049-001-001-0001-00
Date Received: 08-29-2008

CHLORINATED PESTICIDES

Six (6) soil samples were collected on 08-27-2008.

The samples and their associated QC samples were extracted on 09-03-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 09-04-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All required holding times for extraction and analysis have been met.
2. The method blank was below the reporting limits for all target compounds.
3. All surrogate recoveries were within acceptance criteria.
4. All blank spike recoveries were within acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. All samples required a 4-fold instrument dilution due to the matrix. Reporting limits have been adjusted to reflect the necessary dilutions.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

LIONVILLE LABORATORY INC.

9. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/10/08
Date

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-029
LVL #: 0808L145
SDG/SAF # K1310 / RC-029

W.O. #: 60049-001-001-0001-00
Date Received: 08-29-2008

PCB

Six (6) soil samples were collected on 08-27-2008.

The samples and their associated QC samples was extracted on 09-03-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 09-05-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All required holding times for extraction and analysis have been met.
2. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid clean ups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
3. The method blank was below the reporting limits for all target compounds.
4. All obtainable surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. Matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.

r:\group\data\2008\pest\tmu\0808-145cs2.pcb.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

LvLI
LIONVILLE LABORATORY INC.

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

9. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date 9/9/08

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford — CHAIN OF CUSTODY RECORD

Collector: Welch – Koellings	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: 128-H-3		SAF No.: RC-029
Ice Chest No.: SACWS - 10	Field Logbook No.: EL-1601-2	COA: C128H31W00	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080319		Bill of Lading/Air Bill No.: See OPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G	G/P	aG	aG	G	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	120mL	250mL	250mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1					
Sample No.	Matrix *	Sample Date	Sample Time								
178T0	SOIL	8/27/08	0840	X	X	X	X	X	X		
178T1	SOIL	8/27/08	0905	X	X	X	X	X	X		
178T2	SOIL	8/27/08	0915	X	X	X	X	X	X		
178T3	SOIL	8/27/08	0945	X	X	X	X	X	X		
178T4	SOIL	8/27/08	1005	X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Joel West Koellings	8/27/08 1102	BHUDSON Bhudson	1102 8/27/08
BHUDSON Bhudson	8/27/08 1810	1060 #3C	8/27/08 1810
1060 #3C	8-28-08 1000	Barry Lawrence	1000 8-28-08
Barry Lawrence	8-28-08 1000	FED EX	
FED EX	8/29/08 0945		8/29/08 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

TOTAL METALS 6010

(1) Metals by ICP ~~(TCLP) - 1311/6010~~ [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury (TCLP) - 1311/7470 BH 8/27/08 mercury OEG 8-28-08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *: S=Soil; SE=Sediment; SO=Solid; Sl=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wi=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

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Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Welch-Koelling	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: 128-H-3		SAF No.: RC-029
Ice Chest No.: SAWS- ERC-02-406	Field Logbook No.: EL-1601-2	COA: C128H31W00	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080319		Bill of Lading/Air Bill No.: SCE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
Type of Container	G	G/P	sG	sG	G	G	
No. of Container(s)	1	1	1	1	1	1	
Volume	60mL	120mL	250mL	250mL	60mL	250mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	

Sample No.	Matrix *	Sample Date	Sample Time						
178T5 ✓	SOIL	8/27/08	1006	X	X	X	X	X	X
178T6 ✓	SOIL	8/27/08	1000	X	~~X~~	~~X~~ BH 8/27/08	X	X	~~X~~ BH 8/27/08
178T7	SOIL								
178T8	SOIL								
178T9	SOIL								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: WELCH-KOELLING	Date/Time: 8/27/08 11:02	Received By/Stored In: BILL HUDSON BHudson	Date/Time: 8/27/08 1102
Relinquished By/Removed From: HUDSON BHudson	Date/Time: 8/27/08 1810	Received By/Stored In: 1060 #3C	Date/Time: 8/27/08 1810
Relinquished By/Removed From: 1060 #3C	Date/Time: 1000 8-28-08	Received By/Stored In: Barry Lawrence	Date/Time: 1000 8-28-08
Relinquished By/Removed From: Barry Lawrence	Date/Time: 1000 8-28-08	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time: 8/29/08 0945	Received By/Stored In:	Date/Time: 8/29/08 0945
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

TOTAL METALS 6010 TR

(1) Metals by ICP ~~(TCLP) - 1311/6010~~ (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470 mercury

BH 8/27/08 SWB 8-28-08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *: S=Soil; SE=Sediment; SO=Solid; Sl=Sludge; W = Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wi=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

CH-EE-011

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Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-W-3			DATA PACKAGE: K1310		
VALIDATOR: ELR		LAB: ELI		DATE: 10/13/08	
			SDG: K1310		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J178T0 J178T1 J178T2 J178T3					
J178T4 J178T5					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments:

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A

Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... Yes No N/A

Surrogate recoveries acceptable? ..... Yes No N/A

Surrogates traceable? (Levels D, E) ..... Yes No N/A

Surrogates expired? (Levels D, E) ..... Yes No N/A

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: no PAS

no toxaphene MS/MSD/LCS - J all

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

no tox MS/MSD - J all

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A

Positive results resolved acceptably? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A

Lot check performed? ..... Yes No N/A

Check recoveries acceptable? ..... Yes No N/A

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 17 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-3
Subject: Semivolatile/Diesel Range Organics - Data Package No. K1310-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1310 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J178T0	8/27/08	Soil	C	See note 1 & 2
J178T1	8/27/08	Soil	C	See note 1 & 2
J178T2	8/27/08	Soil	C	See note 1 & 2
J178T3	8/27/08	Soil	C	See note 1 & 2
J178T4	8/27/08	Soil	C	See note 1 & 2
J178T5	8/27/08	Soil	C	See note 1 & 2
J178T6	8/27/08	Soil	C	See note 1

1 – Semivolatiles by 8270C
2 - Diesel range organics by 8015B.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-

detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all detected di-n-butylphthalate and bis(2-ethylhexyl)phthalate results were raised to the RQL and flagged "U".

All other method blank results were acceptable (although one semivolatile surrogate recovery was low).

Field Blanks

One field (equipment) blank (J178T6) was submitted for analysis. No analytes were detected in the field blank.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results

are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to LCS recoveries outside QC limits, all 1,2,4-trichlorobenzene (59%), 2,4-dinitrophenol (13%), 4,6-dinitro-2-methylphenol (34%) and ideno(1,2,3-cd)pyrene (57%) results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all motor oil range organic results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all motor oil results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits, all 2,4,6-trichlorophenol (42%) and 4,6-dinotro-2-methylphenol (31%) results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J178T4/J178T5) were submitted for analysis. Field Duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Fifty-six semivolatile analytes exceeded the RQL. Under the WCH statement of work, no qualification is required. All other undetected analytes met the RQL.

- **Completeness**

Data package No. K1310 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, all detected di-n-butylphthalate and bis(2-ethylhexyl)phthalate results were raised to the RQL and flagged "U".
- Due to LCS recoveries outside QC limits, all 1,2,4-trichlorobenzene (59%), 2,4-dinitrophenol (13%), 4,6-dinitro-2-methylphenol (34%) and ideno(1,2,3-cd)pyrene (57%) results were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all motor oil range organic results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits, all 2,4,6-trichlorophenol (42%) and 4,6-dinotro-2-methylphenol (31%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Fifty-six semivolatile analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K1310	REVIEWER: ELR	Project: 128-H-3	QC Issue
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	U at RQL	All	Blank contamination
1,2,4-trichlorobenzene 2,4-dinitrophenol 4,6-dinitro-2-methylphenol Ideno(1,2,3-cd)pyrene	J	All	LCS recovery
2,4,6-trichlorophenol 4,6-dinotro-2-methylphenol	J	All	RPD
Motor oil	J	All	No MS, MSD or LCS

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Semivolatiles by GC/MS, HSL List

RFW Batch Number: 0808L145 Client: WC-HANFORD RC-029 K1310 Work Order: 60049001001 Page: 1a

	Cust ID:	J178T0	J178T0	J178T0	J178T1	J178T2	J178T3
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	78 %	67 %	83 %	75 %	71 %	78 %
	2-Fluorobiphenyl	83 %	77 %	88 %	80 %	80 %	83 %
	Terphenyl-d14	127 %	97 %	112 %	102 %	97 %	99 %
	Phenol-d5	79 %	68 %	80 %	70 %	74 %	73 %
	2-Fluorophenol	79 %	67 %	78 %	69 %	69 %	72 %
	2,4,6-Tribromophenol	48 %	33 %	47 %	67 %	90 %	65 %
Phenol		340 U	73 %	82 %	340 U	330 U	330 U
bis(2-Chloroethyl)ether		340 U	60 %	75 %	340 U	330 U	330 U
2-Chlorophenol		340 U	66 %	78 %	340 U	330 U	330 U
1,3-Dichlorobenzene		340 U	59 %	74 %	340 U	330 U	330 U
1,4-Dichlorobenzene		340 U	59 %	74 %	340 U	330 U	330 U
1,2-Dichlorobenzene		340 U	60 %	77 %	340 U	330 U	330 U
2-Methylphenol		340 U	68 %	79 %	340 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		340 U	57 %	77 %	340 U	330 U	330 U
3/4 Methylphenol		340 U	73 %	82 %	340 U	330 U	330 U
N-Nitroso-di-n-propylamine		340 U	74 %	87 %	340 U	330 U	330 U
Hexachloroethane		340 U	59 %	74 %	340 U	330 U	330 U
Nitrobenzene		340 U	69 %	82 %	340 U	330 U	330 U
Isophorone		340 U	69 %	82 %	340 U	330 U	330 U
2-Nitrophenol		340 U	71 %	82 %	340 U	330 U	330 U
2,4-Dimethylphenol		340 U	73 %	85 %	340 U	330 U	330 U
bis(2-Chloroethoxy)methane		340 U	71 %	88 %	340 U	330 U	330 U
2,4-Dichlorophenol		340 U	72 %	83 %	340 U	330 U	330 U
1,2,4-Trichlorobenzene		340 U J	67 %	80 %	340 U J	330 U J	330 U J
Naphthalene		340 U	68 %	83 %	340 U	330 U	330 U
4-Chloroaniline		340 U	45 %	60 %	340 U	330 U	330 U
Hexachlorobutadiene		340 U	72 %	84 %	340 U	330 U	330 U
4-Chloro-3-methylphenol		340 U	80 %	86 %	340 U	330 U	330 U
2-Methylnaphthalene		340 U	73 %	85 %	340 U	330 U	330 U
Hexachlorocyclopentadiene		340 U	75 %	75 %	340 U	330 U	330 U
2,4,6-Trichlorophenol		340 U J	37 %	57 %	340 U J	330 U J	330 U J
2,4,5-Trichlorophenol		840 U	65 %	79 %	840 U	830 U	830 U

*= Outside of EPA CLP QC limits.

K 10/6/08

000000008

000011

Case ID: [illegible]

RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	340	U	76	%	88	%	340	U	330	U	330	U
2-Nitroaniline	840	U	86	%	93	%	840	U	830	U	830	U
Dimethylphthalate	340	U	81	%	89	%	340	U	330	U	330	U
Acenaphthylene	340	U	78	%	89	%	340	U	330	U	330	U
2,6-Dinitrotoluene	340	U	82	%	89	%	340	U	330	U	330	U
3-Nitroaniline	840	U	70	%	82	%	840	U	830	U	830	U
Acenaphthene	340	U	78	%	89	%	340	U	330	U	330	U
2,4-Dinitrophenol	840	U J	28	%	32	%	840	U J	830	U J	830	U J
4-Nitrophenol	840	U	68	%	64	%	840	U	830	U	830	U
Dibenzofuran	340	U	73	%	85	%	340	U	330	U	330	U
2,4-Dinitrotoluene	340	U	76	%	85	%	340	U	330	U	330	U
Diethylphthalate	340	U	81	%	89	%	340	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	80	%	86	%	340	U	330	U	330	U
Fluorene	340	U	81	%	91	%	340	U	330	U	330	U
4-Nitroaniline	840	U	72	%	76	%	840	U	830	U	830	U
4,6-Dinitro-2-methylphenol	840	U J	43	%	59	%	840	U J	830	U J	830	U J
N-Nitrosodiphenylamine (1)	340	U	72	%	84	%	340	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	82	%	88	%	340	U	330	U	330	U
Hexachlorobenzene	340	U	96	%	102	%	340	U	330	U	330	U
Pentachlorophenol	840	U	55	%	60	%	840	U	830	U	830	U
Phenanthrene	340	U	84	%	97	%	340	U	330	U	330	U
Anthracene	340	U	83	%	95	%	340	U	330	U	330	U
Carbazole	340	U	79	%	89	%	340	U	330	U	330	U
Di-n-butylphthalate	660 ~~26~~ JB	U	81	%	96	%	660 ~~59~~ JB	U	660 ~~54~~ JB	U	660 ~~94~~ JB	U
Fluoranthene	340	U	85	%	91	%	340	U	24	J	330	U
Pyrene	340	U	85	%	106	%	340	U	28	J	330	U
Butylbenzylphthalate	340	U	86	%	108	%	340	U	330	U	22	J
3,3'-Dichlorobenzidine	340	U	68	%	89	%	340	U	330	U	330	U
Benzo(a)anthracene	340	U	88	%	101	%	340	U	18	J	330	U
Chrysene	340	U	89	%	103	%	340	U	20	J	330	U
bis(2-Ethylhexyl)phthalate	660 ~~69~~ JB	U	83	%	101	%	660 ~~70~~ JB	U	660 ~~120~~ JB	U	660 ~~120~~ JB	U
Di-n-octyl phthalate	340	U	80	%	92	%	340	U	330	U	330	U
Benzo(b)fluoranthene	340	U	89	%	98	%	340	U	28	J	330	U
Benzo(k)fluoranthene	340	U	92	%	100	%	340	U	27	J	330	U
Benzo(a)pyrene	340	U	87	%	97	%	340	U	37	J	330	U
Indeno(1,2,3-cd)pyrene	340	U J	86	%	101	%	340	U J	330	U J	330	U J
Dibenz(a,h)anthracene	340	U	88	%	104	%	340	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	87	%	103	%	340	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

10/16/08

000000009

00001122

	Cust ID:	J178T4	J178T5	J178T6	SBLKXK	SBLKXK BS
Sample Information	RFW#:	005	006	007	08LE0408-MB1	08LE0408-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	69 %	75 %	67 %	48 %	71 %
	2-Fluorobiphenyl	75 %	86 %	70 %	47 %	65 %
	Terphenyl-d14	125 %	128 %	90 %	61 %	85 %
	Phenol-d5	69 %	77 %	62 %	47 %	74 %
	2-Fluorophenol	63 %	70 %	57 %	43 %	67 %
	2,4,6-Tribromophenol	94 %	81 %	32 %	8 * %	23 %
		fl	fl	fl	fl	fl
Phenol		340 U	380 U	330 U	330 U	71 %
bis(2-Chloroethyl)ether		340 U	380 U	330 U	330 U	69 %
2-Chlorophenol		340 U	380 U	330 U	330 U	61 %
1,3-Dichlorobenzene		340 U	380 U	330 U	330 U	59 %
1,4-Dichlorobenzene		340 U	380 U	330 U	330 U	57 %
1,2-Dichlorobenzene		340 U	380 U	330 U	330 U	60 %
2-Methylphenol		340 U	380 U	330 U	330 U	66 %
2,2'-oxybis(1-Chloropropane)		340 U	380 U	330 U	330 U	73 %
3/4 Methylphenol		340 U	380 U	330 U	330 U	69 %
N-Nitroso-di-n-propylamine		340 U	380 U	330 U	330 U	71 %
Hexachloroethane		340 U	380 U	330 U	330 U	61 %
Nitrobenzene		340 U	380 U	330 U	330 U	70 %
Isophorone		340 U	380 U	330 U	330 U	65 %
2-Nitrophenol		340 U	380 U	330 U	330 U	62 %
2,4-Dimethylphenol		340 U	380 U	330 U	330 U	63 %
bis(2-Chloroethoxy)methane		340 U	380 U	330 U	330 U	66 %
2,4-Dichlorophenol		340 U	380 U	330 U	330 U	63 %
1,2,4-Trichlorobenzene		340 UJ	380 UJ	330 UJ	330 U	59 * %
Naphthalene		340 U	380 U	330 U	330 U	59 %
4-Chloroaniline		340 U	380 U	330 U	330 U	44 %
Hexachlorobutadiene		340 U	380 U	330 U	330 U	61 %
4-Chloro-3-methylphenol		340 U	380 U	330 U	330 U	71 %
2-Methylnaphthalene		340 U	380 U	330 U	330 U	63 %
Hexachlorocyclopentadiene		340 U	380 U	330 U	330 U	53 %
2,4,6-Trichlorophenol		340 UJ	380 UJ	330 UJ	330 U	32 %
2,4,5-Trichlorophenol		860 U	950 U	830 U	830 U	62 %

*= Outside of EPA CLP QC limits.

K 10/16/08

0000013

000000010

Cust ID:										
RFW#:	005		006		007		08LE0408-MB1		08LE0408-MB1	
2-Chloronaphthalene	340	U	380	U	330	U	330	U	62	%
2-Nitroaniline	860	U	950	U	830	U	830	U	79	%
Dimethylphthalate	340	U	380	U	330	U	330	U	66	%
Acenaphthylene	340	U	380	U	330	U	330	U	63	%
2,6-Dinitrotoluene	340	U	380	U	330	U	330	U	67	%
3-Nitroaniline	860	U	950	U	830	U	830	U	60	%
Acenaphthene	340	U	380	U	330	U	330	U	63	%
2,4-Dinitrophenol	860	U J	950	U J	830	U J	830	U	13	* %
4-Nitrophenol	860	U	950	U	830	U	830	U	59	%
Dibenzofuran	340	U	380	U	330	U	330	U	65	%
2,4-Dinitrotoluene	340	U	380	U	330	U	330	U	71	%
Diethylphthalate	340	U	380	U	330	U	330	U	68	%
4-Chlorophenyl-phenylether	340	U	380	U	330	U	330	U	66	%
Fluorene	340	U	380	U	330	U	330	U	66	%
4-Nitroaniline	860	U	950	U	830	U	830	U	61	%
4,6-Dinitro-2-methylphenol	860	U J	950	U J	830	U J	830	U	34	* %
N-Nitrosodiphenylamine (1)	340	U	380	U	330	U	330	U	55	%
4-Bromophenyl-phenylether	340	U	380	U	330	U	330	U	56	%
Hexachlorobenzene	340	U	380	U	330	U	330	U	65	%
Pentachlorophenol	860	U	950	U	830	U	830	U	30	%
Phenanthrene	340	U	380	U	330	U	330	U	66	%
Anthracene	340	U	380	U	330	U	330	U	64	%
Carbazole	340	U	380	U	330	U	330	U	60	%
Di-n-butylphthalate	660 ~~120~~ 10/16/08 JB	U	660 ~~81~~ 10/16/08 JB	U	660 ~~68~~ 10/16/08 JB	U	41	J	65	%
Fluoranthene	340	U	380	U	330	U	330	U	65	%
Pyrene	340	U	380	U	330	U	330	U	77	%
Butylbenzylphthalate	28	J	380	U	18	J	330	U	71	%
3,3'-Dichlorobenzidine	340	U	380	U	330	U	330	U	45	%
Benzo(a)anthracene	340	U	380	U	330	U	330	U	67	%
Chrysene	340	U	380	U	330	U	330	U	65	%
bis(2-Ethylhexyl)phthalate	660 ~~160~~ 10/16/08 JB	U	660 ~~76~~ 10/16/08 JB	U	660 ~~110~~ 10/16/08 JB	U	23	J	73	%
Di-n-octyl phthalate	340	U	380	U	330	U	330	U	73	%
Benzo(b)fluoranthene	340	U	380	U	330	U	330	U	66	%
Benzo(k)fluoranthene	340	U	380	U	330	U	330	U	67	%
Benzo(a)pyrene	340	U	380	U	330	U	330	U	66	%
Indeno(1,2,3-cd)pyrene	340	U J	380	U J	330	U J	330	U	57	* %
Dibenz(a,h)anthracene	340	U	380	U	330	U	330	U	60	%
Benzo(g,h,i)perylene	340	U	380	U	330	U	330	U	58	%

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

10/16/08

000000011

000014

DIESEL RANGE ORGANICS BY GC

Report Date: 09/11/08 14:32

RFW Batch Number: 0808L145 Client: WC-HANFORD RC-029 K1310 Work Order: 60049001001 Page: 1

	Cust ID:	J178T0	J178T0	J178T0	J178T1	J178T2	J178T3
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	p-Terphenyl	99 %	114 %	83 %	115 %	95 %	91 %
Diesel Range Organics		3370 U	77 %	83 %	3360 U	6000	1800 J
Motor Oil Range Organics		10100 U J	NS	NS	4400 ~~J~~ J (10W)	13000 J	4600 ~~J~~ J (10W)

	Cust ID:	J178T4	J178T5	BLK	BLK BS
Sample Information	RFW#:	005	006	08LE0420-MB1	08LE0420-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
	p-Terphenyl	91 %	94 %	97 %	70 %
Diesel Range Organics		3430 U	3780 U	3330 U	66 %
Motor Oil Range Organics		10300 U J	11300 U J	10000 U	NS

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

10/16/08

000000005

000015

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-029
LVL #: 0808L145
SDG/SAF # K1310 / RC-029

W.O. #: 60049-001-001-0001-00
Date Received: 08-29-2008

SEMIVOLATILE

Seven (7) soil samples were collected on 08-27-2008.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 09-02-2008 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 09-09,10,11-2008.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

2. Samples were extracted and analyzed within holding time.

3. Non-target compounds were detected in these samples.

4. One (1) of sixty-six (66) surrogate recoveries was outside acceptance criteria. The surrogate recovery criteria were not met for sample 08LE0408-MB1. The loss of the surrogate 2,4,6-Tribromophenol in the sample 08LE0408-MB1 appears to be due to a chemical reaction rather than to a problem with the extraction process. Peaks on the chromatogram indicate this reaction. The conversion compound has been reported as a non-target compound in sample 08LE0408-MB1 at a retention time of 21.686 minutes. This surrogate loss has been associated with the use of soxhlet extractions. A copy of the Sample Discrepancy Report (SDR# 08MS202) has been enclosed.

5. All matrix spike recoveries were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 23 pages.

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LvLI
LIONVILLE LABORATORY INC.

6. Four (4) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08MS202) has been enclosed.

7. The method blank contained the common laboratory contaminants Di-n-butylphthalate and Bis (2-Ethlyhexy) phthalate at a level less than the 1x the CRQL.

8. All initial calibrations associated with this data set were within acceptance criteria.

9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

10. Internal standard area and retention time criteria were met.

11. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

12. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

13. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager, or a designee, as verified by the following signature.

Judy Stone

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/16/08
Date

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08MS202

Initiator: Sharon Saylor
Date: 9-12-08
Client: WC-Hanford RL029 K1310

Batch: 08OFL145
Samples: 25
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: SOLID
Prep Batch: 08LE0408

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

① <10% recovery of 2,4,6-trichlorophenol in the method blank

② low recovery of several spike analytes in the bs but ms + msd are OK (1,2,4-Trichlorobenzene, 2,4-dinitrophenol, 4,6-Dinitro-2-methylphenol, indeno(1,2,3-cd)pyrene)

2. Known or Probable Causes(s) ① Low recovery appears to be due to a chemical reaction rather than a problem with the extraction. Conversion compl has been reported as TK in sample. This surrogate loss has been associated with the use of soxhlet extractions. ② Acidic phenols are subject to erratic chromatographic behavior especially if the GC system is contaminated with high boiling material. Otherwise erratic. All other spikes/surrogates within acceptance criteria. RLG 9/16/08

3. Discussion and Proposed Action Other Description: narrate

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

9/15/08

4. Project Manager Instructions...signature/date: _____

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 9/15/08 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for diposition.

Route
__ Lab Manager: Daniels
✓ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
✓ MS BNA: Garden / _____
__ Other: _____

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LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-029
LVL #: 0808L145
SDG/SAF # K1310 /RC-029

W.O. #: 60049-001-001-0001-00
Date Received: 08-29-2008

DIESEL RANGE ORGANICS

Six (6) soil samples were collected on 08-27-2008.

The samples and their associated QC samples were extracted on 09-05-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 09-09,10-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8015B.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All required holding times for extraction and analysis have been met.
2. The method blank was below the reporting limits for all target compounds.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. All blank spike recoveries were within acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. All initial calibrations associated with this data set were within acceptance criteria.
7. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.
r:\group\data\2008\dro\tnu\0808-145cs2.doc

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

LvLI
LIONVILLE LABORATORY INC.

8. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/15/05
Date

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Welch – Koelling	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: 128-H-3		SAF No.: RC-029
Ice Chest No.: SAWS - 10	Field Logbook No.: EL-1601-2	COA: C128H31W00	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080319		Bill of Lading/Air Bill No.: See OPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G	G/P	aG	aG	G	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	120mL	250mL	250mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1					
Sample No.	Matrix *	Sample Date	Sample Time								
178T0	SOIL	8/27/08	0840	X	X	X	X	X	X		
178T1	SOIL	8/27/08	0905	X	X	X	X	X	X		
178T2	SOIL	8/27/08	0915	X	X	X	X	X	X		
178T3	SOIL	8/27/08	0945	X	X	X	X	X	X		
178T4	SOIL	8/27/08	1005	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Scott Welch Koelling — Date/Time: 8/27/08 11:02	Received By/Stored In: BHudson BHudson — Date/Time: 8/27/08 1102	
Relinquished By/Removed From: BHudson BHudson — Date/Time: 8/27/08 1810	Received By/Stored In: 1060 #3C — Date/Time: 8/27/08 1810	
Relinquished By/Removed From: 1060 #3C — Date/Time: 8-28-08 1000	Received By/Stored In: Barry Lawrence — Date/Time: 8-28-08 1000	
Relinquished By/Removed From: Barry Lawrence — Date/Time: 8-28-08 1000	Received By/Stored In: FED EX — Date/Time:	
Relinquished By/Removed From: FED EX — Date/Time: 8/29/08 0945	Received By/Stored In: [illegible] — Date/Time: 8/29/08 0945	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP) - 1311/6010~~ TOTAL METALS 6010 [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury (TCLP) - 1311/7470 mercury BH 8/27/08 JEB 8-28-08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *: S=Soil; SE=Sediment; SO=Solid; Sl=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wi=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

FCH-EE-011

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ollector Welch-Koelling	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 15 Days
roject Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location 128-H-3		SAF No. RC-029	
ce Chest No. SAWS- ERC-02-406	Field Logbook No. EL-1601-2	COA C128H31W00	Method of Shipment FedEx	
hipped To EBERLINE SERVICES/ LIONVILLE	Offsite Property No. A080319		Bill of Lading/Air Bill No. SCE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G	G/P	aG	aG	G	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	120mL	250mL	250mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1					

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Sample No.	Matrix *	Sample Date	Sample Time										
1178T5 ✓	SOIL	8/27/08	8/27/08 1006	X	X	X	X	X	X				
1178T6 ✓	SOIL	8/27/08	1000	X	~~X~~	~~X~~ BH 8/27/08	X	X	~~X~~ BH 8/27/08				
1178T7	SOIL												
1178T8	SOIL												
1178T9	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Bill Welch-Koelling	8/27/08 11:02	BILL HUDSON BHudson	8/27/08 1102
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BHudson BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
1060 #3C	8-28-08 1000	Barry Lawrence	8-28-08 1000
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Barry Lawrence	8-28-08 1000	FEDEX	
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FEDEX	8/29/08 0945		8/29/08 0945
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

TOTAL METALS 6010 TR

(1) Metals by ICP ~~(TCLP) - 1311/6010~~ (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

mercury SWB 8-28-08

BH 8/27/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

VCH-EE-011

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Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 108-H-3			DATA PACKAGE: K1310		
VALIDATOR:		LAB: LLI		DATE: 10/16/08	
			SDG: K1310		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270	PRO POISB	SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J178T0 J178T1 J178T2 J178T3 J178T4					
J178T5 J178T6					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: di-n-butylphthalate + bis(2-ethylhexyl)phthalate - U at RQL

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: motor oil - no MS/MSD/LCS - J all no PAS

LCS - 1,2,4-trichlorobenzene - 59% - J all
2,4-dinitrophenol - 13% - J all
4,6-dinitro-2-methylphenol - (34%) - J all
Indeno(1,2,3-cd)pyrene - 57% - J all

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD RPD values acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: motor oil – NO MS/MSD
2,4,6-trichlorophenol (42%) – J all
4,6-dinitro-2-methyl phenol (31%) – J all

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: 5G over

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 17 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-3
Subject: Volatile Organic - Data Package No. K1310-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1310 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J178T0	8/27/08	Soil	C	See note 1 & 2
J178T1	8/27/08	Soil	C	See note 1 & 2
J178T2	8/27/08	Soil	C	See note 1 & 2
J178T3	8/27/08	Soil	C	See note 1 & 2
J178T4	8/27/08	Soil	C	See note 1 & 2
J178T5	8/27/08	Soil	C	See note 1 & 2
J178T6	8/27/08	Soil	C	See note 1

1 – Volatile organics by 8260B.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within 14 days of the date of sample collection.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all methylene chloride results were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One field (equipment) blank (J178T6) was submitted for analysis. No analytes were detected in the equipment blank.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to an LCS result outside QC limits (62%), all 1,1,2,2-tetrachloroethane results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J178T4/J178T5) were submitted for analysis. Field Duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Eight analytes in sample J178T5 exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K1310 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, all methylene chloride results were raised to the RQL, qualified as undetected and flagged "U".
- Due to an LCS result outside QC limits (62%), all 1,1,2,2-tetrachloroethane results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Eight analytes in sample J178T5 exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

Fluor Hanford Data Validation Contract #29776 (June 2006), *Validation Statement of Work*, through Washington Closure Hanford Work Order #WB6081.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

VOLATILE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: K1310	REVIEWER: ELR	Project: 128-H-3	QC Issue
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U at RQL	All	Blank contamination
1,1,2,2-tetrachloroethane	J	All	LCS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

	Cust ID:	J178T0	J178T1	J178T2	J178T3	J178T4	J178T5
Sample Information	RFW#:	001	002	003	004	005	006
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	0.877	0.962	1.04	0.980	0.980	0.962
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	92 %	94 %	92 %	94 %	93 %	96 %
	Bromofluorobenzene	85 %	92 %	91 %	92 %	88 %	96 %
	1,2-Dichloroethane-d4	124 %	124 %	127 %	126 %	124 %	127 %
Chloromethane		9 U	10 U	10 U	10 U	10 U	11 U
Bromomethane		9 U	10 U	10 U	10 U	10 U	11 U
Vinyl Chloride		9 U	10 U	10 U	10 U	10 U	11 U
Chloroethane		9 U	10 U	10 U	10 U	10 U	11 U
Methylene Chloride		10 ~~5 B~~ U	10 ~~4 JB~~ U	10 ~~5 JB~~ U	10 ~~4 JB~~ U	10 ~~6 B~~ U	10 ~~6 B~~ U
Acetone		9 U	10 U	10 U	10 U	10 U	11 U
Carbon Disulfide		4 U	5 U	5 U	5 U	5 U	6 U
1,1-Dichloroethene		4 U	5 U	5 U	5 U	5 U	6 U
1,1-Dichloroethane		4 U	5 U	5 U	5 U	5 U	6 U
1,2-Dichloroethene (total)		4 U	5 U	5 U	5 U	5 U	6 U
Chloroform		4 U	5 U	5 U	5 U	5 U	6 U
1,2-Dichloroethane		4 U	5 U	5 U	5 U	5 U	6 U
2-Butanone		9 U	10 U	10 U	10 U	10 U	11 U
1,1,1-Trichloroethane		4 U	5 U	5 U	5 U	5 U	6 U
Carbon Tetrachloride		4 U	5 U	5 U	5 U	5 U	6 U
Bromodichloromethane		4 U	5 U	5 U	5 U	5 U	6 U
1,2-Dichloropropane		4 U	5 U	5 U	5 U	5 U	6 U
cis-1,3-Dichloropropene		4 U	5 U	5 U	5 U	5 U	6 U
Trichloroethene		4 U	5 U	5 U	5 U	5 U	6 U
Dibromochloromethane		4 U	5 U	5 U	5 U	5 U	6 U
1,1,2-Trichloroethane		4 U	5 U	5 U	5 U	5 U	6 U
Benzene		4 U	5 U	5 U	5 U	5 U	6 U
Trans-1,3-Dichloropropene		4 U	5 U	5 U	5 U	5 U	6 U
Bromoform		4 U	5 U	5 U	5 U	5 U	6 U
4-Methyl-2-pentanone		9 U	10 U	10 U	10 U	10 U	11 U
2-Hexanone		9 U	10 U	10 U	10 U	10 U	11 U
Tetrachloroethene		4 U	5 U	5 U	5 U	5 U	6 U
1,1,2,2-Tetrachloroethane		4 UJ	5 UJ	5 UJ	5 UJ	5 UJ	6 UJ
Toluene		4 U	5 U	5 U	5 U	5 U	6 U

*= Outside of EPA CLP QC limits.

10/16/08

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Cust ID:	J178T0	J178T1	J178T2	J178T3		
RFW#:	001	002	003	004	005	006
Chlorobenzene	4 U	5 U	5 U	5 U	5 U	6 U
Ethylbenzene	4 U	5 U	5 U	5 U	5 U	6 U
Styrene	4 U	5 U	5 U	5 U	5 U	6 U
Xylenes (total)	4 U	5 U	5 U	5 U	5 U	6 U
cis-1,2-dichloroethene	4 U	5 U	5 U	5 U	5 U	6 U
trans-1,2-dichloroethene	4 U	5 U	5 U	5 U	5 U	6 U

*= Outside of EPA CLP QC limits.

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10/10/08

RFW Batch Number: 0808L145 Client: WC-HANFORD RC-029 K1310 Work Order: 60049001001 Page: 2a

	Cust ID:	J178T6	J178T6	J178T6	VBLKGA	VBLKGA BS
Sample Information	RFW#:	007	007 MS	007 MSD	08LVK164-MB1	08LVK164-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	0.943	0.926	0.943	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	96 %	93 %	90 %	93 %	94 %
	Bromofluorobenzene	103 %	87 %	82 %	82 %	83 %
	1,2-Dichloroethane-d4	135 %	131 %	129 %	113 %	112 %
Chloromethane		9 U	59 %	56 %	10 U	59 %
Bromomethane		9 U	116 %	110 %	10 U	106 %
Vinyl Chloride		9 U	72 %	69 %	10 U	70 %
Chloroethane		9 U	81 %	75 %	10 U	78 %
Methylene Chloride		10 ~~B~~ U	61 %	61 %	6	59 %
Acetone		9 U	167 %	164 %	10 U	129 %
Carbon Disulfide		5 U	99 %	96 %	5 U	95 %
1,1-Dichloroethene		5 U	115 %	113 %	5 U	109 %
1,1-Dichloroethane		5 U	98 %	97 %	5 U	91 %
1,2-Dichloroethene (total)		5 U	107 %	107 %	5 U	100 %
Chloroform		5 U	120 %	120 %	5 U	136 %
1,2-Dichloroethane		5 U	137 %	140 %	5 U	120 %
2-Butanone		9 U	109 %	103 %	10 U	89 %
1,1,1-Trichloroethane		5 U	129 %	126 %	5 U	118 %
Carbon Tetrachloride		5 U	139 %	130 %	5 U	126 %
Bromodichloromethane		5 U	125 %	125 %	5 U	113 %
1,2-Dichloropropane		5 U	84 %	85 %	5 U	77 %
cis-1,3-Dichloropropene		5 U	93 %	92 %	5 U	87 %
Trichloroethene		5 U	130 %	127 %	5 U	121 %
Dibromochloromethane		5 U	130 %	131 * %	5 U	111 %
1,1,2-Trichloroethane		5 U	92 %	94 %	5 U	83 %
Benzene		5 U	96 %	96 %	5 U	92 %
Trans-1,3-Dichloropropene		5 U	99 %	102 %	5 U	95 %
Bromoform		5 U	143 * %	148 * %	5 U	120 %
4-Methyl-2-pentanone		9 U	63 %	66 %	10 U	52 %
2-Hexanone		9 U	80 %	79 %	10 U	72 %
Tetrachloroethene		5 U	124 %	122 %	5 U	125 %
1,1,2,2-Tetrachloroethane		5 UJ	76 %	77 %	5 U	62 * %
Toluene		5 U	90 %	90 %	5 U	89 %

*= Outside of EPA CLP QC limits.

10/16/08

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Cust ID: [illegible]

RFW#:	007		007 MS		007 MSD		08LVK164-MB1		08LVK164-MB1	
Chlorobenzene	5	U	105	%	102	%	5	U	102	%
Ethylbenzene	5	U	99	%	98	%	5	U	98	%
Styrene	5	U	101	%	103	%	5	U	101	%
Xylenes (total)	5	U	100	%	100	%	5	U	100	%
cis-1,2-dichloroethene	5	U	110	%	107	%	5	U	102	%
trans-1,2-dichloroethene	5	U	105	%	107	%	5	U	98	%

*= Outside of EPA CLP QC limits.

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10/11/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-029
LVL #: 0808L145
SDG/SAF # K1310/RC-029

W.O. #: 60049-001-001-0001-00
Date Received: 08-29-2008

GC/MS VOLATILE

Seven (7) soil samples were collected on 08-27-2008.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL Volatile target compounds on 09-09-2008.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were analyzed within required holding time.
2. Non-target compounds were detected in these samples.
3. All surrogate recoveries were within acceptance criteria.
4. Three (3) of seventy (70) matrix spike recoveries were outside acceptance criteria.
5. One (1) of thirty-five (35) blank spike recoveries was outside acceptance criteria.
6. The method blank contained Methylene Chloride at levels less than 2x the reporting limit.
7. All internal standard area and retention time criteria were met.
8. The CCL analyzed on 09-09-2008 on instrument 5972K did not meet the in-house %D of 40% for the compound Bromoform. There is minimal impact on data as this compound was not detected in the samples. A copy of the Sample Discrepancy Report (SDR# 08VT047) has been included in the package.

r:\group\data\2008\voa\tnu\0808-145cs2.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage.
All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 23 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

LvLI
LIONVILLE LABORATORY INC.

9. Manual integrations are performed according to SOP QA-125 to produce quality data with utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

10. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

11. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release ofthe data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/15/08
Date

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08V047

Initiator: Jack Blacken
Date: 9/10/08
Client: Washington Closure Hanford

Batch: 0809L145
Samples: all
Method: SW846/MCAWW/CLP/ 5035

Parameter: 0624H
Matrix: soil
Prep Batch: 08LVK164

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

bromoform was 42.0% high in the daily CCV, and the in-house limit is 40%.

2. Known or Probable Causes(s)

response factor for this compound has gotten larger for some reason

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

Report + narrate

4. Project Manager Instructions...signature/date: 9/10/08

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 9/10/08

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for diposition.

Route
__ Lab Manager: Daniels
__ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
__ MS BNA: Carden / _____
__ Other: _____

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QA-139-A-0208

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Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Welch – Koellings	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: 128-H-3		SAF No.: RC-029
Ice Chest No.: SACWS - 10	Field Logbook No.: EL-1601-2	COA: C128H31W00	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A080319		Bill of Lading/Air Bill No.: See OSPC

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POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
Type of Container	G	G/P	aG	aG	G	G	
No. of Container(s)	1	1	1	1	1	1	
Volume	60mL	120mL	250mL	250mL	60mL	250mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	

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Sample No.	Matrix *	Sample Date	Sample Time						
J178T0	SOIL	8/27/08	0840	X	X	X	X	X	X
J178T1	SOIL	8/27/08	0905	X	X	X	X	X	X
J178T2	SOIL	8/27/08	0915	X	X	X	X	X	X
J178T3	SOIL	8/27/08	0945	X	X	X	X	X	X
J178T4	SOIL	8/27/08	1005	X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Tom Welch Koellings	8/27/08 1102	BHUDSON BHudson	8/27/08 1102
BHUDSON BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
1060 #3C	8-28-08 1000	Barry Lawrence	8-28-08 1000
Barry Lawrence	8-28-08 1000	FED EX	
FED EX	8/29/08 0945		8/29/08 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

TOTAL METALS 6010

(1) Metals by ICP ~~(TCLP) - 1311/6010~~ [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury (TCLP) - 1311/7470 BH 8/27/08 mercury OEG 8-28-08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *: S=Soil; SE=Sediment; SO=Solid; Sl=Sludge; W = Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wi=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Welch-Koelling	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: 128-H-3		SAF No.: RC-029
Ice Chest No.: SAWS- ERC-02-406	Field Logbook No.: EL-1601-2	COA: C128H31W00	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES/ LIONVILLE	Offsite Property No.: A080319		Bill of Lading/Air Bill No.: SEE OSPC

000000822

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
Type of Container	G	G/P	aG	aG	G	G	
No. of Container(s)	1	1	1	1	1	1	
Volume	60mL	120mL	250mL	250mL	60mL	250mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	

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Sample No.	Matrix *	Sample Date	Sample Time						
J178T5 ✓	SOIL	8/27/08	8/27/08 1006	X	X	X	X	X	X
J178T6 ✓	SOIL	8/27/08	1000	X	~~X~~	~~X~~ BH 8/27/08	X	X	~~X~~ BH 8/27/08
J178T7	SOIL								
J178T8	SOIL								
J178T9	SOIL								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Tom Welch-Koelling	8/27/08 11:02	Bill Hudson	8/27/08 1102
B Hudson	8/27/08 1810	1060 #3C	8/27/08 1810
1060 #3C	8-28-08 1000	Barry Lawrence	8-28-08 1000
Barry Lawrence	8-28-08 1000	FED EX	
FED EX	8/29/08 0945		8/29/08 0945

SPECIAL INSTRUCTIONS

TOTAL METALS 6010 TR

(1) Metals by ICP (TCLP) 1311/6010 [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury (TCLP) 1311/7470

mercury SWB 8-28-08

BH 8/27/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *: S=Soil; SE=Sediment; SO=Solid; Sl=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wi=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-H-3			DATA PACKAGE: K1310		
VALIDATOR: ELR		LAB: LLI		DATE: 10/16/08	
			SDG: K1B10		

ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)

SAMPLES/MATRIX			
J178T0	J178T1	J178T2	J178T3
J178T4	J178T5	J178T6	~~J178T7~~
			Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A

Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: Methylene Chloride - U all at RQL

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

Surrogates traceable? (Levels D, E) ..... Yes No N/A

Surrogates expired? (Levels D, E) ..... Yes No N/A

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: LCS - 1,1,2,2-tetrachloroethane - 62% - J all

no RPD

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD RPD values acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: 8 over (+5)

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments: