0078910

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

COMPLETE COPY OF VALIDATION PACKAGE TO:

Kathy Wendt (2) H4-21

COMMENTS:

SDG K1309 **SAF-RC-029**

Waste Site: 128-H-2

RECEIVED
OCT 2 0 2008
EDMC

Date: 10 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-2
Subject: Volatile Organic - Data Package No. K1309-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1309 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
J17FT5	8/27/08	Soil	C	See note 1
J17FT6	8/27/08	Soil	C	See note 1
J17FT7	8/27/08	Soil	C	See note 1
J17FT8	8/27/08	Soil	C	See note 1
J17FT9	8/27/08	Soil	C	See note 1
J17FV0	8/27/08	Soil	C	See note 1
J17FV1	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 (J17FT5) 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 a matrix spike duplicate recovery outside QC limits (49%), all chloromethane results were qualified as estimates and flagged "J".

Due to an LCS result outside QC limits (69%), 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 (J17FT7/J17FT8) 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 J17FT7 exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K1309 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 a matrix spike duplicate recovery outside QC limits (49%), all chloromethane results were qualified as estimates and flagged "J".
- Due to an LCS result outside QC limits (69%), 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 J17FT7 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: K1309	REVIEWER: ELR	Project: 128-H-2	QC Issue
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U at RQL	All	Blank contamination
Chloromethane	J	All	MSD recovery
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:	J17FT5	J17FT5	J17FT5	J17FT6	J17FT7	J17FT8
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	0.980	0.980	0.862	0.806	1.04	0.980
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	93 %	95 %	94 %	100 %	97 %	96 %
	Bromofluorobenzene	87 %	87 %	88 %	101 %	92 %	91 %
	1,2-Dichloroethane-d4	127 %	128 %	131 %	134 %	131 %	131 %
		fl	fl	fl	fl	fl	fl
Chloromethane		10 U J	52 %	49 * %	8 U J	11 U J	10 U J
Bromomethane		10 U	107 %	104 %	8 U	11 U	10 U
Vinyl Chloride		10 U	70 %	69 %	8 U	11 U	10 U
Chloroethane		10 U	83 %	78 %	8 U	11 U	10 U
Methylene Chloride		10 ~~3~~ 10/10 ~~UB~~ U	64 %	65 %	10 ~~3~~ 10/10 ~~UB~~ U	10 ~~3~~ 10/10 ~~UB~~ U	10 ~~4~~ 10/10 ~~UB~~ U
Acetone		10 U	203 %	197 %	8 U	11 U	10 U
Carbon Disulfide		5 U	97 %	97 %	4 U	6 U	5 U
1,1-Dichloroethene		5 U	112 %	113 %	4 U	6 U	5 U
1,1-Dichloroethane		5 U	97 %	96 %	4 U	6 U	5 U
1,2-Dichloroethene (total)		5 U	106 %	109 %	4 U	6 U	5 U
Chloroform		5 U	120 %	121 %	4 U	6 U	5 U
1,2-Dichloroethane		5 U	142 * %	142 * %	4 U	6 U	5 U
2-Butanone		10 U	129 %	126 %	8 U	11 U	10 U
1,1,1-Trichloroethane		5 U	127 %	129 %	4 U	6 U	5 U
Carbon Tetrachloride		5 U	131 %	136 %	4 U	6 U	5 U
Bromodichloromethane		5 U	126 %	130 %	4 U	6 U	5 U
1,2-Dichloropropane		5 U	84 %	86 %	4 U	6 U	5 U
cis-1,3-Dichloropropene		5 U	94 %	95 %	4 U	6 U	5 U
Trichloroethene		5 U	131 %	130 %	4 U	6 U	5 U
Dibromochloromethane		5 U	130 %	133 * %	4 U	6 U	5 U
1,1,2-Trichloroethane		5 U	97 %	99 %	4 U	6 U	5 U
Benzene		5 U	96 %	96 %	4 U	6 U	5 U
Trans-1,3-Dichloropropene		5 U	106 %	108 %	4 U	6 U	5 U
Bromoform		5 U	153 * %	153 * %	4 U	6 U	5 U
4-Methyl-2-pentanone		10 U	70 %	72 %	8 U	11 U	10 U
2-Hexanone		10 U	96 %	95 %	8 U	11 U	10 U
Tetrachloroethene		5 U	122 %	120 %	4 U	6 U	5 U
1,1,2,2-Tetrachloroethane		5 U J	82 %	84 %	4 U J	6 U J	5 U J
Toluene		5 U	93 %	91 %	4 U	6 U	5 U

*= Outside of EPA CLP QC limits.

10/9/06

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	001		001 MS		001 MSD		002		003		004	
Chlorobenzene	5	U	106	%	107	%	4	U	6	U	5	U
Ethylbenzene	5	U	101	%	104	%	4	U	6	U	5	U
Styrene	5	U	104	%	106	%	4	U	6	U	5	U
Xylenes (total)	5	U	102	%	98	%	4	U	6	U	5	U
cis-1,2-dichloroethene	5	U	107	%	111	%	4	U	6	U	5	U
trans-1,2-dichloroethene	5	U	105	%	106	%	4	U	6	U	5	U

*= Outside of EPA CLP QC limits.

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10/9/08

	Cust ID:	J17FT9	J17FV0	J17FV1	VBLKFS	VBLKFS BS
Sample Information	RFW#:	005	006	007	08LVK163-MB1	08LVK163-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	0.820	0.877	0.962	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	97 %	93 %	91 %	94 %	95 %
	Bromofluorobenzene	94 %	88 %	86 %	85 %	86 %
	1,2-Dichloroethane-d4	136 %	128 %	124 %	117 %	114 %
Chloromethane		8 U J	9 U J	10 U J	10 U	59 %
Bromomethane		8 U	9 U	10 U	10 U	115 %
Vinyl Chloride		8 U	9 U	10 U	10 U	71 %
Chloroethane		8 U	9 U	10 U	10 U	79 %
Methylene Chloride		10 3 ~~JB~~ U	10 3 ~~JB~~ U	10 3 ~~JB~~ U	3 J	57 %
Acetone		8 U	9 U	10 U	10 U	159 %
Carbon Disulfide		4 U	4 U	5 U	5 U	96 %
1,1-Dichloroethene		4 U	4 U	5 U	5 U	109 %
1,1-Dichloroethane		4 U	4 U	5 U	5 U	91 %
1,2-Dichloroethene (total)		4 U	4 U	5 U	5 U	104 %
Chloroform		4 U	4 U	5 U	5 U	109 %
1,2-Dichloroethane		4 U	4 U	5 U	5 U	118 %
2-Butanone		8 U	9 U	10 U	10 U	119 %
1,1,1-Trichloroethane		4 U	4 U	5 U	5 U	115 %
Carbon Tetrachloride		4 U	4 U	5 U	5 U	121 %
Bromodichloromethane		4 U	4 U	5 U	5 U	113 %
1,2-Dichloropropane		4 U	4 U	5 U	5 U	81 %
cis-1,3-Dichloropropene		4 U	4 U	5 U	5 U	89 %
Trichloroethene		4 U	4 U	5 U	5 U	125 %
Dibromochloromethane		4 U	4 U	5 U	5 U	115 %
1,1,2-Trichloroethane		4 U	4 U	5 U	5 U	89 %
Benzene		4 U	4 U	5 U	5 U	94 %
Trans-1,3-Dichloropropene		4 U	4 U	5 U	5 U	95 %
Bromoform		4 U	4 U	5 U	5 U	131 %
4-Methyl-2-pentanone		8 U	9 U	10 U	10 U	71 %
2-Hexanone		8 U	9 U	10 U	10 U	100 %
Tetrachloroethene		4 U	4 U	5 U	5 U	126 %
1,1,2,2-Tetrachloroethane		4 U J	4 U J	5 U J	5 U	69 * %
Toluene		4 U	4 U	5 U	5 U	93 %

*= Outside of EPA CLP QC limits.

10/9/88

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KFW#:	005	006	007	08LVK163-MB1	08LVK163-MB1
Chlorobenzene	4 U	4 U	5 U	5 U	102 %
Ethylbenzene	4 U	4 U	5 U	5 U	101 %
Styrene	4 U	4 U	5 U	5 U	103 %
Xylenes (total)	4 U	4 U	5 U	5 U	101 %
cis-1,2-dichloroethene	4 U	4 U	5 U	5 U	104 %
trans-1,2-dichloroethene	4 U	4 U	5 U	5 U	103 %

*= Outside of EPA CLP QC limits.

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10/9/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-026
LVL #: 0808L138
SDG/SAF # K1309/RC-026

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 09-08-2008.

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. Six (6) 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 was below the reporting limit for all target compounds.

r:\group\data\2008\voa\tnu\0808-138cs2.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.

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LIONVILLE LABORATORY INC.

7. All internal standard area and retention time criteria were met.

8. The CCL analyzed on 09-08-2008 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# 08VT046) has been included in the package.

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 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 Sample Discrepancy Report (SDR)

SDR #: 08VT046

Initiator: Jack Glacken
Date: 9/9/08
Client: Washington Closure Hanford

Batch: 0809L020, 0808L138
Samples: 111
Method: SW846/MCAWW/CLP/

Parameter: 0624H
Matrix: encore soils
Prep Batch: 08LVK163

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 44% high in the daily continuing calibration check

Bromoform was not detected in these samples. PR 9/9/08

2. Known or Probable Causes(s)

unknown

3. Discussion and Proposed Action Other Description:

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

report + narrate

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: 9/10/08 Other Explanation:

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

0808L020 - PR 9/10/08
0808L138 - PR 9/10/08

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

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

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

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QA-139-A-0208

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oject Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~128-H-3~~ BH 8/27/08 128-H-2	SAF No. RC-029	15 Days
Chest No. ERC-96-069	Field Logbook No. EL-1601-2 / COA ~~C109H4A000~~ BH 8/27/08	Method of Shipment FedEx	
ipped To EBERLINE SERVICES ~~HONVILLE~~	Offsite Property No. A080320	Bill of Lading/Air Bill No. SCCOSPC	

OSSIBLE SAMPLE HAZARDS/REMARKS

pecial Handling and/or Storage

Preservation	None	None	D None	E Cool 4C	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C		
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	250mL	250mL	120mL	250mL	250mL	60mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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										
7FT5 ✓ / SOIL / 8/27/08 / 1140			X			X	X			
7FT6 ✓ / SOIL / 8/27/08 / 1214			X	X	X	X	X	X		
7FT7 / SOIL / 8/27/08 / 1235			X	X	X	X	X	X		
7FT8 / SOIL / 8/27/08 / 1240			X	X	X	X	X	X		
7FT9 / SOIL / 8/27/08 / 1250			X	X	X	X	X	X		

0000019

CHAIN OF POSSESSION	Sign/Print Names		
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	8/27/08 1352	BHudson BHudson	8/27/08 1352
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
HUDSON BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
60/3C J.E. Bernhard	8-28-08 0900	Fed Ex	
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FedEx	8/29/08 0945	[illegible]	8-29-08 0945
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(3) ICP Metals - 6010TR (Client List (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

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

000000021

Project Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~128-H-3~~ 128-H-2 C128H21W00	KESSNER, JH SAF No. RC-029	Price Code 8C Data Turnaround 15 Days
Ice Chest No. ERC-96-069	Field Logbook No. BH 8/27/08 EL-1601-2 COA ~~C128H21W00~~ ~~C100H4A000~~ BH 8/27/08	Method of Shipment FedEx	
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A080320	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

020000

Preservation	None	None	D None	E Cool 4C	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C		
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	60mL	250mL	120mL	250mL	250mL	60mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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										
7FV0 ✓ / SOIL / 8/27/08 / 1300			X	X	X	X	X	X		
7FV1 ✓ / SOIL / 8/27/08 / 1340			X	X	X	X	X	X		
7FV2 / SOIL										
7FV3 / SOIL										
7FV4 / SOIL										

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	[illegible]	8/27/08 1352	Received By/Stored In: BILL HUDSON [illegible]	1352 8/27/08
Relinquished By/Removed From	HUDSON [illegible]	8/27/08 1810	Received By/Stored In: 1060 #3C	8/27/08 1810
Relinquished By/Removed From	1060 #3C J.E. Bernhard	8-28-08 0900	Received By/Stored In: Fed Ex	
Relinquished By/Removed From	[illegible]	8/29/08 0945	Received By/Stored In: [illegible]	8-29-08 0945
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(3) ICP Metals - 6010TR (Client List (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

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
Ve=Vegetation
X=Other

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

H-EE-011

000000022

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-14-2			DATA PACKAGE: K1309		
VALIDATOR: ELR		LAB: LLI		DATE: 10/08/08	
			SDG: K1309		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)

SAMPLES/MATRIX			
J17FT5	J17FT6	J17FT7	J17FT8
J17FT9	~~J17FF9~~	J17FU0	J17FU1

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 at RQL all

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: MSD - chloromethane (49%) J all

LCS - 1,1,2,2, - tetrachloroethane - J all

no PA

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

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: 10 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-2
Subject: Semivolatile/Diesel Range Organics - Data Package No. K1309-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1309 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
J17FT5	8/27/08	Soil	C	See note 1
J17FT6	8/27/08	Soil	C	See note 1
J17FT7	8/27/08	Soil	C	See note 1
J17FT8	8/27/08	Soil	C	See note 1
J17FT9	8/27/08	Soil	C	See note 1
J17FV0	8/27/08	Soil	C	See note 1
J17FV1	8/27/08	Soil	C	See note 1

1 – Semivolatiles by 8270C & 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 (J17FT5) was submitted for analysis. Diesel range organics were detected in the field blank. Under the WCH statement of work, no qualification is required.

- **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 matrix spike duplicate results outside QC limits, all 2-methylphenol (57%), isophorone (57%) and 1,2,4-trichlorobenzene (57%) results were qualified as estimates and flagged "J".

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".

Due to a surrogate recovery outside QC limits, all 2,4-dichlorophenol, 2,4,6-trichlorophenol, 2,4,5-trichlorophenol, pentachlorophenol, bis(2-chloroethyl)ether, bis(2-chloroethoxy)methane, 4-chlorophenyl phenyl ether, 4-bromophenyl phenyl ether results in samples J17FT7, J17FV0 and J17FV1 were qualified as estimates and flagged "J".

All other 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".

All other duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J17FT7/J17FT8) 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. K1309 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 matrix spike duplicate results outside QC limits, all 2-methylphenol (57%), isophorone (57%) and 1,2,4-trichlorobenzene (57%) results were qualified as estimates and flagged "J".

- 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 a surrogate recovery outside QC limits, all 2,4-dichlorophenol, 2,4,6-trichlorophenol, 2,4,5-trichlorophenol, pentachlorophenol, bis(2-chloroethyl)ether, bis(2-chloroethoxy)methane, 4-chlorophenyl phenyl ether, 4-bromophenyl phenyl ether results in samples J17FT7, J17FV0 and J17FV1 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: K1309	REVIEWER: ELR	Project: 128-H-2	QC Issue
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	U at RQL	All	Blank contamination
2-methylphenol Isophorone 1,2,4-trichlorobenzene	J	All	MSD recovery
1,2,4-trichlorobenzene 2,4-dinitrophenol 4,6-dinitro-2-methylphenol Ideno(1,2,3-cd)pyrene	J	All	LCS recovery
2,4-dichlorophenol 2,4,6-trichlorophenol 2,4,5-trichlorophenol Pentachlorophenol Bis(2-chloroethyl)ether Bis(2-chloroethoxy)methane 4-chlorophenylphenylether 4-bromophenylphenylether	J	J17FT7, J17FV0 J17FV1	Surrogate recovery
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

	Cust ID:	J17FT5	J17FT6	J17FT6	J17FT6	J17FT7	J17FT8
Sample Information	RFW#:	001	002	002 MS	002 MSD	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	69 %	52 %	65 %	60 %	58 %	59 %
	2-Fluorobiphenyl	64 %	54 %	76 %	65 %	56 %	57 %
	Terphenyl-d14	75 %	69 %	88 %	75 %	76 %	79 %
	Phenol-d5	71 %	52 %	63 %	61 %	62 %	63 %
	2-Fluorophenol	68 %	50 %	67 %	64 %	59 %	62 %
	2,4,6-Tribromophenol	87 %	34 %	65 %	69 %	10 * %	31 %
		fl	fl	fl	fl	fl	fl
Phenol		330 U	340 U	64 %	62 %	340 U	340 U
bis(2-Chloroethyl)ether		330 U	340 U	55 %	54 %	340 U J	340 U
2-Chlorophenol		330 U	340 U	62 %	59 %	340 U	340 U
1,3-Dichlorobenzene		330 U	340 U	57 %	54 %	340 U	340 U
1,4-Dichlorobenzene		330 U	340 U	56 %	53 %	340 U	340 U
1,2-Dichlorobenzene		330 U	340 U	59 %	54 %	340 U	340 U
2-Methylphenol		330 U J	340 U J	62 %	57 * %	340 U J	340 U J
2,2'-oxybis(1-Chloropropane)		330 U	340 U	54 %	52 %	340 U	340 U
3/4 Methylphenol		330 U	340 U	65 %	63 %	340 U	340 U
N-Nitroso-di-n-propylamine		330 U	340 U	64 %	61 %	340 U	340 U
Hexachloroethane		330 U	340 U	56 %	54 %	340 U	340 U
Nitrobenzene		330 U	340 U	60 %	58 %	340 U	340 U
Isophorone		330 U J	340 U J	64 %	57 * %	340 U J	340 U J
2-Nitrophenol		330 U	340 U	64 %	60 %	340 U	340 U
2,4-Dimethylphenol		330 U	340 U	68 %	61 %	340 U	340 U
bis(2-Chloroethoxy)methane		330 U	340 U	66 %	59 %	340 U J	340 U
2,4-Dichlorophenol		330 U	340 U	70 %	62 %	340 U J	340 U
1,2,4-Trichlorobenzene		330 U J	340 U J	62 %	57 * %	340 U J	340 U J
Naphthalene		330 U	340 U	63 %	57 %	340 U	340 U
4-Chloroaniline		330 U	340 U	60 %	47 %	340 U	340 U
Hexachlorobutadiene		330 U	340 U	65 %	63 %	340 U	340 U
4-Chloro-3-methylphenol		330 U	340 U	78 %	67 %	340 U	340 U
2-Methylnaphthalene		330 U	340 U	68 %	60 %	340 U	340 U
Hexachlorocyclopentadiene		330 U	340 U	48 %	58 %	340 U	340 U
2,4,6-Trichlorophenol		330 U	340 U	70 %	65 %	340 U J	340 U
2,4,5-Trichlorophenol		830 U	840 U	79 %	66 %	850 U J	850 U

*= Outside of EPA CLP QC limits.

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000011

10/8/08

RFW#:	001		002		002 MS		002 MSD		003		004	
2-Chloronaphthalene	330	U	340	U	73	%	63	%	340	U	340	U
2-Nitroaniline	830	U	840	U	81	%	67	%	850	U	850	U
Dimethylphthalate	330	U	340	U	79	%	64	%	340	U	340	U
Acenaphthylene	330	U	340	U	77	%	64	%	340	U	340	U
2,6-Dinitrotoluene	330	U	340	U	79	%	65	%	340	U	340	U
3-Nitroaniline	830	U	840	U	77	%	57	%	850	U	850	U
Acenaphthene	330	U	340	U	75	%	62	%	340	U	340	U
2,4-Dinitrophenol	830	U J	840	U J	42	%	33	%	850	U J	850	U J
4-Nitrophenol	830	U	840	U	78	%	63	%	850	U	850	U
Dibenzofuran	330	U	340	U	75	%	62	%	340	U	340	U
2,4-Dinitrotoluene	330	U	340	U	81	%	63	%	340	U	340	U
Diethylphthalate	330	U	340	U	81	%	62	%	340	U	340	U
4-Chlorophenyl-phenylether	330	U	340	U	78	%	62	%	340	U J	340	U
Fluorene	330	U	340	U	81	%	64	%	340	U	340	U
4-Nitroaniline	830	U	840	U	78	%	58	%	850	U	850	U
4,6-Dinitro-2-methylphenol	830	U J	840	U J	59	%	48	%	850	U J	850	U J
N-Nitrosodiphenylamine (1)	330	U	340	U	68	%	60	%	340	U	340	U
4-Bromophenyl-phenylether	330	U	340	U	74	%	65	%	340	U J	340	U
Hexachlorobenzene	330	U	340	U	87	%	76	%	340	U	340	U
Pentachlorophenol	830	U	840	U	60	%	52	%	850	U J	850	U
Phenanthrene	330	U	340	U	81	%	67	%	340	U	340	U
Anthracene	330	U	340	U	80	%	65	%	340	U	340	U
Carbazole	330	U	340	U	83	%	66	%	340	U	340	U
Di-n-butylphthalate	660 ~~35~~ 10/4/12 JB	U	660 ~~24~~ 10/4/12 JB	U	81	%	63	%	660 ~~36~~ 10/4/12 JB	U	660 ~~20~~ 10/4/12 JB	U
Fluoranthene	330	U	340	U	84	%	64	%	340	U	340	U
Pyrene	330	U	340	U	78	%	68	%	340	U	340	U
Butylbenzylphthalate	330	U	340	U	83	%	67	%	340	U	22	J
3,3'-Dichlorobenzidine	330	U	340	U	81	%	63	%	340	U	340	U
Benzo(a)anthracene	330	U	340	U	82	%	68	%	340	U	340	U
Chrysene	330	U	340	U	83	%	69	%	340	U	340	U
bis(2-Ethylhexyl)phthalate	660 ~~75~~ 10/4/12 JB	U	660 ~~48~~ 10/4/12 JB	U	81	%	64	%	660 ~~58~~ 10/4/12 JB	U	660 ~~77~~ 10/4/12 JB	U
Di-n-octyl phthalate	330	U	340	U	73	%	56	%	340	U	340	U
Benzo(b)fluoranthene	330	U	340	U	78	%	66	%	340	U	340	U
Benzo(k)fluoranthene	330	U	340	U	81	%	66	%	340	U	340	U
Benzo(a)pyrene	330	U	340	U	79	%	66	%	340	U	340	U
Indeno(1,2,3-cd)pyrene	330	U J	340	U J	85	%	73	%	340	U J	340	U J
Dibenz(a,h)anthracene	330	U	340	U	88	%	75	%	340	U	340	U
Benzo(g,h,i)perylene	330	U	340	U	86	%	75	%	340	U	340	U

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

10/4/05

000000009

	Cust ID:	J17FT9	J17FV0	J17FV1	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	59 %	46 %	44 %	48 %	71 %
	2-Fluorobiphenyl	60 %	46 %	47 %	47 %	65 %
	Terphenyl-d14	77 %	71 %	65 %	61 %	85 %
	Phenol-d5	60 %	47 %	45 %	47 %	74 %
	2-Fluorophenol	58 %	43 %	43 %	43 %	67 %
	2,4,6-Tribromophenol	43 %	8 * %	16 * %	8 * %	23 %
		fl	fl	fl	fl	fl fl
Phenol		340 U	340 U	340 U	330 U	71 %
bis(2-Chloroethyl)ether		340 U	340 U J	340 U J	330 U	69 %
2-Chlorophenol		340 U	340 U	340 U	330 U	61 %
1,3-Dichlorobenzene		340 U	340 U	340 U	330 U	59 %
1,4-Dichlorobenzene		340 U	340 U	340 U	330 U	57 %
1,2-Dichlorobenzene		340 U	340 U	340 U	330 U	60 %
2-Methylphenol		340 U J	340 U J	340 U J	330 U	66 %
2,2'-oxybis(1-Chloropropane)		340 U	340 U	340 U	330 U	73 %
3/4 Methylphenol		340 U	340 U	340 U	330 U	69 %
N-Nitroso-di-n-propylamine		340 U	340 U	340 U	330 U	71 %
Hexachloroethane		340 U	340 U	340 U	330 U	61 %
Nitrobenzene		340 U	340 U	340 U	330 U	70 %
Isophorone		340 U J	340 U J	340 U J	330 U	65 %
2-Nitrophenol		340 U	340 U	340 U	330 U	62 %
2,4-Dimethylphenol		340 U	340 U	340 U	330 U	63 %
bis(2-Chloroethoxy)methane		340 U	340 U J	340 U J	330 U	66 %
2,4-Dichlorophenol		340 U	340 U J	340 U J	330 U	63 %
1,2,4-Trichlorobenzene		340 U J	340 U J	340 U J	330 U	59 * %
Naphthalene		340 U	340 U	340 U	330 U	59 %
4-Chloroaniline		340 U	340 U	340 U	330 U	44 %
Hexachlorobutadiene		340 U	340 U	340 U	330 U	61 %
4-Chloro-3-methylphenol		340 U	340 U	340 U	330 U	71 %
2-Methylnaphthalene		340 U	340 U	340 U	330 U	63 %
Hexachlorocyclopentadiene		340 U	340 U	340 U	330 U	53 %
2,4,6-Trichlorophenol		340 U	340 U J	340 U J	330 U	32 %
2,4,5-Trichlorophenol		840 U	840 U J	850 U J	830 U	62 %

*= Outside of EPA CLP QC limits.

R 10/9/08

000000010

Cust ID:	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
RFW#:	005	006	007	08LE0408-MB1	08LE0408-MB1
2-Chloronaphthalene	340 U	340 U	340 U	330 U	62 %
2-Nitroaniline	840 U	840 U	850 U	830 U	79 %
Dimethylphthalate	340 U	340 U	340 U	330 U	66 %
Acenaphthylene	340 U	340 U	340 U	330 U	63 %
2,6-Dinitrotoluene	340 U	340 U	340 U	330 U	67 %
3-Nitroaniline	840 U	840 U	850 U	830 U	60 %
Acenaphthene	340 U	340 U	340 U	330 U	63 %
2,4-Dinitrophenol	840 U J	840 U J	850 U J	830 U	13 * %
4-Nitrophenol	840 U	840 U	850 U	830 U	59 %
Dibenzofuran	340 U	340 U	340 U	330 U	65 %
2,4-Dinitrotoluene	340 U	340 U	340 U	330 U	71 %
Diethylphthalate	340 U	340 U	340 U	330 U	68 %
4-Chlorophenyl-phenylether	340 U	340 U J	340 U J	330 U	66 %
Fluorene	340 U	340 U	340 U	330 U	66 %
4-Nitroaniline	840 U	840 U	850 U	830 U	61 %
4,6-Dinitro-2-methylphenol	840 U J	840 U J	850 U J	830 U	34 * %
N-Nitrosodiphenylamine (1)	340 U	340 U	340 U	330 U	55 %
4-Bromophenyl-phenylether	340 U	340 U J	340 U J	330 U	56 %
Hexachlorobenzene	340 U	340 U	340 U	330 U	65 %
Pentachlorophenol	840 U	840 U J	850 U J	830 U	30 %
Phenanthrene	340 U	340 U	340 U	330 U	66 %
Anthracene	340 U	340 U	340 U	330 U	64 %
Carbazole	340 U	340 U	340 U	330 U	60 %
Di-n-butylphthalate	340 U	660 ~~19~~ 10/9/08 JB	660 ~~21~~ 10/9/08 JB U	41 J	65 %
Fluoranthene	340 U	340 U	340 U	330 U	65 %
Pyrene	340 U	340 U	340 U	330 U	77 %
Butylbenzylphthalate	340 U	340 U	340 U	330 U	71 %
3,3'-Dichlorobenzidine	340 U	340 U	340 U	330 U	45 %
Benzo(a)anthracene	340 U	340 U	340 U	330 U	67 %
Chrysene	340 U	340 U	340 U	330 U	65 %
bis(2-Ethylhexyl)phthalate	660 ~~130~~ 10/9/08 JB U	660 ~~54~~ 10/9/08 JB U	660 ~~22~~ 10/9/08 JB U	23 J	73 %
Di-n-octyl phthalate	340 U	340 U	340 U	330 U	73 %
Benzo(b)fluoranthene	340 U	340 U	340 U	330 U	66 %
Benzo(k)fluoranthene	340 U	340 U	340 U	330 U	67 %
Benzo(a)pyrene	340 U	340 U	340 U	330 U	66 %
Indeno(1,2,3-cd)pyrene	340 U J	340 U J	340 U J	330 U	57 * %
Dibenz(a,h)anthracene	340 U	340 U	340 U	330 U	60 %
Benzo(g,h,i)perylene	340 U	340 U	340 U	330 U	58 %

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

JC 10/9/08

000000011

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000000005

	Cust ID:	J17FT5	J17FT6	J17FT6	J17FT6	J17FT7	J17FT8
Sample Information	RFW#:	001	002	002 MS	002 MSD	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	98 %	86 %	82 %	77 %	92 %	104 %
Diesel Range Organics		880 J	3360 U	74 %	71 %	3410 U	3400 U
Motor Oil Range Organics		10000 U J	10100 U J	NS	NS	3800 ~~U~~ 10100 J	4100 ~~U~~ 10400 J

	Cust ID:	J17FT9	J17FV0	J17FV1	BLK	BLK BS
Sample Information	RFW#:	005	006	007	08LE0420-MB1	08LE0420-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
	p-Terphenyl	96 %	108 %	99 %	97 %	70 %
Diesel Range Organics		3370 U	3370 U	3400 U	3330 U	66 %
Motor Oil Range Organics		10100 U J	1400 ~~U~~ 1400 J	10200 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

000015

10/6/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-029
LVL #: 0808L138
SDG/SAF # K1309 / 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 client specified target compounds on 09-09,10-2008.

All soil samples are reported on a wet weight basis due to matrix (client indicates matrix as other liquid). 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. Four (4) of sixty-six (66) surrogate recoveries were outside acceptance criteria. However, surrogate recovery acceptance criteria were met for samples J17FT7 and J17FV1 (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%). The surrogate recovery criteria were not met for the following samples: J17FV0 and 08LE0408-MB1. The loss of the surrogate 2,4,6-Tribromophenol in the samples J17FT7, J17FV0, J17FV1, and 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 J17FT7 at a retention time of 21.687 minutes, sample J17FV0 at a retention time of 21.678 minutes, sample J17FV1 at a retention time of 21.677 minutes, and 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# 08MS201) has been enclosed.

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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 pages.

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LIONVILLE LABORATORY INC

5. Three (3) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08MS201) has been enclosed.

6. Four (4) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08MS201) 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

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Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08MS201

Initiator: Sharm Saylor
Date: 9-12-08
Client: WC Hanford RC09 K1309

Batch: 08FOFL13F
Samples: msd BS
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: SOLID
Prep Batch: ~~08FOFL13F~~ 08SS 08FLE040F 9-12

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 low spike recoveries in the msd + BS but ms is OK

② <10% recovery of 2,4,6-tribromophenol in samples J17FV0, + ~~J17FV1~~ RW9/15/08 B1K

2. Known or Probable Causes(s) ① Acidic phenols are subject to erratic chromatographic behavior especially if the GC system is contaminated with high boiling material. Other spike/ Surr spikes within acceptance criteria. ② low recoveries appear to be due to a chemical reaction rather than to a problem with the extraction. Conversion cmpd has been reported as TIC in the samples RW9/15/08 This surrogate has has been associated with the use of soxhlet extraction.

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)

9/12/08

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: Carden / _____
__ Other: _____

000019

LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-029
LVL #: 0808L138
SDG/SAF # K1309 /RC-029

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

DIESEL RANGE ORGANICS

Seven (7) 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.
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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

9/15/08
Date

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

WELCH-KOELLING	Matt Perrott 372-9088	KESSNER, JH	Price Code 8C — Data Turnaround 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: ~~128 H-3~~ BH 8/27/08 128-H-2	SAF No. RC-029	
Ice Chest No. ERC-96-069	Field Logbook No. EL-1601-2 / COA ~~C100H4A008~~ C128H5A000 BH 8/27/08	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No. A080320	Bill of Lading/Air Bill No. SCCOSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	D None	E Cool 4C	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C			
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G			
No. of Container(s)	1	1	1	1	1	1	1	1			
Volume	1000mL	60mL	250mL	120mL	250mL	250mL	60mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			

000022

Sample No.	Matrix *	Sample Date	Sample Time										
J17FT5	SOIL	8/27/08	1140			X			X	X			
J17FT6	SOIL	8/27/08	1214			X	X	X	X	X	X		
J17FT7	SOIL	8/27/08	1235			X	X	X	X	X	X		
J17FT8	SOIL	8/27/08	1240			X	X	X	X	X	X		
J17FT9	SOIL	8/27/08	1250			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 LEE KOELLING	8/27/08 1352	BHudson BHudson	8/27/08 1352
BHUDSON BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
1060/3C J.E. Bernhard	8-28-08 0900	Fed Ex	
Fed Ex	8/29/08 0945		8-29-08 0945

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(3) ICP Metals - 6010TR (Client List (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

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

000000011

WELCH-KOELLING	Matt Perrott 372-9088	KESSNER, JH	Price Code 8C — Data Turnaround 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: ~~128-H-3~~ 128-H-2 C128H21W00	SAF No. RC-029	
Ice Chest No. IF RC-96-069	Field Logbook No. EL-1601-2 BH 8/27/08	COA ~~C128H31W00~~ ~~C100H4A000~~ BH 8/27/08	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No. A080320		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	D None	E Cool 4C	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C		
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	60mL	250mL	120mL	250mL	250mL	60mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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										
J17FV0 ✓	SOIL	8/27/08	1300			X	X	X	X	X	X		
J17FV1 ✓	SOIL	8/27/08	1340			X	X	X	X	X	X		
J17FV2	SOIL												
J17FV3	SOIL												
J17FV4	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 1352	BILL HUDSON Bill Hudson	1352 8/27/08
BILL HUDSON Bill Hudson	8/27/08 1810	1060 #3C	8/27/08 1810
1060 #3C J.E. Bernhard	8-29-08 0900	Fed Ex	
Fed Ex	8/29/08 0945		8-29-08 0945

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(3) ICP Metals - 6010TR (Client List (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

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

000000012

000023

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-H-2			DATA PACKAGE: K1309		
VALIDATOR: ELR		LAB: LLI		DATE: 10/8/08	
			SDG: K1309		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270	8015B	SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J17FT5	J17FT6	J17FT7	J17FT8		
J17FT9	J17FV0	J17FV1			
					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: bis(2-ethylhexyl)phthalate + dibutylphthalate - U at RQL

FB - DRO

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: Surr (SV) - T7, V0, V1 - J all trihalo assoc
SV MSD - 2-methylphenol (57%) isophorone (57%) 1,2,4-trichlorobenzene (57%) - J all
motor oil - NO MS/MSD or LCS - J all

LCS-SV - 1,2,4-trichlorobenzene - J all NO PAS
4,6-Dinitro-2-methylphenol - J all (34%)
2,4-dinitrophenol - J all (13%) -
Indeno(1,2,3-cd)pyrene - J all (57%)

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 - 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: ~~5/8~~ SV over 5/6

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: 10 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-2
Subject: Pesticide/PCB - Data Package No. K1309-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1309 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
J17FT6	8/27/08	Soil	C	See note 1
J17FT7	8/27/08	Soil	C	See note 1
J17FT8	8/27/08	Soil	C	See note 1
J17FT9	8/27/08	Soil	C	See note 1
J17FV0	8/27/08	Soil	C	See note 1
J17FV1	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".

Due to a matrix spike and/or matrix spike duplicate result outside QC limits, all 4,4-DDE (79%), dieldrin (78%), 4,4-DDD (76%), endosulfan II (79%), 4,4-DDT (81%), endosulfan sulfate (73%B & 71%) and endrin ketone (84%& 82%) results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all endosulfan sulfate (73%) and endrin ketone (83%) 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 (J17FT7/J17FT8) 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. K1309 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".

- Due to a matrix spike and/or matrix spike duplicate result outside QC limits, all 4,4-DDE (79%), dieldrin (78%), 4,4-DDD (76%), endosulfan II (79%), 4,4-DDT (81%), endosulfan sulfate (73%B & 71%) and endrin ketone (84%& 82%) results were qualified as estimates and flagged "J".

- Due to LCS recoveries outside QC limits, all endosulfan sulfate (73%) and endrin ketone (83%) 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.

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: K1309	REVIEWER: ELR	Project: 128-H-2	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS analysis
4,4-DDE Dieldrin 4,4-DDD Endosulfan II 4,4-DDT Endosulfan sulfate Endrin ketone	J	All	MS and/or MSD recovery
Endosulfan sulfate Endrin ketone	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:	J17FT6	J17FT6	J17FT6	J17FT7	J17FT8	J17FT9
Sample Information	RFW#:	002	002 MS	002 MSD	003	004	005
	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	107 %	102 %	112 %	108 %	102 %	112 %
	Decachlorobiphenyl	119 %	113 %	116 %	114 %	102 %	100 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	92 %	106 %	14 U	14 U	13 U
Aroclor-1221		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1232		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1242		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1248		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1254		13 U	13 U	13 U	14 U	14 U	13 U
Aroclor-1260		13 U	101 %	114 %	14 U	14 U	13 U

	Cust ID:	J17FV0	J17FV1	PBLKUG	PBLKUG BS
Sample Information	RFW#:	006	007	08LE0409-MB1	08LE0409-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	99 %	104 %	99 %	104 %
	Decachlorobiphenyl	103 %	111 %	110 %	109 %
		fl	fl	fl	fl
Aroclor-1016		13 U	14 U	13 U	96 %
Aroclor-1221		13 U	14 U	13 U	13 U
Aroclor-1232		13 U	14 U	13 U	13 U
Aroclor-1242		13 U	14 U	13 U	13 U
Aroclor-1248		13 U	14 U	13 U	13 U
Aroclor-1254		13 U	14 U	13 U	13 U
Aroclor-1260		13 U	14 U	13 U	104 %

R 10/9/08

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

000000005

000010

	Cust ID:	J17FT6	J17FT6	J17FT6	J17FT7	J17FT8	J17FT9
Sample Information	RFW#:	002	002 MS	002 MSD	003	004	005
	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	83 %	82 %	81 %	81 %	76 %	80 %
	Decachlorobiphenyl	99 %	102 %	103 %	101 %	97 %	101 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.3 U	80 %	77 %	1.4 U	1.4 U	1.3 U
gamma-BHC (Lindane)		1.3 U	83 %	80 %	1.4 U	1.4 U	1.3 U
Beta-BHC		1.3 U	87 %	84 %	1.4 U	1.4 U	1.3 U
Heptachlor		1.3 U	85 %	83 %	1.4 U	1.4 U	1.3 U
Delta-BHC		1.3 U	57 %	55 %	1.4 U	1.4 U	1.3 U
Aldrin		1.3 U	81 %	79 %	1.4 U	1.4 U	1.3 U
Heptachlor epoxide		1.3 U	81 %	79 %	1.4 U	1.4 U	1.3 U
gamma-Chlordane		1.3 U	83 %	80 %	1.4 U	1.4 U	1.3 U
Endosulfan I		1.3 U	87 %	84 %	1.4 U	1.4 U	1.3 U
alpha-Chlordane		1.3 U	84 %	83 %	1.4 U	1.4 U	1.3 U
4,4'-DDE		1.3 U J	82 %	79 * %	1.4 U J	1.4 U J	1.3 U J
Dieldrin		1.3 U J	80 %	78 * %	1.4 U J	1.4 U J	1.3 U J
Endrin		1.3 U	87 %	85 %	1.4 U	1.4 U	1.3 U
4,4'-DDD		1.3 U J	78 %	76 * %	1.4 U J	1.4 U J	1.3 U J
Endosulfan II		1.3 U J	81 %	79 * %	1.4 U J	1.4 U J	1.3 U J
4,4'-DDT		1.3 U J	84 %	81 * %	1.4 U J	1.4 U J	1.3 U J
Endrin aldehyde		1.3 U	77 %	76 %	1.4 U	1.4 U	1.3 U
Endosulfan sulfate		1.3 U J	73 * %	71 * %	1.4 U J	1.4 U J	1.3 U J
Methoxychlor		1.3 U	97 %	97 %	1.4 U	1.4 U	1.3 U
Endrin ketone		1.3 U J	84 * %	82 * %	1.4 U J	1.4 U J	1.3 U J
Toxaphene		13 U J	13 U	13 U	14 U J	14 U J	13 U J

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

10/9/06

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	Cust ID:	J17FV0	J17FV1	PBLKUG	PBLKUG BS
Sample Information	RFW#:	006	007	08LE0409-MB1	08LE0409-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		72 %	73 %	73 %	72 %
Decachlorobiphenyl		95 %	97 %	82 %	92 %
Alpha-BHC		1.3 U	1.4 U	0.33 U	86 %
gamma-BHC (Lindane)		1.3 U	1.4 U	0.33 U	86 %
Beta-BHC		1.3 U	1.4 U	0.33 U	81 %
Heptachlor		1.3 U	1.4 U	0.33 U	82 %
Delta-BHC		1.3 U	1.4 U	0.33 U	65 %
Aldrin		1.3 U	1.4 U	0.33 U	84 %
Heptachlor epoxide		1.3 U	1.4 U	0.33 U	81 %
gamma-Chlordane		1.3 U	1.4 U	0.33 U	83 %
Endosulfan I		1.3 U	1.4 U	0.33 U	90 %
alpha-Chlordane		1.3 U	1.4 U	0.33 U	82 %
4,4'-DDE		1.3 U J	1.4 U J	0.33 U	82 %
Dieldrin		1.3 U J	1.4 U J	0.33 U	85 %
Endrin		1.3 U	1.4 U	0.33 U	90 %
4,4'-DDD		1.3 U J	1.4 U J	0.33 U	87 %
Endosulfan II		1.3 U J	1.4 U J	0.33 U	81 %
4,4'-DDT		1.3 U J	1.4 U J	0.33 U	87 %
Endrin aldehyde		1.3 U	1.4 U	0.33 U	69 %
Endosulfan sulfate		1.3 U J	1.4 U J	0.33 U	73 * %
Methoxychlor		1.3 U	1.4 U	0.33 U	89 %
Endrin ketone		1.3 U J	1.4 U J	0.33 U	83 * %
Toxaphene		13 U J	14 U J	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

10/9/08

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: WC-HANFORD RC-029
LVL #: 0808L138
SDG/SAF # K1309 / RC-029

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

PCB

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

The samples and their associated QC samples were extracted on 09-02-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 09-17-2008. 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. Samples were extracted and analyzed within required holding time.
2. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups 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. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set 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

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.

Judy Stum

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/18/08
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 #: 0808L138
SDG/SAF # K1309 / RC-029

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

CHLORINATED PESTICIDES

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

The samples and their associated QC samples were extracted on 09-02-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 09-15-2008. 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. Two (2) of twenty (20) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08GC116) has been enclosed.
5. Nine (9) of forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08GC116) has been enclosed.
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.

r:\group\data\2008\pest\tnu\0808-138cs2.pest.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 13 pages.

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LvLI
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

9/19/08
Date

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08GC116

Initiator: CAC
Date: 9/16/08
Client: WC-Hanford EC029

Batch: 0808L138
Samples: 002MS/MSD BS
Method: SW846/MCAWW/CLP/

Parameter: Pest
Matrix: SOIL
Prep Batch: 08LE0409

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)

several spike recoveries are low

2. Known or Probable Causes(s)

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:
~~Reso~~ ID Recoveries are outside normal limits but still > 70%
Narrate
ID

4. Project Manager Instructions...signature/date: 9/18/08
✓ 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: 9/17/08
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: _____

000018

QA-139-A-0208

WELDON-ROLLING

Matt Perrott 372-9088	KESSNER, JH	Time Code 8C	15 Days
Project Designation Remaining Sites Confirmation Sampling - Soil	**Sampling Location** ~~128-H-3~~ BH 8/27/08 128-H-2	**SAF No.** RC-029	
Chest No. ERC-96-069	**Field Logbook No.** EL-1601-2 / **COA** C128H3100Q ~~C100H4A008~~ BH 8/27/08	**Method of Shipment** FedEx	
Shipped To EBERLINE SERVICES / JONVILLE	**Offsite Property No.** A080320	**Bill of Lading/Air Bill No.** SCCOSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000019

Preservation	None	None	D None	E Cool 4C	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C			
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G			
No. of Container(s)	1	1	1	1	1	1	1	1			
Volume	1000mL	60mL	250mL	120mL	250mL	250mL	60mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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**								
7FT5 ✓	SOIL	8/27/08	1140			X			X	X	
7FT6 ✓	SOIL	8/27/08	1214			X	X	X	X	X	X
7FT7	SOIL	8/27/08	1235			X	X	X	X	X	X
7FT8	SOIL	8/27/08	1240			X	X	X	X	X	X
7FT9	SOIL	8/27/08	1250			X	X	X	X	X	X

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	8/27/08 1352	BHudson BHudson	8/27/08 1352
HUDSON BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
60/3C J.E. Bernhard	8-28-08 0900	Fed Ex	
FedEx	8/29/08 0945	[illegible]	8/29/08 0945

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium
(3) ICP Metals - 6010TR (Client List {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

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

000000009

Work Location of	Mail Center 372-9088	KESSNER, JH	Price Code 8C
Date Turnaround 15 Days			

ject Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~128-H-3~~ 128-H-2 C128H21W00		SAF No. RC-029
Chest No. EKC-96-069	Field Logbook No. BH 8/28/08 EL-1601-2	COA ~~C128H31W00~~ ~~C100H4A000~~ BH 8/27/08	Method of Shipment FedEx
pped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A080320		Bill of Lading/Air Bill No. SEE OSPC

000000010

OSSIBLE SAMPLE HAZARDS/REMARKS

pecial Handling and/or Storage

000020

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G			
No. of Container(s)	1	1	1	1	1	1	1	1			
Volume	1000mL	60mL	250mL	120mL	250mL	250mL	60mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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								
FV0 ✓	SOIL	8/27/08	1300			X	X	X	X	X	X
FV1 ✓	SOIL	8/27/08	1340			X	X	X	X	X	X
FV2	SOIL										
FV3	SOIL										
FV4	SOIL										

CHAIN OF POSSESSION	Sign/Print Names		
quished By/Removed From	Date/Time 8/27/08 1352	Received By/Stored In BILL HUDSON Bill Hudson	Date/Time 1352 8/27/08
quished By/Removed From HUDSON Bill Hudson	Date/Time 8/27/08 1810	Received By/Stored In 1060 #3C	Date/Time 8/27/08 1810
quished By/Removed From C/O 13C S.E. Bernhard	Date/Time 8-28-08 0900	Received By/Stored In Fed Ex	Date/Time
quished By/Removed From	Date/Time 8/29/08 0945	Received By/Stored In	Date/Time 8-29-08 0945
quished By/Removed From	Date/Time	Received By/Stored In	Date/Time
quished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium [Plutonium-238, Plutonium-239/240]; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium
(3) ICP Metals - 6010TR (Client List [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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
Ve=Vegetation
X=Other

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

H-EE-011

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-H-2			DATA PACKAGE: K1309		
VALIDATOR: ELR		LAB: LLI		DATE: 10/5/08	
			SDG: K1309		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J17FT6 J17FT7 J17FT8 J17FT9					
J17FV0 J17FV1					
					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: MS Post – 44-DDE (79%), d+eldrin (78%), 44-DDD (76%)
Endosulfan II (79%) 4,4-DDT (81%) Endosulfan Sulfate (73+71%)
Endrin ketone (84+83%) – J all
LCS – Endosulfan Sulfate (73%) & endrin ketone (83%) – J all
40X – no MS/MSD or LCS – J all

no PAB

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 Poy MS/MSD – J ell

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: 10 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-2
Subject: Inorganics - Data Package No. K1309-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1309 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
J17FT5	8/27/08	Soil	C	See note 1
J17FT6	8/27/08	Soil	C	See note 1
J17FT7	8/27/08	Soil	C	See note 1
J17FT8	8/27/08	Soil	C	See note 1
J17FT9	8/27/08	Soil	C	See note 1
J17FV0	8/27/08	Soil	C	See note 1
J17FV1	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 sodium result in sample J17FT5 was qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J17FT5) was submitted for analysis. Aluminum, iron, manganese and silicon 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 recovery outside QC limits, all antimony (47%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (32.6%), 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 (J17FT7/J17FT8) 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. The zinc result in sample J17FT5 and the barium results in J17FT5, J17FT9, J17FV0 and J17FV1 exceeded the RQL. Under the WCH statement of work, no qualification is required. All other results met the RQL.

- **Completeness**

Data package No. K1309 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 sodium result in sample J17FT5 was qualified as undetected and flagged "UJ".
- Due to a matrix spike recovery outside QC limits, all antimony (47%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (32.6%), 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.

The zinc result in sample J17FT5 and the barium results in J17FT5, J17FT9, J17FV0 and J17FV1 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 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: K1309	REVIEWER: ELR	Project: 128-H-2	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Sodium	UJ	J17FT5	Method blank contamination
Antimony	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 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17FT5	Silver, Total	0.83	u	MG/KG	0.83	1.0
		Aluminum, Total	55.3		MG/KG	16.7	1.0
		Arsenic, Total	0.83	u	MG/KG	0.83	1.0
		Boron, Total	8.3	u	MG/KG	8.3	1.0
		Barium, Total	16.7	u	MG/KG	16.7	1.0
		Beryllium, Total	0.42	u	MG/KG	0.42	1.0
		Calcium, Total	416	u	MG/KG	416	1.0
		Cadmium, Total	0.42	u	MG/KG	0.42	1.0
		Cobalt, Total	4.2	u	MG/KG	4.2	1.0
		Chromium, Total	0.83	u	MG/KG	0.83	1.0
		Copper, Total	2.1	u	MG/KG	2.1	1.0
		Iron, Total	124		MG/KG	8.3	1.0
		Mercury, Total	0.03	u	MG/KG	0.03	1.0
		Potassium, Total	416	u	MG/KG	416	1.0
		Magnesium, Total	416	u	MG/KG	416	1.0
		Manganese, Total	3.6		MG/KG	1.2	1.0
		Molybdenum, Total	8.3	u	MG/KG	8.3	1.0
		Sodium, Total	25.1	UJ	MG/KG	1.7	1.0
		Nickel, Total	3.3	u	MG/KG	3.3	1.0
		Lead, Total	0.25	u	MG/KG	0.25	1.0
		Antimony, Total	0.83	uJ	MG/KG	0.83	1.0
		Selenium, Total	0.42	u	MG/KG	0.42	1.0
		Silicon, Total	53.1	J	MG/KG	8.3	1.0
		Vanadium, Total	4.2	u	MG/KG	4.2	1.0
		Zinc, Total	1.7	u	MG/KG	1.7	1.0

10/9/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J17FT6	Silver, Total	2.5	u	MG/KG	2.5	3.0
		Aluminum, Total	6410		MG/KG	49.6	3.0
		Arsenic, Total	2.5		MG/KG	2.5	3.0
		Boron, Total	24.8	u	MG/KG	24.8	3.0
		Barium, Total	58.1		MG/KG	49.6	3.0
		Beryllium, Total	1.2	u	MG/KG	1.2	3.0
		Calcium, Total	7920		MG/KG	1240	3.0
		Cadmium, Total	1.2	u	MG/KG	1.2	3.0
		Cobalt, Total	12.4	u	MG/KG	12.4	3.0
		Chromium, Total	11.1		MG/KG	2.5	3.0
		Copper, Total	16.3		MG/KG	6.2	3.0
		Iron, Total	18400		MG/KG	24.8	3.0
		Mercury, Total	0.03	u	MG/KG	0.03	1.0
		Potassium, Total	967		MG/KG	413	1.0
		Magnesium, Total	4450		MG/KG	1240	3.0
		Manganese, Total	280		MG/KG	3.7	3.0
		Molybdenum, Total	24.8	u	MG/KG	24.8	3.0
		Sodium, Total	196		MG/KG	1.7	1.0
		Nickel, Total	10.8		MG/KG	9.9	3.0
		Lead, Total	4.3		MG/KG	0.74	3.0
		Antimony, Total	2.5	u J	MG/KG	2.5	3.0
		Selenium, Total	1.2		MG/KG	1.2	3.0
		Silicon, Total	172	J	MG/KG	24.8	3.0
		Vanadium, Total	42.8		MG/KG	12.4	3.0
		Zinc, Total	37.4		MG/KG	5.0	3.0

10/9/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J17FT7	Silver, Total	2.5	u	MG/KG	2.5	3.0
		Aluminum, Total	9050		MG/KG	49.9	3.0
		Arsenic, Total	3.1		MG/KG	2.5	3.0
		Boron, Total	25.0	u	MG/KG	25.0	3.0
		Barium, Total	80.7		MG/KG	49.9	3.0
		Beryllium, Total	1.2	u	MG/KG	1.2	3.0
		Calcium, Total	8590		MG/KG	1250	3.0
		Cadmium, Total	1.2	u	MG/KG	1.2	3.0
		Cobalt, Total	12.5	u	MG/KG	12.5	3.0
		Chromium, Total	13.3		MG/KG	2.5	3.0
		Copper, Total	14.1		MG/KG	6.2	3.0
		Iron, Total	21000		MG/KG	25.0	3.0
		Mercury, Total	0.03	u	MG/KG	0.03	1.0
		Potassium, Total	1520		MG/KG	416	1.0
		Magnesium, Total	4930		MG/KG	1250	3.0
		Manganese, Total	323		MG/KG	3.7	3.0
		Molybdenum, Total	25.0	u	MG/KG	25.0	3.0
		Sodium, Total	218		MG/KG	1.7	1.0
		Nickel, Total	13.0		MG/KG	10.0	3.0
		Lead, Total	4.9		MG/KG	0.75	3.0
		Antimony, Total	2.5	u J	MG/KG	2.5	3.0
		Selenium, Total	1.2	u	MG/KG	1.2	3.0
		Silicon, Total	184	J	MG/KG	25.0	3.0
		Vanadium, Total	44.7		MG/KG	12.5	3.0
		Zinc, Total	41.7		MG/KG	5.0	3.0

10/9/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J17FT8	Silver, Total	2.5	u	MG/KG	2.5	3.0
		Aluminum, Total	8920		MG/KG	50.6	3.0
		Arsenic, Total	3.5		MG/KG	2.5	3.0
		Boron, Total	25.3	u	MG/KG	25.3	3.0
		Barium, Total	82.6		MG/KG	50.6	3.0
		Beryllium, Total	1.3	u	MG/KG	1.3	3.0
		Calcium, Total	8480		MG/KG	1270	3.0
		Cadmium, Total	1.3	u	MG/KG	1.3	3.0
		Cobalt, Total	12.7	u	MG/KG	12.7	3.0
		Chromium, Total	13.8		MG/KG	2.5	3.0
		Copper, Total	14.0		MG/KG	6.3	3.0
		Iron, Total	21000		MG/KG	25.3	3.0
		Mercury, Total	0.03	u	MG/KG	0.03	1.0
		Potassium, Total	1530		MG/KG	422	1.0
		Magnesium, Total	5040		MG/KG	1270	3.0
		Manganese, Total	329		MG/KG	3.8	3.0
		Molybdenum, Total	25.3	u	MG/KG	25.3	3.0
		Sodium, Total	230		MG/KG	1.7	1.0
		Nickel, Total	13.1		MG/KG	10.1	3.0
		Lead, Total	4.3		MG/KG	0.76	3.0
		Antimony, Total	2.5	u J	MG/KG	2.5	3.0
		Selenium, Total	1.3	u	MG/KG	1.3	3.0
		Silicon, Total	181	J	MG/KG	25.3	3.0
		Vanadium, Total	44.0		MG/KG	12.7	3.0
		Zinc, Total	42.0		MG/KG	5.1	3.0

10/9/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J17FT9	Silver, Total	2.4	u	MG/KG	2.4	3.0
		Aluminum, Total	5360		MG/KG	48.2	3.0
		Arsenic, Total	2.4	u	MG/KG	2.4	3.0
		Boron, Total	24.1	u	MG/KG	24.1	3.0
		Barium, Total	48.2	u	MG/KG	48.2	3.0
		Beryllium, Total	1.2	u	MG/KG	1.2	3.0
		Calcium, Total	5910		MG/KG	1200	3.0
		Cadmium, Total	1.2	u	MG/KG	1.2	3.0
		Cobalt, Total	12.0	u	MG/KG	12.0	3.0
		Chromium, Total	9.4		MG/KG	2.4	3.0
		Copper, Total	14.2		MG/KG	6.0	3.0
		Iron, Total	21800		MG/KG	24.1	3.0
		Mercury, Total	0.03	u	MG/KG	0.03	1.0
		Potassium, Total	805		MG/KG	402	1.0
		Magnesium, Total	4040		MG/KG	1200	3.0
		Manganese, Total	287		MG/KG	3.6	3.0
		Molybdenum, Total	24.1	u	MG/KG	24.1	3.0
		Sodium, Total	173		MG/KG	1.6	1.0
		Nickel, Total	9.7		MG/KG	9.6	3.0
		Lead, Total	2.7		MG/KG	0.72	3.0
		Antimony, Total	2.4	u J	MG/KG	2.4	3.0
		Selenium, Total	1.2	u	MG/KG	1.2	3.0
		Silicon, Total	190	J	MG/KG	24.1	3.0
		Vanadium, Total	58.5		MG/KG	12.0	3.0
		Zinc, Total	40.5		MG/KG	4.8	3.0

10/9/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J17FV0	Silver, Total	2.4	u	MG/KG	2.4	3.0
		Aluminum, Total	4440		MG/KG	48.5	3.0
		Arsenic, Total	2.4		MG/KG	2.4	3.0
		Boron, Total	24.3	u	MG/KG	24.3	3.0
		Barium, Total	48.5	u	MG/KG	48.5	3.0
		Beryllium, Total	1.2	u	MG/KG	1.2	3.0
		Calcium, Total	5180		MG/KG	1210	3.0
		Cadmium, Total	1.2	u	MG/KG	1.2	3.0
		Cobalt, Total	12.1	u	MG/KG	12.1	3.0
		Chromium, Total	8.5		MG/KG	2.4	3.0
		Copper, Total	13.6		MG/KG	6.1	3.0
		Iron, Total	20300		MG/KG	24.3	3.0
		Mercury, Total	0.03	u	MG/KG	0.03	1.0
		Potassium, Total	636		MG/KG	404	1.0
		Magnesium, Total	3880		MG/KG	1210	3.0
		Manganese, Total	265		MG/KG	3.6	3.0
		Molybdenum, Total	24.3	u	MG/KG	24.3	3.0
		Sodium, Total	164		MG/KG	1.6	1.0
		Nickel, Total	9.7	u	MG/KG	9.7	3.0
		Lead, Total	2.2		MG/KG	0.73	3.0
		Antimony, Total	2.4	uJ	MG/KG	2.4	3.0
		Selenium, Total	1.2	u	MG/KG	1.2	3.0
		Silicon, Total	219	J	MG/KG	24.3	3.0
		Vanadium, Total	49.9		MG/KG	12.1	3.0
		Zinc, Total	36.7		MG/KG	4.9	3.0

10/9/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/12/08

CLIENT: WC-HANPORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J17FV1	Silver, Total	2.4	u	MG/KG	2.4	3.0
		Aluminum, Total	4880		MG/KG	47.0	3.0
		Arsenic, Total	2.4	u	MG/KG	2.4	3.0
		Boron, Total	23.5	u	MG/KG	23.5	3.0
		Barium, Total	47.0	u	MG/KG	47.0	3.0
		Beryllium, Total	1.2	u	MG/KG	1.2	3.0
		Calcium, Total	7260		MG/KG	1180	3.0
		Cadmium, Total	1.2	u	MG/KG	1.2	3.0
		Cobalt, Total	11.8	u	MG/KG	11.8	3.0
		Chromium, Total	7.9		MG/KG	2.4	3.0
		Copper, Total	12.4		MG/KG	5.9	3.0
		Iron, Total	17000		MG/KG	23.5	3.0
		Mercury, Total	0.03	u	MG/KG	0.03	1.0
		Potassium, Total	716		MG/KG	392	1.0
		Magnesium, Total	3850		MG/KG	1180	3.0
		Manganese, Total	250		MG/KG	3.5	3.0
		Molybdenum, Total	23.5	u	MG/KG	23.5	3.0
		Sodium, Total	168		MG/KG	1.6	1.0
		Nickel, Total	9.4	u	MG/KG	9.4	3.0
		Lead, Total	2.8		MG/KG	0.71	3.0
		Antimony, Total	2.4	u J	MG/KG	2.4	3.0
		Selenium, Total	1.2	u	MG/KG	1.2	3.0
		Silicon, Total	178	J	MG/KG	23.5	3.0
		Vanadium, Total	40.1		MG/KG	11.8	3.0
		Zinc, Total	32.5		MG/KG	4.7	3.0

10/9/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-029
LVL#: 0808L138
SDG/SAF#: K1309/RC-029

W.O.#: 60049-001-001-0001-00
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 were run with 3-fold dilutions with the exception of sample J17FT5 for ICP metals due to sample matrix.

   All samples were run on a different instrument for Potassium and Sodium with no dilution.

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 Sodium and Potassium in file TA0911B. The samples were rerun for Sodium and Potassium in file PS0911C.

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

6. The preparation/method blank for 1 analyte was outside method criteria. {less than the Limit of Quantitation (3-10X the LOD), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Sodium was greater than the Limit of Quantitation (LOQ) {3-10x the (LOD) Limit of Detection} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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.

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

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 (32.6%). Sample results may be biased low. Refer to the Inorganics Laboratory Control Standards Report.

9. The matrix spike (MS) recoveries for 5 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 serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J17FT6	Aluminum	60,000	97.3
	Calcium	60,000	100.7
	Iron	60,000	102.3
	Antimony	300	102.6
	Silicon	300	67.0

11. All duplicate analyses were within 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.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/15/08
Date

LIONVILLE LABORATORY INC.

Project Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~128-H-3~~ BH 8/27/08 128-H-2	SAF No. RC-029	Price Code 8C Data Turnaround 15 Days
Chest No. ERC-96-069	Field Logbook No. EL-1601-2 COA ~~C100H4A000~~ BH 8/27/08	Method of Shipment FedEx	
Shipped To EBERLINE SERVICES HUNTSVILLE	Offsite Property No. A080320	Bill of Lading/Air Bill No. SCCOSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000000028

020000

Preservation	None	None	D None	E Cool 4C	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C			
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G			
No. of Container(s)	1	1	1	1	1	1	1	1			
Volume	1000mL	250mL	250mL	120mL	250mL	250mL	60mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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								
7FT5 ✓	SOIL	8/27/08	1140			X			X	X	
7FT6 ✓	SOIL	8/27/08	1214			X	X	X	X	X	X
7FT7	SOIL	8/27/08	1235			X	X	X	X	X	X
7FT8	SOIL	8/27/08	1240			X	X	X	X	X	X
7FT9	SOIL	8/27/08	1250			X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	8/27/08 1352	BHudson BHudson	8/27/08 1352
BHUDSON BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
1060/3C J.E. Bernhard	8-28-08 0900	Fed Ex	
Fed Ex	8/29/08 0945	[illegible]	8-29-08 0945

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium [Plutonium-238, Plutonium-239/240]; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium
(3) ICP Metals - 6010TR (Client List [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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

SCH-EE-011

ject Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~128-H-2~~ 128-H-2 C128H21W00	SAF No. RC-029	15 Days
Chest No. ERC-96-069	Field Logbook No. BH 8/27/08 EL-1601-2	COA ~~C128H31W00~~ ~~C100H4A000~~ BH 8/27/08	Method of Shipment FedEx
ipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A080320		Bill of Lading/Air Bill No. SEE OSPC

000000029

OSSIBLE SAMPLE HAZARDS/REMARKS

pecial Handling and/or Storage

Preservation	None	None	D None	E Cool 4C -	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C		
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	60mL	250mL	120mL	250mL	250mL	60mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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								
7FV0 ✓	SOIL	8/27/08	1300			X	X	X	X	X	X
7FV1 ✓	SOIL	8/27/08	1340			X	X	X	X	X	X
7FV2	SOIL										
7FV3	SOIL										
7FV4	SOIL										

120000

CHAIN OF POSSESSION	Sign/Print Names		
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	8/27/08 1352	BILL HUDSON Bill Hudson	8/27/08 1352
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
HUDSON Bhudson	8/27/08 1810	1060 #3C	8/27/08 1810
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
GB 13C S.E. Bernhard	8-28-08 0900	Fed Ex	
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	8/29/08 0945	[illegible]	8-29-08 0945
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
nquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(3) ICP Metals - 6010TR (Client List (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

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 ISPOSITION	Disposal Method	Disposed By	Date/Time

H-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-H-2			DATA PACKAGE: K1309		
VALIDATOR: ELR		LAB: LLI		DATE: 10/5/08	
			SDG: K1309		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J17FT5 J17FT6 J17FT7 J17FT8					
J17FT9 J17FV0 J17FV1					
					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: MB - TS - UJ

FB - TS - aluminum, iron, manganese + silicon

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 47.1% - J all

LCS - silicon 32.6% - J all

no PA's

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:

TS - barium, zinc

T9 - barium

V0 - barium

V1 - barium

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/12/08

CLIENT: WC-HANFORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0330-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	0.10 u	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	4.0 u	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	2.5 u	MG/KG	2.5	1.0
		Manganese, Total	0.04 u	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Sodium, Total	24.3	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	08C0151-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 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J17FT6	Silver, Total	3.7	2.5 u	4.1	90.2	3.0
		Aluminum, Total	7420	6410	164	619.2*	3.0
		Arsenic, Total	155	2.5	164	93.1	3.0
		Boron, Total	74.9	24.8 u	82.0	91.3	3.0
		Barium, Total	205	58.1	164	89.6	3.0
		Beryllium, Total	4.0	1.2 u	4.1	97.6	3.0
		Calcium, Total	10500	7920	2050	125.9	3.0
		Cadmium, Total	3.9	1.2 u	4.1	95.1	3.0
		Cobalt, Total	45.3	12.4 u	41.0	110.5	3.0
		Chromium, Total	28.3	11.1	16.4	104.9	3.0
		Copper, Total	34.6	16.3	20.5	89.3	3.0
		Iron, Total	19100	18400	82.0	930.5*	3.0
		Mercury, Total	0.17	0.03u	0.16	108.2	1.0
		Potassium, Total	2830	967	2050	91.0	1.0
		Magnesium, Total	6740	4450	2050	111.5	3.0
		Manganese, Total	314	280	41.0	82.0*	3.0
		Molybdenum, Total	75.2	24.8 u	82.0	91.7	3.0
		Sodium, Total	2120	196	2050	94.0	1.0
		Nickel, Total	52.0	10.8	41.0	100.5	3.0
		Lead, Total	42.2	4.3	41.0	92.4	3.0
		Antimony, Total	19.3	2.5 u	41.0	47.1	3.0
		Selenium, Total	133	1.2	164	80.3	3.0
		Silicon, Total	230	172	82.0	70.9	3.0
		Vanadium, Total	83.4	42.8	41.0	99.0	3.0
		Zinc, Total	77.2	37.4	41.0	97.1	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-002REP	J17FT6	Silver, Total	2.5 u	2.4 u	NC	3.0
		Aluminum, Total	6410	6620	3.2	3.0
		Arsenic, Total	2.5	2.9	14.8	3.0
		Boron, Total	24.8 u	24.4 u	NC	3.0
		Barium, Total	58.1	49.7	15.6	3.0
		Beryllium, Total	1.2 u	1.2 u	NC	3.0
		Calcium, Total	7920	8360	5.5	3.0
		Cadmium, Total	1.2 u	1.2 u	NC	3.0
		Cobalt, Total	12.4 u	12.2 u	NC	3.0
		Chromium, Total	11.1	11.5	3.5	3.0
		Copper, Total	16.3	14.8	9.6	3.0
		Iron, Total	18400	18100	1.5	3.0
		Mercury, Total	0.03u	0.03u	NC	1.0
		Potassium, Total	967	988	2.1	1.0
		Magnesium, Total	4450	4650	4.3	3.0
		Manganese, Total	280	267	4.8	3.0
		Molybdenum, Total	24.8 u	24.4 u	NC	3.0
		Sodium, Total	196	178	10.0	1.0
		Nickel, Total	10.8	10.9	0.92	3.0
		Lead, Total	4.3	4.0	7.2	3.0
		Antimony, Total	2.5 u	2.4 u	NC	3.0
		Selenium, Total	1.2	1.4	15.4	3.0
		Silicon, Total	172	157	8.6	3.0
		Vanadium, Total	42.8	42.5	0.70	3.0
		Zinc, Total	37.4	36.1	3.5	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/12/08

CLIENT: WC-HANFORD RC-029 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0330-LC1	Silver, LCS	48.3	50.0	MG/KG	96.6
		Aluminum, LCS	478	500	MG/KG	95.6
		Arsenic, LCS	926	1000	MG/KG	92.6
		Boron, LCS	454	500	MG/KG	90.8
		Barium, LCS	475	500	MG/KG	94.9
		Beryllium, LCS	24.2	25.0	MG/KG	96.8
		Calcium, LCS	2430	2500	MG/KG	97.2
		Cadmium, LCS	23.7	25.0	MG/KG	94.8
		Cobalt, LCS	240	250	MG/KG	96.1
		Chromium, LCS	48.9	50.0	MG/KG	97.8
		Copper, LCS	121	125	MG/KG	96.6
		Iron, LCS	485	500	MG/KG	97.0
		Potassium, LCS	2280	2500	MG/KG	91.2
		Magnesium, LCS	2360	2500	MG/KG	94.2
		Manganese, LCS	73.0	75.0	MG/KG	97.3
		Molybdenum, LCS	474	500	MG/KG	94.9
		Sodium, LCS	2330	2500	MG/KG	93.1
		Nickel, LCS	193	200	MG/KG	96.4
		Lead, LCS	239	250	MG/KG	95.6
		Antimony, LCS	274	300	MG/KG	91.4
		Selenium, LCS	882	1000	MG/KG	88.2
		Silicon, LCS	163	500	MG/KG	32.6
		Vanadium, LCS	241	250	MG/KG	96.2
		Zinc, LCS	96.2	100	MG/KG	96.2
LCS1	08C0151-LC1	Mercury, LCS	4.9	4.7	MG/KG	103.5

Date: 10 October 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil - Waste Site 128-H-2
Subject: Wet Chemistry - Data Package No. K1309-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1309 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
J17FT6	8/27/08	Soil	C	See note 1
J17FT7	8/27/08	Soil	C	See note 1
J17FT8	8/27/08	Soil	C	See note 1
J17FT9	8/27/08	Soil	C	See note 1
J17FV0	8/27/08	Soil	C	See note 1
J17FV1	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 (J17FT7/J17FT8) 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 K1309 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: K1309	REVIEWER: ELR	Project: 128-H-2	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 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17FT5	% Solids	100	%	0.01	1.0
-002	J17FT6	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-003	J17FT7	% Solids	97.7	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-004	J17FT8	% Solids	97.9	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-005	J17FT9	% Solids	98.8	%	0.01	1.0
		Chromium VI	0.20	MG/KG	0.20	1.0
-006	J17FV0	% Solids	98.9	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-007	J17FV1	% Solids	98.1	%	0.01	1.0
		Chromium VI	0.22	MG/KG	0.20	1.0

10/9/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-029 K1309
LVL#: 0808L138

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\i08-138

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.

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

WELDON-ROCKING	Matt Perrott 372-9088	KESSNER, JH	Price Code 8C / Data Turnaround 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: ~~128-H-3~~ BH 8/27/08 128-H-2	SAF No. RC-029	
Chest No. ERC-96-069	Field Logbook No. EL-1601-2 / COA ~~C100H4A000~~ C128W510000 BH 8/27/08	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES/HONVILLE	Offsite Property No. A080320	Bill of Lading/Air Bill No. SCCOSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	D None	E Cool 4C	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C			
Type of Container	P	G/P	G/P	G/P	aG	aG	G	G			
No. of Container(s)	1	1	1	1	1	1	1	1			
Volume	1000mL	250mL	250mL	120mL	250mL	250mL	60mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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										
7FT5	SOIL	8/27/08	1140			X			X	X			
7FT6	SOIL	8/27/08	1214			X	X	X	X	X	X		
7FT7	SOIL	8/27/08	1235			X	X	X	X	X	X		
7FT8	SOIL	8/27/08	1240			X	X	X	X	X	X		
7FT9	SOIL	8/27/08	1250			X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	8/27/08 1352	BHudson BHudson	8/27/08 1352
BHUDSON BHudson	8/27/08 1810	1060 #3C	8/27/08 1810
1060/3C J.E. Bernhard	8-28-08 0900	Fed Ex	
[signature]	8/29/08 0945	[signature]	8-29-08 0945

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(3) ICP Metals - 6010TR (Client List (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

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

000000011

000012

KESSNER, JH

15 Days

000000012

Project Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~128-H-2~~ 128-H-2 C128H21W00		SAF No. RC-029
Chest No. IERC-96-069	Field Logbook No. EL-1601-2 BH 8/27/08	COA ~~C128H31W00~~ ~~C100H4A000~~ BH 8/27/08	Method of Shipment FedEx
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A080320		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS													
Preservation				None	None	D None	E Cool 4C	C Cool 4C	B Cool 4C	A Cool 4C	F Cool 4C		
Type of Container				P	G/P	G/P	G/P	aG	aG	G	G		
No. of Container(s)				1	1	1	1	1	1	1	1		
Volume				1000mL	60mL	250mL	120mL	250mL	250mL	60mL	250mL		
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) 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										
7FV0	SOIL	8/27/08	1300			X	X	X	X	X	X		
7FV1	SOIL	8/27/08	1340			X	X	X	X	X	X		
7FV2	SOIL												
7FV3	SOIL												
7FV4	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 8/27/08 1352	Received By/Stored In	Date/Time 1352
		BILL HUDSON Bill Hudson	8/27/08
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
HUDSON Bhudson	8/27/08 1810	10600 #3C	8/27/08 1810
Relinquished By/Removed From	Date/Time 0900	Received By/Stored In	Date/Time
10600 3C S.E. Bernhard	8-28-08	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
	8/29/08 0945		8-29-08 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Gross Alpha & Gross Beta
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium
(3) ICP Metals - 6010TR (Client List {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

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

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 128-H-2			DATA PACKAGE: K1309		
VALIDATOR: ELR		LAB: LLI		DATE: 10/5/08	
			SDG: K1309		
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					
J17FT6 J17FT7 J17FT8 J17FT9					
J17FV0 J17FV1					
					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:

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 K1309

LVL LOT #: 0808L138

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 K1309

LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-005	J17FT9	Soluble Chromium VI	4.0	0.20	4.0	92.9	1.0
		Insoluble Chromium VI	1460	0.20	1240	117.3	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 K1309 LVL LOT #: 0808L138

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17FT5	% Solids	100	99.9	0.040	1.0
-005REP	J17FT9	Chromium VI	0.20	0.20u	5.1	1.0