0077253

SAF-RC-030
Remaining Sites Confirmation Sampling - Other Solid
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Kathy Wendt (2) H4-21

COMMENTS:

SDG K1131 **SAF-RC-030**

Waste Site: 100-F-44:4

RECEIVED
MAY 19 2008
EDMC

Date: 28 April 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling - Other Solid - Waste Subsite 100-F-44:4
Subject: Semivolatile - Data Package No. K1131-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1131 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
J169P1	2/25/08	Soil	C	See note 1

1 – Semivolatiles by 8270C.

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 bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **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 the lack of a matrix spike and matrix spike duplicate analysis, all semivolatile results were qualified as estimates and flagged "J".

Due to LCS and/or LCS duplicate recoveries outside QC limits, all nitrobenzene (49%), isophorone (58%), 2,4-dimethylphenol (49%), 1,2,4-trichlorobenzene (58%), 4-chloroanaline (43% & 36%), 2,4-dinitrophenol (12% & 21%), 4-nitrophenol (49%), 4,6-dinitro-2-methylphenol (25% & 37%) and pentachlorophenol (33% & 41%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

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

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **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 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. K1131 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 bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

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

- Due to LCS and/or LCS duplicate recoveries outside QC limits, all nitrobenzene (49%), isopherone (58%), 2,4-dimethylphenol (49%), 1,2,4-trichlorobenzene (58%), 4-chloroanaline (43% & 36%), 2,4-dinitrophenol (12% & 21%), 4-nitrophenol (49%), 4,6-dinitro-2-methylphenol (25% & 37%) and pentachlorophenol (33% & 41%) 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 semivolatile analytes 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

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K1131	REVIEWER: ELR	Project: 100-F-44:4	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	All	Method blank contamination
All	J	All	No MS or MSD analysis
Nitrobenzene Isophorone 2,4-dimethylphenol 1,2,4-trichlorobenzene 4-chloroanaline 2,4-dinitrophenol 4-nitrophenol 4,6-dinitro-2-methylphenol Pentachlorophenol	J	All	LCS and/or LCS duplicate 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

Semivolatiles by GC/MS, HSL List

RFW Batch Number: 0802L668 Client: TNUHANFORD RC-030 K1131 Work Order: 11343606001 Report Date: 03/27/08 12:01 Page: 1a

	Cust ID:	J169P1	SBLKTE	SBLKTE BS	SBLKTE BSD
Sample Information	RFW#:	001	08LE0120-MB1	08LE0120-MB1	08LE0120-MB1
	Matrix:	SOLID	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	78 %	52 %	62 %	51 %
	2-Fluorobiphenyl	83 %	62 %	90 %	80 %
	Terphenyl-d14	97 %	77 %	85 %	83 %
	Phenol-d5	85 %	61 %	77 %	71 %
	2-Fluorophenol	84 %	59 %	81 %	71 %
	2,4,6-Tribromophenol	90 %	21 %	47 %	57 %
		fl	fl	fl	fl
Phenol		330 U J	330 U	77 %	74 %
bis(2-Chloroethyl)ether		330 U	330 U	66 %	60 %
2-Chlorophenol		330 U	330 U	78 %	73 %
1,3-Dichlorobenzene		330 U	330 U	80 %	66 %
1,4-Dichlorobenzene		330 U	330 U	80 %	68 %
1,2-Dichlorobenzene		330 U	330 U	82 %	70 %
2-Methylphenol		330 U	330 U	78 %	77 %
2,2'-oxybis(1-Chloropropane)		330 U	330 U	67 %	63 %
3/4 Methylphenol		330 U	330 U	77 %	77 %
N-Nitroso-di-n-propylamine		330 U	330 U	70 %	64 %
Hexachloroethane		330 U	330 U	78 %	62 %
Nitrobenzene		330 U	330 U	57 %	49 * %
Isophorone		330 U	330 U	63 %	58 * %
2-Nitrophenol		330 U	330 U	62 %	57 %
2,4-Dimethylphenol		330 U	330 U	52 %	49 * %
bis(2-Chloroethoxy)methane		330 U	330 U	57 %	53 %
2,4-Dichlorophenol		330 U	330 U	64 %	61 %
1,2,4-Trichlorobenzene		330 U	330 U	66 %	58 * %
Naphthalene		30 J	330 U	62 %	53 %
4-Chloroaniline		330 U	330 U	43 %	36 %
Hexachlorobutadiene		330 U	330 U	76 %	63 %
4-Chloro-3-methylphenol		330 U	330 U	61 %	62 %
2-Methylnaphthalene		32 J	330 U	64 %	60 %
Hexachlorocyclopentadiene		330 U	330 U	82 %	72 %
2,4,6-Trichlorophenol		330 U	330 U	55 %	60 %
2,4,5-Trichlorophenol		830 U	830 U	76 %	82 %

*= Outside of EPA CLP QC limits.

4/26/08

000011

000000008

Cust ID:	J169P1	SBLKTE	SBLKTE BS	SBLKTE BSD
RFW#:	001	08LE0120-MB1	08LE0120-MB1	08LE0120-MB1

2-Chloronaphthalene	330	U	330	U	79	%	74	%
2-Nitroaniline	830	U	830	U	78	%	75	%
Dimethylphthalate	330	U	330	U	85	%	83	%
Acenaphthylene	330	U	330	U	81	%	77	%
2,6-Dinitrotoluene	330	U	330	U	86	%	83	%
3-Nitroaniline	830	U	830	U	83	%	81	%
Acenaphthene	330	U	330	U	80	%	74	%
2,4-Dinitrophenol	830	U	830	U	12 *	%	21	%
4-Nitrophenol	830	U	830	U	49	%	65	%
Dibenzofuran	330	U	330	U	88	%	83	%
2,4-Dinitrotoluene	330	U	330	U	96	%	97	%
Diethylphthalate	330	U	330	U	89	%	88	%
4-Chlorophenyl-phenylether	330	U	330	U	86	%	87	%
Fluorene	330	U	330	U	84	%	84	%
4-Nitroaniline	830	U	830	U	95	%	96	%
4,6-Dinitro-2-methylphenol	830	U	830	U	25 *	%	37 *	%
N-Nitrosodiphenylamine (1)	330	U	330	U	68	%	73	%
4-Bromophenyl-phenylether	330	U	330	U	80	%	87	%
Hexachlorobenzene	330	U	330	U	105	%	110	%
Pentachlorophenol	830	U	830	U	33	%	41	%
Phenanthrene	19	J	330	U	84	%	82	%
Anthracene	330	U	330	U	91	%	86	%
Carbazole	330	U	330	U	97	%	94	%
Di-n-butylphthalate	330	U	330	U	92	%	90	%
Fluoranthene	330	U	330	U	106	%	102	%
Pyrene	330	U	330	U	72	%	75	%
Butylbenzylphthalate	330	U	330	U	76	%	80	%
3,3'-Dichlorobenzidine	330	U	330	U	76	%	65	%
Benzo(a)anthracene	330	U	330	U	82	%	81	%
Chrysene	330	U	330	U	83	%	81	%
bis(2-Ethylhexyl)phthalate	(LO ~~50~~ 41 ~~JB~~	U	190	J	76	%	75	%
Di-n-octyl phthalate	330	U	330	U	73	%	80	%
Benzo(b)fluoranthene	330	U	330	U	80	%	83	%
Benzo(k)fluoranthene	330	U	330	U	83	%	80	%
Benzo(a)pyrene	330	U	330	U	84	%	81	%
Indeno(1,2,3-cd)pyrene	330	U	330	U	93	%	82	%
Dibenz(a,h)anthracene	330	U	330	U	92	%	80	%
Benzo(g,h,i)perylene	330	U	330	U	93	%	82	%

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

J

4/26/08

000000009

000012

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0802L668
SDG/SAF # K1131 / RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 03-11-2008

SEMIVOLATILE

One (1) solid sample was collected on 02-25-2008.

The sample and its associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 03-10-2008 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Client Specified Semivolatile target compounds on 03-24-2008.

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

1. The results for solid samples were reported on an 'as-received basis'.
2. The sample was extracted and analyzed within holding time.
3. Non-target compounds were detected in these samples.
4. All surrogate recoveries were within acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. Seven (7) of one hundred and twenty-eight (128) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. The method blank was below the reporting limit for all target compounds.
8. 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 14 pages.

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

LIONVILLE LABORATORY INC.

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.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/27/08
Date

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08M5047

Initiator: Sharon Saylor
Date: 3-26-08
Client: TMU RC020 K1131

Batch: 08U2LLLF
Samples: BS BSD
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: SOLID
Prep Batch: 08IE0120

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)

low recovery of several spike analytes in the BS + BSD

2. Known or Probable Causes(s)

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)

4. Project Manager Instructions...signature/date: 3/27/08
__ 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: 3-27-08 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 Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	✓	X MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-072	Page 1 of 1
llector Welch-Koelling / DeBrigne	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH	Price Code 9C
				Data Turnaround 15 Days
oject Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-F-44:4		SAF No. RC-030	
Chest No. FRC-96-006	Field Logbook No. EL-1601-2	COA C00F44A000	Method of Shipment Fed Ex	
ipped To: EBERLINE SERVICES / MONVILLE	Offsite Property No. A080190 MO 2/26/08 ~~FRC-96-006~~		Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	aG	G	aG	G					
No. of Container(s)	3 1 JPD	1 2-25-08	1	1	1	1					
Volume	~~500mL~~ 125mL	~~60mL~~ 120mL	60mL	60mL	60mL	250mL					
SAMPLE ANALYSIS	See item (2) in Special Instructions	See item (2) in Special Instructions	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1					

Sample No.	Matrix *	Sample Date	Sample Time										
I69P1	OTHER SOLID	2-25-08	0910		X	X	X	X	X				
~~I69P2~~	~~OTHER SOLID~~												
~~I69P3~~	~~OTHER SOLID~~												
~~I69P4~~	~~OTHER SOLID~~												
~~I69P5~~	~~OTHER SOLID~~												

CHAIN OF POSSESSION	Sign/Print Names		
linquished By/Removed From	Date/Time 1030	Received By/Stored In	Date/Time
DeBrigne	2-25-08	1060/2A	2-25-08 1030
linquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
260/2A	2/26/08 0900	MSTankovich	2/26/08
linquished By/Removed From	Date/Time 0900	Received By/Stored In	Date/Time
MSTankovich	2/26/08	Fed Ex	
linquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	2-27-08 0940		2-27-08 0940
linquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
linquished 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}; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

(2) ICP Metals - 6010A (SW-846) {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)

(3) Run PCBs, VOA, SVOA, TPH, Pesticides, Chloro Herbicides with material from ICP Metals.
samples from 3728 Ref # 2A
3728 Custodian removed samples for shipping on 2/26/08.
Sampler unavailable to relinquish

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

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

CH-EE-011

000000013

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-44:4			DATA PACKAGE: K1131		
VALIDATOR: ELR		LAB: LLI		DATE: 4/20/08	
			SDG: K1131		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)

SAMPLES/MATRIX
J169P1
Solid

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 – U at RQL

no FB

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: no MS/MSD – J all

LCS Dup / LCS – nitrobenzene (49%) isophorone (58%) 2,4-dimethylphenol (49%) 1,2,4-trichlorobenzene (58%) 4-chloroaniline (43 & 36%) 2,4-dinitrophenol (12 & 21%) 4-nitrophenol (49%) 4,6-dinitro-2-methylphenol (25 & 37%) pentachlorophenol (33 & 41%) / J all

no PVTs

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: 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: 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: 28 April 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite 100-F-44:4
Subject: Radiochemistry - Data Package No. K1131-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1131 prepared by Eberline Services (EB). 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
J169P1	2/25/08	Solid	C	See note 1

1 – Gross alpha/beta, alpha spectroscopy, gamma spectroscopy, total uranium, technetium-99, total strontium and nickel-63.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (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 Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All laboratory blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike 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 contract required detection limit (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 duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Three analyte exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K1131 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

Three analyte 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 statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

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.

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.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K1131	REVIEWER: ELR	Project: 100-F-44:4	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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1131

7777-001 J169P1

DATA SHEET

SDG	7777	Client/Case no	Hanford	SDG K1131	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R802184-01	Client sample id	J169P1		
Dept sample id	7777-001	Location/Matrix	100-F-44:4	SOLID	
Received	02/27/08	Collected/Weight	02/25/08 09:10	127 g	
% solids	100.0	Custody/SAF No	RC-030-072	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	11.2	5.9	6.74	10.0		93A
Gross Beta	12587-47-2	22.3	5.8	8.69	15.0		93B
Nickel 63	13981-37-8	-1.00	1.9	3.36	30.0	U	NI_L
Total Strontium	SR-RAD	0.084	0.15	0.286	1.00	U	SR
Americium 241	14596-10-2	-0.058	0.12	0.320	1.00	U	AM
Technetium 99	14133-76-7	0.050	0.16	0.561	15.0	U	TC
Total Uranium (ug/g)	7440-61-1	1.10	0.13	0.014	1.00		U_T
Uranium 233/234	U-233/234	0.758	0.33	0.305	1.00		U
Uranium 235	15117-96-1	0.145	0.19	0.369	1.00	U	U
Uranium 238	U-238	0.678	0.33	0.305	1.00		U
Plutonium 238	13981-16-3	0	0.14	0.336	1.00	U	PU
Plutonium 239/240	PU-239/240	0.035	0.070	0.268	1.00	U	PU
Potassium 40	13966-00-2	10.6	0.73	0.508			GAM
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Cesium 137	10045-97-3	4.46	0.099	0.057	0.100		GAM
Radium 226	13982-63-3	0.689	0.11	0.100	0.100		GAM
Radium 228	15262-20-1	0.818	0.21	0.206	0.200		GAM
Europium 152	14683-23-9	U		0.130	0.100	U	GAM
Europium 154	15585-10-1	U		0.129	0.100	U	GAM
Europium 155	14391-16-3	U		0.102	0.100	U	GAM
Thorium 228	14274-82-9	0.763	0.060	0.063			GAM
Thorium 232	TH-232	0.818	0.21	0.206			GAM
Uranium 235	15117-96-1	U		0.180		U	GAM
Uranium 238	U-238	U		5.25		U	GAM
Americium 241	14596-10-2	U		0.048		U	GAM

RemainSitesConfirmSamp- Other Solid

4/26/08

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/13/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1131 was composed of one solid (other solid) sample designated under SAF No. RC-030 with a Project Designation of: Remaining Site Confirmation Sampling-Other Solid.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on March 13, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.7 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.8 Americium-241 Analysis

No problems were encountered during the course of the analyses.

2.9 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

03/17/08
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-030-072	Page 1 of 1

Collector: Welch-Koelling / DeBuigne	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 9C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-F-44:4 K1131 (7777)	SAF No.: RC-030	
Ice Chest No.: CWCH-07-01	Field Logbook No.: EL-1601-2	COA: C00F44A000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A080173		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000013

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	G	G	G	G						
No. of Container(s)	1	1	1	1	1	1						
Volume	~~500mL~~ 125mL	60mL	60mL	[illegible]	60mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chlor-Herbicides - EPA8151	VOA - 8260A (TCL)	SVOA - 8270 (TCL)	TPH (Total) - 418.1						
Sample No.	Matrix *	Sample Date	Sample Time									
J169P1	OTHER SOLID	2-25-08	0910	X								
~~J169P2~~	~~OTHER SOLID~~											
~~J169P3~~	~~OTHER SOLID~~											
~~J169P4~~	~~OTHER SOLID~~											
~~J169P5~~	~~OTHER SOLID~~											

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: JPDeBuigne	1030 2-25-08	1060/2A	1030 2-25-08
Relinquished By/Removed From: 1060/2A	2/26/08 0930	MTL MSHanford	2/26/08 0930
Relinquished By/Removed From: MTL MSHanford	CWCH 0930 2/26/08	Fed Ex	
Relinquished By/Removed From: FED EX		Alex Kelmel	2/27/08 10:00
Relinquished By/Removed From			
Relinquished By/Removed From			

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

(2) ICP Metals - 6010A (SW-846) {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)

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

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

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-F-44:4		DATA PACKAGE:	K1131	
VALIDATOR:	ELR	LAB: EB		DATE: 4/20/08	
			SDG:	K1131	

ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			

SAMPLES/MATRIX
J169P1
solid

1. Completeness ..... ☐ N/A

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

Comments: _____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

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

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

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

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

Comments: _____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

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

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

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

Comments: _____

_____

_____

_____

_____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

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

Comments: _____

_____

_____

_____

_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A

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

Analytes detected in method blank? ..... Yes No N/A

Field blank(s) analyzed? ..... Yes No N/A

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

Analytes detected in field blank(s)? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A

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

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

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

LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments:

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

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

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

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

Comments: _____

8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

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

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

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

Comments: _____

9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

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

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

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

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... Yes No N/A

RPD Values Acceptable? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... Yes No N/A

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

Field split sample(s) analyzed? ..... Yes No N/A

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

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

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

Comments: no field QC

12. Holding Times (All levels)

Are sample holding times acceptable? ..... Yes No N/A

Comments: _____

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses? Yes No N/A

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

Results Acceptable? (Levels D, E) Yes No N/A

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

MDA's meet required detection limits? Yes No N/A

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

Comments: 3 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1131

7777-003 Method Blank

METHOD BLANK

SDG	7777	Client/Case no	Hanford SDG K1131
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R802184-03	Client sample id	Method Blank
Dept sample id	7777-003	Material/Matrix	SOLID
		SAF No	RC-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.730	2.7	6.73	10.0	U	93A
Gross Beta	12587-47-2	-1.16	3.0	5.64	15.0	U	93B
Nickel 63	13981-37-8	-0.382	1.7	2.88	30.0	U	NI_L
Total Strontium	SR-RAD	0.031	0.15	0.310	1.00	U	SR
Americium 241	14596-10-2	0	0.16	0.305	1.00	U	AM
Technetium 99	14133-76-7	-0.008	0.16	0.519	15.0	U	TC
Total Uranium (ug/g)	7440-61-1	0	0.006	0.014	1.00	U	U_T
Uranium 233/234	U-233/234	0	0.062	0.236	1.00	U	U
Uranium 235	15117-96-1	0	0.075	0.286	1.00	U	U
Uranium 238	U-238	0	0.062	0.236	1.00	U	U
Plutonium 238	13981-16-3	0.092	0.18	0.351	1.00	U	PU
Plutonium 239/240	PU-239/240	0.046	0.092	0.351	1.00	U	PU
Potassium 40	13966-00-2	U		0.281		U	GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.100	U	GAM
Radium 226	13982-63-3	U		0.056	0.100	U	GAM
Radium 228	15262-20-1	U		0.115	0.200	U	GAM
Europium 152	14683-23-9	U		0.067	0.100	U	GAM
Europium 154	15585-10-1	U		0.083	0.100	U	GAM
Europium 155	14391-16-3	U		0.053	0.100	U	GAM
Thorium 228	14274-82-9	U		0.042		U	GAM
Thorium 232	TH-232	U		0.115		U	GAM
Uranium 235	15117-96-1	U		0.097		U	GAM
Uranium 238	U-238	U		3.26		U	GAM
Americium 241	14596-10-2	U		0.032		U	GAM

RemainSitesConfirmSamp- Other Solid

QC-BLANK #64867

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/13/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1131

7777-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7777

Contact Melissa C. Mannion

Client/Case no Hanford SDG K1131

Contract No. 630

Lab sample id R802184-02

Dept sample id 7777-002

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-030

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	114	17	7.14	10.0		93A	102	4.1	112	58-142	70-130
Gross Beta	88.8	7.2	5.70	15.0		93B	93.8	3.8	95	75-125	80-120
Nickel 63	214	5.8	3.18	30.0		NI_L	222	8.9	96	84-116	80-120
Total Strontium	10.2	0.60	0.266	1.00		SR	9.38	0.38	109	80-120	80-120
Americium 241	22.0	2.7	0.306	1.00		AM	20.4	0.82	108	78-122	80-120
Technetium 99	102	2.6	0.545	15.0		TC	109	4.4	94	84-116	80-120
Total Uranium (ug/g)	30.8	3.6	0.135	1.00		U_T	33.0	1.3	93	79-121	80-120
Uranium 233/234	18.4	2.1	0.985	1.00		U	18.6	0.74	99	81-119	80-120
Uranium 235	15.8	1.9	0.243	1.00		U	15.1	0.60	105	79-121	80-120
Uranium 238	18.3	2.1	0.943	1.00		U	20.2	0.81	91	82-118	80-120
Plutonium 238	27.3	3.3	0.411	1.00		PU	23.4	0.94	117	76-124	80-120
Plutonium 239/240	27.8	3.3	0.329	1.00		PU	26.4	1.1	105	79-121	80-120
Cobalt 60	1.90	0.11	0.080	0.050		GAM	1.94	0.078	98	76-124	80-120
Cesium 137	2.10	0.10	0.080	0.100		GAM	2.05	0.082	102	75-125	80-120

RemainSitesConfirmSamp- Other Solid

QC-LCS #64866

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/13/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1131

7777-004 J169P1

DUPLICATE

SDG	7777			Client/Case no	Hanford SDG K1131
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R802184-04	Lab sample id	R802184-01	Client sample id	J169P1
Dept sample id	7777-004	Dept sample id	7777-001	Location/Matrix	100-F-44:4 SOLID
		Received	02/27/08	Collected/Weight	02/25/08 09:10 127 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-030-072 RC-030

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	10.4	3.8	3.31	10.0		93A	11.2	5.9	6.74		7	106	0.2
Gross Beta	23.4	3.1	3.62	15.0		93B	22.3	5.8	8.69		5	54	0.3
Nickel 63	0	1.9	3.28	30.0	U	NI_L	-1.00	1.9	3.36	U	-		0.7
Total Strontium	0.088	0.14	0.274	1.00	U	SR	0.084	0.15	0.286	U	-		0
Americium 241	0	0.15	0.286	1.00	U	AM	-0.058	0.12	0.320	U	-		0.6
Technetium 99	-0.133	0.15	0.452	15.0	U	TC	0.050	0.16	0.561	U	-		1.7
Total Uranium (ug/g)	1.04	0.12	0.014	1.00		U_T	1.10	0.13	0.014		6	31	0.5
Uranium 233/234	0.617	0.32	0.394	1.00		U	0.758	0.33	0.305		21	101	0.6
Uranium 235	0	0.12	0.476	1.00	U	U	0.145	0.19	0.369	U	-		1.3
Uranium 238	0.926	0.43	0.394	1.00		U	0.678	0.33	0.305		31	102	0.9
Plutonium 238	0	0.17	0.463	1.00	U	PU	0	0.14	0.336	U	-		0
Plutonium 239/240	0.126	0.17	0.321	1.00	U	PU	0.035	0.070	0.268	U	-		1.0
Potassium 40	11.5	0.95	0.513			GAM	10.6	0.73	0.508		8	36	0.7
Cobalt 60	U		0.055	0.050	U	GAM	U		0.042	U	-		0.4
Cesium 137	4.35	0.13	0.069	0.100		GAM	4.46	0.099	0.057		2	32	0.2
Radium 226	0.605	0.12	0.110	0.100		GAM	0.689	0.11	0.100		13	49	0.8
Radium 228	0.932	0.24	0.267	0.200		GAM	0.818	0.21	0.206		13	63	0.6
Europium 152	U		0.164	0.100	U	GAM	U		0.130	U	-		0.3
Europium 154	U		0.142	0.100	U	GAM	U		0.129	U	-		0.1
Europium 155	U		0.131	0.100	U	GAM	U		0.102	U	-		0.3
Thorium 228	0.830	0.077	0.077			GAM	0.763	0.060	0.063		8	37	0.7
Thorium 232	0.932	0.24	0.267			GAM	0.818	0.21	0.206		13	63	0.6
Uranium 235	U		0.226		U	GAM	U		0.180	U	-		0.3
Uranium 238	U		6.40		U	GAM	U		5.25	U	-		0.3
Americium 241	U		0.076		U	GAM	U		0.048	U	-		0.6

RemainSitesConfirmSamp- Other Solid

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	03/13/08

Date: 28 April 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Other Solid - Waste Subsite 100-F-44:4
Subject: Pesticide/PCB/Herbicide - Data Package No. K1131-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1131 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
J169P1	2/25/08	Soil	C	See note 1

1 – PCBs by 8082, pesticides by 8081A and herbicides by 8151A.

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 and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Due to matrix spike recovery outside QC limits (82%), all edrin ketone results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike duplicate analysis, all PCB, pesticide and herbicide 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".

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

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **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. K1131 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 the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".
- Due to matrix spike recovery outside QC limits (82%), all edrin ketone results were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike duplicate analysis, all PCB, pesticide and herbicide results were qualified as estimates and flagged "J".

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

REFERENCES

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 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/HERBICIDE DATA QUALIFICATION SUMMARY*

SDG: K1131	REVIEWER: ELR	Project: 100-F-44:4	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS recovery
All	J	All	No MSD analysis
Endrin ketone	J	All	MS 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.

PCBs by GC

Report Date: 03/12/08 13:22

RFW Batch Number: 0802L668 Client: TNUHANFORD RC-030 K1131 Work Order: 11343606001 Page: 1

	Cust ID:	J169P1	J169P1	PBLKNT	PBLKNT BS	PBLKNT BSD
Sample Information	RFW#:	001	001 MS	08LE0121-MB1	08LE0121-MB1	08LE0121-MB1
	Matrix:	SOLID	SOLID	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:	Decachlorobiphenyl	95 %	100 %	86 %	95 %	94 %
	Tetrachloro-m-xylene	102 %	103 %	90 %	95 %	99 %
Aroclor-1016		10 U	84 %	3.3 U	76 %	77 %
Aroclor-1221		10 U	10 U	3.3 U	3.3 U	3.3 U
Aroclor-1232		10 U	10 U	3.3 U	3.3 U	3.3 U
Aroclor-1242		10 U	10 U	3.3 U	3.3 U	3.3 U
Aroclor-1248		10 U	10 U	3.3 U	3.3 U	3.3 U
Aroclor-1254		10 U	10 U	3.3 U	3.3 U	3.3 U
Aroclor-1260		10 U	86 %	3.3 U	77 %	80 %

J

K 4/28/08

000000005

000011

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

Herbicides, Special List

Report Date: 03/13/08 14:04

RFW Batch Number: 0802L668 Client: TNUHANFORD RC-030 K1131 Work Order: 11343606001 Page: 1

	Cust ID:	J169P1	PBLKNS	PBLKNS BS	PBLKNS BSD
Sample Information	RFW#:	001	08LE0124-MB1	08LE0124-MB1	08LE0124-MB1
	Matrix:	SOLID	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	DCAA	62 %	66 %	64 %	59 %
Dalapon		50 U J	33 U	68 %	71 %
Dicamba		50 U	33 U	82 %	79 %
Dichloroprop		50 U	33 U	82 %	78 %
2,4-D		42	33 U	83 %	78 %
2,4,5-TP (Silvex)		25 U	17 U	82 %	79 %
2,4,5-T		25 U	17 U	85 %	83 %
Dinoseb		25 U	17 U	58 %	32 %
2,4-DB		25 U	17 U	86 %	79 %
Pentachlorophenol		25 U	17 U	60 %	61 %

000000005

000012

4/26/08

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

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 03/12/08 13:15

RFW Batch Number: 0802L668 Client: TNUHANFORD RC-030 K1131 Work Order: 11343606001 Page: 1

	Cust ID:	J169P1	J169P1	PBLKNT	PBLKNT BS	PBLKNT BSD
Sample Information	RFW#:	001	001 MS	08LE0121-MB1	08LE0121-MB1	08LE0121-MB1
	Matrix:	SOLID	SOLID	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:	Tetrachloro-m-xylene	85	%	68	%	86	%	83	%	90	%					
	Decachlorobiphenyl	75	%	63	%	77	%	75	%	82	%					
			fl		fl		fl		fl		fl					
Alpha-BHC		1.0	U	J	77	%	0.33	U	92	%	102	%				
gamma-BHC (Lindane)		1.0	U		78	%	0.33	U	93	%	102	%				
Beta-BHC		1.0	U		73	%	0.33	U	91	%	100	%				
Heptachlor		1.0	U		79	%	0.33	U	87	%	99	%				
Delta-BHC		1.0	U		65	%	0.33	U	79	%	89	%				
Aldrin		1.0	U		79	%	0.33	U	92	%	102	%				
Heptachlor epoxide		1.0	U		89	%	0.33	U	92	%	102	%				
gamma-Chlordane		1.9			78	%	0.33	U	94	%	103	%				
Endosulfan I		1.0	U		83	%	0.33	U	93	%	103	%				
alpha-Chlordane		1.0	U		78	%	0.33	U	92	%	102	%				
4,4'-DDE		1.0	U		90	%	0.33	U	102	%	112	%				
Dieldrin		1.0	U		82	%	0.33	U	95	%	105	%				
Endrin		1.0	U		85	%	0.33	U	93	%	106	%				
4,4'-DDD		1.0	U		85	%	0.33	U	93	%	104	%				
Endosulfan II		1.0	U		80	%	0.33	U	93	%	104	%				
4,4'-DDT		1.0	U		90	%	0.33	U	102	%	116	%				
Endrin aldehyde		1.0	U		81	%	0.33	U	82	%	88	%				
Endosulfan sulfate		1.0	U		77	%	0.33	U	86	%	100	%				
Methoxychlor		1.0	U		93	%	0.33	U	95	%	111	%				
Endrin ketone		1.0	U		82 *	%	0.33	U	88	%	101	%				
Toxaphene		10	U		10	U	3.3	U	3.3	U	3.3	U				

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

K 4/24/08

0000013

0000000

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0802L668
SDG/SAF# K1131 / RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 02-27-2008

CHLORINATED PESTICIDES

One (1) solid sample was collected on 02-25-2008.

The sample and its associated QC samples were extracted on 03-10-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 03-11-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

All solid 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 method blank was below the reporting limits for all target compounds.
3. All surrogate recoveries were within acceptance criteria.
4. All blank spike recoveries were within acceptance criteria.
5. One (1) of twenty (20) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. The initial calibrations associated with this data set were within acceptance criteria.
7. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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.

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

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

LIONVILLE LABORATORY INC.

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

3/19/08
Date

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 080000

Initiator: CAC
Date: 03/12/08
Client: TNU

Batch: 08021668
Samples: 001MS
Method: SW846/MCAWW/CLP/

Parameter: Pest
Matrix: SOIL
Prep Batch:

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)

Endrin Ketone recovery is 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:

BS is good
Narrate
ID.

4. Project Manager Instructions...signature/date: [illegible] 3/19/08

__ 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: KDS 3-18-08

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: _____

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0802L668
SDG/SAF # K1131 / RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 02-27-2008

PCB

One (1) solid sample was collected on 02-25-2008.

The sample and its associated QC samples was extracted on 03-10-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 03-11,12-2008. 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. The sample was extracted and analyzed within required holding time
2. The sample and its 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 surrogate recoveries were within acceptance criteria.
5. The blank spike recoveries were within acceptance criteria.
6. The matrix spike recoveries were within acceptance criteria.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

r:\group\data\2008\pest\tnu\0802-668soil.pcb.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 0 pages.

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

LvLI
LIONVILLE LABORATORY INC.

9. The results for solid samples were reported on an 'as-received basis' as required by the project.

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

3/17/08
Date

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

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0802L668
SDG/SAF # K1131 / RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 02-27-2008

HERBICIDE

One (1) solid sample was collected on 02-25-2008.

The sample and its associated QC samples were extracted on 03-10-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 03-11-2008. The extraction and analysis procedures were based on method 8151A.

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 surrogate recoveries were within acceptance criteria.
4. All blank spike recoveries were within acceptance criteria.
5. The initial calibrations associated with this data set were within acceptance criteria.
6. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
7. 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.
8. The results for solid samples were reported on an 'as-received basis' as required by the project.

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 9 pages.

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

LIONVILLE LABORATORY INC.

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

3/17/08
Date

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-030-072	Page 1 of 1

Collector: Welch-Koelling / DeBuigne	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 9C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-F-44:4		SAF No.: RC-030
Ice Chest No.: ERC-96-006	Field Logbook No.: EL-1601-2	COA: C00F44A000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / MONVILLE	Offsite Property No.: A080190 ~~ERC-96-006~~ WO 2/26/08		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	aG	G	aG	G					
No. of Container(s)	3 1 JPD 2-25-08	1	1	1	1	1					
Volume	~~500mL~~ 125mL	~~60mL~~ 120mL	60mL	60mL	60mL	250mL					
SAMPLE ANALYSIS	See Item (1) in Special Instructions	See item (2) in Special Instructions	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1					
Sample No.	Matrix *	Sample Date	Sample Time								
169P1	OTHER SOLID	2-25-08	0910		X	X	X	X	X		
~~169P2~~	~~OTHER SOLID~~										
~~169P3~~	~~OTHER SOLID~~										
~~169P4~~	~~OTHER SOLID~~										
~~169P5~~	~~OTHER SOLID~~										

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DeBuigne	1020 2-25-08	1060/2A	2-25-08 1030
Relinquished By/Removed From: 060/2A	2/26/08 0900	MSTankovich	2/26/08
Relinquished By/Removed From: MSTankovich	2/26/08 1500	Fed Ex	
Relinquished By/Removed From: Fed Ex	2-27-08 0940		2-27-08 0940
Relinquished By/Removed From			
Relinquished By/Removed From			

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium

(2) ICP Metals - 6010A (SW-846) [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)

(3) Run PCBs, VOA, SVOA, TPH, Pesticides, Chloro Herbicides with material from ICP Metals.

samples from 3728 Ref # 2A
3728 Custodian removed samples for shipping on 8/26/08.
Sampler unavailable to relinquish

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
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

ICH-EE-011

000000022

000000009

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-44:4			DATA PACKAGE: K1131		
VALIDATOR: ELR		LAB: LLI		DATE: 4/20/08	
			SDG: K1131		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	8151A	
SAMPLES/MATRIX					
J169P1					
					solid

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: NO MSD - J all no PAS

MS - endrin ketone (82%) - J all

toxaphene - NO MS/MSD/LCS analysis

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 MSD - J all

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: _____

Date: 28 April 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling - Other Solid - Waste Subsite 100-F-44:4
Subject: Volatile Organic - Data Package No. K1131-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1131 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
J169P1	2/25/08	Solid	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, the methylene chloride result was raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **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.

All 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

No field duplicates were submitted for analysis.

- **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. All analytes met the RQL.

- **Completeness**

Data package No. K1131 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

Due to method blank contamination, the methylene chloride result was raised to the RQL, qualified as undetected and flagged "U".

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: K1131	REVIEWER: ELR	Project: 100-F-44:4	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U at RQL	All	Method blank contamination

* - 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

Volatiles by GC/MS, HSL List — Report Date: 03/12/08 12:19

RFW Batch Number: 0802L668 — Client: TNUHANFORD RC-030 K1131 — Work Order: 11343606001 — Page: 1a

	Cust ID:	J169P1	J169P1	J169P1	VBLKVL	VBLKVL BS
Sample Information	RFW#:	001	001 MS	001 MSD	08LVK040-MB1	08LVK040-MB1
	Matrix:	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	0.943	1.04	0.980	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	106 %	103 %	102 %	98 %	101 %
	Bromofluorobenzene	129 * %	109 %	109 %	111 %	109 %
	1,2-Dichloroethane-d4	123 %	116 %	115 %	109 %	102 %
Chloromethane		9 U	65 %	72 %	10 U	78 %
Bromomethane		9 U	110 %	107 %	10 U	117 %
Vinyl Chloride		9 U	94 %	96 %	10 U	100 %
Chloroethane		9 U	127 %	122 %	10 U	131 %
Methylene Chloride		103 ~~B~~ U	76 %	76 %	3 J	74 %
Acetone		9 U	258 %	280 %	10 U	194 %
Carbon Disulfide		5 U	99 %	97 %	5 U	102 %
1,1-Dichloroethene		5 U	94 %	92 %	5 U	95 %
1,1-Dichloroethane		5 U	96 %	97 %	5 U	94 %
1,2-Dichloroethene (total)		5 U	94 %	93 %	5 U	92 %
Chloroform		5 U	104 %	104 %	5 U	100 %
1,2-Dichloroethane		5 U	114 %	111 %	5 U	99 %
2-Butanone		9 U	242 * %	233 * %	10 U	143 %
1,1,1-Trichloroethane		5 U	103 %	101 %	5 U	100 %
Carbon Tetrachloride		5 U	101 %	101 %	5 U	98 %
Bromodichloromethane		5 U	111 %	111 %	5 U	98 %
1,2-Dichloropropane		5 U	96 %	97 %	5 U	92 %
cis-1,3-Dichloropropene		5 U	114 %	107 %	5 U	99 %
Trichloroethene		5 U	95 %	96 %	5 U	94 %
Dibromochloromethane		5 U	122 %	111 %	5 U	100 %
1,1,2-Trichloroethane		5 U	119 %	108 %	5 U	95 %
Benzene		5 U	93 %	93 %	5 U	93 %
Trans-1,3-Dichloropropene		5 U	125 %	112 %	5 U	101 %
Bromoform		5 U	116 %	104 %	5 U	91 %
4-Methyl-2-pentanone		9 U	157 * %	153 * %	10 U	104 %
2-Hexanone		9 U	244 * %	237 * %	4 J	146 %
Tetrachloroethene		5 U	94 %	92 %	5 U	95 %
1,1,2,2-Tetrachloroethane		5 U	139 * %	128 %	5 U	104 %
Toluene		5 U	103 %	100 %	5 U	99 %

*= Outside of EPA CLP QC limits.

4/24/08

000000007

000010

Cust ID:	J169P1		J169P1		J169P1		VBLKVL		VBLKVL BS	
RFW#:	001		001 MS		001 MSD		08LVK040-MB1		08LVK040-MB1	
Chlorobenzene	5	U	104	%	98	%	5	U	97	%
Ethylbenzene	5	U	108	%	102	%	5	U	99	%
Styrene	5	U	102	%	95	%	5	U	95	%
Xylenes (total)	5	U	99	%	95	%	5	U	93	%
cis-1,2-dichloroethene	5	U	97	%	97	%	5	U	93	%
trans-1,2-dichloroethene	5	U	91	%	89	%	5	U	91	%

*= Outside of EPA CLP QC limits.

VC
4/26/08

000011

000000008

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0802L668
SDG/SAF # K1131/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 02-27-2008

GC/MS VOLATILE

One (1) solid sample was collected on 02-25-2008.

The sample and its 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 03-02-2008.

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

1. The sample was analyzed within required holding time.
2. Non-target compounds were detected in the samples.
3. One (1) of fifteen (15) surrogate recoveries was outside acceptance criteria. Associated matrix spike analyses fulfilled its reanalysis requirement.
4. Seven (7) of seventy (70) matrix spike recoveries were outside acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. The method blank was below the reporting limit for all target compounds.
7. All internal standard area and retention time criteria were met.

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.

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

LIONVILLE LABORATORY INC.

8. The result for the solid sample was reported on an 'as-received basis', due to the sample matrix.

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

3/17/08
Date

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-030-072	Page 1 of 1
ollector: Welch-Koelling / DeBuigne	Company Contact: Matt Perrott; Telephone No.: 372-9088	Project Coordinator: KESSNER, JH	Price Code: 9C; Data Turnaround: 15 Days
roject Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-F-44:4	SAF No.: RC-030	
e Chest No.: ERC-96-006	Field Logbook No.: EL-1601-2; COA: C00F44A000	Method of Shipment: Fed Ex	
hipped To: EBERLINE SERVICES / MONVILLE	Offsite Property No.: A080190 ~~ERC-96-006~~ WO 2/26/08	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	aG	G	aG	G					
No. of Container(s)	3 1 JPD 2-25-08	1	1	1	1	1					
Volume	~~500mL~~ 125mL	~~60mL~~ 120mL	60mL	60mL	60mL	250mL					
SAMPLE ANALYSIS	See Item (1) in Special Instructions	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - SPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1					

Sample No.	Matrix *	Sample Date	Sample Time										
169P1	OTHER SOLID	2-25-08	0910		X	X	X	X	X				
~~169P2~~	~~OTHER SOLID~~												
~~169P3~~	~~OTHER SOLID~~												
~~169P4~~	~~OTHER SOLID~~												
~~169P5~~	~~OTHER SOLID~~												

CHAIN OF POSSESSION	Sign/Print Names		
elinquished By/Removed From	Date/Time 1030	Received By/Stored In	Date/Time
DeBuigne 2-25-08		1060/2A	2-25-08 1030
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D60/2A 2/26/08	0900	MSTankovich	2/26/08
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MSTankovich 2/26/08	1500	Fed Ex	
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex 2-27-08	0940	2-27-08	0940
elinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
elinquished 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]; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium

(2) ICP Metals - 6010A (SW-846) [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)

(3) Run PCBs, VOA, SVOA, TPH, Pesticides, Chloro Herbicides with material from KP metals.

samples from 3728 Ref # 2A
3728 Custodian removed samples for shipping on 8/26/08.
Sampler unavailable to relinquish

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

000000012

000015

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-44:4			DATA PACKAGE: K1131		
VALIDATOR: ELR		LAB: LLI		DATE: 4/20/08	
			SDG: K1131		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J169P1					
					Solid

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

no FB

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: no PAS

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: _____

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: 28 April 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite 100-F-44:4
Subject: Inorganics - Data Package No. K1131-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1131 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
J169P1	2/25/08	Solid	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.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blank was 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.

Due to a matrix spike recovery outside QC limits, all silver (68.9%), boron (194.1%), barium (366%), copper (131.7%), magnesium (135.5%), sodium (137.9%) and antimony (47.4%) results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (8.6%), all mercury results were qualified as rejected and flagged "R".

Due to an LCS recovery outside QC limits (23.9%), 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.

Due to an RPD outside QC limits (31.8%), all barium results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **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. K1131 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 96%.

MAJOR DEFICIENCIES

The following major deficiencies were noted:

- Due to a matrix spike recovery outside QC limits (8.6%), all mercury results were qualified as rejected and flagged "R".

Rejected data is unusable and should not be reported.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike recovery outside QC limits, all silver (68.9%), boron (194.1%), barium (366%), copper (131.7%), magnesium (135.5%), sodium (137.9%) and antimony (47.4%) results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (23.9%), all silicon results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (31.8%), all barium results were qualified as estimates and flagged "J".

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

REFERENCES

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 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: K1131	REVIEWER: ELR	Project: 100-F-44:4	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silver Boron Barium Copper Magnesium Sodium Antimony	J	All	MS recovery
Mercury	UR	All	MS recovery
Silicon	J	All	LCS recovery
Barium	J	All	RPD

* - 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 03/12/08

CLIENT: TNUHANFORD RC-030 K1131 LVL LOT #: 0802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J169F1	Silver, Total	1.3 J	MG/KG	0.27	3.0
		Aluminum, Total	9870	MG/KG	10.9	3.0
		Arsenic, Total	4.9	MG/KG	1.4	3.0
		Boron, Total	48.4 J	MG/KG	1.4	3.0
		Barium, Total	383 J	MG/KG	0.27	3.0
		Beryllium, Total	0.54	MG/KG	0.14	3.0
		Calcium, Total	9210	MG/KG	10.9	3.0
		Cadmium, Total	0.58	MG/KG	0.14	3.0
		Cobalt, Total	7.5	MG/KG	0.55	3.0
		Chromium, Total	18.3	MG/KG	0.55	3.0
		Copper, Total	24.2 J	MG/KG	0.55	3.0
		Iron, Total	47900	MG/KG	12.3	3.0
		Mercury, Total	0.009u R	MG/KG	0.009	1.0
		Potassium, Total	988	MG/KG	10.9	3.0
		Magnesium, Total	4470 J	MG/KG	6.8	3.0
		Manganese, Total	440	MG/KG	0.11	3.0
		Molybdenum, Total	3.1	MG/KG	0.82	3.0
		Sodium, Total	414 J	MG/KG	5.5	3.0
		Nickel, Total	19.8	MG/KG	0.55	3.0
		Lead, Total	18.8	MG/KG	0.82	3.0
		Antimony, Total	0.82 uJ	MG/KG	0.82	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Silicon, Total	694 J	MG/KG	10.9	3.0
		Vanadium, Total	46.5	MG/KG	0.38	3.0
		Zinc, Total	42.4	MG/KG	1.6	3.0

4/21/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Washington Closure Hanford | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | RC-030-072 | Page 1 of 1

Collector: Welch-Koelling / DeBuigne	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 9C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-F-44:4		SAF No.: RC-030
Ice Chest No.: FRC-96-006	Field Logbook No.: EL-1601-2	COA: C00F44A000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / MONVILLE	Offsite Property No.: A080190 WO 2/26/08 ~~FRC-96-006~~		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000012

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	G	aG	G						
No. of Container(s)	3 1 JPD	1 2-25-08	1	1	1	1						
Volume	~~250mL~~ 125mL	~~60mL~~ 120mL	60mL	60mL	60mL	250mL						
SAMPLE ANALYSIS	See item (2) in Special Instructions	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1						
Sample No.	Matrix *	Sample Date	Sample Time									
J169P1	OTHER SOLID	2-25-08	0910		X	X	X	X	X			
~~J169P2~~	~~OTHER SOLID~~											
~~J169P3~~	~~OTHER SOLID~~											
~~J169P4~~	~~OTHER SOLID~~											
~~J169P5~~	~~OTHER SOLID~~											

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DeBuigne	1030 2-25-08	1060/2A	2-25-08 1030
1060/2A	2/26/08 0900	MSTankovich	2/26/08
MSTankovich	2/26/08 1500	FedEx	
FedEx	2-27-08 0940		2-27-08 0940

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium

(2) ICP Metals - 6010A (SW-846) [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)

(3) Run PCBs, VOA, SVOA, TPH, Pesticides, Chloro Herbicides with material from ICP Metals.
samples from 3728 Ref # 2A
3728 Custodian removed samples for shipping on 8/26/08.
Sampler unavailable to relinquish

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

NCH-EE-011

000000818

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-030
LVL#: 0802L668
SDG/SAF#: K1131/RC-030

W.O.#: 11343-606-001-9999-00
Date Received: 02-27-08

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 analysis of 1 solid sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary. The sample is reported on a wet weight, 'as-received' basis.

   The sample was analyzed with a 3-fold dilution for ICP metals due to sample matrix.

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

4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

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

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

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

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 23.9%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

9. The matrix spike (MS) recoveries for 13 analytes were outside the 75-125% control limits.

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 19 pages.

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

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. The Mercury spike was not added to the original spike sample. There was insufficient sample volume to perform a Mercury spike redigestion. Please see SDR #: 08MR001A. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J169P1	Silver	300	104.8
	Aluminum	66,000	99.1
	Boron	300	105.5
	Barium	3,300	99.7
	Calcium	66,000	91.2
	Copper	300	107.5
	Iron	66,000	72.0
	Magnesium	66,000	91.8
	Manganese	3,000	98.9
	Sodium	6,000	91.9
	Antimony	300	104.5
	Silicon	3,300	105.4

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/13/08
Date

alm/m02-668

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08MR001A

Initiator: TLBRIDGES
Date: 3/12/08
Client: TNU

Batch: 08022668
Samples: -0015
Method: SW846/MCAWW/CLP/

Parameter: Hg
Matrix: SOLID
Prep Batch: 08C0040

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)

Appears missed spike for Hg. No sample left for Redig.

2. Known or Probable Causes(s)

did not spike

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:

Narrate.

4. Project Manager Instructions...signature/date: 3/12/08

__ 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: 3/12/08

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 Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-44:4			DATA PACKAGE: K1131		
VALIDATOR: ELR		LAB: LLI		DATE: 4/20/08	
			SDG: K1131		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX
J16 9P1
solid

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: no FB

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 - silver (68.9%) boron (194.1%) barium (364.3%)
copper (131.7%) magnesium (135.5%) sodium (137.7%)
antimony (47.4%) — J all
MS - Hg (8.6%) - UR

LCS - silicon (23.9%) - J all

no PB

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: barium (31.8%) – J all

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

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

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

Comments: _____

8. HOLDING TIMES (all levels)

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/12/08

CLIENT: TNUHANFORD RC-030 K1131 LVL LOT #: 0802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0092-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	8.0	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	0.20	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	16.7	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	0.31	MG/KG	0.20	1.0
		Iron, Total	14.2	MG/KG	4.5	1.0
		Potassium, Total	4.4	MG/KG	4.0	1.0
		Magnesium, Total	4.7	MG/KG	2.5	1.0
		Manganese, Total	0.07	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Sodium, Total	8.2	MG/KG	2.0	1.0
		Nickel, Total	0.28	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	MG/KG	4.0	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	1.2	MG/KG	0.60	1.0
BLANK1	08C0040-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/12/08

CLIENT: TNUHANFORD RC-030 K1131

LVL LOT #: 0802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J169P1	Silver, Total	4.4	1.3	4.5	68.9	3.0
		Aluminum, Total	15400	9870	182	3048 *	3.0
		Arsenic, Total	175	4.9	182	93.3	3.0
		Boron, Total	225	48.4	90.9	194.1	3.0
		Barium, Total	1050	383	182	366.3	3.0
		Beryllium, Total	5.4	0.54	4.5	108.0	3.0
		Calcium, Total	20200	9210	2270	482.7*	3.0
		Cadmium, Total	4.6	0.58	4.5	89.4	3.0
		Cobalt, Total	50.5	7.5	45.4	94.7	3.0
		Chromium, Total	33.8	18.3	18.2	85.2	3.0
		Copper, Total	54.1	24.2	22.7	131.7	3.0
		Iron, Total	42800	47900	90.9	-5600. *	3.0
		Mercury, Total	0.01	0.00u	0.15	8.6	1.0
		Potassium, Total	3270	988	2270	100.4	3.0
		Magnesium, Total	7550	4470	2270	135.5	3.0
		Manganese, Total	460	440	45.4	44.7*	3.0
		Molybdenum, Total	85.8	3.1	90.9	91.0	3.0
		Sodium, Total	3550	414	2270	137.9	3.0
		Nickel, Total	62.4	19.8	45.4	93.8	3.0
		Lead, Total	58.7	18.8	45.4	87.9	3.0
		Antimony, Total	21.5	0.82u	45.4	47.4	3.0
		Selenium, Total	153	1.6 u	182	84.0	3.0
		Silicon, Total	1040	694	90.9	375.7*	3.0
		Vanadium, Total	91.4	46.5	45.4	98.9	3.0
		Zinc, Total	81.2	42.4	45.4	85.5	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/12/08

CLIENT: TNUHANFORD RC-030 K1131 LVL LOT #: 0802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J169P1	Silver, Total	1.3	0.27u	NC	3.0
		Aluminum, Total	9870	9470	4.2	3.0
		Arsenic, Total	4.9	4.5	8.5	3.0
		Boron, Total	48.4	48.4	0.00	3.0
		Barium, Total	383	528	31.8	3.0
		Beryllium, Total	0.54	0.50	7.5	3.0
		Calcium, Total	9210	9190	0.20	3.0
		Cadmium, Total	0.58	0.54	6.1	3.0
		Cobalt, Total	7.5	7.3	2.7	3.0
		Chromium, Total	18.3	17.5	4.5	3.0
		Copper, Total	24.2	24.9	2.9	3.0
		Iron, Total	47900	50900	6.0	3.0
		Mercury, Total	0.00u	0.01	NC	1.0
		Potassium, Total	988	1030	3.9	3.0
		Magnesium, Total	4470	4080	9.0	3.0
		Manganese, Total	440	447	1.6	3.0
		Molybdenum, Total	3.1	2.7	13.8	3.0
		Sodium, Total	414	392	5.4	3.0
		Nickel, Total	19.8	22.0	10.5	3.0
		Lead, Total	18.8	16.6	12.4	3.0
		Antimony, Total	0.82u	0.80u	NC	3.0
		Selenium, Total	1.6 u	1.6 u	NC	3.0
		Silicon, Total	694	713	2.7	3.0
		Vanadium, Total	46.5	42.6	8.8	3.0
		Zinc, Total	42.4	41.4	2.4	3.0

LionVille Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/12/08

CLIENT: TNUHANFORD RC-030 K1131

LVL LOT #: 0802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0092-LC1	Silver, LCS	48.6	50.0	MG/KG	97.2
		Aluminum, LCS	503	500	MG/KG	100.6
		Arsenic, LCS	933	1000	MG/KG	93.3
		Boron, LCS	472	500	MG/KG	94.5
		Barium, LCS	490	500	MG/KG	98.0
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Calcium, LCS	2410	2500	MG/KG	96.5
		Cadmium, LCS	24.0	25.0	MG/KG	96.0
		Cobalt, LCS	248	250	MG/KG	99.0
		Chromium, LCS	49.4	50.0	MG/KG	98.8
		Copper, LCS	124	125	MG/KG	99.5
		Iron, LCS	501	500	MG/KG	100.2
		Potassium, LCS	2300	2500	MG/KG	92.0
		Magnesium, LCS	2360	2500	MG/KG	94.4
		Manganese, LCS	73.5	75.0	MG/KG	98.0
		Molybdenum, LCS	480	500	MG/KG	96.0
		Sodium, LCS	2290	2500	MG/KG	91.4
		Nickel, LCS	194	200	MG/KG	97.0
		Lead, LCS	242	250	MG/KG	96.8
		Antimony, LCS	287	300	MG/KG	95.6
		Selenium, LCS	911	1000	MG/KG	91.1
		Silicon, LCS	119	500	MG/KG	23.9
		Vanadium, LCS	242	250	MG/KG	96.8
		Zinc, LCS	97.2	100	MG/KG	97.2
LCS1	08C0040-LC1	Mercury, LCS	4.9	4.7	MG/KG	105.0

Date: 28 April 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite 100-F-44:4
Subject: Wet Chemistry - Data Package No. K1131-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1131 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
J169P1	2/25/08	Soil	C	See note 1

1 – Petroleum hydrocarbons by 9071/418.1.

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 14 days for petroleum hydrocarbons.

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".

Due to the holding time being exceeded by less than twice the limit, all petroleum hydrocarbon results were qualified as estimates and flagged "J".

- **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

No field duplicates were submitted for analysis.

- **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 petroleum hydrocarbon results exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package K1131 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 holding time being exceeded by less than twice the limit, all petroleum hydrocarbon 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.

All petroleum hydrocarbon results 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 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: K1131	REVIEWER: ELR	Project: 100-F-44·4	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Petroleum hydrocarbons	J	All	Holding time

* - 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 03/11/08

CLIENT: TNUHANFORD RC-030 K1131

LVL LOT #: C802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J169P1	Petroleum Hydrocarbons	133	uJ MG/KG	133	1.0

4/26/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-030 K1131
LVL#: 0802L668

W.O.#: 11343-606-001-9999-00
Date Received: 02-27-08

INORGANIC NARRATIVE

1. This narrative covers the analysis of 1 solid sample.

2. The sample was 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 time as required by the method and/or contract was met.

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

5. The method blank was within the method criteria.

6. The Laboratory Control Sample (LCS) was within the laboratory control limits.

7. The matrix spike recovery was within the 75-125% control limits.

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

9. Results for solid samples are reported on an "as-received" 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

3/17/08
Date

njp\i02-668

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 11 pages.

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-072
Collector: Welch-Koelling / DeBuigne	Company Contact: Matt Perrott — Telephone No.: 372-9088	Project Coordinator: KESSNER, JH	Price Code: 9C — Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-F-44;4	SAF No.: RC-030	
Ice Chest No.: FRC-96-006	Field Logbook No.: EL-1601-2 — COA: C00F44A000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / RICHLAND	Offsite Property No.: A080190 ~~FRC-96-006~~ WO 2/26/08	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	aG	G	aG	G				
No. of Container(s)	3 1 JPD	1 2-25-08	1	1	1	1				
Volume	~~500mL~~ 125mL	~~60mL~~ 120mL	60mL	60mL	60mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time										
J169P1	OTHER SOLID	2-25-08	0910		X	X	X	X	X				
~~J169P2~~	~~OTHER SOLID~~												
~~J169P3~~	~~OTHER SOLID~~												
~~J169P4~~	~~OTHER SOLID~~												
~~J169P5~~	~~OTHER SOLID~~												

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DeBuigne	1030 2-25-08	1060/2A	2-25-08 1030
1060/2A	2/26/08 0900	MSTankovich	2/26/08
MSTankovich	2/26/08 0900	FedEx	
FedEx	2-27-08 0940		2-27-08 0940

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium

(2) ICP Metals - 6010A (SW-846) (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)

(3) Run PCBs, VOA, SVOA, TPH, Pesticides, Chloro Herbicides with material from ICP Metals.

samples from 3728 Ref# 2A
3728 Custodian removed samples for shipping on 8/26/08.
Sampler unavailable to relinquish

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
Va=Vegetation
X=Other

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

WCH-EE-011

000000010

00001

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-030 K1131

RECEIVED 2008

DATE RECEIVED: 02/27/08 LVL LOT # 0802L668

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J169P1						
PETROLEUM HYDROCARBO	001	SO	08LHC009	02/25/08	03/06/08	03/11/08
PETROLEUM HYDROCARBO	001 REP	SO	08LHC009	02/25/08	03/06/08	03/11/08
PETROLEUM HYDROCARBO	001 MS	SO	08LHC009	02/25/08	03/06/08	03/11/08
AB QC:						
PETROLEUM HYDROCARBO	MB1	S	08LHC009	N/A	03/06/08	03/11/08
PETROLEUM HYDROCARBO	MB1 BS	S	08LHC009	N/A	03/06/08	03/11/08

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-44:4			DATA PACKAGE: K1131		
VALIDATOR: ELR		LAB: LLI		DATE: 4/20/08	
			SDG: K1131		
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					
J169P1					
					solid

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

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

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no PA

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: all <2x - J

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: all TPH over

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/11/08

CLIENT: TNUHANFORD RC-030 K1131 LVL LOT #: 0802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LHC009-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/11/08

CLIENT: TNUHANFORD RC-030 K1131 LVL LOT #: 0802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT		SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J169P1	Petroleum Hydrocarbons	536	10.3		554	94.9	1.0
BLANK10	08LHC009-MB1	Petroleum Hydrocarbons	543	133	u	558	97.2	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/11/08

CLIENT: TNUHANFORD RC-030 K1131

LVL LOT #: 0802L668

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT		REPLICATE		RPD	DILUTION FACTOR(REP)
-001REP	J169P1	Petroleum Hydrocarbons	133	u	133	u	NC	1.0