0074166

SAF-RC-032
100-F Remaining Sites Burial Grounds - Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H4-21

COMMENTS:

SDG K0755 SAF-RC-032

Waste Site: 100-F-26:8

RECEIVED
OCT 17 2007
EDMC

Date: 17 September 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol – Waste Site 100-F-26:8
Subject: Radiochemistry - Data Package No. K0755-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0755 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	Date
J14YW4	4/3/07	Soil	C	See note 1
J14YW5	4/3/07	Soil	C	See note 2
J14YW6	4/3/07	Soil	C	See note 3

1 – Gamma spectroscopy, gross alpha/beta, total strontium and alpha spectroscopy.
2 – Gross alpha/beta & gamma spectroscopy.
3 – Gross alpha/beta, total strontium & gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, Rev. 0, December 2001). 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 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 65-135%. 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.

Due to an LCS recovery outside QC limits (138%), all gross alpha results were qualified as estimates and flagged "J".

All other 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 35%, 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. Twelve analytes exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K0755 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 an LCS recovery outside QC limits (138%), all gross alpha 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.

Twelve 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-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

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: K0755	REVIEWER: ELR	Project: 100-F-26:8	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Gross alpha	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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-001 J14YW4

DATA SHEET

SDG	7755	Client/Case no	Hanford	SDG K0755	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R704030-01	Client sample id	J14YW4		
Dept sample id	7755-001	Location/Matrix	100-F-26:8 Road Cross Ve	SOLID	
Received	04/05/07	Collected/Weight	04/03/07 07:50	1092 g	
% solids	97.6	Custody/SAF No	RC-032-092	RC-032	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	57.2	13	7.8	10	J	93A
Gross Beta	12587-47-2	30.8	5.0	5.4	15		93B
Total Strontium	SR-RAD	0.0197	0.11	0.23	1.0	U	SR
Uranium 233/234	U-233/234	0.600	0.16	0.088	1.0		U
Uranium 235	15117-96-1	0.0140	0.028	0.11	1.0	U	U
Uranium 238	U-238	0.416	0.14	0.088	1.0		U
Plutonium 238	13981-16-3	0.0322	0.13	0.25	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.064	0.25	1.0	U	PU
Potassium 40	13966-00-2	8.24	1.4	0.93			GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Cesium 137	10045-97-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.232	0.17	0.19	0.10		GAM
Radium 228	15262-20-1	U		0.52	0.20	U	GAM
Europium 152	14683-23-9	U		0.31	0.10	U	GAM
Europium 154	15585-10-1	U		0.37	0.10	U	GAM
Europium 155	14391-16-3	U		0.20	0.10	U	GAM
Thorium 228	14274-82-9	0.615	0.19	0.17			GAM
Thorium 232	TH-232	U		0.52		U	GAM
Uranium 235	15117-96-1	U		0.35		U	GAM
Uranium 238	U-238	U		14		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Silver 108m	14391-65-2	U		0.086		U	GAM

100-F Remaining Sites Burial Grounds

9/16/07

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/09/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-002 J14YW5

DATA SHEET

SDG	7755	Client/Case no	Hanford	SDG_K0755	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R704030-02	Client sample id	J14YW5		
Dept sample id	7755-002	Location/Matrix	100-F-26:8 Road Cross Ve	SOLID	
Received	04/05/07	Collected/Weight	04/03/07 08:00	1008 g	
% solids	95.1	Custody/SAF No	RC-032-092	RC-032	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	14.8	7.1	7.6	10	J	93A
Gross Beta	12587-47-2	18.2	4.3	5.5	15		93B
Potassium 40	13966-00-2	12.3	5.7	0.92			GAM
Cobalt 60	10198-40-0	U		0.14	0.050	U	GAM
Cesium 137	10045-97-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.432	0.22	0.17	0.10		GAM
Radium 228	15262-20-1	0.756	0.50	0.43	0.20		GAM
Europium 152	14683-23-9	U		0.28	0.10	U	GAM
Europium 154	15585-10-1	U		0.42	0.10	U	GAM
Europium 155	14391-16-3	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	0.503	0.18	0.17			GAM
Thorium 232	TH-232	0.756	0.50	0.43			GAM
Uranium 235	15117-96-1	U		0.46		U	GAM
Uranium 238	U-238	U		15		U	GAM
Americium 241	14596-10-2	U		0.39		U	GAM
Silver 108m	14391-65-2	U		0.085		U	GAM

100-F Remaining Sites Burial Grounds

9/16/07

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/09/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-003 J14YW6

DATA SHEET

SDG	7755	Client/Case no	Hanford SDG K0755
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R704030-03	Client sample id	J14YW6
Dept sample id	7755-003	Location/Matrix	100-F-26:8 Road Cross Ve SOLID
Received	04/05/07	Collected/Weight	04/03/07 08:20 1087 g
% solids	98.3	Custody/SAF No	RC-032-092 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	12.1	7.3	8.5	10	J	93A
Gross Beta	12587-47-2	27.6	4.9	5.9	15		93B
Total Strontium	SR-RAD	0.0439	0.11	0.22	1.0	U	SR
Potassium 40	13966-00-2	16.9	4.6	0.69			GAM
Cobalt 60	10198-40-0	U		0.12	0.050	U	GAM
Cesium 137	10045-97-3	U		0.12	0.10	U	GAM
Radium 226	13982-63-3	0.302	0.28	0.25	0.10		GAM
Radium 228	15262-20-1	0.778	0.61	0.53	0.20		GAM
Europium 152	14683-23-9	U		0.31	0.10	U	GAM
Europium 154	15585-10-1	U		0.39	0.10	U	GAM
Europium 155	14391-16-3	U		0.23	0.10	U	GAM
Thorium 228	14274-82-9	0.343	0.17	0.20			GAM
Thorium 232	TH-232	0.778	0.61	0.53			GAM
Uranium 235	15117-96-1	U		0.45		U	GAM
Uranium 238	U-238	U		13		U	GAM
Americium 241	14596-10-2	U		0.099		U	GAM
Silver 108m	14391-65-2	U		0.084		U	GAM

100-F Remaining Sites Burial Grounds

9/16/07

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/09/07

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0755 was composed of three solid (soil) samples designated under SAF No. RC-032 with a Project Designation of: 100-F Remaining Sites Burial Grounds-Soil Full Protocol.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on April 20 and May 9, 2007.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

The gross alpha QC LCS recovery was 138%, greater than the upper control limit of 130%. No other problems were encountered during the course of the analyses.

2.2 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.3 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.4 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.5 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."

Mel Mannion

Melissa C. Mannion
Senior Program Manager

05 ~~04~~/14/7

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-092	Page 1 of 1

Collector: Collman	Company Contact: R.T. Collman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: SK	Data Turnaround: 15 Day		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-26:8 (Road Cross) Verification K0755 (7755)		SAF No.: RC-032
Ice Chest No.: ERC-099-027	Field Logbook No.: EFL-1174-3	COA: R10F262000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A070271		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

NA

SAMPLE ANALYSIS												
Preservation				None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container				P	aG	aG	aG	aG	P	P		
No. of Container(s)				1	1	1	1	1	1	1		
Volume				250mL	60mL	60mL	120mL	120mL	500mL	125mL		
				See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	See item (2) in Special Instructions.	Gross Alpha: Gross Beta		
Sample No.	Matrix *	Sample Date	Sample Time									
J14YW4	SOIL	4/3/07	0750						X	X		#1 NORTH
J14YW5	SOIL	4/3/07	0800						X	X		BCL
J14YW6	SOIL	4/3/07	0820						X	X		#2 SOUTH

RT 4/3/07

000015

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: RT COFFMAN / RT Coffman	4/3/07 2030	Received By/Stored In: REFER #3C, 3728	4/3/07 2030
Relinquished By/Removed From: Refer #3C 3728	4-4-07 1100	Received By/Stored In: KM Singleton	4-4-07 1100
Relinquished By/Removed From: KM Singleton	4-4-07 WCH 1100	Received By/Stored In: FED-EX	
Relinquished By/Removed From: FED EX		Received By/Stored In: Rex Kellum	4/5/07 09:30
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

NA

(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Silver-108 metastable}

Sampler unavailable to relinquish samples from 3728 Ref # 3C
3728 Custodian removed samples for shipping on 4/4/07

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-26:8			DATA PACKAGE: K0755		
VALIDATOR: ELR		LAB: FB		DATE: 9/14/07	
			SDG: K0755		
ANALYSES PERFORMED					
Gross Alpha/Beta Total Uranium	Strontium-90 Radium-22	Technetium-99 Tritium	Alpha Spectroscopy	Gamma Spectroscopy	
SAMPLES/MATRIX					
J14YW4	J14YW5	J14YW6			
					Soil

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: _____

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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: _____

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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: 3 over MDC in MB

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: gross alpha - 1385. - J all

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: _____

_____

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_____

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: _____

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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: _____

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_____

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: 12 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-005 Method Blank

METHOD BLANK

SDG	7755	Client/Case no	Hanford		SDG K0755
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R704030-05	Client sample id	Method Blank		
Dept sample id	7755-005	Material/Matrix			SOLID
		SAF No	RC-032		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.909	4.0	7.7	10	U	93A
Gross Beta	12587-47-2	-1.43	5.6	9.4	15	U	93B
Potassium 40	13966-00-2	U		2.5		U	GAM
Cobalt 60	10198-40-0	U		0.11	0.050	U	GAM
Cesium 137	10045-97-3	U		0.10	0.10	U	GAM
Radium 226	13982-63-3	U		0.21	0.10	U	GAM
Radium 228	15262-20-1	U		0.80	0.20	U	GAM
Europium 152	14683-23-9	U		0.23	0.10	U	GAM
Europium 154	15585-10-1	U		0.29	0.10	U	GAM
Europium 155	14391-16-3	U		0.22	0.10	U	GAM
Thorium 228	14274-82-9	U		0.13		U	GAM
Thorium 232	TH-232	U		0.80		U	GAM
Uranium 235	15117-96-1	U		0.35		U	GAM
Uranium 238	U-238	U		12		U	GAM
Americium 241	14596-10-2	U		0.32		U	GAM
Silver 108m	14391-65-2	U		0.072		U	GAM

100-F Remaining Sites Burial Grounds

QC-BLANK 60925

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/09/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-008 Method Blank

METHOD BLANK

SDG	7755	Client/Case no	Hanford	SDG K0755	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R704030-08	Client sample id	Method Blank		
Dept sample id	7755-008	Material/Matrix		SOLID	
		SAF No	RC-032		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.0847	0.12	0.22	1.0	U	SR
Uranium 233/234	U-233/234	0	0.025	0.096	1.0	U	U
Uranium 235	15117-96-1	0.0305	0.031	0.12	1.0	U	U
Uranium 238	U-238	0	0.025	0.096	1.0	U	U
Plutonium 238	13981-16-3	0.0578	0.12	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.058	0.22	1.0	U	PU

100-F Remaining Sites Burial Grounds

QC-BLANK #61122

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/09/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-004

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7755

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0755

Contract No. 630

Lab sample id R704030-04

Dept sample id 7755-004

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-032

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	153	20	8.7	10		93A	111	4.4	138	50-150	70-130
Gross Beta	117	8.4	6.1	15		93B	115	4.6	102	74-126	70-130
Cobalt 60	3.06	0.22	0.089	0.050		GAM	2.85	0.11	107	73-127	80-120
Cesium 137	2.88	0.18	0.13	0.10		GAM	2.73	0.11	106	74-126	80-120

100-F Remaining Sites Burial Grounds

QC-LCS 60924

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 05/09/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-007

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7755

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0755

Contract No. 630

Lab sample id R704030-07

Dept sample id 7755-007

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-032

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
Total Strontium	9.71	0.48	0.18	1.0		SR	9.57	0.38	102	82-118	80-120
Uranium 233/234	19.3	1.5	0.65	1.0		U	18.6	0.74	104	84-116	80-120
Uranium 235	16.0	1.3	0.11	1.0		U	15.1	0.60	106	84-116	80-120
Uranium 238	19.9	1.5	0.62	1.0		U	20.2	0.81	99	85-115	80-120
Plutonium 238	25.1	2.4	0.20	1.0		PU	23.6	0.94	106	82-118	80-120
Plutonium 239/240	26.1	2.5	0.20	1.0		PU	26.4	1.1	99	83-117	80-120

100-F Remaining Sites Burial Grounds

QC-LCS #61121

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/09/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-009 J14YW4

DUPLICATE

SDG	7755			Client/Case no	Hanford SDG K0755
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R704030-09	Lab sample id	R704030-01	Client sample id	J14YW4
Dept sample id	7755-009	Dept sample id	7755-001	Location/Matrix	100-F-26:8 Road Cross Ve SOLID
		Received	04/05/07	Collected/Weight	04/03/07 07:50 1092 g
% solids	97.6	% solids	97.6	Custody/SAF No	RC-032-092 RC-032

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
Total Strontium	0.0658	0.11	0.21	1.0	U	SR	0.0197	0.11	0.23	U	-		0.6
Uranium 233/234	0.414	0.15	0.096	1.0		U	0.600	0.16	0.088		37	66	1.7
Uranium 235	0	0.030	0.12	1.0	U	U	0.0140	0.028	0.11	U	-		0.7
Uranium 238	0.576	0.18	0.096	1.0		U	0.416	0.14	0.088		32	70	1.4
Plutonium 238	-0.0596	0.060	0.29	1.0	U	PU	0.0322	0.13	0.25	U	-		1.3
Plutonium 239/240	0.0298	0.060	0.23	1.0	U	PU	0	0.064	0.25	U	-		0.7

100-F Remaining Sites Burial Grounds

QC-DUP#1 61123

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	05/09/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0755

7755-006

J14YW5

DUPLICATE

SDG	7755			Client/Case no	Hanford SDG K0755
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R704030-06	Lab sample id	R704030-02	Client sample id	J14YW5
Dept sample id	7755-006	Dept sample id	7755-002	Location/Matrix	100-F-26:8 Road Cross Ve SOLID
		Received	04/05/07	Collected/Weight	04/03/07 08:00 1008 g
% solids	95.1	% solids	95.1	Custody/SAF No	RC-032-092 RC-032

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	23.5	8.7	8.5	10		93A	14.8	7.1	7.6		45	98	1.4
Gross Beta	22.3	4.7	5.9	15		93B	18.2	4.3	5.5		20	57	1.1
Potassium 40	11.9	5.7	1.0			GAM	12.3	5.7	0.92		3	105	0.1
Cobalt 60	U		0.12	0.050	U	GAM	U		0.14	U	-		0.2
Cesium 137	U		0.099	0.10	U	GAM	U		0.11	U	-		0.1
Radium 226	0.320	0.21	0.17	0.10		GAM	0.432	0.22	0.17		30	126	0.7
Radium 228	U		0.73	0.20	U	GAM	0.756	0.50	0.43		3	182	0.1
Europium 152	U		0.25	0.10	U	GAM	U		0.28	U	-		0.2
Europium 154	U		0.38	0.10	U	GAM	U		0.42	U	-		0.1
Europium 155	U		0.26	0.10	U	GAM	U		0.29	U	-		0.2
Thorium 228	0.659	0.19	0.16			GAM	0.503	0.18	0.17		27	75	1.1
Thorium 232	U		0.73		U	GAM	0.756	0.50	0.43		3	182	0.1
Uranium 235	U		0.40		U	GAM	U		0.46	U	-		0.2
Uranium 238	U		14		U	GAM	U		15	U	-		0.1
Americium 241	U		0.33		U	GAM	U		0.39	U	-		0.2
Silver 108m	U		0.075		U	GAM	U		0.085	U	-		0.2

100-F Remaining Sites Burial Grounds

QC-DUP#2 60926

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	05/09/07

Date: 17 August 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol – Waste Site 100-F-26:8
Subject: PCB/Pesticide - Data Package No. K0755-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0755 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	Date
J14YW4	4/3/07	Soil	C	See note 1
J14YW5	4/3/07	Soil	C	See note 1
J14YW6	4/3/07	Soil	C	See note 1

1 – PCBs by 8082 & pesticides by 8081A.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, December 2001). 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".

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 35%. 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".

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 analytes met the RQL.

- **Completeness**

Data Package No. K0755 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

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

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

REFERENCES

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

DOE/RL-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0755	REVIEWER: ELR	Project: 100-F-26:8	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS/MSD/LCS

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

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 04/11/07 12:09

RFW Batch Number: 0704L081 Client: TNU-HANFORD Work Order: 11343606001 Page: 1

000000005

	Cust ID:	J14YW4	J14YW5	J14YW5	J14YW5	J14YW6	PBLKYX
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	07LE0178-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	84 %	92 %	85 %	86 %	88 %	91 %
	Decachlorobiphenyl	96 %	98 %	89 %	93 %	91 %	97 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U	14 U	92 %	95 %	14 U	13 U
Aroclor-1221		14 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1232		14 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1242		14 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1248		14 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1254		14 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1260		14 U	14 U	94 %	97 %	14 U	13 U

000010

	Cust ID:	PBLKYX BS
Sample Information	RFW#:	07LE0178-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate:	Tetrachloro-m-xylene	84 %
	Decachlorobiphenyl	91 %
		fl
Aroclor-1016		91 %
Aroclor-1221		13 U
Aroclor-1232		13 U
Aroclor-1242		13 U
Aroclor-1248		13 U
Aroclor-1254		13 U
Aroclor-1260		98 %

9/16/07

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: 04/17/07 10:24

RFW Batch Number: 0704L081 Client: TNUHANFORD RC-032 K0755 Work Order: 11343606001 Page: 1

	Cust ID:	J14YW4	J14YW4	J14YW4	J14YW5	J14YW6	PBLKYX
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	07LE0178-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	4.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	105 %	120 * %	111 %	116 %	115 %	97 %
	Decachlorobiphenyl	116 %	123 * %	116 %	125 * %	118 %	97 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.4 U	117 %	110 %	1.4 U	1.4 U	0.33 U
gamma-BHC (Lindane)		1.4 U	121 %	114 %	1.4 U	1.4 U	0.33 U
Beta-BHC		1.4 U	124 %	118 %	1.4 U	1.4 U	0.33 U
Heptachlor		1.4 U	122 %	116 %	1.4 U	1.4 U	0.33 U
Delta-BHC		1.4 U	105 %	94 %	1.4 U	1.4 U	0.33 U
Aldrin		1.4 U	117 %	113 %	1.4 U	1.4 U	0.33 U
Heptachlor epoxide		1.4 U	120 %	114 %	1.4 U	1.4 U	0.33 U
gamma-Chlordane		1.4 U	117 %	113 %	1.4 U	1.4 U	0.33 U
Endosulfan I		1.4 U	122 * %	116 %	1.4 U	1.4 U	0.33 U
alpha-Chlordane		1.4 U	118 %	112 %	1.4 U	1.4 U	0.33 U
4,4'-DDE		1.4 U	119 %	114 %	1.4 U	1.4 U	0.33 U
Dieldrin		1.4 U	115 %	111 %	1.4 U	1.4 U	0.33 U
Endrin		1.4 U	117 %	111 %	1.4 U	1.4 U	0.33 U
4,4'-DDD		1.4 U	114 %	108 %	1.4 U	1.4 U	0.33 U
Endosulfan II		1.4 U	118 %	113 %	1.4 U	1.4 U	0.33 U
4,4'-DDT		1.4 U	117 %	111 %	1.4 U	1.4 U	0.33 U
Endrin aldehyde		1.4 U	111 %	104 %	1.4 U	1.4 U	0.33 U
Endosulfan sulfate		1.4 U	113 %	107 %	1.4 U	1.4 U	0.33 U
Methoxychlor		1.4 U	116 %	111 %	1.4 U	1.4 U	0.33 U
Endrin ketone		1.4 U	120 %	113 %	1.4 U	1.4 U	0.33 U
Toxaphene		14 U J	14 U	14 U	14 U J	14 U J	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

9/11/07

9/19/07

000011

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 04/17/07 10:24

RFW Batch Number: **0704L081** Client: **TNUHANFORD RC-032 K0755** Work Order: 11343606001 Page: 2

Cust ID: **PBLKYX BS**

Sample Information		
	RFW#:	**07LE0178-MB1**
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG

Surrogate:	Tetrachloro-m-xylene	94	%
	Decachlorobiphenyl	98	%

==========fl==========fl==========fl==========fl==========fl==========fl

Alpha-BHC	105	%
gamma-BHC (Lindane)	106	%
Beta-BHC	103	%
Heptachlor	104	%
Delta-BHC	93	%
Aldrin	106	%
Heptachlor epoxide	105	%
gamma-Chlordane	106	%
Endosulfan I	112	%
alpha-Chlordane	104	%
4,4'-DDE	107	%
Dieldrin	110	%
Endrin	112	%
4,4'-DDD	113	%
Endosulfan II	109	%
4,4'-DDT	114	%
Endrin aldehyde	102	%
Endosulfan sulfate	108	%
Methoxychlor	104	%
Endrin ketone	111	%
Toxaphene	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

9/14/07

4/14/07

000012

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0704L081
SDG/SAF # K0755 /RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 04-05-2007

PCB

Three (3) soil samples were collected on 04-03-2007.

The samples and their associated QC samples were extracted on 04-09-2007 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 04-10,11-2007. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

1. Samples were extracted and analyzed within required holding time.

2. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.

3. The method blank was below the reporting limits for all target compounds.

4. All surrogate recoveries were within acceptance criteria.

5. The blank spike recoveries were within acceptance criteria.

6. All 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.

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 8 pages.

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

LvLI
LIONVILLE LABORATORY INC.

9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/12/02
Date

som\r:\group\data\pest\tmu hanford\0704-081.pcb

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

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0704L081
SDG/SAF # K0755/RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 04-05-2007

CHLORINATED PESTICIDES

Three (3) soil samples were collected on 04-03-2007.

The samples and their associated QC samples were extracted on 04-09-2007 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 04-14-2007. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

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

1. Samples were extracted and analyzed within required holding time.

2. The method blank was below the reporting limits for all target compounds.

3. Three (3) of fourteen (14) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

4. All blank spike recoveries were within acceptance criteria.

5. One (1) of forty (40) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. All samples required a 4-fold dilution due to high concentration of target analytes. The reporting limits were adjusted to reflect the necessary dilution.

7. The 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 1 0 pages.

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LIONVILLE LABORATORY INC.

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

9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/20/07
Date

som\r:\group\data\pest\tmu hanford\0704-081s.pst

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Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 070C121

Initiator: CAC
Date: 4-17-07
Client: TNU

Batch: 07041081
Samples: 001MS ~~MSD~~ +002
Method: SW846/MCAWW/CLP/ CAC 4-17-07

Parameter: 0608Hj
Matrix: SOIL
Prep Batch: 07LE0178

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)

surrogates out high in 001MS +002
1 spike out high in 001MS

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:
__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [signature] 4/20/07
__ 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: [signature] 4/27/07 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: _____

0704081

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-092	Page 1 of 1

Collector: Coffman	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8K	Data Turnaround: 15 DAY
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-26:8 (Road Cross) Verification		SAF No.: RC-032		
Ice Chest No.: ERC-99-061	Field Logbook No.: EFL-1174-3	COA: R10F262000	Method of Shipment: Fed Ex		
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.		Bill of Lading/Air Bill No.: See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	P	aG	aG	aG	aG	P	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	250mL	60mL	60mL	120mL	120mL	500mL	125mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	See item (2) in Special Instructions. RTC	Gross Alpha; Gross Beta 4/3/07				
Sample No.	Matrix *	Sample Date	Sample Time								
J14YW4	SOIL	4/3/07	0750	X	X	X	X	X			#1 NORTH
J14YW5	SOIL	4/3/07	0800	X	X	X	X	X			BCL
J14YW6	SOIL	4/3/07	0820	X	X	X	X	X			#2 SOUTH

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Coffman / RT Coffman	2030 4/3/07	Refer 3C, 3728	2030 4/3/07
Refer 3C 3728	APR 04 2007 1100	KM Stockdale	APR 04 2007 1100
KM Stockdale	APR 04 2007 1500	FED EX	
FED EX	4-5-07 0935	[illegible]	4-5-07 0935

Sign/Print Names

SPECIAL INSTRUCTIONS

NA

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Silver-108 metastable)

Sampler unavailable to relinquish samples from 3728 Ref # 3C
3728 Custodian removed samples for shipping on 4/4/07

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquid
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

000019

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-26:8			DATA PACKAGE: K0755		
VALIDATOR: ELR		LAB: LLI		DATE: 9/14/07	
			SDG: K0755		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J14YW4	J14YW5	J14YW6			
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no toxaphene LCS, MS or MSD - J all

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no toxaphene MS or MSD - Jeff

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: _____

Date: 17 September 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Site 100-F-26:8
Subject: Inorganic - Data Package No. K0755-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0755 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	Date
J14YW4	4/3/07	Soil	C	See note 1
J14YW5	4/3/07	Soil	C	See note 2
J14YW6	4/3/07	Soil	C	See note 3

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

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, Rev. 0, December 2001). 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 "U". 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 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 75% to 125%. 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 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recoveries outside QC limits, all antimony (62.9%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (30.5%), 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 35%, 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 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. K0755 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 a matrix spike recoveries outside QC limits, all antimony (62.9%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (30.5%), all silicon results were qualified as estimates and flagged "J".

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

REFERENCES

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

DOE/RL-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

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: K0755	REVIEWER: ELR	Project: 100-F-26:8	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	J	All	MS recovery
Silicon	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 04/13/07

CLIENT: TNUHANFORD RC-032 K0755

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

LVL LOT #: 0704L081

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J14YW4	Silver, Total	0.52 u	MG/KG	0.52	6.0
		Aluminum, Total	3990	MG/KG	8.4	6.0
		Arsenic, Total	2.4 u	MG/KG	2.4	6.0
		Boron, Total	2.2 u	MG/KG	2.2	6.0
		Barium, Total	25.3	MG/KG	0.12	6.0
		Beryllium, Total	0.17	MG/KG	0.06	6.0
		Calcium, Total	3770	MG/KG	4.3	6.0
		Cadmium, Total	0.17 u	MG/KG	0.17	6.0
		Cobalt, Total	4.2	MG/KG	0.52	6.0
		Chromium, Total	7.6	MG/KG	0.46	6.0
		Copper, Total	11.0	MG/KG	0.69	6.0
		Iron, Total	11500	MG/KG	17.1	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	535	MG/KG	28.2	6.0
		Magnesium, Total	3080	MG/KG	4.2	6.0
		Manganese, Total	208	MG/KG	0.12	6.0
		Molybdenum, Total	0.75 u	MG/KG	0.75	6.0
		Sodium, Total	127	MG/KG	2.5	6.0
		Nickel, Total	9.5	MG/KG	1.1	6.0
		Lead, Total	3.0	MG/KG	1.6	6.0
		Antimony, Total	1.9 u J	MG/KG	1.9	6.0
		Selenium, Total	2.1 u	MG/KG	2.1	6.0
		Silicon, Total	554 J	MG/KG	2.4	6.0
		Vanadium, Total	29.5	MG/KG	0.58	6.0
		Zinc, Total	37.3	MG/KG	0.17	6.0

K 9/16/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/13/07

CLIENT: TNUHANFORD RC-032 K0765 LVL LOT #: 0704L081

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J14YN5	Silver, Total	0.53	u	MG/KG	0.53	6.0
		Aluminum, Total	5840		MG/KG	8.6	6.0
		Arsenic, Total	3.9		MG/KG	2.4	6.0
		Boron, Total	2.2	u	MG/KG	2.2	6.0
		Barium, Total	48.2		MG/KG	0.12	6.0
		Beryllium, Total	0.28		MG/KG	0.06	6.0
		Calcium, Total	4360		MG/KG	4.4	6.0
		Cadmium, Total	0.18	u	MG/KG	0.18	6.0
		Cobalt, Total	5.6		MG/KG	0.53	6.0
		Chromium, Total	8.7		MG/KG	0.47	6.0
		Copper, Total	12.9		MG/KG	0.71	6.0
		Iron, Total	15700		MG/KG	17.4	6.0
		Mercury, Total	0.02	u	MG/KG	0.02	1.0
		Potassium, Total	949		MG/KG	28.7	6.0
		Magnesium, Total	3810		MG/KG	4.3	6.0
		Manganese, Total	272		MG/KG	0.12	6.0
		Molybdenum, Total	0.76	u	MG/KG	0.76	6.0
		Sodium, Total	142		MG/KG	2.6	6.0
		Nickel, Total	9.2		MG/KG	1.1	6.0
		Lead, Total	3.9		MG/KG	1.6	6.0
		Antimony, Total	1.9	uJ	MG/KG	1.9	6.0
		Selenium, Total	2.2	u	MG/KG	2.2	6.0
		Silicon, Total	841	J	MG/KG	2.5	6.0
		Vanadium, Total	40.4		MG/KG	0.59	6.0
		Zinc, Total	34.2		MG/KG	0.18	6.0

9/16/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/13/07

CLIENT: TNUHANFORD RC-032 K0755

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

LVL LOT #: 0704L081

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J14YW6	Silver, Total	0.51 u	MG/KG	0.51	6.0
		Aluminum, Total	4160	MG/KG	8.3	6.0
		Arsenic, Total	2.5	MG/KG	2.3	6.0
		Boron, Total	2.2 u	MG/KG	2.2	6.0
		Barium, Total	24.2	MG/KG	0.11	6.0
		Beryllium, Total	0.19	MG/KG	0.06	6.0
		Calcium, Total	4850	MG/KG	4.3	6.0
		Cadmium, Total	0.17 u	MG/KG	0.17	6.0
		Cobalt, Total	4.4	MG/KG	0.51	6.0
		Chromium, Total	7.8	MG/KG	0.45	6.0
		Copper, Total	11.3	MG/KG	0.68	6.0
		Iron, Total	11900	MG/KG	16.8	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	515	MG/KG	27.7	6.0
		Magnesium, Total	3210	MG/KG	4.1	6.0
		Manganese, Total	204	MG/KG	0.11	6.0
		Molybdenum, Total	0.74 u	MG/KG	0.74	6.0
		Sodium, Total	150	MG/KG	2.5	6.0
		Nickel, Total	8.8	MG/KG	1.1	6.0
		Lead, Total	2.7	MG/KG	1.6	6.0
		Antimony, Total	1.8 u J	MG/KG	1.8	6.0
		Selenium, Total	2.1 u	MG/KG	2.1	6.0
		Silicon, Total	508 J	MG/KG	2.4	6.0
		Vanadium, Total	31.9	MG/KG	0.57	6.0
		Zinc, Total	26.1	MG/KG	0.17	6.0

9/16/07

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032
LVL#: 0704L081
SDG/SAF#: K0755/RC-032

W.O.#: 11343-606-001-9999-00
Date Received: 04-05-07

METALS CASE NARRATIVE

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

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

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All ICP metal samples were reported with 6-fold dilutions 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% Mercury).

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

6. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, 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 30.5%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

9. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 19 pages.

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LIONVILLE LABORATORY INC.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J14YW4	Aluminum	12,000	100.8
	Antimony	100	101.0
	Silicon	2,100	100.1

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 Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. 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

4/17/07
Date

tlb/m04-081

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-092	Page 1 of 1

Collector: Coffman	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8K	Data Turnaround: 15 DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-26:8 (Road Cross) Verification		SAF No.: RC-032
Ice Chest No.: ERC-99-061	Field Logbook No.: EFL-1174-3	COA: R10F262000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.		Bill of Lading/Air Bill No.: See OSRC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	P	aG	aG	aG	aG	P	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	250mL	60mL	60mL	120mL	120mL	500mL	125mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	See item (2) in Special Instructions. RTC	Gross Alpha; Gross Beta 4/3/07				
Sample No.	Matrix *	Sample Date	Sample Time								
J14YW4	SOIL	4/3/07	0750	X	X	X	X	X			#1 NORTH
J14YW5	SOIL	4/3/07	0800	X	X	X	X	X			BCL
J14YW6	SOIL	4/3/07	0820	X	X	X	X	X			#2 SOUTH

910001

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RTCoffman / RT Coffman	2030 4/3/07	RCFP 3C, 3728	2030 4/3/07
Refer 3C 3728	APR 04 2007 1100	[signature]	APR 04 2007 1100
[signature]	APR 04 2007 1500	FED EX	
Fed Ex	4-5-07 0935	[signature]	4-5-07 0935

SPECIAL INSTRUCTIONS

NA

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Silver-108 metastable)

Sampler unavailable to relinquish samples from 3728 Ref# 3C
3728 Custodian removed samples for shipping on 4/4/07

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-26:8			DATA PACKAGE: K0755		
VALIDATOR: ELR		LAB: LLI		DATE: 9/14/07	
			SDG: K0755		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J14YW4	J14YW5	J14YW6			
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: 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 - antimony - 62.9% - J calf no ~~PAS~~
LCS - Silicon - 30.5% - J calf

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

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

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

Comments:

8. HOLDING TIMES (all levels)

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/13/07

CLIENT: TNUHANFORD RC-032 K0755 LVL LOT #: 0704L081

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	07L0170-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	1.5 u	MG/KG	1.5	1.0
		Arsenic, Total	0.41 u	MG/KG	0.41	1.0
		Boron, Total	0.44	MG/KG	0.38	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	6.5	MG/KG	0.75	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.09 u	MG/KG	0.09	1.0
		Chromium, Total	0.09	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Iron, Total	3.0 u	MG/KG	3.0	1.0
		Potassium, Total	4.9 u	MG/KG	4.9	1.0
		Magnesium, Total	0.73 u	MG/KG	0.73	1.0
		Manganese, Total	0.02	MG/KG	0.02	1.0
		Molybdenum, Total	0.14	MG/KG	0.13	1.0
		Sodium, Total	4.8	MG/KG	0.44	1.0
		Nickel, Total	0.19 u	MG/KG	0.19	1.0
		Lead, Total	0.28 u	MG/KG	0.28	1.0
		Antimony, Total	0.32 u	MG/KG	0.32	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Silicon, Total	0.97	MG/KG	0.42	1.0
		Vanadium, Total	0.10 u	MG/KG	0.10	1.0
		Zinc, Total	0.60	MG/KG	0.03	1.0
BLANK1	07C0058-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/13/07

CLIENT: TNUHANFORD RC-032 K0755 LVL LOT #: 0704L081

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J14YW4	Silver, Total	5.2	0.52u	4.8	108.3	6.0
		Aluminum, Total	4360	3990	193	190.8*	6.0
		Arsenic, Total	178	2.4 u	193	92.5	6.0
		Boron, Total	84.9	2.2 u	96.4	88.1	6.0
		Barium, Total	201	25.3	193	91.0	6.0
		Beryllium, Total	4.5	0.17	4.8	90.3	6.0
		Calcium, Total	5990	3770	2410	92.4	6.0
		Cadmium, Total	4.5	0.17u	4.8	93.8	6.0
		Cobalt, Total	48.1	4.2	48.2	91.1	6.0
		Chromium, Total	25.7	7.6	19.3	93.8	6.0
		Copper, Total	34.5	11.0	24.1	97.5	6.0
		Iron, Total	11500	11500	96.4	76.8*	6.0
		Mercury, Total	0.18	0.02u	0.16	113.3	1.0
		Potassium, Total	2560	535	2410	84.2	6.0
		Magnesium, Total	5370	3080	2410	95.2	6.0
		Manganese, Total	257	208	48.2	102.3*	6.0
		Molybdenum, Total	87.0	0.75u	96.4	90.2	6.0
		Sodium, Total	2190	127	2410	85.7	6.0
		Nickel, Total	51.6	9.5	48.2	87.3	6.0
		Lead, Total	45.6	3.0	48.2	88.4	6.0
		Antimony, Total	30.3	1.9 u	48.2	62.9	6.0
		Selenium, Total	175	2.1 u	193	91.0	6.0
		Silicon, Total	509	554	96.4	-46. *	6.0
		Vanadium, Total	73.1	29.5	48.2	90.5	6.0
		Zinc, Total	78.6	37.3	48.2	85.7	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/13/07

CLIENT: TNUHANFORD RC-032 K0755 LVL LOT #: 0704L081

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J14YW4	Silver, Total	0.52u	0.54	NC	6.0
		Aluminum, Total	3990	3820	4.4	6.0
		Arsenic, Total	2.4 u	2.4 u	NC	6.0
		Boron, Total	2.2 u	2.2 u	NC	6.0
		Barium, Total	25.3	24.4	3.6	6.0
		Beryllium, Total	0.17	0.16	7.1	6.0
		Calcium, Total	3770	3800	0.78	6.0
		Cadmium, Total	0.17u	0.17u	NC	6.0
		Cobalt, Total	4.2	4.2	0.00	6.0
		Chromium, Total	7.6	8.3	8.8	6.0
		Copper, Total	11.0	11.9	7.9	6.0
		Iron, Total	11500	10900	4.7	6.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Potassium, Total	535	504	5.8	6.0
		Magnesium, Total	3080	3160	2.5	6.0
		Manganese, Total	208	197	5.2	6.0
		Molybdenum, Total	0.75u	0.75u	NC	6.0
		Sodium, Total	127	114	11.4	6.0
		Nickel, Total	9.5	11.3	17.3	6.0
		Lead, Total	3.0	1.8	50.0	6.0
		Antimony, Total	1.9 u	1.9 u	NC	6.0
		Selenium, Total	2.1 u	2.1 u	NC	6.0
		Silicon, Total	554	501	10.0	6.0
		Vanadium, Total	29.5	27.8	5.9	6.0
		Zinc, Total	37.3	34.7	7.2	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/13/07

CLIENT: TNUHANFORD RC-032 K0755 LVL LOT #: 0704L081

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	07L0170-LC1	Silver, LCS	46.9	50.0	MG/KG	93.8
		Aluminum, LCS	465	500	MG/KG	93.0
		Arsenic, LCS	908	1000	MG/KG	90.8
		Boron, LCS	453	500	MG/KG	90.6
		Barium, LCS	469	500	MG/KG	93.8
		Beryllium, LCS	23.3	25.0	MG/KG	93.2
		Calcium, LCS	2360	2500	MG/KG	94.3
		Cadmium, LCS	23.2	25.0	MG/KG	92.8
		Cobalt, LCS	234	250	MG/KG	93.7
		Chromium, LCS	46.9	50.0	MG/KG	93.8
		Copper, LCS	118	125	MG/KG	94.0
		Iron, LCS	473	500	MG/KG	94.6
		Potassium, LCS	2210	2500	MG/KG	88.2
		Magnesium, LCS	2300	2500	MG/KG	91.8
		Manganese, LCS	71.5	75.0	MG/KG	95.3
		Molybdenum, LCS	462	500	MG/KG	92.4
		Sodium, LCS	2200	2500	MG/KG	88.0
		Nickel, LCS	186	200	MG/KG	93.0
		Lead, LCS	235	250	MG/KG	93.9
		Antimony, LCS	277	300	MG/KG	92.2
		Selenium, LCS	889	1000	MG/KG	88.9
		Silicon, LCS	152	500	MG/KG	30.5
		Vanadium, LCS	235	250	MG/KG	94.0
		Zinc, LCS	92.3	100	MG/KG	92.3
LCS1	07C0058-LC1	Mercury, LCS	2.8	2.8	MG/KG	99.6

Date: 17 September 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Site 100-F-26:8
Subject: Wet Chemistry - Data Package No. K0755-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0755 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	Date
J14YW4	4/3/07	Soil	C	See note 1
J14YW5	4/3/07	Soil	C	See note 2
J14YW6	4/3/07	Soil	C	See note 3

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, December 2001). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI.
If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

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

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 65% to 135%. 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 64% 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 135% 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 35%, 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 analytes met the RQL.

- **Completeness**

Data package K0755 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

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

DOE/RL-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

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: K0755	REVIEWER: ELR	Project: 100-F-26:8	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/17/07

CLIENT: TNUHANFORD RC-032 K0755 LVL LOT #: 0704L081

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J14YW4	% Solids	96.0	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-002	J14YW5	% Solids	93.6	%	0.01	1.0
		Chromium VI	0.22	MG/KG	0.21	1.0
-003	J14YW6	% Solids	97.8	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0

R 9/16/07

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032 K0755
LVL#: 0704L081

W.O.#: 11343-606-001-9999-00
Date Received: 04-05-07

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

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

   LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

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

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

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

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

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

8. The replicate analyses for Chromium VI and Percent Solids were within the 20% Relative Percent Difference (RPD) control limit.

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

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/23/07
Date

njp\i04-081

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-032-092	Page 1 of 1

Collector: Coffman	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8K	Data Turnaround: 15 DAY
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-26:8 (Road Cross) Verification		SAF No.: RC-032		
Ice Chest No.: ERC-99-061	Field Logbook No.: EFL-1174-3	COA: R10F262000	Method of Shipment: Fed Ex		
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.		Bill of Lading/Air Bill No.: See OSRC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

NA

000012

SAMPLE ANALYSIS												
Preservation				None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container				P	aG	aG	aG	aG	P	P		
No. of Container(s)				1	1	1	1	1	1	1		
Volume				250mL	60mL	60mL	120mL	120mL	500mL	125mL		
				See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	See item (2) in Special Instructions RTC	Gross Alpha, Gross Beta 4/3/07		
Sample No.	Matrix *	Sample Date	Sample Time									
J14YW4	SOIL	4/3/07	0750	X	X	X	X	X				#1 NORTH
J14YW5	SOIL	4/3/07	0800	X	X	X	X	X				BCL
J14YW6	SOIL	4/3/07	0820	X	X	X	X	X				#2 SOUTH

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: RTCoffman / RT Coffman	4/3/07 2030	Received By/Stored In: RESCO 3C, 3728,	4/3/07 2030
Relinquished By/Removed From: Refer 3C 3728	APR 04 2007 1100	Received By/Stored In:	APR 04 2007 1100
Relinquished By/Removed From:	APR 04 2007 1500	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	4-5-07 0935	Received By/Stored In:	4-5-07 0935
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

NA

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Silver-108 metastable)

Sampler unavailable to relinquish samples from 3728 Ref # 3C
3728 Custodian removed samples for shipping on 4/4/07

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

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-26:8			DATA PACKAGE: K0755		
VALIDATOR: ELR		LAB: LLI		DATE: 9/14/07	
			SDG: K0755		

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
J14YW4 J14YW5 J14YW6
Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

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

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

6. HOLDING TIMES (all levels)

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

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

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/17/07

CLIENT: TNUHANFORD RC-032 K0755
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0704L081

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	07LVI035-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/17/07

CLIENT: TNUHANFORD RC-032 K0755

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

LVL LOT #: 0704L081

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J14YW4	Soluble Chromium VI	4.3	0.21u	4.2	102.7	1.0
		Insoluble Chromium VI	1150	0.21u	1130	101.7	100
BLANK10	07LVI035-MB1	Soluble Chromium VI	3.9	0.20u	4.0	98.0	1.0
		Insoluble Chromium VI	999	0.20u	914	109.3	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/17/07

CLIENT: TNUHANFORD RC-032 K0755

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

LVL LOT #: 0704L081

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J14YW4	Chromium VI	0.21u	0.21u	NC	1.0
-003REP	J14YW6	% Solids	97.8	97.8	0.010	1.0

Date: 17 September 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Site 100-F-26:8
Subject: Semivolatile - Data Package No. K0755-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0755 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	Date
J14YW4	4/3/07	Soil	C	See note 1
J14YW5	4/3/07	Soil	C	See note 1
J14YW6	4/3/07	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, December 2001). 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, the bis(2-ethylhexyl)phthalate results in samples J14WY4 and J14YW5 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 matrix spike recovery outside QC limits, all bis(2-chloroethyl)ether (46%), 1,3-dichlorobenzene (42%), 1,4-dichlorobenzene (42%), 1,2-dichlorobenzene (46%), 2-methylphenol (59%), 2,2'-oxybis(1-chloropropane) (45%), hexachloroethane (39%), nitrobenzene (44%), isophorone (53%), 2-nitrophenol (48%), 4-chloro-3-methylphenol (59%), 2,4-dimethylphenol (44%) and 2-methylnaphthalene (54%) results were qualified as estimates and flagged "J".

Due to matrix spike and matrix spike duplicate recoveries outside QC limits (42% & 54%), all 1,2,4-trichlorobenzene results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all phenol (49%), bis(2-chloroethyl)ether (44%), 2-chlorophenol (49%), 1,3-dichlorobenzene (42%), 1,4-dichlorobenzene (42%), 1,2-dichlorobenzene (45%), 2-methylphenol (47%), 2,2'-oxybis(1-chloropropane) (43%), 3/4-methylphenol (52%), n-nitroso-di-n-propylamine (47%), hexachloroethane (42%), nitrobenzene (39%), isophorone (44%), 2-nitrophenol (42%), 2,4-dimethylphenol (39%), 2,4-dichlorophenol (45%), 1,2,4-trichlorobenzene (39%), 4-chloro-3-methylphenol (47%), 2-methylnaphthalene (45%), acenaphthylene (56%), 2,6-dinitrotoluene (58%), 2,4-dintrophenol (11%), dibenzofuran (57%), fluorene (59%), 4,6-dinitro-2-methylphenol (20%), n-nitrosodiphenylamine (49%), 4-bromophenyl-phenylether (49%), hexachlorobenzene (59%), pentachlorophenol (25%), phenanthrene (58%) and carbazole (57%) 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 RPDs outside QC limits, all bis(2-chloroethyl)ether (33%), 1,3-dichlorobenzene (34%), 1,4-dichlorobenzene (32%),1,2-dichlorobenzene (33%), 2,2'-oxybis(1-chloropropane) (30.1%), hexachloroethane (37%), hexachlorocyclopentadiene (31%), 2,4,6-trichlorophenol (37%), 2,4,5-trichlorophenol (38%) and 3,3-dichlorobenzidine (31%) 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 required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. No semivolatile RQLs were specified.

- **Completeness**

Data package No. K0755 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 method blank contamination, the bis(2-ethylhexyl)phthalate results in samples J14WY4 and J14YW5 were raised to the RQL, qualified as undetected and flagged "U".

- Due to matrix spike recovery outside QC limits, all bis(2-chloroethyl)ether (46%), 1,3-dichlorobenzene (42%), 1,4-dichlorobenzene (42%), 1,2-dichlorobenzene (46%), 2-methylphenol (59%), 2,2'-oxybis(1-chloropropane) (45%), hexachloroethane (39%), nitrobenzene (44%), isophorone (53%), 2-nitrophenol (48%), 4-chloro-3-methylphenol (59%), 2,4-dimethylphenol (44%) and 2-methylnaphthalene (54%) results were qualified as estimates and flagged "J".

- Due to matrix spike and matrix spike duplicate recoveries outside QC limits (42% & 54%), all 1,2,4-trichlorobenzene results were qualified as estimates and flagged "J".

- Due to LCS recoveries outside QC limits, all phenol (49%), bis(2-chloroethyl)ether (44%), 2-chlorophenol (49%), 1,3-dichlorobenzene (42%), 1,4-dichlorobenzene (42%), 1,2-dichlorobenzene (45%), 2-methylphenol (47%), 2,2'-oxybis(1-chloropropane) (43%), 3/4-methylphenol (52%), n-nitroso-di-n-propylamine (47%), hexachloroethane (42%), nitrobenzene (39%), isophorone (44%), 2-nitrophenol (42%), 2,4-dimethylphenol (39%), 2,4-dichlorophenol (45%), 1,2,4-trichlorobenzene (39%), 4-chloro-3-methylphenol (47%), 2-methylnaphthalene (45%), acenaphthylene (56%), 2,6-dinitrotoluene (58%), 2,4-dintrophenol (11%), dibenzofuran (57%), fluorene (59%), 4,6-dinitro-2-methylphenol (20%), n-nitrosodiphenylamine (49%), 4-bromophenyl-phenylether (49%), hexachlorobenzene (59%), pentachlorophenol (25%), phenanthrene (58%) and carbazole (57%) results were qualified as estimates and flagged "J".

- Due to RPDs outside QC limits, all bis(2-chloroethyl)ether (33%), 1,3-dichlorobenzene (34%), 1,4-dichlorobenzene (32%),1,2-dichlorobenzene (33%), 2,2'-oxybis(1-chloropropane) (30.1%), hexachloroethane (37%), hexachlorocyclopentadiene (31%), 2,4,6-trichlorophenol (37%), 2,4,5-trichlorophenol (38%) and 3,3-dichlorobenzidine (31%) results were qualified as estimates and flagged "J".

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

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

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: K0755	REVIEWER: ELR	Project: 100-F-26:8	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	J14YW4, J14YW5	Method blank contamination
Bis(2-chloroethyl)ether 1,3-dichlorobenzene 1,4-dichlorobenzene 1,2-dichlorobenzene 2-methylphenol 2,2'-oxybis(1-chloropropane) 4-chloro-3-methylphenol hexachloroethane nitrobenzene isophorone 2-nitrophenol 2,4-dimethylphenol 2-methylnaphthalene 1,2,4-trichlorobenzene	J	All	MS and/or MSD recovery
Phenol bis(2-chloroethyl)ether 2-chlorophenol 1,3-dichlorobenzene 1,4-dichlorobenzene 1,2-dichlorobenzene 2-methylphenol 2,2'-oxybis(1-chloropropane) 3/4-methylphenol n-nitroso-di-n-propylamine hexachloroethane nitrobenzene isophorone 2-nitrophenol 2,4-dimethylphenol 2,4-dichlorophenol 1,2,4-trichlorobenzene 4-chloro-3-methylphenol 2-methylnaphthalene acenaphthylene 2,6-dinitrotoluene	J	All	LCS recovery

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

2,4-dintrophenol dibenzofuran fluorene 4,6-dinitro-2-methylphenol n-nitrosodiphenylamine 4-bromophenyl-phenylether hexachlorobenzene pentachlorophenol phenanthrene carbazole			
bis(2-chloroethyl)ether 1,3-dichlorobenzene 1,4-dichlorobenzene 1,2-dichlorobenzene 2,2'-oxybis(1-chloropropane) hexachloroethane hexachlorocyclopentadiene 2,4,6-trichlorophenol 2,4,5-trichlorophenol 3,3-dichlorobenzidine	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.
Semivolatiles by GC/MS, HSL List

RFW Batch Number: 0704L081 Client: TNUHANFORD RC-032 K0755 Work Order: 11343606001 Report Date: 04/13/07 12:12 Page: 1a

	Cust ID:	J14YW4	J14YW4	J14YW4	J14YW5	J14YW6	SBLKJP
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	07LE0180-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	53 %	45 %	57 %	68 %	67 %	73 %
	2-Fluorobiphenyl	51 %	63 %	77 %	84 %	69 %	75 %
	Terphenyl-d14	79 %	77 %	90 %	91 %	88 %	107 %
	Phenol-d5	59 %	65 %	78 %	77 %	72 %	78 %
	2-Fluorophenol	56 %	57 %	71 %	70 %	68 %	77 %
	2,4,6-Tribromophenol	43 %	30 %	36 %	76 %	44 %	81 %
		fl	fl	fl	fl	fl	fl
Phenol		350 U J	58 %	71 %	360 U J	340 U J	330 U
bis(2-Chloroethyl)ether		350 U	46 * %	64 %	360 U	340 U	330 U
2-Chlorophenol		350 U	57 %	73 %	360 U	340 U	330 U
1,3-Dichlorobenzene		350 U	42 * %	59 %	360 U	340 U	330 U
1,4-Dichlorobenzene		350 U	42 * %	58 %	360 U	340 U	330 U
1,2-Dichlorobenzene		350 U	46 * %	64 %	360 U	340 U	330 U
2-Methylphenol		350 U	59 * %	74 %	360 U	340 U	330 U
2,2'-oxybis(1-Chloropropane)		350 U	45 * %	61 %	360 U	340 U	330 U
3/4 Methylphenol		350 U	63 %	78 %	360 U	340 U	330 U
N-Nitroso-di-n-propylamine		350 U	61 %	74 %	360 U	340 U	330 U
Hexachloroethane		350 U	39 * %	57 %	360 U	340 U	330 U
Nitrobenzene		350 U	44 * %	56 %	360 U	340 U	330 U
Isophorone		350 U	53 * %	65 %	360 U	340 U	330 U
2-Nitrophenol		350 U	48 * %	58 %	360 U	340 U	330 U
2,4-Dimethylphenol		350 U	44 * %	52 %	360 U	340 U	330 U
bis(2-Chloroethoxy)methane		350 U	48 %	57 %	360 U	340 U	330 U
2,4-Dichlorophenol		350 U J	55 %	66 %	360 U J	340 U J	330 U
1,2,4-Trichlorobenzene		350 U J	42 * %	54 * %	360 U J	340 U J	330 U
Naphthalene		350 U	45 %	56 %	360 U	340 U	330 U
4-Chloroaniline		350 U	37 %	45 %	360 U	340 U	330 U
Hexachlorobutadiene		350 U J	44 %	57 %	360 U J	340 U J	330 U
4-Chloro-3-methylphenol		350 U J	59 * %	67 %	360 U J	340 U J	330 U
2-Methylnaphthalene		350 U J	54 * %	63 %	360 U J	340 U J	330 U
Hexachlorocyclopentadiene		350 U J	44 %	60 %	360 U J	340 U J	330 U
2,4,6-Trichlorophenol		350 U J	26 %	38 %	360 U J	340 U J	330 U
2,4,5-Trichlorophenol		870 U J	43 %	63 %	890 U J	850 U J	830 U

*= Outside of EPA CLP QC limits.

R 9/16/07

000013

RFW Batch Number: 0704L081 Client: TNUHANFORD RC-032 K0755 Work Order: 11343606001 Page: 1b

Cust ID:	J14YW4		J14YW4		J14YW4		J14YW5		J14YW6		SBLKJP	
RFW#:	001		001 MS		001 MSD		002		003		07LE0180-MB1	
2-Chloronaphthalene	350	U	62	%	77	%	360	U	340	U	330	U
2-Nitroaniline	870	U	70	%	87	%	890	U	850	U	830	U
Dimethylphthalate	350	U	70	%	87	%	360	U	340	U	330	U
Acenaphthylene	350	U J	66	%	81	%	360	U J	340	U J	330	U
2,6-Dinitrotoluene	350	U J	68	%	83	%	360	U J	340	U J	330	U
3-Nitroaniline	870	U	63	%	82	%	890	U	850	U	830	U
Acenaphthene	350	U	65	%	81	%	360	U	340	U	330	U
2,4-Dinitrophenol	870	U J	43	%	45	%	890	U J	850	U J	830	U
4-Nitrophenol	870	U	54	%	71	%	890	U	850	U	830	U
Dibenzofuran	350	U J	68	%	86	%	360	U J	340	U J	330	U
2,4-Dinitrotoluene	350	U	78	%	91	%	360	U	340	U	330	U
Diethylphthalate	350	U	70	%	87	%	360	U	340	U	330	U
4-Chlorophenyl-phenylether	350	U	68	%	85	%	360	U	340	U	330	U
Fluorene	350	U J	71	%	87	%	360	U J	340	U J	330	U
4-Nitroaniline	870	U	70	%	84	%	890	U	850	U	830	U
4,6-Dinitro-2-methylphenol	870	U J	47	%	56	%	890	U J	850	U J	830	U
N-Nitrosodiphenylamine (1)	350	U J	56	%	70	%	360	U J	340	U J	330	U
4-Bromophenyl-phenylether	350	U J	57	%	74	%	360	U J	340	U J	330	U
Hexachlorobenzene	350	U J	72	%	91	%	360	U J	340	U J	330	U
Pentachlorophenol	870	U J	44	%	52	%	890	U J	850	U J	830	U
Phenanthrene	350	U J	68	%	84	%	360	U J	340	U J	330	U
Anthracene	350	U	71	%	88	%	360	U	340	U	330	U
Carbazole	350	U J	66	%	84	%	360	U J	340	U J	330	U
Di-n-butylphthalate	350	U	70	%	86	%	21	J	340	U	330	U
Fluoranthene	350	U	75	%	94	%	360	U	340	U	330	U
Pyrene	350	U	73	%	89	%	360	U	340	U	330	U
Butylbenzylphthalate	350	U	75	%	92	%	360	U	340	U	330	U
3,3'-Dichlorobenzidine	350	U J	55	%	75	%	360	U J	340	U J	330	U
Benzo(a)anthracene	350	U	70	%	87	%	360	U	340	U	330	U
Chrysene	350	U	72	%	88	%	360	U	340	U	330	U
bis(2-Ethylhexyl)phthalate	330	~~72~~ 71 ~~JB~~ U	75	%	88	%	330	~~44~~ 71 ~~JB~~ U	340	U	17	J
Di-n-octyl phthalate	350	U	77	%	93	%	360	U	340	U	330	U
Benzo(b)fluoranthene	350	U	71	%	91	%	360	U	340	U	330	U
Benzo(k)fluoranthene	350	U	73	%	83	%	360	U	340	U	330	U
Benzo(a)pyrene	350	U	73	%	90	%	360	U	340	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	69	%	91	%	360	U	340	U	330	U
Dibenz(a,h)anthracene	350	U	71	%	91	%	360	U	340	U	330	U
Benzo(g,h,i)perylene	350	U	70	%	90	%	360	U	340	U	330	U

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

9/16/07

000014

Cust ID: SBLKJP BS

Sample Information

RFW#: 07LE0180-MB1
Matrix: SOIL
D.F.: 1.00
Units: ug/Kg

Surrogate Recovery	Nitrobenzene-d5	45	%
	2-Fluorobiphenyl	54	%
	Terphenyl-d14	68	%
	Phenol-d5	55	%
	2-Fluorophenol	53	%
	2,4,6-Tribromophenol	42	%

Phenol	49 *	%
bis(2-Chloroethyl)ether	44 *	%
2-Chlorophenol	49 *	%
1,3-Dichlorobenzene	42 *	%
1,4-Dichlorobenzene	42 *	%
1,2-Dichlorobenzene	45 *	%
2-Methylphenol	47 *	%
2,2'-oxybis(1-Chloropropane)	43 *	%
3/4 Methylphenol	52 *	%
N-Nitroso-di-n-propylamine	47 *	%
Hexachloroethane	42 *	%
Nitrobenzene	39 *	%
Isophorone	44 *	%
2-Nitrophenol	42 *	%
2,4-Dimethylphenol	39 *	%
bis(2-Chloroethoxy)methane	41	%
2,4-Dichlorophenol	45 *	%
1,2,4-Trichlorobenzene	39 *	%
Naphthalene	41	%
4-Chloroaniline	31	%
Hexachlorobutadiene	41	%
4-Chloro-3-methylphenol	47 *	%
2-Methylnaphthalene	45 *	%
Hexachlorocyclopentadiene	41	%
2,4,6-Trichlorophenol	44	%
2,4,5-Trichlorophenol	53	%

*= Outside of EPA CLP QC limits.

9/16/07

000015

000000016

Cust ID: SBLKJP BS

RFW#: 07LE0180-MB1

2-Chloronaphthalene	51	%
2-Nitroaniline	61	%
Dimethylphthalate	59	%
Acenaphthylene	56 *	%
2,6-Dinitrotoluene	58 *	%
3-Nitroaniline	54	%
Acenaphthene	54	%
2,4-Dinitrophenol	11 *	%
4-Nitrophenol	49	%
Dibenzofuran	57 *	%
2,4-Dinitrotoluene	61	%
Diethylphthalate	60	%
4-Chlorophenyl-phenylether	54	%
Fluorene	59 *	%
4-Nitroaniline	55	%
4,6-Dinitro-2-methylphenol	20 *	%
N-Nitrosodiphenylamine (1)	49 *	%
4-Bromophenyl-phenylether	49 *	%
Hexachlorobenzene	59 *	%
Pentachlorophenol	25 *	%
Phenanthrene	58 *	%
Anthracene	62	%
Carbazole	57 *	%
Di-n-butylphthalate	61	%
Fluoranthene	63	%
Pyrene	66	%
Butylbenzylphthalate	69	%
3,3'-Dichlorobenzidine	52	%
Benzo(a)anthracene	62	%
Chrysene	61	%
bis(2-Ethylhexyl)phthalate	67	%
Di-n-octyl phthalate	66	%
Benzo(b)fluoranthene	62	%
Benzo(k)fluoranthene	62	%
Benzo(a)pyrene	62	%
Indeno(1,2,3-cd)pyrene	60	%
Dibenz(a,h)anthracene	60	%
Benzo(g,h,i)perylene	63	%

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

9/14/07

000046

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0704L081
SDG/SAF # K0755 /RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 04-05-2007

SEMIVOLATILE

Three (3) soil samples were collected on 04-03-2007.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 04-10-2007 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 04-12-2007.

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. Samples were extracted and analyzed within required holding time.

2. Non-target compounds were detected in the samples.

3. All surrogate recoveries were within acceptance criteria.

4. Fifteen (15) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

5. Thirty-one (31) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.

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

8. 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").

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 1 8 pages.

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

LIONVILLE LABORATORY INC.

9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/20/07
Date

som\gorup\data\bna\tnu-hanford\0704-081.doc

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 07MS080

Initiator: Shawn Saylor
Date: 4-13-07
Client: TMM

Batch: 07D4L081
Samples: 001ms, 001msd, BS
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: Solid
Prep Batch: 07LE0180

1. Reason for SDR

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

b. General Discrepancy

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

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

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

(1) low recovery of 1,2,4-trichlorobenzene in the msd All surrogates ok

(2) several low spike recoveries in the ms + BS All surrogates ok

2. Known or Probable Causes(s) (1) sporadic unstable QC criteria of bis-ncb RGW 4/13/07
(2) spike/surrogate appear low across the board which may indicate a portion of the extract was lost in the water bath possibly due to a failed gl455/gl455 seal on receiver tube/KD.

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: 4/13/07

✓ 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: 4/20/07 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
(1)	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	(2)	X MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

0704L081

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-092	Page 1 of 1

Collector Coffman	Company Contact R.T. Coffman	Telephone No. 528-6409	Project Coordinator KESSNER, JH	Price Code 8K	Data Turnaround 15 DAY
Project Designation 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location 100-F-26:8 (Road Cross) Verification		SAF No. RC-032		
Ice Chest No. ERC-99-061	Field Logbook No. EFL-1174-3	COA R10F262000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No.		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container	P	aG	aG	aG	aG	P	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	250mL	60mL	60mL	120mL	120mL	500mL	125mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	See item (2) in Special Instructions. RTC	Gross Alpha; Gross Beta 4/3/07				
Sample No.	Matrix *	Sample Date	Sample Time								
J14YW4	SOIL	4/3/07	0750	X	X	X	X	X			#1 NORTH
J14YW5	SOIL	4/3/07	0800	X	X	X	X	X			BCL
J14YW6	SOIL	4/3/07	0820	X	X	X	X	X			#2 SOUTH

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From RTCoffman/RT Coffman	2030 4/3/07	Received By/Stored In Refer 3C, 3728,	2030 4/3/07
Relinquished By/Removed From Refer 3C 3728	APR 04 2007 1100	Received By/Stored In KMSingleton	APR 04 2007 1100
Relinquished By/Removed From KMSingleton	APR 04 2007 1500	Received By/Stored In FED EX	
Relinquished By/Removed From Fed Ex	4-5-07 0935	Received By/Stored In	4-5-07 0935
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

NA

(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Silver-108 metastable}

Sampler unavailable to relinquish samples from 3728 Ref # 3C
3728 Custodian removed samples for shipping on 4/4/07

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=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

120001

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-26:8			DATA PACKAGE: K0755		
VALIDATOR: ELR		LAB: LLI		DATE: 9/14/07	
			SDG: K0755		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J14YW4 J14YW5 J14YW6					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: bis(2-ethylhexyl)phthalate - U at RQL - W4 + W5

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: 14 MS/MSD out - J all no PAS

31 out LCS - J all

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: 10 RPDs out — 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:

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:

REVIEW COMMENT RECORD (RCR)

1. Date 09/25/07	2. Review No.
3. Project No. 100-F Remaining Sites Burial Grounds - Soil	4. Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Validation Package for SDGs K0755	100-F-26:8	RL Weiss	WCH - S&DM	Fermi 372-9631

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. Closed
Organization Manager (Optional)	R. L. Weiss 09/25/07 Reviewer/Point of Contract	Reviewer/Point of Contact
	Date	Date
	R. L. Weiss Author/Originator	Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Radiochemistry & Inorganic– No Comments			
2	PCB, Page 1; Subject should be PCB/Pesticide		[illegible]	
3	Wet Chemistry, Page 7; The reviewer should be "ELR" not "TLI"		[illegible]	
4	Semivolatile, Pages 3, 5, 10, & 20; 4-Chloro-3-methylphenol should be identified for "J" flagging due to low MS (59%).		[illegible]	
5	Semivolatile, Page 13; All Hexachlorochclopentadien results should be flagged "J" due to high RPD.		[illegible]	

Date: 17 August 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol – Waste Site 100-F-26:8
Subject: PCB/Pesticide - Data Package No. K0755-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0755 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	Date
J14YW4	4/3/07	Soil	C	See note 1
J14YW5	4/3/07	Soil	C	See note 1
J14YW6	4/3/07	Soil	C	See note 1

1 – PCBs by 8082 & pesticides by 8081A.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, December 2001). 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

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

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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.