

0062639

SAF-B03-015
Remaining Sites Confirmation
Sampling-Soil
FINAL VALIDATION PACKAGE

MAIL COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan

BJ
INITIAL/DATE 7/21/04

Joan Kessner

JK
INITIAL/DATE

SAF-B03-015

SDG H 2584

**Sample Location/Waste Site: 600-111 – P-11 Critical Mass
Laboratory Crib**

RECEIVED
SEP 13 2004

EDMC

Date: 29 June 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 600 -111 (P-11 Critical Mass Laboratory Crib)
Subject: Radiochemistry - Data Package No. H2584-EB (SDG No. H2584)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2584 prepared by Eberline Services Inc. (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	Waste Site	Analysis
J01F71	5/10/04	Soil	C	600-111 (P-11)	See note 1
J01F72	5/10/04	Soil	C	600-111 (P-11)	See note 1

1- Gamma spectroscopy, isotopic plutonium and americium-241.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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. Qualified Data Summary and 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.

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- **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 field blanks were submitted for analysis.

- **Accuracy**

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

All accuracy results were acceptable.

- **Laboratory Duplicates**

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

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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 Duplicate

One set of field duplicates (J01F71/J01F72) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **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. All reported results met the analyte specific RQL.

- **Completeness**

Data package No. H2584 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

FHI, Contract #20266, *Validation Statement of Work*, Bechtel Hanford Incorporated, July 7, 2003.

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BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI 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.
- UU - 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: H2584	REVIEWER: TLI	DATE: 6/29/04	PAGE <u>1</u> OF <u>1</u>
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.

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: BECHTEL-HANFORD									
Laboratory: EB									
Case		SDG: H2684							
Sample Number		J01F71		J01F72					
Remarks		Duplicate							
Sample Date		5/10/04		5/10/04					
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Plutonium-238	1	0	U	0.076	U				
Plutonium-239/240	1	0.816		0.570					
Americium-241(gea)	1	0.226		0.141	U				
Potassium-40		9.74		10.7					
Cobalt 60	0.05	U	U	U	U				
Cesium 137	0.05	U	U	U	U				
Radium-226		0.355		0.356					
Radium-228		0.653		0.761					
Europium 152	0.1	U	U	U	U				
Europium 154	0.1	U	U	U	U				
Europium 155	0.1	U	U	U	U				
Thorium-228		0.716		0.639					
Thorium-232		0.653		0.761					
Uranium-235(gea)		U	U	U	U				
Uranium-238(gea)		U	U	U	U				
Americium-241(gea)		U	U	U	U				

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* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2584

7028-001

J01F71

DATA SHEET

SDG <u>7028</u>	Client/Case no <u>Hanford</u>	SDG <u>H2584</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R405056-01</u>	Client sample id <u>J01F71</u>	
Dept sample id <u>7028-001</u>	Location/Matrix <u>600-111</u>	<u>SOLID</u>
Received <u>05/11/04</u>	Collected/Weight <u>05/10/04 10:00</u>	<u>1445 g</u>
% solids <u>96.4</u>	Custody/SAF No <u>B03-015-203</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Plutonium 238	13981-16-3	0	0.063	0.24	1.0	U	PU
Plutonium 239/240	PU-239/240	0.816	0.32	0.24	1.0		PU
Americium 241	14596-10-2	0.226	0.17	0.22	1.0		AM
Potassium 40	13966-00-2	9.74	0.50	0.25			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	0.355	0.055	0.050	0.10		GAM
Radium 228	15262-20-1	0.653	0.15	0.12	0.20		GAM
Europium 152	14683-23-9	U		0.082	0.10	U	GAM
Europium 154	15585-10-1	U		0.094	0.10	U	GAM
Europium 155	14391-16-3	U		0.075	0.10	U	GAM
Thorium 228	14274-82-9	0.716	0.056	0.047			GAM
Thorium 232	TH-232	0.653	0.15	0.12			GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Americium 241	14596-10-2	U		0.048		U	GAM

Remaining Site Confirmation Smpl.

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05/28/04

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/21/04</u>

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2584

7028-002

J01F72

DATA SHEET

SDG <u>7028</u>	Client/Case no <u>Hanford</u>	SDG <u>H2584</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R405056-02</u>	Client sample id <u>J01F72</u>	
Dept sample id <u>7028-002</u>	Location/Matrix <u>600-111</u>	<u>SOLID</u>
Received <u>05/11/04</u>	Collected/Weight <u>05/10/04 10:00</u>	<u>1468 g</u>
% solids <u>96.6</u>	Custody/SAF No <u>B03-015-203</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Plutonium 238	13981-16-3	0.076	0.076	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0.570	0.31	0.29	1.0		PU
Americium 241	14596-10-2	0.141	0.11	0.22	1.0	U	AM
Potassium 40	13966-00-2	10.7	0.56	0.24			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	U		0.032	0.10	U	GAM
Radium 226	13982-63-3	0.356	0.074	0.067	0.10		GAM
Radium 228	15262-20-1	0.761	0.17	0.14	0.20		GAM
Europium 152	14683-23-9	U		0.094	0.10	U	GAM
Europium 154	15585-10-1	U		0.097	0.10	U	GAM
Europium 155	14391-16-3	U		0.086	0.10	U	GAM
Thorium 228	14274-82-9	0.639	0.060	0.054			GAM
Thorium 232	TH-232	0.761	0.17	0.14			GAM
Uranium 235	15117-96-1	U		0.13		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Americium 241	14596-10-2	U		0.057		U	GAM

Remaining Site Confirmation Smpl.

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6/28/04

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>EBERLINE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>05/21/04</u>

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2584 was composed of two soil samples designated under SAF No. B03-015 with a Project Designation of: Remaining Sites Confirmation Sampling-Soil.

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 BHI via e-fax on May 21, 2004.

2.0 ANALYSIS NOTES

2.1 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.2 Americium-241 Analyses

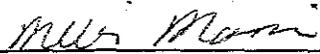
No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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



Melissa C. Mannion
Senior Program Manager

5/24/4

Date

Collector Fahlberg/Gale	Company Contact W Thompson	Telephone No. 372-9597	Project Coordinator KESSNER, JH	Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 600-111	H2584 (7028)		SAF No. B03-015	Air Quality <input type="checkbox"/>
Ice Chest No. ERC-01-040	Field Logbook No. EL 1578-1	COA C17HXU671C	Method of Shipment Fed EX		
Shipped To EBERLINE SERVICES (Formerly TMA)	Offsite Property No. A040146	Bill of Lading/Air Bill No. SEE OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	Preservation	None	None	Cool 4C	Cool 40								
	Type of Container	aG	aG	aG	aG								
	No. of Container(s)	1	1	1	1								
	Volume	1000mL	250mL	250mL	120mL								
Special Handling and/or Storage 000015		See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - 8084; 4/15/04	Semi-VOA - 8270A (TCL)								
	SAMPLE ANALYSIS												
Sample No.	Matrix *	Sample Date	Sample Time										
J01F71	SOIL	5.10.04	1000	X	X	X	X						
J01F72	Soil	5.10.04	1000	X	X	X	X						

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS								Matrix *
Relinquished By/Removed From <i>R. Fahlberg</i>	Date/Time 5.10.04	Received By/Stored In <i>Fed Ex</i>	Date/Time	(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89/90 - Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Fe-45/54 (2) ICP Metals - 6010TR (SW846) (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)								S=Soil
Relinquished By/Removed From <i>Fed Ex</i>	Date/Time 5.11.04	Received By/Stored In <i>any Eberline</i>	Date/Time 5/11/4									SE=Sediment
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									SO=Solid
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									SI=Sludge
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									W=Water
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	O=Oil								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	A=Air								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	DS=Drum Solids								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	DL=Drum Liquids								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	T=Tissue								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	WI=Wipe								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	L=Liquid								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	V=Vegetation								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	X=Other								

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

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-111	PWS	DATA PACKAGE: H2584		
VALIDATOR:	TLT	LAB:	DATE: 6/28/04		
CASE:			SDG:	H2584	
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
J01F71 J01F72					
501					

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

Appendix A – Radiochemical Data Validation Checklist

Standards Expired?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

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

Calibration checked within required frequency?Yes No N/A

Calibration check acceptable?Yes No N/A

Calibration check standards traceable?Yes No N/A

Calibration check standards expired?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

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

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

Background Counts acceptable?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

Appendix A – Radiochemical Data Validation Checklist

- 5. Blanks (Levels B, C, D, E) N/A
- Method blank analyzed within required frequency? Yes No N/A
- Method blank results acceptable? Yes No N/A
- Analytes detected in method blank? Yes No N/A
- Field blank(s) analyzed? Yes No N/A
- Field blank results acceptable? Yes No N/A
- Analytes detected in field blank(s)? Yes No N/A
- Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments: NO FR

- 6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) N/A
- LCS /BSS analyzed within required frequency? Yes No N/A
- LCS/BSS recoveries acceptable? Yes No N/A
- LCS/BSS traceable? (Levels D,E) Yes No N/A
- LCS/BSS expired? (Levels D,E) Yes No N/A
- LCS/BSS levels correct? (Levels D,E) Yes No N/A
- Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments: _____

- 7. Chemical Carrier Recovery (Levels C, D, E) N/A
- Chemical carrier added? Yes No N/A
- Chemical recovery acceptable? Yes No N/A
- Chemical carrier traceable? (Levels D, E) Yes No N/A

Appendix A – Radiochemical Data Validation Checklist

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

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

Comments: _____

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

Tracer added? Yes No N/A

Tracer recovery acceptable? Yes No N/A

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

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

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

Comments: _____

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

Matrix spike analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

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

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

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

Comments: _____

Appendix A – Radiochemical Data Validation Checklist

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 FS or PAS

12. Holding Times (All levels)

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

Comments: _____

Appendix A – Radiochemical Data Validation Checklist

- 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:

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2584

7028-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7028</u>	Client/Case no <u>Hanford</u>	SDG <u>H2584</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R405056-03</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7028-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B03-015</u>	

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
Plutonium 238	25.6	2.8	0.25	1.0		PU	24.2	0.97	106	80-120	80-120
Plutonium 239/240	28.9	3.0	0.25	1.0		PU	26.4	1.1	110	80-120	80-120
Americium 241	17.9	2.4	0.34	1.0		AM	19.0	0.76	94	79-121	80-120
Cobalt 60	0.569	0.046	0.025	0.050		GAM	0.654	0.026	87	77-123	80-120
Cesium 137	0.504	0.041	0.027	0.10		GAM	0.590	0.024	85	77-123	80-120

Remaining Site Confirmation Smpl.

QC-LCS #47473

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>05/21/04</u>

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2584

7028-005

J01F71

DUPLICATE

SDG <u>7028</u>	Client/Case no <u>Hanford</u>	SDG <u>H2584</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R405056-05</u>	Lab sample id <u>R405056-01</u>	Client sample id <u>J01F71</u>
Dept sample id <u>7028-005</u>	Dept sample id <u>7028-001</u>	Location/Matrix <u>600-111</u> SOLID
	Received <u>05/11/04</u>	Collected/Weight <u>05/10/04 10:00</u> <u>1445 g</u>
% solids <u>96.4</u>	% solids <u>96.4</u>	Custody/SAF No <u>B03-015-203</u> <u>B03-015</u>

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	PROT LIMIT
Plutonium 238	0.018	0.054	0.10	1.0	U	PU	0	0.063	0.24	U	-		
Plutonium 239/240	1.09	0.20	0.069	1.0		PU	0.816	0.32	0.24		29	60	
Americium 241	0.107	0.11	0.20	1.0	U	AM	0.226	0.17	0.22		71	183	
Potassium 40	10.1	0.55	0.27			GAM	9.74	0.50	0.25		4	34	
Cobalt 60	U		0.036	0.050	U	GAM	U		0.026	U	-		
Cesium 137	U		0.035	0.10	U	GAM	U		0.026	U	-		
Radium 226	0.418	0.058	0.056	0.10		GAM	0.355	0.055	0.050		16	45	
Radium 228	0.535	0.14	0.14	0.20		GAM	0.653	0.15	0.12		20	61	
Europium 152	U		<u>0.12</u>	0.10	U	GAM	U		0.082	U	-		
Europium 154	U		<u>0.12</u>	0.10	U	GAM	U		0.094	U	-		
Europium 155	U		0.091	0.10	U	GAM	U		0.075	U	-		
Thorium 228	0.669	0.058	0.051			GAM	0.716	0.056	0.047		7	36	
Thorium 232	0.535	0.14	0.14			GAM	0.653	0.15	0.12		20	61	
Uranium 235	U		0.15		U	GAM	U		0.12	U	-		
Uranium 238	U		3.9		U	GAM	U		2.9	U	-		
Americium 241	U		0.062		U	GAM	U		0.048	U	-		

Remaining Site Confirmation Smpl.

QC-DUP#1 47475

000025

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 05/21/04

Date: 29 June 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 600-111 (P-11
Critical Mass Laboratory Crib)
Subject: PCB - Data Package No. H2584-LLI (SDG No. H2584)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2584-LLI prepared by Lionville Laboratory Incorporated (LLI). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Waste Site	Analysis
J01F71	5/10/04	Soil	C	600-111 (P-11)	See note 1
J01F72	5/10/04	Soil	C	600-111 (P-11)	See note 1

1 - PCBs by 8082.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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. Qualified Data Summary and 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.

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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 target compound 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 50% to 150% (laboratory CLP limits for chlorinated pesticides). 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.

All accuracy spike results were acceptable.

Surrogate Recovery

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The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

All matrix spike/matrix spike duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J01F71/J01F72) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

000003

- **Completeness**

Data Package No. H2584-LLI 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

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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

PCB DATA QUALIFICATION SUMMARY*

SDG: H2584	REVIEWER: TLI	DATE: 6/29/04	PAGE <u>1</u> OF <u>1</u>
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

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD									
Laboratory: Lionville Laboratory Inc.									
Case:		SDG: H2584							
Sample Number		J01F71		J01F72					
Remarks		Duplicate							
Sample Date		5/10/04		5/10/04					
Extraction Date		5/12/04		5/12/04					
Analysis Date		5/14/04		5/14/04					
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	14	U	14	U				
Aroclor-1221	20	14	U	14	U				
Aroclor-1232	20	14	U	14	U				
Aroclor-1242	20	14	U	14	U				
Aroclor-1248	20	14	U	14	U				
Aroclor-1254	20	14	U	14	U				
Aroclor-1260	20	14	U	14	U				

0100000

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 05/18/04 08:46

RFW Batch Number: 0405L588

Client: TNU-HANFORD B03-015

Work Order: 11343606001 Page: 1

Cust ID:	J01F71	J01F71	J01F71	J01F72	PBLKKC	PBLKKC BS
Sample Information	RFW#: 001	001 MS	001 MSD	002	04LE0613-MB1	04LE0613-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:	Decachlorobiphenyl	100 %	125 * %	100 %	110 %	100 %
	Tetrachloro-m-xylene	105 %	115 %	90 %	100 %	80 %
	=====fl=====	=====fl=====	=====fl=====	=====fl=====	=====fl=====	=====fl=====
Aroclor-1016	14 U	113 %	95 %	14 U	13 U	85 %
Aroclor-1221	14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1232	14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1242	14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1248	14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1254	14 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1260	14 U	115 %	97 %	14 U	13 U	89 %

Cust ID: PBLKKC BSD

Sample Information RFW#: 04LE0613-MB1
 Matrix: SOIL
 D.F.: 1.00
 Units: UG/KG

Surrogate:	Decachlorobiphenyl	100 %
	Tetrachloro-m-xylene	85 %
	=====fl=====	=====fl=====
Aroclor-1016	85 %	
Aroclor-1221	13 U	
Aroclor-1232	13 U	
Aroclor-1242	13 U	
Aroclor-1248	13 U	
Aroclor-1254	13 U	
Aroclor-1260	88 %	

Handwritten signature

05/18/04

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

0000011

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU HANFORD B03-015
LVL#: 0405L588
SDG/SAF#: H2584/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 05-11-04

PCB

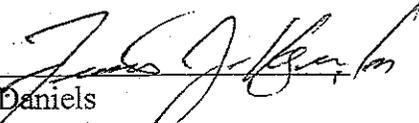
The set of samples consisted of two (2) soil samples collected on 05-10-04.

The samples and the associated QC samples were extracted on 05-12-04 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 05-14-04. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The samples and the associated QC samples received a Sulfuric Acid Cleanup performed according to Lionville Laboratory SOPs based on SW-846 method 3665A.
4. The method blank was below the reporting limits for all target compounds.
5. One (1) of fourteen (14) surrogate recoveries was outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

10. To the best of my knowledge, this data report is in compliance with the terms and conditions of the purchase order, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hard copy data package and in the electronic data submitted on diskette has been authorized by the cognizant laboratory manager or his/her designee to be accurate as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/28/04
Date

pefir:\group\data\pest\lvm\05L-588.pcb



000014

Collector Fahlberg/Gale	Company Contact W Thompson	Telephone No. 372-9597	Project Coordinator KESSNER, JH	Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 600-111	SAF No. B03-015	Air Quality		

Ice Chest No. ERC-99-013	Field Logbook No. EL 1578-1	COA C17HXU671C	Method of Shipment Fed EX		
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Shipped To EBERLINE SERVICES (Formerly TMA)	Offsite Property No. A040174	Bill of Lading/Air Bill No. SEE OSPC
------------------------------------------------	---------------------------------	-----------------------------------------

POSSIBLE SAMPLE HAZARDS/REMARKS
 Samples did not originate in radiological controlled area. No total activity associated with sample/samples.
Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1						
Volume	1000mL	250mL	250mL	120mL						

SAMPLE ANALYSIS

See item (1) in Special Instructions. *See item (2) in Special Instructions.*

PCBs - 8082: 8081, Chloro-Herbicides - 4.15.04

400015

Sample No.	Matrix *	Sample Date	Sample Time										
J01F71	SOIL	5.10.04	1000	X	X	X	X						
J01F72	Soil	5.10.04	1000	X	X	X	X						

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From <i>R. Fahlberg</i>	Date/Time 5.10.04	Received By/Stored In <i>Fed Ex</i>	Date/Time	(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium [Plutonium-238, Plutonium-239/240]; Strontium-90 - Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; (2) ICP Metals - 6010TR (SW846) [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)	S=Soil SE=Sediment SO=Soils SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From <i>Fed Ex</i>	Date/Time 5.11.04/0945	Received By/Stored In <i>[Signature]</i>	Date/Time 5.11.04/0945			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			

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

Appendix 5

Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 600-III RWS	DATA PACKAGE: H2854				
VALIDATOR: TLI	LAB: LLI		DATE: 6/28/04		
CASE:			SDG: H2854		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
JOIF71 JOIF72					
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: _____

PESTICIDE/PCB DATA VALIDATION CHECKLIST

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

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

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

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

PESTICIDE/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: _____

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: _____

PESTICIDE/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)

Fluorocil ® (or other absorbant) 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: 29 June 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 600-111 (P-11 Critical Mass Laboratory Crib)
Subject: Inorganic - Data Package No. H2584-LLI (SDG No. H2584)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2584-LLI 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	Waste Site	Analysis
J01F71	5/10/04	Soil	C	600-111 (P-11)	See note 1
J01F72	5/10/04	Soil	C	600-111 (P-11)	See note 1

1 - ICP metals; mercury by 7471A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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. Qualified Data Summary and 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.

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- **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.

Due to preparation blank contamination, the boron result in sample J01F72 was qualified as undetected and as an estimate and flagged "UJ".

Due to preparation blank contamination, the selenium result in sample J01F71 was qualified as undetected and as an estimate and flagged "UJ".

All other 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 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of

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greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (61.1%), all antimony results were qualified as estimates and flagged "J".

All other matrix spike recovery results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

Due to an RPD outside QC limits (36.4%), all silicon results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J01F71/J01F72) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RDLs to ensure that laboratory detection levels meet the required criteria. All reported results met the analyte specific RDL.

- **Completeness**

Data package No. H2584-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to preparation blank contamination, the boron result in sample J01F72 was qualified as undetected and as an estimate and flagged "UJ". Due to preparation blank contamination, the selenium result in sample J01F71 was qualified as undetected and as an estimate and flagged "UJ". Due to a matrix spike recovery outside QC limits (61.1%), all antimony results were qualified as estimates and flagged "J". Due to an RPD outside QC limits (36.4%), all silicon results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI 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

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI 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

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H2584	REVIEWER: TLI	DATE: 6/29/04	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Boron	UJ	J01F72	Blank contamination
Selenium	UJ	J01F71	Blank contamination
Silicon	J	All	RPD
Antimony	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.

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD															
Laboratory: LLI															
Case		SDG: H2584													
Sample Number		J01F71				J01F72									
Remarks		Duplicate													
Sample Date		5/10/04				5/10/04									
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.05	U	0.06	U										
Aluminum		7260		6780											
Arsenic		8.7		8.3											
Boron		1.5		1.3	UJ										
Barium	20	102		92.4											
Beryllium		0.29		0.24											
Calcium		4870		4970											
Cadmium	0.2	0.09		0.17											
Cobalt		8.1		7.3											
Chromium	1	11.8		9.5											
Copper		16.8		17.4											
Iron		24700		23700											
Mercury	0.2	0.01	U	0.02	U										
Potassium		1350		1340											
Magnesium		5000		4580											
Manganese		378		346											
Molybdenum		0.54		0.47											
Sodium		170		160											
Nickel		15.4		11.3											
Lead	5	18.6		19.4											
Antimony		0.20	UJ	0.27	UJ										
Selenium	1	0.29	UJ	0.34	U										
Silicon		319	J	438	J										
Vanadium		58.5		60.4											
Zinc		49.2		49.1											

000010

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/20/04

CLIENT: TNU-HANFORD B03-015 **H2584**
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0405L588

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J01F71	Silver, Total	0.05	u MG/KG	0.05	1.0
		Aluminum, Total	7260	MG/KG	2.6	1.0
		Arsenic, Total	8.7	MG/KG	0.26	1.0
		Boron, Total	1.5	MG/KG	0.15	1.0
		Barium, Total	102	MG/KG	0.02	1.0
		Beryllium, Total	0.29	MG/KG	0.02	1.0
		Calcium, Total	4870	MG/KG	1.6	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Cobalt, Total	8.1	MG/KG	0.05	1.0
		Chromium, Total	11.8	MG/KG	0.04	1.0
		Copper, Total	16.8	MG/KG	0.09	1.0
		Iron, Total	24700	MG/KG	0.83	1.0
		Mercury, Total	0.01	u MG/KG	0.01	1.0
		Potassium, Total	1350	MG/KG	0.80	1.0
		Magnesium, Total	5000	MG/KG	0.29	1.0
		Manganese, Total	378	MG/KG	0.008	1.0
		Molybdenum, Total	0.54	MG/KG	0.14	1.0
		Sodium, Total	170	MG/KG	0.11	1.0
		Nickel, Total	15.4	MG/KG	0.08	1.0
		Lead, Total	18.6	MG/KG	0.15	1.0
		Antimony, Total	0.20	u MG/KG	0.20	1.0
		Selenium, Total	0.29	u MG/KG	0.26	1.0
		Silicon, Total	319	J MG/KG	0.63	1.0
		Vanadium, Total	58.5	MG/KG	0.04	1.0
		Zinc, Total	49.2	MG/KG	0.03	1.0

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6/2/04

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/20/04

CLIENT: TNU-HANFORD B03-015
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0405L588

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J01F72	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Aluminum, Total	6780	MG/KG	3.4	1.0
		Arsenic, Total	8.3	MG/KG	0.34	1.0
		Boron, Total	1.3	MG/KG	0.20	1.0
		Barium, Total	92.4	MG/KG	0.02	1.0
		Beryllium, Total	0.24	MG/KG	0.02	1.0
		Calcium, Total	4970	MG/KG	2.1	1.0
		Cadmium, Total	0.17	MG/KG	0.04	1.0
		Cobalt, Total	7.3	MG/KG	0.06	1.0
		Chromium, Total	9.5	MG/KG	0.05	1.0
		Copper, Total	17.4	MG/KG	0.12	1.0
		Iron, Total	23700	MG/KG	1.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1340	MG/KG	1.1	1.0
		Magnesium, Total	4580	MG/KG	0.39	1.0
		Manganese, Total	346	MG/KG	0.01	1.0
		Molybdenum, Total	0.47	MG/KG	0.18	1.0
		Sodium, Total	160	MG/KG	0.14	1.0
		Nickel, Total	11.3	MG/KG	0.10	1.0
		Lead, Total	19.4	MG/KG	0.20	1.0
		Antimony, Total	0.27 u	MG/KG	0.27	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Silicon, Total	438	MG/KG	0.84	1.0
		Vanadium, Total	60.4	MG/KG	0.05	1.0
		Zinc, Total	49.1	MG/KG	0.04	1.0

Handwritten: u/25/04

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Handwritten initials: JK

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000013



Analytical Report

Client: TNU-HANFORD B03-015
LVL#: 0405L588
SDG/SAF#: H2584/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 05-11-04

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
 - a). The MB result for Silicon was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recoveries for 4 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 18 pages.

000014

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

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
J01F71	Aluminum	20,000	104
	Iron	20,000	102
	Manganese	2000	93
	Antimony	100	95

12. The duplicate analyses for 5 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. 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.
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

jjw/m05-588

06-01-04

Date



000015

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B03-015-203

Page 1 of 1

Collector Fahlberg/Gale	Company Contact W Thompson	Telephone No. 372-9597	Project Coordinator KESSNER, JH	Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 600-111	SAF No. B03-015	Air Quality		
Ice Chest No. ERC-99-013	Field Logbook No. EL 1578-1	COA C17HXU671C	Method of Shipment Fed EX		
Shipped To EBERLINE SERVICES (Formerly TMA)	Offsite Property No. A040174	Bill of Lading/Air Bill No. SEE OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1						
Volume	1000mL	250mL	250mL	120mL						

SAMPLE ANALYSIS

See item (1) in Special Instructions.
See item (2) in Special Instructions.
PCBs - 8082; Pesticides - 8084; Chloro-Herbicides - ERABLES - 4.15.04

Sample No.	Matrix *	Sample Date	Sample Time										
J01F71	SOIL	5.10.04	1000	X	X	X	X						
J01F72	Soil	5.10.04	1000	X	X	X	X						

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

Matrix *

Relinquished By/Removed From R. Fahlberg	Date/Time 5.10.04	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 5.11.04/0945	Received By/Stored In J. J. [Signature]	Date/Time 5.11.04/0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium [Plutonium-238, Plutonium-239/240]; Strontium-89/90 - Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/232, Uranium-235, Uranium-238]; Total 3r; Total 4r]

(2) ICP Metals - 6010TR (SW846) [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)

- S=Soil
- SE=Sediment
- SO=Solid
- SL=Sudge
- 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

Appendix 5

Data Validation Supporting Documentation

000017

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-111 AWS		DATA PACKAGE: H2584		
VALIDATOR:	FCI	LAB:	LLI	DATE: 6/23/04	
CASE:			SDG: H2584		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J01F71 J01F72					
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: Boron - UJ F72 NO FR
Selenium - UJ F71

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 6/70 J all NO PAS

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: Silicon 36.470 - J all

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? Yes No N/A
ICP serial dilution %D values acceptable? Yes No N/A
ICP post digestion spike required? Yes No N/A
ICP post digestion spike values acceptable? Yes No N/A
Standards traceable? Yes No N/A
Standards expired? Yes No N/A
Transcription/calculation errors? Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

- Results reported for all requested analyses? Yes No N/A
- Results supported in the raw data? (Levels D, E) Yes No N/A
- Samples properly prepared? (Levels D, E) Yes No N/A
- Detection limits meet RDL? Yes No N/A
- Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

000023

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/20/04

CLIENT: TNU-HANFORD B03-015

LVL LOT #: 0405L588

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	04L0328-MB1	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Aluminum, Total	3.4 u	MG/KG	3.4	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Boron, Total	0.28	MG/KG	0.20	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	2.6	MG/KG	2.1	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.07	MG/KG	0.06	1.0
		Chromium, Total	0.05 u	MG/KG	0.05	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Iron, Total	1.1 u	MG/KG	1.1	1.0
		Potassium, Total	10.6	MG/KG	1.1	1.0
		Magnesium, Total	0.86	MG/KG	0.39	1.0
		Manganese, Total	0.01 u	MG/KG	0.01	1.0
		Molybdenum, Total	0.18 u	MG/KG	0.18	1.0
		Sodium, Total	1.1	MG/KG	0.14	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.20 u	MG/KG	0.20	1.0
		Antimony, Total	0.27 u	MG/KG	0.27	1.0
		Selenium, Total	0.35	MG/KG	0.34	1.0
		Silicon, Total	49.3	MG/KG	0.84	1.0
		Vanadium, Total	0.05 u	MG/KG	0.05	1.0
		Zinc, Total	0.04 u	MG/KG	0.04	1.0
BLANK1	04C0105-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/20/04

CLIENT: TNU-HANFORD B03-015
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 04051588

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J01F71	Silver, Total	4.3	0.05u	4.9	87.8	1.0
		Aluminum, Total	8150	7260	194	459.2*	1.0
		Arsenic, Total	177	8.7	194	86.5	1.0
		Boron, Total	82.6	1.5	97.2	83.4	1.0
		Barium, Total	256	102	194	79.2	1.0
		Beryllium, Total	4.5	0.29	4.9	85.8	1.0
		Calcium, Total	7240	4870	2430	97.5	1.0
		Cadmium, Total	4.4	0.09	4.9	88.0	1.0
		Cobalt, Total	51.0	8.1	48.6	88.3	1.0
		Chromium, Total	29.8	11.8	19.4	92.8	1.0
		Copper, Total	39.3	16.8	24.3	92.6	1.0
		Iron, Total	25500	24700	97.2	841.8*	1.0
		Mercury, Total	0.16	0.01u	0.15	104.7	1.0
		Potassium, Total	3560	1350	2430	91.0	1.0
		Magnesium, Total	7170	5000	2430	89.3	1.0
		Manganese, Total	414	378	48.6	73.5*	1.0
		Molybdenum, Total	87.3	0.54	97.2	89.3	1.0
		Sodium, Total	2310	170	2430	88.0	1.0
		Nickel, Total	55.7	15.4	48.6	82.9	1.0
		Lead, Total	61.0	18.6	48.6	87.2	1.0
		Antimony, Total	29.7	0.20u	48.6	61.1	1.0
		Selenium, Total	164	0.29	194	84.0	1.0
		Silicon, Total	437	319	97.2	121.6	1.0
		Vanadium, Total	105	58.5	48.6	95.9	1.0
		Zinc, Total	95.1	49.2	48.6	94.4	1.0

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Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/20/04

CLIENT: TNU-HANFORD B03-015
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0405L588

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	
-001REP	J01F71	Silver, Total	0.05u	0.06u	NC	1.0
		Aluminum, Total	7260	7690	5.7	1.0
		Arsenic, Total	8.7	8.1	7.1	1.0
		Boron, Total	1.5	1.2	22.2	1.0
		Barium, Total	102	90.7	11.9	1.0
		Beryllium, Total	0.29	0.28	5.4	1.0
		Calcium, Total	4870	5670	15.0	1.0
		Cadmium, Total	0.09	0.14	51.1	1.0
		Cobalt, Total	8.1	7.8	3.8	1.0
		Chromium, Total	11.8	9.5	21.6	1.0
		Copper, Total	16.8	16.9	0.59	1.0
		Iron, Total	24700	24700	0.16	1.0
		Mercury, Total	0.01u	0.02u	NC	1.0
		Potassium, Total	1350	1340	0.98	1.0
		Magnesium, Total	5000	4760	4.9	1.0
		Manganese, Total	378	396	4.8	1.0
		Molybdenum, Total	0.54	0.54	1.1	1.0
		Sodium, Total	170	175	2.5	1.0
		Nickel, Total	15.4	12.1	24.0	1.0
		Lead, Total	18.6	18.1	2.7	1.0
		Antimony, Total	0.20u	0.26u	NC	1.0
		Selenium, Total	0.29	0.33u	NC	1.0
		Silicon, Total	319	221	36.4	1.0
		Vanadium, Total	58.5	61.2	4.5	1.0
		Zinc, Total	49.2	50.1	1.8	1.0

000026

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Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/20/04

CLIENT: TNU-HANFORD B03-015
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0405L588

SAMPLE	SITE ID	ANALYTE	SPIKED		UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	04L0328-LC1	Silver, LCS	48.5	50.0	MG/KG	97.0
		Aluminum, LCS	468	500	MG/KG	93.5
		Arsenic, LCS	930	1000	MG/KG	93.0
		Boron, LCS	469	500	MG/KG	93.8
		Barium, LCS	474	500	MG/KG	94.8
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Calcium, LCS	2440	2500	MG/KG	97.8
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Cobalt, LCS	248	250	MG/KG	99.1
		Chromium, LCS	49.6	50.0	MG/KG	99.2
		Copper, LCS	123	125	MG/KG	98.5
		Iron, LCS	502	500	MG/KG	100.4
		Potassium, LCS	2360	2500	MG/KG	94.3
		Magnesium, LCS	2380	2500	MG/KG	95.1
		Manganese, LCS	75.4	75.0	MG/KG	100.5
		Molybdenum, LCS	500	500	MG/KG	100.0
		Sodium, LCS	2270	2500	MG/KG	91.0
		Nickel, LCS	194	200	MG/KG	96.9
		Lead, LCS	242	250	MG/KG	96.6
		Antimony, LCS	284	300	MG/KG	94.8
		Selenium, LCS	898	1000	MG/KG	89.8
		Silicon, LCS	465	500	MG/KG	93.0
		Vanadium, LCS	247	250	MG/KG	98.7
		Zinc, LCS	96.1	100	MG/KG	96.1
LCS1	04C0105-LC1	Mercury, LCS	6.8	6.2	MG/KG	109.1

000027

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Date: 29 June 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 600-111 (P-11
Critical Mass Laboratory Crib)
Subject: Semivolatile - Data Package No. H2584-LLI (SDG No. H2584)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2584-LLI 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	Waste Site	Analysis
J01F71	5/10/04	Soil	C	600-111 (P-11)	See note 1
J01F72	5/10/04	Soil	C	600-111 (P-11)	See note 1

1 - Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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. Qualified Data Summary and 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: 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, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects

000001

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".

All method blank results were acceptable.

Field Blanks

No field blank was 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 outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

000002

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.

Sample 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 an RPD outside QC limits (32%), all phenol associated compounds (phenol, 2-methylphenol, 3 and/or 4-methylphenol, 2,4-dimethylphenol, dimethylphthalate, di-n-butylphthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, di-n-octylphthalate) were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (41%), all n-nitroso-di-n-propylamine associated compounds (4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline and 3,3-dichlorobenzidine) were qualified as estimates and flagged "J".

All other MS/MSD RPD results were acceptable.

000003

Field Duplicate Samples

One set of field duplicates (J01F71/J01F72) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Eighteen analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2584-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD outside QC limits (32%), all phenol associated compounds (phenol, 2-methylphenol, 3 and/or 4-methylphenol, 2,4-dimethylphenol, dimethylphthalate, di-n-butylphthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, di-n-octylphthalate) were qualified as estimates and flagged "J". Due to an RPD outside QC limits (41%), all n-nitroso-di-n-propylamine associated compounds (n-nitroso-di-n-propylamine, 4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline and 3,3-dichlorobenzidine) were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI 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.

Eighteen analytes exceeded the RQL in all samples. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

000006

Qualifiers which may be applied by data validators in compliance with the BHI 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.
- UU - 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: H2584	REVIEWER: TLI	DATE: 6/29/04	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
phenol 2-methylphenol 3 and/or 4-methylphenol 2,4-dimethylphenol dimethylphthalate di-n-butylphthalate butylbenzylphthalate bis(2-ethylhexyl)phthalate di-n-octylphthalate	J	All	RPD
n-nitroso-di-n-propylamine 4-chloroaniline 2-nitroaniline 3-nitroaniline 4-nitroaniline 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

Qualified Data Summary and Annotated Laboratory Reports

000010

Project: BECHTEL-HANFORD									
Laboratory: LLI									
Case:		SDG: H2584							
Sample Number		J01F71		J01F72					
Remarks				Duplicate					
Sample Date		5/10/04		5/10/04					
Extraction Date		5/14/04		5/14/04					
Analysis Date		5/18/04		5/19/04					
Semivolatile (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	350	UJ	350	UJ				
bis(2-Chloroethyl)ether	660	350	U	350	U				
2-Chlorophenol	660	350	U	350	U				
1,3-Dichlorobenzene	660	350	U	350	U				
1,4-Dichlorobenzene	660	350	U	350	U				
1,2-Dichlorobenzene	660	350	U	350	U				
2-methylphenol	660	350	UJ	350	UJ				
2,2'-oxybis(1-chloropropane)	660	350	U	350	U				
3 and/or 4-Methylphenol	660	350	UJ	350	UJ				
N-Nitroso-di-n-propylamine	660	350	UJ	350	UJ				
Hexachloroethane	660	350	U	350	U				
Nitrobenzene	660	350	U	350	U				
Isophorone	660	350	U	350	U				
2-Nitrophenol	660	350	U	350	U				
2,4-Dimethylphenol	660	350	UJ	350	UJ				
bis(2-Chloroethoxy)methane	660	350	U	350	U				
2,4-Dichlorophenol	660	350	U	350	U				
1,2,4-Trichlorobenzene	660	350	U	350	U				
Naphthalene	660	350	U	350	U				
4-Chloroaniline	660	350	UJ	350	UJ				
Hexachlorobutadiene	660	350	U	350	U				
4-Chloro-3-methylphenol	660	350	U	350	U				
2-Methylnaphthalene	660	350	U	350	U				
Hexachlorocyclopentadiene	660	350	U	350	U				
2,4,6-Trichlorophenol	660	350	U	350	U				
2,4,5-Trichlorophenol	660	870	U	870	U				
2-Chloronaphthalene	660	350	U	350	U				
2-Nitroaniline	660	870	UJ	870	UJ				
Dimethylphthalate	660	350	UJ	350	UJ				
Acenaphthylene	660	350	U	350	U				
2,6-Dinitrotoluene	660	350	U	350	U				

Project: BECHTEL-HANFORD									
Laboratory: LLI									
Case:		SDG: H2584							
Sample Number		J01F71		J01F72					
Remarks				Duplicate					
Sample Date		5/10/04		5/10/04					
Extraction Date		5/14/04		5/14/04					
Analysis Date		5/18/04		5/19/04					
Semivolatile (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	660	870	UJ	870	UJ				
Acenaphthene	660	350	U	350	U				
2,4-Dinitrophenol	660	870	U	870	U				
4-Nitrophenol	660	870	U	870	U				
Dibenzofuran	660	350	U	350	U				
2,4-Dinitrotoluene	660	350	U	350	U				
Diethylphthalate	660	350	U	350	U				
4-Chlorophenyl-phenyl ether	660	350	U	350	U				
Fluorene	660	350	U	350	U				
4-Nitroaniline	660	870	UJ	870	UJ				
4,6-Dinitro-2-methylphenol	660	870	U	870	U				
N-Nitrosodiphenylamine	660	350	U	350	U				
4-Bromophenyl-phenyl ether	660	350	U	350	U				
Hexachlorobenzene	660	350	U	350	U				
Pentachlorophenol	660	870	U	870	U				
Phenanthrene	660	350	U	350	U				
Anthracene	660	350	U	350	U				
Carbazole	660	350	U	350	U				
Di-n-butylphthalate	660	350	UJ	350	UJ				
Fluoranthene	660	350	U	350	U				
Pyrene	660	350	U	350	U				
Butylbenzylphthalate	660	350	UJ	350	UJ				
3,3'-Dichlorobenzidine	660	350	UJ	350	UJ				
Benzo(a)anthracene	660	350	U	350	U				
Chrysene	660	350	U	350	U				
bis(2-Ethylhexyl)phthalate	660	350	UJ	350	UJ				
Di-n-octylphthalate	660	350	UJ	350	UJ				
Benzo(b)fluoranthene	660	350	U	350	U				
Benzo(k)fluoranthene	660	350	U	350	U				
Benzo(a)pyrene	660	350	U	350	U				
Indeno(1,2,3-cd)pyrene	660	350	U	350	U				
Dibenz(a,h)anthracene	660	350	U	350	U				
Benzo(g,h,i)perylene	660	350	U	350	U				

000012

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Cust ID: J01F71 J01F71 J01F71 J01F72 SBLKPS SBLKPS BS
 RFW#: 001 001 MS 001 MSD 002 04LE0627-MB1 04LE0627-MB1

Chemical Name	001	001 MS	001 MSD	002	04LE0627-MB1	04LE0627-MB1
2-Chloronaphthalene	350 U	350 U	350 U	350 U	330 U	330 U
2-Nitroaniline	870 U J	870 U	870 U	870 U J	830 U	830 U
Dimethylphthalate	350 U J	350 U	350 U	350 U J	330 U	330 U
Acenaphthylene	350 U	350 U	350 U	350 U	330 U	330 U
2,6-Dinitrotoluene	350 U	350 U	350 U	350 U	330 U	330 U
3-Nitroaniline	870 U J	870 U	870 U	870 U J	830 U	830 U
Acenaphthene	350 U	65 %	67 %	350 U	330 U	67 %
2,4-Dinitrophenol	870 U	870 U	870 U	870 U	830 U	830 U
4-Nitrophenol	870 U	61 %	74 %	870 U	830 U	73 %
Dibenzofuran	350 U	350 U	350 U	350 U	330 U	330 U
2,4-Dinitrotoluene	350 U	66 %	70 %	350 U	330 U	70 %
Diethylphthalate	350 U	350 U	350 U	350 U	330 U	330 U
4-Chlorophenyl-phenylether	350 U	350 U	350 U	350 U	330 U	330 U
Fluorene	350 U	350 U	350 U	350 U	330 U	330 U
4-Nitroaniline	870 U J	870 U	870 U	870 U J	830 U	830 U
4,6-Dinitro-2-methylphenol	870 U	870 U	870 U	870 U	830 U	830 U
N-Nitrosodiphenylamine (1)	350 U	350 U	350 U	350 U	330 U	330 U
4-Bromophenyl-phenylether	350 U	350 U	350 U	350 U	330 U	330 U
Hexachlorobenzene	350 U	350 U	350 U	350 U	330 U	330 U
Pentachlorophenol	870 U	59 %	59 %	870 U	830 U	81 %
Phenanthrene	350 U	350 U	350 U	350 U	330 U	330 U
Anthracene	350 U	350 U	350 U	350 U	330 U	330 U
Carbazole	350 U	350 U	350 U	350 U	330 U	330 U
Di-n-butylphthalate	350 U J	350 U	350 U	350 U J	330 U	330 U
Fluoranthene	350 U	350 U	350 U	350 U	330 U	330 U
Pyrene	350 U	95 %	96 %	350 U	330 U	79 %
Butylbenzylphthalate	350 U J	350 U	350 U	350 U J	330 U	330 U
3,3'-Dichlorobenzidine	350 U J	350 U	350 U	350 U J	330 U	330 U
Benzo(a)anthracene	350 U	350 U	350 U	350 U	330 U	330 U
Chrysene	350 U	350 U	350 U	350 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	350 U J	350 U	350 U	350 U J	330 U	330 U
Di-n-octyl phthalate	350 U J	350 U	350 U	350 U J	330 U	330 U
Benzo(b)fluoranthene	350 U	350 U	350 U	350 U	330 U	330 U
Benzo(k)fluoranthene	350 U	350 U	350 U	350 U	330 U	330 U
Benzo(a)pyrene	350 U	350 U	350 U	350 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	350 U	350 U	350 U	350 U	330 U	330 U
Dibenz(a,h)anthracene	350 U	350 U	350 U	350 U	330 U	330 U
Benzo(g,h,i)perylene	350 U	350 U	350 U	350 U	330 U	330 U

000014

PK
U/2/04

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

Cust ID: SBLKPS BSD

Sample Information RFW#: 04LE0627-MB1
Matrix: SOIL
D.F.: 1.00
Units: UG/KG

Surrogate	Nitrobenzene-d5	67	%
Recovery	2-Fluorobiphenyl	69	%
	Terphenyl-d14	82	%
	Phenol-d5	70	%
	2-Fluorophenol	71	%
	2,4,6-Tribromophenol	73	%

Phenol	65	%
bis(2-Chloroethyl) ether	330	U
2-Chlorophenol	61	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	65	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
3 and/or 4-Methylphenol	330	U
N-Nitroso-di-n-propylamine	71	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy) methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	70	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	64	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	830	U

*= Outside of EPA CLP QC limits.

R
6/28/04

000015

07-12-04 08:33pm From-LIONVILLE LABORATORY INCORPORATED 8102803041 T-090 P.03/03 E-944

Cust ID: SBLKPS BSD

RFW#: 04LE0627-MB1

2-Chloronaphthalene	330	U
2-Nitroaniline	830	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	830	U
Acenaphthene	73	%
2,4-Dinitrophenol	830	U
4-Nitrophenol	67	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	70	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	830	U
4,6-Dinitro-2-methylphenol	830	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	75	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-butylphthalate	330	U
Fluoranthene	330	U
Pyrene	82	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo (a) anthracene	330	U
Chrysene	330	U
bis (2-Ethylhexyl) phthalate	330	U
Di-n-octyl phthalate	330	U
Benzo (b) fluoranthene	330	U
Benzo (k) fluoranthene	330	U
Benzo (a) pyrene	330	U
Indeno (1,2,3-cd) pyrene	330	U
Dibenz (a,h) anthracene	330	U
Benzo (g,h,i) perylene	330	U

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

000016

JR
6/28/04

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Client: TNU HANFORD B03-015
LVL#: 0405L588
SDG/SAF#: H2584/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 05-11-2004

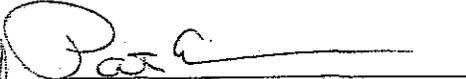
SEMIVOLATILE

Two (2) soil samples were collected on 05-10-2004.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on method 3550 on 05-14-2004 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 05-16,18,19-2004.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
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").
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


J. Michael Taylor
President

Lionville Laboratory Incorporated

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The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

05-26-04
Date

000018

02

Collector Fahlberg/Gale	Company Contact W Thompson	Telephone No. 372-9597	Project Coordinator KESSNER, JH	Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 600-111	SAF No. B03-015	Air Quality		

Ice Chest No. ERC-99-013	Field Logbook No. EL 1578-1	COA C17HXU671C	Method of Shipment Fed EX		
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Shipped To EBERLINE SERVICES (Formerly TMA)	Offsite Property No. A040174	Bill of Lading/Air Bill No. SEE OSPC			
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POSSIBLE SAMPLE HAZARDS/REMARKS Samples did not originate in radiological controlled area. No total activity associated with sample/samples. Special Handling and/or Storage	Preservation	None	None	Cool 4C	Cool 4C								
	Type of Container	aG	aG	aG	aG								
	No. of Container(s)	1	1	1	1								
	Volume	1000mL	250mL	250mL	120mL								

SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8084; Chloro-Herbicides - 8085; 4-15-04	Semi-VOA - 8270A (TCL)									
	5100019	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8084; Chloro-Herbicides - 8085; 4-15-04	Semi-VOA - 8270A (TCL)								

Sample No.	Matrix *	Sample Date	Sample Time										
J01F71	SOIL	5.10.04	1000	X	X	X	X						
J01F72	Soil	5.10.04	1000	X	X	X	X						

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From P. Fahlberg Date/Time 5.10.04	Received By/Stored In Fed Ex Date/Time 5.11.04	(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium [Plutonium-238, Plutonium-239/240]; Strontium-90 - Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total U; (2) ICP Metals - 6010TR (SW846) [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)				S=Soil SF=Settlement SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WJ=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By/Removed From Fed Ex Date/Time 5.11.04/0945	Received By/Stored In J. J. J. J. Date/Time 5.11.04/1045							
Relinquished By/Removed From	Received By/Stored In							
Relinquished By/Removed From	Received By/Stored In							
Relinquished By/Removed From	Received By/Stored In							
Relinquished By/Removed From	Received By/Stored In							

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

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	<u>C</u>	D	E
PROJECT:	600-111 RWS		DATA PACKAGE: H2584		
VALIDATOR:	TLE	LAB:	DATE: 6/28/04		
CASE:			SDG: H2584		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	<u>SW-846 8270</u>		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J01F71 J01F72					
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: NO FB

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

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

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

- MS/MSD samples analyzed? Yes No N/A
- MS/MSD RPD values acceptable? Yes No N/A
- MS/MSD standards NIST traceable? (Levels D, E) Yes No N/A
- MS/MSD standards expired? (Levels D, E) Yes No N/A
- Field duplicate RPD values acceptable? Yes No N/A
- Field split RPD values acceptable? Yes No N/A
- Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: phenol 3270 - J all associated
N-nitroso-di-n-propylamine - 4170 - J all associated

6. SYSTEM PERFORMANCE (Levels D and E)

- Internal standards analyzed? Yes No N/A
- Internal 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: 18 m

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: _____

