0059871

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

MAIL COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan KS 6.12.03
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE COVER SHEET)

SDG H2186 SAF-B03-015

Sample Location/Waste Site: 128-K-1

RECEIVED
JUL 28 2003
EDMC

Date: 28 May 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil-
Waste Site 128-K-1
Subject: Inorganics - Data Package No. H2186-LLI (SDG No. H2186)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2186-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	Analysis
J00MB0	4/24/03	Soil	C	See note 1
J00MB1	4/24/03	Soil	C	See note 1
J00MB2	4/24/03	Soil	C	See note 1
J00MB3	4/24/03	Soil	C	See note 1
J00MB4	4/25/03	Soil	C	See note 1
J00MB5	4/25/03	Soil	C	See note 1
J00MB6	4/25/03	Soil	C	See note 1
J00MC6	4/24/03	Soil	C	See note 1
J00MC8	4/24/03	Soil	C	See note 1
J00M98	4/22/03	Soil	C	See note 1
J00M99	4/22/03	Soil	C	See note 1

1 - ICP metals; mercury.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL December 2001) 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 Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

All preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J00MC8) was submitted for analysis. Barium, mercury and lead were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike

Matrix spike (MS) 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 recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All 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.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J00MB0/J00MC6) were submitted for analysis. Duplicates are evaluated based on the same criteria as 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 reported results met the analyte specific RQL.

- **Completeness**

Data package No. H2186-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

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

DATA QUALIFICATION SUMMARY

SDG: H2186	REVIEWER: TLI	DATE: 5/28/03	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

INORGANIC ANALYSIS, SOIL MATRIX, MG/KG

Project: BECHTEL-HANFORD																					
Laboratory: LLI																					
Case	SDG: H2186																				
Sample Number		J00MB0		J00MB1		J00MB2		J00MB3		J00MB4		J00MB5		J00MB6		J00MC6					
Remarks																Duplicate					
Sample Date		4/24/03		4/24/03		4/24/03		4/24/03		4/25/03		4/25/03		4/25/03		4/24/03					
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.08	U	0.08	U	0.07	U	0.08	U	0.08	U	0.08	U	0.08	U	0.07	U				
Arsenic		2.8		3.0		1.8		2.8		2.7		3.7		3.0		2.8					
Barium	20	60.6		65.2		54.4		53.9		65.8		57.8		71.5		66.6					
Cadmium	0.2	0.11		0.15		0.11		0.09		0.08		0.04	U	0.04	U	0.04	U				
Chromium (total)	1	7.6		9.5		5.9		6.4		10.1		8.7		10.5		9.1					
Mercury	0.2	0.02		0.02		0.02		0.02		0.02		0.02		0.02		0.02					
Lead	5	4.2		5.2		3.5		3.8		4.7		5.8		5.7		5.0					
Selenium	1	0.54		0.67		0.76		0.80		0.74		0.38	U	0.36	U	0.33	U				
Sample Number		J00MC8		J00M98		J00M99															
Remarks		E. Blank																			
Sample Date		4/24/03		4/22/03		4/22/03															
Inorganics	RQL	Result	Q	Result	Q	Result	Q														
Silver	0.2	0.08	U	0.08	U	0.08	U														
Arsenic		0.35	U	2.9		3.4															
Barium	20	1.2		69.5		67.6															
Cadmium	0.2	0.04	U	0.04	U	0.04	U														
Chromium (total)	1	0.06	U	9.5		9.7															
Mercury	0.2	0.01		0.02		0.02															
Lead	5	0.40		6.2		10.8															
Selenium	1	0.36	U	0.36	U	0.38	U														

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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 05/07/03

CLIENT: TNUHANFORD B03-015 H2186 LVL LOT #: 0304L294

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00MB0	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.8	MG/KG	0.35	1.0
		Barium, Total	60.6	MG/KG	0.01	1.0
		Cadmium, Total	0.11	MG/KG	0.04	1.0
		Chromium, Total	7.6	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Lead, Total	4.2	MG/KG	0.26	1.0
		Selenium, Total	0.54	MG/KG	0.37	1.0
-002	J00MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.0	MG/KG	0.34	1.0
		Barium, Total	65.2	MG/KG	0.01	1.0
		Cadmium, Total	0.15	MG/KG	0.04	1.0
		Chromium, Total	9.5	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Lead, Total	5.2	MG/KG	0.25	1.0
		Selenium, Total	0.67	MG/KG	0.35	1.0
-003	J00MB2	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	1.8	MG/KG	0.32	1.0
		Barium, Total	54.4	MG/KG	0.009	1.0
		Cadmium, Total	0.11	MG/KG	0.04	1.0
		Chromium, Total	5.9	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Lead, Total	3.5	MG/KG	0.24	1.0
		Selenium, Total	0.76	MG/KG	0.33	1.0
-004	J00MB3	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.8	MG/KG	0.37	1.0
		Barium, Total	53.9	MG/KG	0.01	1.0
		Cadmium, Total	0.09	MG/KG	0.04	1.0
		Chromium, Total	6.4	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.01	1.0
		Lead, Total	3.8	MG/KG	0.27	1.0
		Selenium, Total	0.80	MG/KG	0.38	1.0

JR 5/27/03

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/07/03

CLIENT: TNUHANFORD B03-015 H2186

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

LVL LOT #: 0304L294

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J00MB4	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.7	MG/KG	0.36	1.0
		Barium, Total	65.8	MG/KG	0.01	1.0
		Cadmium, Total	0.08	MG/KG	0.04	1.0
		Chromium, Total	10.1	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Lead, Total	4.7	MG/KG	0.26	1.0
		Selenium, Total	0.74	MG/KG	0.37	1.0
-006	J00MB5	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.7	MG/KG	0.37	1.0
		Barium, Total	57.8	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	8.7	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Lead, Total	5.8	MG/KG	0.27	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
-007	J00MB6	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.0	MG/KG	0.35	1.0
		Barium, Total	71.5	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	10.5	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Lead, Total	5.7	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
-008	J00MC6	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.8	MG/KG	0.32	1.0
		Barium, Total	66.6	MG/KG	0.009	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	9.1	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.01	1.0
		Lead, Total	5.0	MG/KG	0.24	1.0
		Selenium, Total	0.33 u	MG/KG	0.33	1.0

5/27/03

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/07/03

CLIENT: TNUHANFORD B03-015 H2186

WORK ORDER: 11343-696-001-9999-00

LVL LOT #: 0304L294

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J00MC8	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Barium, Total	1.2	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.06 u	MG/KG	0.06	1.0
		Mercury, Total	0.01	MG/KG	0.01	1.0
		Lead, Total	0.40	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
-010	J00M98	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.9	MG/KG	0.35	1.0
		Barium, Total	69.5	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	9.5	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.01	1.0
		Lead, Total	6.2	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
-011	J00M99	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.4	MG/KG	0.37	1.0
		Barium, Total	67.6	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	9.7	MG/KG	0.06	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Lead, Total	10.8	MG/KG	0.28	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0

JRW
5/27/03

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-015
LVL#: 0304L294
SDG/SAF#: H2186/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 04-29-03

METALS CASE NARRATIVE

1. This narrative covers the analyses of 11 soil samples.

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

   Various samples were rerun in file TA0505B as the Torch turned off in the middle of the original run, TA0502C.

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

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision 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 25 pages.

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

13. 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

05-08-03
Date

gmb/m04-294

LVLI
LIONVILLE LABORATORY INC

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-69	Page 1 of 2

Collector: Robert Fahlberg	Company Contact: Renee Nielson; Telephone No.: 521-2090	Project Coordinator: KESSNER, JH	Price Code: 8B; Data Turnaround: 7 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	Air Quality ☐
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577; COA: C17HXK671C	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A030217	Bill of Lading/Air Bill No.: SGE 05PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000027

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

Sample No.	Matrix *	Sample Date	Sample Time										
~~J00M98~~	~~SOIL~~												
~~J00M99~~	~~SOIL~~												
J00MB0	SOIL	4.24.03	0945	X	X	X	X	X		X			
J00MB1	SOIL	4.24.03	1120	X	X	X	X	X					
J00MB2	SOIL	4.24.03	1324	X	X	X	X	X		X			

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: R. Fahlberg	R. Fahlberg	4.24.03 1600	3B 3728	4.24.03 1600
Relinquished By/Removed From: REF 3B 3728		42803 1000	S J GALES	42803 1000
Relinquished By/Removed From: S J GALES		42803 1000	FED EX	
Relinquished By/Removed From: Fed Ex		4.29.03 1015	D. Mack	4.29.03 1015
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 128 103

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-69	Page 2 of 2

Collector: Robert Fahlberg	Company Contact: Renee Nielson; Telephone No.: 521-2090	Project Coordinator: KESSNER, JH	Price Code: 8B; Data Turnaround: 7 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	Air Quality: [ ]
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577; COA: C17HXK671C	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A030217	Bill of Lading/Air Bill No.: SEE OOPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000018

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	sG	sG	sG	sG	sG	sG	sG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time								
J00MB3	SOIL	4.24.03	1430	X	X	X	X	X		X	
~~J00MB4~~	~~SOIL~~										
~~J00MB5~~	~~SOIL~~										
~~J00MB6~~	~~SOIL~~										

4.24.03

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From	R Fahlberg	4.24.03 1600
Received By/Stored In	JB 3728	4.24.03 1600
Relinquished By/Removed From	REF JB 3728	42803 1000
Received By/Stored In	SJGALLOWAY	42803 1000
Relinquished By/Removed From	SJGALLOWAY	42803 1000
Received By/Stored In	FED EX	
Relinquished By/Removed From	Fed Ex	4.29.03 1015
Received By/Stored In	D. Miller	4.29.03 1015
Relinquished By/Removed From		
Received By/Stored In		
Relinquished By/Removed From		
Received By/Stored In		

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Samples are not originated in radiological controlled area. No total activity associated with sample/samples.

Personnel not available to relinquish samples from the 3728 Ref # JB on 4 / 28 / 03

Matrix: S=Soil; SE=Sediment; SO=Solid; SL=Sludge; W=Water; O=Oil; A=Air; DS=Drum; DL=Drum; 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-69	Page 2 of 2

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030217	Bill of Lading/Air Bill No.: SEE DSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000019

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

Sample No.	Matrix *	Sample Date	Sample Time									
~~J00MB3~~	~~SOIL~~											
J00MB4	SOIL	4-25-03	0852	X	X	X	X	X		X		
J00MB5	SOIL	4-25-03	1001	X	X	X	X	X		X		
J00MB6	SOIL	4-25-03	1045	X	X	X	X	X		X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Powers	4-25-03/1345	REF 3A 3728	4-25-03/1345
REF 3A 3728	42803 1000	S GALE	42803 1000
S GALE	42803 1000	FED EX	
Fed Ex	4.29.03 1015	D Mann	4.29.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3A on 4/28/03

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-71	Page 1 of 1

Collector: Robert Fahlberg	Company Contact: Renee Nielson — Telephone No.: 521-2090	Project Coordinator: KESSNER, JH	Price Code: 8B — Data Turnaround: 7 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	Air Quality ☐
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577 — COA: C17HXK671C	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A030 217	Bill of Lading/Air Bill No.: SEE DSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

020000

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
Sample No.	Matrix *	Sample Date	Sample Time								
J00MC6	SOIL	4-24-03	0945	X	X	X	X	X		X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1600 4-24-03	3B 3728	1600 4-24-03
REF 3B 3728	42803 1000	SJGALE	42803 1000
SJGALE	42803 1000	FED EX	
Fed Ex	4-29-03 1015		4-29-03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 128 103

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

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

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-73	Page 1 of 1

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXKC71C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030717	Bill of Lading/Air Bill No.: 382 OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000021

Preservation	None	None	Cool 4C	Cool 4C								
Type of Container	aG	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	1000mL	60mL	120mL	60mL								
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	See Item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)								
Sample No.	Matrix *	Sample Date	Sample Time									
J00MC8	SOIL	4.24.03	0832	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1600 4.24.03	B.B 3728	1600 4.24.03
REF 3B 3728	42803 1000	SIGALE	42803 1000
SIGALE	42803 1000	FED EX	
	4.25.03 1015		4.25.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); 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)
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

DO NOT USE FOR QA/QC.

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 12 8 03

Matrix *: S=Soil; SE=Sediment; SO=Solid; Sl=Sludge; W = Water; O=Oil; A=Air; DS=Drum Solid; DL=Drum Liqu; 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

BHLEF.011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-69	Page 1 of 2

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 217	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000022

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

Sample No.	Matrix *	Sample Date	Sample Time									
J00M98	SOIL	4-22-03	1045	X	X	X	X	X		X		
J00M99	SOIL	4.22.03	1405	X	X	X	X	X		X		
~~J00MB0~~	~~SOIL~~											
~~J00MB1~~	~~SOIL~~											
~~J00MB2~~	~~SOIL~~											

R.E. 4.22.03

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Fahlberg	1530 4.22.03	3B 3728	1530 4.22.03
REF. 3B 3728	42803 1000	SJGALE	42803 1000
SJGALE	42803 1000	FED EX	
	4.25.03 1015		4.25.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

Matr
S=Soil
SE=Sed
SO=Sol
SD=Sud
W=Wt
O=Oil
A=Air
DS=Dr
DL=Dr
T=Tis
WI=Wi
L=Liq
V=Veg
X=Oth

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

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E
PROJECT: RSCS	128-K-1		DATA PACKAGE: H2186		
VALIDATOR: TLI		LAB: LLI		DATE: 5/27/03	
CASE:			SDG: H2186		

ANALYSES PERFORMED

SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX

J00MB0 J00MB1 J00MB2 J00MB3 J00MB4 J00MB5
J00MB6 ~~J00MB7~~ J00MC6 J00MC8 J00M98
J00M99

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: Barium, mercury, lead in eb

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: 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: ~~Cadmium – 49.1 2a~~ 5/26/07

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/07/03

CLIENT: TNUHANFORD B03-015 H2186

LVL LOT #: 0304L294

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0240-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Barium, Total	0.01	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.06 u	MG/KG	0.06	1.0
		Lead, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
BLANK1	03C0101-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/07/03

CLIENT: TNUHANFORD B03-015 H2186

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

LVL LOT #: 0304L294

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J00MB0	Mercury, Total	0.19	0.02	0.16	103.0	1.0
-002	J00MB1	Silver, Total	4.9	0.08u	5.2	94.2	1.0
		Arsenic, Total	189	3.0	207	89.6	1.0
		Barium, Total	266	65.2	207	97.0	1.0
		Cadmium, Total	4.8	0.15	5.2	89.4	1.0
		Chromium, Total	29.3	9.5	20.7	95.7	1.0
		Lead, Total	52.3	5.2	51.8	90.9	1.0
		Selenium, Total	184	0.67	207	88.7	1.0

14

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/07/03

CLIENT: TNUHANFORD B03-015 H2186

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

LVL LOT #: 0304L294

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J00MB0	Mercury, Total	0.02	0.02	6.1	1.0
-002REP	J00MB1	Silver, Total	0.08u	0.08u	NC	1.0
		Arsenic, Total	3.0	2.9	3.4	1.0
		Barium, Total	65.2	60.6	7.3	1.0
		Cadmium, Total	0.15	0.09	49.1	1.0
		Chromium, Total	9.5	11.6	19.9	1.0
		Lead, Total	5.2	4.8	8.0	1.0
		Selenium, Total	0.67	0.59	11.8	1.0

Date: 28 May 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 128-K-1
Subject: Semivolatile - Data Package No. H2186-LLI (SDG No. H2186)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2186-LLI prepared by Lionville Laboratory Incorporated (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	Analysis
J00MB0	4/24/03	Soil	C	Semivolatiles by 8270C
J00MB1	4/24/03	Soil	C	Semivolatiles by 8270C
J00MB2	4/24/03	Soil	C	Semivolatiles by 8270C
J00MB3	4/24/03	Soil	C	Semivolatiles by 8270C
J00MB4	4/25/03	Soil	C	Semivolatiles by 8270C
J00MB5	4/25/03	Soil	C	Semivolatiles by 8270C
J00MB6	4/25/03	Soil	C	Semivolatiles by 8270C
J00MC6	4/24/03	Soil	C	Semivolatiles by 8270C
J00MC8	4/24/03	Soil	C	Semivolatiles by 8270C
J00M98	4/22/03	Soil	C	Semivolatiles by 8270C
J00M99	4/22/03	Soil	C	Semivolatiles by 8270C

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL December 2001) 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

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: Water samples must be extracted within 7 days of the date of sample collection and analyzed within 40 days from the date of extraction.

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

All holding times were met.

- **Method Blanks**

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

All method blank results were acceptable.

<u>Field Blanks</u>

One equipment blank (J00MC8) was submitted for analysis. Di-n-butylphthalate as detected in the equipment blank. Under the BHI statement of work, no qualification is required. All other field blank results were acceptable.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate 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 matrix spike/matrix spike duplicate results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between

the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD of 35%, all 4-chloro-3-methylphenol results were qualified as estimates and flagged "J".

All MS/MSD RPD results were acceptable.

Field Duplicate Samples

One set of field duplicate samples (J00MB0/J00MC6) 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. Eight analytes exceeded the RQL in all samples (2-nitroanaline, 2,4-dinitrophenol, 3-nitroanaline, 4-nitrophenol, 4-nitroanaline, 4,6-dinitro-2-methylphenol, pentachlorophenol and 2,4,5-trichlorophenol). Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2186-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 of 35%, all 4-chloro-3-methylphenol 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.

Eight analytes exceeded the RQL in all samples (2-nitroanaline, 2,4-dinitrophenol, 3-nitroanaline, 4-nitrophenol, 4-nitroanaline, 4,6-dinitro-2-methylphenol, pentachlorophenol and 2,4,5-trichlorophenol). 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

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.

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H2186	REVIEWER: TLI	DATE: 5/28/03	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
4-Chloro-3-methylphenol	J	All	RPD

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE/PAH ANALYSIS, WATER MATRIX, (UG/L)

Project: BECHTEL-HANFORD																					
Laboratory: LLI																					
Case:	SDG: H2186																				
Sample Number		J00MB0		J00MB1		J00MB2		J00MB3		J00MB4		J00MB5		J00MB6		J00MC6		J00MC8			
Remarks																Duplicate		E. Blank			
Sample Date		4/24/03		4/24/03		4/24/03		4/24/93		4/25/03		4/25/03		4/25/03		4/24/03		4/24/03			
Extraction Date		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03			
Analysis Date		5/1/03		5/1/03		5/1/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03			
Semivolatile (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Phenol	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
bis(2-Chloroethyl)ether	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2-Chlorophenol	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
1,3-Dichlorobenzene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
1,4-Dichlorobenzene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
1,2-Dichlorobenzene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2-Methylphenol	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2,2'-oxybis(1-chloropropane)	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
3 and/or 4-Methylphenol	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
N-Nitroso-di-n-propylamine	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Hexachloroethane	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Nitrobenzene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Isophorone	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2-Nitrophenol	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2,4-Dimethylphenol	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
bis(2-Chloroethoxy)methane	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2,4-Dichlorophenol	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
1,2,4-Trichlorobenzene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Naphthalene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
4-Chloroaniline	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Hexachlorobutadiene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
4-Chloro-3-methylphenol	660	360	UJ	360	UJ	350	UJ	350	UJ	360	UJ	360	UJ	360	UJ	360	UJ	330	UJ		
2-Methylnaphthalene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Hexachlorocyclopentadiene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2,4,6-Trichlorophenol	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2,4,5-Trichlorophenol*	660	900	U	900	U	880	U	880	U	910	U	910	U	900	U	900	U	840	U		
2-Chloronaphthalene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2-Nitroaniline*	660	900	U	900	U	880	U	880	U	910	U	910	U	900	U	900	U	840	U		
Dimethylphthalate	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Acenaphthylene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2,6-Dinitrotoluene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		

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.

* - TDL exceeded

SEMIVOLATILE/PAH ANALYSIS, WATER MATRIX, (UG/L)

Project: BECHTEL-HANFORD																					
Laboratory: LLI																					
Case:	SDG: H2186																				
Sample Number		J00MB0		J00MB1		J00MB2		J00MB3		J00MB4		J00MB5		J00MB6		J00MC6		J00MC8			
Remarks																					
Sample Date		4/24/03		4/24/03		4/24/03		4/29/03		4/25/03		4/25/03		4/25/03		4/24/03		4/24/03			
Extraction Date		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03			
Analysis Date		5/1/03		5/1/03		5/1/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03			
Semivolatile (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
3-Nitroaniline*	660	900	U	900	U	880	U	880	U	910	U	910	U	900	U	900	U	840	U		
Acenaphthene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2,4-Dinitrophenol*	660	900	U	900	U	880	U	880	U	910	U	910	U	900	U	900	U	840	U		
4-Nitrophenol*	660	900	U	900	U	880	U	880	U	910	U	910	U	900	U	900	U	840	U		
Dibenzofuran	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
2,4-Dinitrotoluene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Diethylphthalate	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
4-Chlorophenyl-phenyl ether	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Fluorene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
4-Nitroaniline*	660	900	U	900	U	880	U	880	U	910	U	910	U	900	U	900	U	840	U		
4,6-Dinitro-2-methylphenol*	660	900	U	900	U	880	U	880	U	910	U	910	U	900	U	900	U	840	U		
N-Nitrosodiphenylamine	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
4-Bromophenyl-phenyl ether	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Hexachlorobenzene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Pentachlorophenol*	660	900	U	900	U	880	U	880	U	910	U	910	U	900	U	900	U	840	U		
Phenanthrene	660	66		360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Anthracene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Carbazole	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Di-n-butylphthalate	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	130			
Fluoranthene	660	140		360	U	350	U	350	U	360	U	360	U	360	U	46		330	U		
Pyrene	660	120		360	U	350	U	350	U	360	U	360	U	360	U	46		330	U		
Butylbenzylphthalate	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
3,3'-Dichlorobenzidine	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Benzo(a)anthracene	660	61		360	U	350	U	350	U	360	U	360	U	360	U	23		330	U		
Chrysene	660	64		360	U	350	U	350	U	360	U	360	U	360	U	28		330	U		
bis(2-Ethylhexyl)phthalate	660	360	U	34		30		350	U	870		27		88		200		330	U		
Di-n-octylphthalate	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Benzo(b)fluoranthene	660	37		360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Benzo(k)fluoranthene	660	43		360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Benzo(a)pyrene	660	44		360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Indeno(1,2,3-cd)pyrene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Dibenz(a,h)anthracene	660	360	U	360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		
Benzo(g,h,i)perylene	660	33		360	U	350	U	350	U	360	U	360	U	360	U	360	U	330	U		

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. * - TDL exceeded

000013

SEMIVOLATILE/PAH ANALYSIS, WATER MATRIX, (UG/L)

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case:	SDG: H2186																		
Sample Number		J00M98		J00M99															
Remarks																			
Sample Date		4/22/03		4/22/03															
Extraction Date		4/30/03		4/30/03															
Analysis Date		5/2/03		5/2/03															
Semivolatile (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	360	U	350	U														
bis(2-Chloroethyl)ether	660	360	U	350	U														
2-Chlorophenol	660	360	U	350	U														
1,3-Dichlorobenzene	660	360	U	350	U														
1,4-Dichlorobenzene	660	360	U	350	U														
1,2-Dichlorobenzene	660	360	U	350	U														
2-Methylphenol	660	360	U	350	U														
2,2'-oxybis(1-chloropropane)	660	360	U	350	U														
3 and/or 4-Methylphenol	660	360	U	350	U														
N-Nitroso-di-n-propylamine	660	360	U	350	U														
Hexachloroethane	660	360	U	350	U														
Nitrobenzene	660	360	U	350	U														
Isophorone	660	360	U	350	U														
2-Nitrophenol	660	360	U	350	U														
2,4-Dimethylphenol	660	360	U	350	U														
bis(2-Chloroethoxy)methane	660	360	U	350	U														
2,4-Dichlorophenol	660	360	U	350	U														
1,2,4-Trichlorobenzene	660	360	U	350	U														
Naphthalene	660	360	U	350	U														
4-Chloroaniline	660	360	U	350	U														
Hexachlorobutadiene	660	360	U	350	U														
4-Chloro-3-methylphenol	660	360	UJ	350	UJ														
2-Methylnaphthalene	660	360	U	350	U														
Hexachlorocyclopentadiene	660	360	U	350	U														
2,4,6-Trichlorophenol	660	360	U	350	U														
2,4,5-Trichlorophenol*	660	910	U	880	U														
2-Chloronaphthalene	660	360	U	350	U														
2-Nitroaniline*	660	910	U	880	U														
Dimethylphthalate	660	360	U	350	U														
Acenaphthylene	660	360	U	350	U														
2,6-Dinitrotoluene	660	360	U	350	U														

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.

* - TDL exceeded

000014

SEMIVOLATILE/PAH ANALYSIS, WATER MATRIX, (UG/L)

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case:	SDG: H2186																		
Sample Number		J00M98		J00M99															
Remarks																			
Sample Date		4/22/03		4/22/03															
Extraction Date		5/2/03		4/30/03															
Analysis Date		5/5/03		5/1/03															
Semivolatile (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	910	U	880	U														
Acenaphthene	660	360	U	350	U														
2,4-Dinitrophenol*	660	910	U	880	U														
4-Nitrophenol*	660	910	U	880	U														
Dibenzofuran	660	360	U	350	U														
2,4-Dinitrotoluene	660	360	U	350	U														
Diethylphthalate	660	360	U	350	U														
4-Chlorophenyl-phenyl ether	660	360	U	350	U														
Fluorene	660	360	U	350	U														
4-Nitroaniline*	660	910	U	880	U														
4,6-Dinitro-2-methylphenol*	660	910	U	880	U														
N-Nitrosodiphenylamine	660	360	U	350	U														
4-Bromophenyl-phenyl ether	660	360	U	350	U														
Hexachlorobenzene	660	360	U	350	U														
Pentachlorophenol*	660	910	U	880	U														
Phenanthrene	660	360	U	350	U														
Anthracene	660	360	U	350	U														
Carbazole	660	360	U	350	U														
Di-n-butylphthalate	660	360	U	350	U														
Fluoranthene	660	360	U	350	U														
Pyrene	660	360	U	350	U														
Butylbenzylphthalate	660	360	U	350	U														
3,3'-Dichlorobenzidine	660	360	U	350	U														
Benzo(a)anthracene	660	360	U	350	U														
Chrysene	660	360	U	350	U														
bis(2-Ethylhexyl)phthalate	660	18		350	U														
Di-n-octylphthalate	660	360	U	350	U														
Benzo(b)fluoranthene	660	360	U	350	U														
Benzo(k)fluoranthene	660	360	U	350	U														
Benzo(a)pyrene	660	360	U	350	U														
Indeno(1,2,3-cd)pyrene	660	360	U	350	U														
Dibenz(a,h)anthracene	660	360	U	350	U														
Benzo(g,h,i)perylene	660	360	U	350	U														

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.

* - DL exceeded

000015

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 05/05/03 16:07

RFW Batch Number: 0304L294 Client: TNU-HANFORD B03-015, H2/86 Work Order: 11343606001 Page: 1a

	Cust ID:	J00MB0		J00MB0		J00MB0		J00MB1		J00MB2		J00MB3	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	73	%	72	%	87	%	83	%	85	%	76	%
	2-Fluorobiphenyl	77	%	74	%	89	%	88	%	87	%	83	%
	Terphenyl-d14	97	%	93	%	107	%	108	%	106	%	99	%
	Phenol-d5	74	%	74	%	87	%	82	%	84	%	73	%
	2-Fluorophenol	76	%	75	%	88	%	86	%	87	%	77	%
	2,4,6-Tribromophenol	80	%	81	%	98	%	92	%	84	%	77	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U	63	%	82	%	360	U	350	U	350	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	360	U	350	U	350	U
2-Chlorophenol		360	U	62	%	79	%	360	U	350	U	350	U
1,3-Dichlorobenzene		360	U	360	U	360	U	360	U	350	U	350	U
1,4-Dichlorobenzene		360	U	60	%	75	%	360	U	350	U	350	U
1,2-Dichlorobenzene		360	U	360	U	360	U	360	U	350	U	350	U
2-Methylphenol		360	U	360	U	360	U	360	U	350	U	350	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	360	U	350	U	350	U
3- and/or 4-Methylphenol		360	U	360	U	360	U	360	U	350	U	350	U
N-Nitroso-di-n-propylamine		360	U	57	%	76	%	360	U	350	U	350	U
Hexachloroethane		360	U	360	U	360	U	360	U	350	U	350	U
Nitrobenzene		360	U	360	U	360	U	360	U	350	U	350	U
Isophorone		360	U	360	U	360	U	360	U	350	U	350	U
2-Nitrophenol		360	U	360	U	360	U	360	U	350	U	350	U
2,4-Dimethylphenol		360	U	360	U	360	U	360	U	350	U	350	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	360	U	350	U	350	U
2,4-Dichlorophenol		360	U	360	U	360	U	360	U	350	U	350	U
1,2,4-Trichlorobenzene		360	U	61	%	79	%	360	U	350	U	350	U
Naphthalene		360	U	360	U	360	U	360	U	350	U	350	U
4-Chloroaniline		360	U	360	U	360	U	360	U	350	U	350	U
Hexachlorobutadiene		360	U	360	U	360	U	360	U	350	U	350	U
4-Chloro-3-methylphenol		360	U J	67	%	96	%	360	U J	350	U J	350	U
2-Methylnaphthalene		360	U	360	U	360	U	360	U	350	U	350	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	360	U	350	U	350	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	360	U	350	U	350	U
2,4,5-Trichlorophenol		900	U	900	U	900	U	900	U	880	U	880	U

*= Outside of EPA CLP QC limits.

000016

5/27/03

RFW Batch Number: 0304L294 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 1b

Cust ID:	J00MB0		J00MB0		J00MB0		J00MB1		J00MB2		J00MB3	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	360	U	350	U	350	U
2-Nitroaniline	900	U	900	U	900	U	900	U	880	U	880	U
Dimethylphthalate	360	U	360	U	360	U	360	U	350	U	350	U
Acenaphthylene	360	U	360	U	360	U	360	U	350	U	350	U
2,6-Dinitrotoluene	360	U	360	U	360	U	360	U	350	U	350	U
3-Nitroaniline	900	U	900	U	900	U	900	U	880	U	880	U
Acenaphthene	360	U	63	%	80	%	360	U	350	U	350	U
2,4-Dinitrophenol	900	U	900	U	900	U	900	U	880	U	880	U
4-Nitrophenol	900	U	65	%	81	%	900	U	880	U	880	U
Dibenzofuran	360	U	360	U	360	U	360	U	350	U	350	U
2,4-Dinitrotoluene	360	U	67	%	88	%	360	U	350	U	350	U
Diethylphthalate	360	U	360	U	360	U	360	U	350	U	350	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	360	U	350	U	350	U
Fluorene	360	U	360	U	360	U	360	U	350	U	350	U
4-Nitroaniline	900	U	900	U	900	U	900	U	880	U	880	U
4,6-Dinitro-2-methylphenol	900	U	900	U	900	U	900	U	880	U	880	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	360	U	350	U	350	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	360	U	350	U	350	U
Hexachlorobenzene	360	U	360	U	360	U	360	U	350	U	350	U
Pentachlorophenol	900	U	67	%	87	%	900	U	880	U	880	U
Phenanthrene	66	J	360	U	360	U	360	U	350	U	350	U
Anthracene	360	U	360	U	360	U	360	U	350	U	350	U
Carbazole	360	U	360	U	360	U	360	U	350	U	350	U
Di-n-butylphthalate	360	U	360	U	360	U	360	U	350	U	350	U
Fluoranthene	140	J	360	U	360	U	360	U	350	U	350	U
Pyrene	120	J	73	%	95	%	360	U	350	U	350	U
Butylbenzylphthalate	360	U	360	U	360	U	360	U	350	U	350	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	360	U	350	U	350	U
Benzo(a)anthracene	61	J	360	U	360	U	360	U	350	U	350	U
Chrysene	64	J	360	U	360	U	360	U	350	U	350	U
bis(2-Ethylhexyl)phthalate	360	U	1300		110	J	34	J	30	J	350	U
Di-n-octyl phthalate	360	U	360	U	360	U	360	U	350	U	350	U
Benzo(b)fluoranthene	37	J	360	U	360	U	360	U	350	U	350	U
Benzo(k)fluoranthene	43	J	360	U	360	U	360	U	350	U	350	U
Benzo(a)pyrene	44	J	360	U	360	U	360	U	350	U	350	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	360	U	350	U	350	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	360	U	350	U	350	U
Benzo(g,h,i)perylene	33	J	360	U	360	U	360	U	350	U	350	U

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

000017

5/27/05

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 05/05/03 16:00

RFW Batch Number: 0304L294 Client: TNU-HANFORD B03-015,H2/86 Work Order: 11343606001 Page: 2a

	Cust ID:	J00MB4		J00MB5		J00MB6		J00MC6		J00MC8		J00M98	
Sample Information	RFW#:	005		006		007		008		009		010	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	69	%	77	%	68	%	59	%	80	%	75	%
	2-Fluorobiphenyl	75	%	79	%	69	%	72	%	84	%	82	%
	Terphenyl-d14	90	%	100	%	85	%	100	%	89	%	101	%
	Phenol-d5	70	%	75	%	64	%	60	%	76	%	76	%
	2-Fluorophenol	74	%	74	%	68	%	58	%	80	%	78	%
	2,4,6-Tribromophenol	74	%	90	%	73	%	82	%	77	%	80	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U	360	U	360	U	360	U	330	U	360	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	360	U	330	U	360	U
2-Chlorophenol		360	U	360	U	360	U	360	U	330	U	360	U
1,3-Dichlorobenzene		360	U	360	U	360	U	360	U	330	U	360	U
1,4-Dichlorobenzene		360	U	360	U	360	U	360	U	330	U	360	U
1,2-Dichlorobenzene		360	U	360	U	360	U	360	U	330	U	360	U
2-Methylphenol		360	U	360	U	360	U	360	U	330	U	360	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	360	U	330	U	360	U
3- and/or 4-Methylphenol		360	U	360	U	360	U	360	U	330	U	360	U
N-Nitroso-di-n-propylamine		360	U	360	U	360	U	360	U	330	U	360	U
Hexachloroethane		360	U	360	U	360	U	360	U	330	U	360	U
Nitrobenzene		360	U	360	U	360	U	360	U	330	U	360	U
Isophorone		360	U	360	U	360	U	360	U	330	U	360	U
2-Nitrophenol		360	U	360	U	360	U	360	U	330	U	360	U
2,4-Dimethylphenol		360	U	360	U	360	U	360	U	330	U	360	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	360	U	330	U	360	U
2,4-Dichlorophenol		360	U	360	U	360	U	360	U	330	U	360	U
1,2,4-Trichlorobenzene		360	U	360	U	360	U	360	U	330	U	360	U
Naphthalene		360	U	360	U	360	U	360	U	330	U	360	U
4-Chloroaniline		360	U	360	U	360	U	360	U	330	U	360	U
Hexachlorobutadiene		360	U	360	U	360	U	360	U	330	U	360	U
4-Chloro-3-methylphenol		360	U J	360	U J	360	U J	360	U J	330	U J	360	U J
2-Methylnaphthalene		360	U	360	U	360	U	360	U	330	U	360	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	360	U	330	U	360	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	360	U	330	U	360	U
2,4,5-Trichlorophenol		910	U	910	U	900	U	900	U	840	U	910	U

*= Outside of EPA CLP QC limits.

000018

5/27/03

RFW Batch Number: 0304L294 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 2b

Cust ID:	J00MB4		J00MB5		J00MB6		J00MC6		J00MC8		J00M98	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	360	U	360	U	360	U	360	U	330	U	360	U
2-Nitroaniline	910	U	910	U	900	U	900	U	840	U	910	U
Dimethylphthalate	360	U	360	U	360	U	360	U	330	U	360	U
Acenaphthylene	360	U	360	U	360	U	360	U	330	U	360	U
2,6-Dinitrotoluene	360	U	360	U	360	U	360	U	330	U	360	U
3-Nitroaniline	910	U	910	U	900	U	900	U	840	U	910	U
Acenaphthene	360	U	360	U	360	U	360	U	330	U	360	U
2,4-Dinitrophenol	910	U	910	U	900	U	900	U	840	U	910	U
4-Nitrophenol	910	U	910	U	900	U	900	U	840	U	910	U
Dibenzofuran	360	U	360	U	360	U	360	U	330	U	360	U
2,4-Dinitrotoluene	360	U	360	U	360	U	360	U	330	U	360	U
Diethylphthalate	360	U	360	U	360	U	360	U	330	U	360	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	360	U	330	U	360	U
Fluorene	360	U	360	U	360	U	360	U	330	U	360	U
4-Nitroaniline	910	U	910	U	900	U	900	U	840	U	910	U
4,6-Dinitro-2-methylphenol	910	U	910	U	900	U	900	U	840	U	910	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	360	U	330	U	360	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	360	U	330	U	360	U
Hexachlorobenzene	360	U	360	U	360	U	360	U	330	U	360	U
Pentachlorophenol	910	U	910	U	900	U	900	U	840	U	910	U
Phenanthrene	360	U	360	U	360	U	360	U	330	U	360	U
Anthracene	360	U	360	U	360	U	360	U	330	U	360	U
Carbazole	360	U	360	U	360	U	360	U	330	U	360	U
Di-n-butylphthalate	360	U	360	U	360	U	360	U	130	J	360	U
Fluoranthene	360	U	360	U	360	U	46	J	330	U	360	U
Pyrene	360	U	360	U	360	U	46	J	330	U	360	U
Butylbenzylphthalate	360	U	360	U	360	U	360	U	330	U	360	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	360	U	330	U	360	U
Benzo(a)anthracene	360	U	360	U	360	U	23	J	330	U	360	U
Chrysene	360	U	360	U	360	U	28	J	330	U	360	U
bis(2-Ethylhexyl)phthalate	870		27	J	88	J	200	J	330	U	18	J
Di-n-octyl phthalate	360	U	360	U	360	U	360	U	330	U	360	U
Benzo(b)fluoranthene	360	U	360	U	360	U	360	U	330	U	360	U
Benzo(k)fluoranthene	360	U	360	U	360	U	360	U	330	U	360	U
Benzo(a)pyrene	360	U	360	U	360	U	360	U	330	U	360	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	360	U	330	U	360	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	360	U	330	U	360	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	360	U	330	U	360	U

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

000019

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5/27/03

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

RFW Batch Number: 0304L294 Client: TNU-HANFORD B03-015, H2186 Work Order: 11343606001 Report Date: 05/05/03 16:07 Page: 3a

	Cust ID:	J00M99		SBLKSF		SBLKSF BS	
Sample Information	RFW#:	011		03LE0506-MB1		03LE0506-MB1	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	73	%	88	%	90	%
	2-Fluorobiphenyl	76	%	93	%	93	%
	Terphenyl-d14	99	%	102	%	105	%
	Phenol-d5	68	%	84	%	88	%
	2-Fluorophenol	71	%	85	%	89	%
	2,4,6-Tribromophenol	78	%	82	%	88	%
Phenol		350	U	330	U	81	%
bis(2-Chloroethyl)ether		350	U	330	U	330	U
2-Chlorophenol		350	U	330	U	79	%
1,3-Dichlorobenzene		350	U	330	U	330	U
1,4-Dichlorobenzene		350	U	330	U	77	%
1,2-Dichlorobenzene		350	U	330	U	330	U
2-Methylphenol		350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	330	U	330	U
3- and/or 4-Methylphenol		350	U	330	U	330	U
N-Nitroso-di-n-propylamine		350	U	330	U	74	%
Hexachloroethane		350	U	330	U	330	U
Nitrobenzene		350	U	330	U	330	U
Isophorone		350	U	330	U	330	U
2-Nitrophenol		350	U	330	U	330	U
2,4-Dimethylphenol		350	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	330	U	330	U
2,4-Dichlorophenol		350	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	330	U	81	%
Naphthalene		350	U	330	U	330	U
4-Chloroaniline		350	U	330	U	330	U
Hexachlorobutadiene		350	U	330	U	330	U
4-Chloro-3-methylphenol		350	U J	330	U	85	%
2-Methylnaphthalene		350	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	330	U	330	U
2,4,5-Trichlorophenol		880	U	840	U	840	U

*= Outside of EPA CLP QC limits.

000020

5/23/03

RFW Batch Number: 0304L294 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 3b

11

Cust ID:	J00M99		SBLKSF		SBLKSF BS	
RFW#:	011		03LE0506-MB1		03LE0506-MB1	
2-Chloronaphthalene	350	U	330	U	330	U
2-Nitroaniline	880	U	840	U	840	U
Dimethylphthalate	350	U	330	U	330	U
Acenaphthylene	350	U	330	U	330	U
2,6-Dinitrotoluene	350	U	330	U	330	U
3-Nitroaniline	880	U	840	U	840	U
Acenaphthene	350	U	330	U	81	%
2,4-Dinitrophenol	880	U	840	U	840	U
4-Nitrophenol	880	U	840	U	81	%
Dibenzofuran	350	U	330	U	330	U
2,4-Dinitrotoluene	350	U	330	U	87	%
Diethylphthalate	350	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	330	U	330	U
Fluorene	350	U	330	U	330	U
4-Nitroaniline	880	U	840	U	840	U
4,6-Dinitro-2-methylphenol	880	U	840	U	840	U
N-Nitrosodiphenylamine (1)	350	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	330	U	330	U
Hexachlorobenzene	350	U	330	U	330	U
Pentachlorophenol	880	U	840	U	84	%
Phenanthrene	350	U	330	U	330	U
Anthracene	350	U	330	U	330	U
Carbazole	350	U	330	U	330	U
Di-n-butylphthalate	350	U	330	U	330	U
Fluoranthene	350	U	330	U	330	U
Pyrene	350	U	330	U	91	%
Butylbenzylphthalate	350	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	330	U	330	U
Benzo(a)anthracene	350	U	330	U	330	U
Chrysene	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U	330	U	330	U
Di-n-octyl phthalate	350	U	330	U	330	U
Benzo(b)fluoranthene	350	U	330	U	330	U
Benzo(k)fluoranthene	350	U	330	U	330	U
Benzo(a)pyrene	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	330	U	330	U
Dibenz(a,h)anthracene	350	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	330	U	330	U

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

KR 5/22/09

000021

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B03-015
LVL #: 0304L294
SDG/SAF # H2186/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 04-29-2003

SEMIVOLATILE

Eleven (11) soil samples were collected on 04-22,24,25-2003.

The samples and their associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 04-30-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 05-01,02-2003.

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. All matrix spike recoveries were within 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 OP 21-06A-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

05-06-03
Date

som\gonup\data\bna\tnu-hanford-0304-294.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 3 2 pages.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-69	Page 1 of 2

Collector Robert Fahlberg	Company Contact Renee Nielson	Telephone No. 521-2090	Project Coordinator KESSNER, JH
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 128-K-1		SAF No. B03-015
Ice Chest No. ERC 02 503	Field Logbook No. EL-1577	COA C17HXK671C	Method of Shipment Federal Express
Shipped To TMA/RECRA	Offsite Property No. A030217		Bill of Lading/Air Bill No. 3GE 05?C

Price Code 8B

Air Quality ☐

Data Turnaround 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000021

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

Sample No.	Matrix *	Sample Date	Sample Time										
~~J00M98~~	~~SOIL~~												
~~J00M99~~	~~SOIL~~												
J00MB0	SOIL	4.24.03	0945	X	X	X	X	X		X			
J00MB1	SOIL	4.24.03	1120	X	X	X	X	X					
J00MB2	SOIL	4.24.03	1324	X	X	X	X	X		X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1600 4.24.03	3B 3728	1600 4.24.03
R&F 3B 3728	42803 1000	SJGALES	42803 1000
SJGALES	42803 1000	FED EX	
	4.29.03 1015		4.29.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 128 103

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solid
DL=Drum Liqui
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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-69	Page 2 of 2

Collector: Robert Fahlberg	Company Contact: Renee Nielson — Telephone No.: 521-2090	Project Coordinator: KESSNER, JH	Price Code: 8B — Data Turnaround: 7 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	Air Quality: [ ]
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577 — COA: C17HXK671C	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A030217	Bill of Lading/Air Bill No.: SGE 00PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

S00035

SAMPLE ANALYSIS

			Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
			Type of Container	sG	sG	sG	sG	sG	sG	sG		
			No. of Container(s)	1	1	1	1	1	1	1		
			Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL		
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1		
Sample No.	Matrix *	Sample Date	Sample Time									
J00MB3	SOIL	4.24.03	1430	X	X	X	X	X		X		
~~J00MB4~~	~~SOIL~~											
~~J00MB5~~	~~SOIL~~											
~~J00MB6~~	~~SOIL~~											

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Gallo R Fahlberg	4.24.03 1600	3B 3728	4.24.03 1600
REF 3B 3728	42803 1000	SJ Gale	42803 1000
SJ Gale	42803 1000	FED EX	
[illegible]	4.25.03 1015	[illegible]	4.27.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

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

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

BU3-015-09

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days		
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		SAF No.: B03-015
Air Quality: ☐			
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030217		Bill of Lading/Air Bill No.: SEE DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
Sample No.	Matrix *	Sample Date	Sample Time								
~~J00MB3~~	~~SOIL~~										
J00MB4	SOIL	4-25-03	0852	X	X	X	X	X		X	
J00MB5	SOIL	4-25-03	1001	X	X	X	X	X		X	
J00MB6	SOIL	4-25-03	1045	X	X	X	X	X		X	

970000

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Doug Bowman Bowers	4-25-03/1345	Ref 3A 3728	4-25-03/1345
Relinquished By/Removed From	REF 3A 3728	42803 1000	Received By/Stored In	42803 1000
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From	Fed Ex	4.25.03 1015	Received By/Stored In	4.27.03 1015
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3A on 4 128103

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-71	Page 1 of 1

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030217		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
Sample No. / Matrix * / Sample Date / Sample Time										
J00MC6 / SOIL / 4-24-03 / 0945	X	X	X	X	X		X			

220027

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: R. Fahlberg, Date/Time: 4-24-03 1600	Received By/Stored In: 3B 3728, Date/Time: 4-24-03 1600
Relinquished By/Removed From: REF 3B 3728, Date/Time: 42803 1000	Received By/Stored In: SJGALE, Date/Time: 42803 1000
Relinquished By/Removed From: SJGALE, Date/Time: 42803 1000	Received By/Stored In: FED EX, Date/Time:
Relinquished By/Removed From: Fed Ex, Date/Time: 4-29-03 1015	Received By/Stored In: [illegible], Date/Time: 4-29-03 1015
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

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

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

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-73	Page 1 of 1

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		SAF No.: B03-015
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXKC71C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030717		Bill of Lading/Air Bill No.: 382 0SPC

Price Code: 8B

Data Turnaround: 7 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

820028

SAMPLE ANALYSIS

Preservation	None	None	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1						
Volume	1000mL	60mL	120mL	60mL						
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)						

Sample No.	Matrix *	Sample Date	Sample Time										
J00MC8	SOIL	4-24-03	0832	x	x	x							

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	1600 4-24-03	3B 3728	1600 4-24-03
REF 3B 3728	42803 1000	BJGALE	42803 1000
SIGALE	42803 1000	FED EX	
	4.25.03 1015		4.25.03 1015

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); 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)
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

DO NOT USE FOR QA/QC.

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 12 8 03

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

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

RHI-EE-011 (03/01/2002)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Bechtel Hanford Inc.

B03-015-69

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days		
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		SAF No.: B03-015
Air Quality ☐			
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 217		Bill of Lading/Air Bill No.: SEG 0SPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

620000

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
Sample No. / Matrix * / Sample Date / Sample Time										
J00M98 / SOIL / 4.22.03 / 1045	X	X	X	X	X		X			
J00M99 / SOIL / 4.22.03 / 1405	X	X	X	X	X		X			
~~J00MB0 / SOIL~~										
~~J00MB1 / SOIL~~										
~~J00MB2 / SOIL~~										

RC 4.22.03

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Fahlberg R Fahlberg	4.22.03 1530	3B 3728	4.22.03 1530
REF. 3B 3728	42803 1000	SJOALE	42803 1000
SJOALE	42803 1000	FED EX	
	4.25.03 1015		4.25.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

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

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

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RSCS		128-K-1	DATA PACKAGE: H2186		
VALIDATOR: TLI		LAB: LLI		DATE: 5/27/03	
CASE:			SDG: H2186		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J00MB0 J00MB1 J00MB2 J00MB3 J00MB4 J00MB5					
J00MB6 ~~J00MB5~~ J00MC6 J00MC8 J00M98 J00M99					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

Comments: Di-n-butylphthalate in eb

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: 4-chloro-3-methylphenol – 359% RPD J

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

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

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

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

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

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

Comments: 8 error in all

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

Comments:

Date: 28 May 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 128-K-1
Subject: Wet Chemistry - Data Package No. H2186-LLI (SDG No. H2186)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2186-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	Analysis
J00MB0	4/24/03	Soil	C	See note 1
J00MB1	4/24/03	Soil	C	See note 1
J00MB2	4/24/03	Soil	C	See note 1
J00MB3	4/24/03	Soil	C	See note 1
J00MB4	4/25/03	Soil	C	See note 1
J00MB5	4/25/03	Soil	C	See note 1
J00MB6	4/25/03	Soil	C	See note 1
J00MC6	4/24/03	Soil	C	See note 1
J00MC8	4/24/03	Soil	C	See note 2
J00M98	4/22/03	Soil	C	See note 1
J00M99	4/22/03	Soil	C	See note 1

1 - Chromium VI by 7196A; petroleum hydrocarbons by 9071.
2 - No validated analysis requested.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL December 2001) 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 Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI and 28 days for petroleum hydrocarbons.

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

All holding times were acceptable.

- **Method Blanks**

Method Blanks

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

Due to method blank contamination, all detected petroleum hydrocarbon results were qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field (Equipment) Blank

The equipment blank contained no validated analytes.

- **Accuracy**

Matrix Spike

Matrix spike (MS) 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 recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All 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.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples (J00MB0/J00MC6) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All other duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All undetected chromium VI results and the petroleum hydrocarbon results in

samples J00MB1, J00MC6 and J00M99 exceeded the RQL. Under the BHI statement of work, no qualification is required. All other results met the analyte specific RQL.

- **Completeness**

Data package No. H2186-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 method blank contamination, all detected petroleum hydrocarbon results were qualified as undetected and flagged "U".

All undetected chromium VI results and the petroleum hydrocarbon results in samples J00MB1, J00MC6 and J00M99 exceeded the RQL. 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

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

DATA QUALIFICATION SUMMARY

SDG: H2186	REVIEWER: TLI	DATE: 5/28/03	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Petroleum hydrocarbons	U	J00MB0, J00MB1, J00MB2, J00MB3, J00MB4, J00MC6, J00M98, J00M99	Blank contamination

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

WET CHEMISTRY ANALYSIS, SOIL MATRIX, MG/KG

Project: BECHTEL-HANFORD																	
Laboratory: LLI																	
Case	SDG: H2186																
Sample Number		J00MB0		J00MB1		J00MB2		J00MB3		J00MB4		J00MB5		J00MB6		J00MC6	
Remarks																Duplicate	
Sample Date		04/24/03		04/24/03		04/24/03		04/24/03		04/25/03		04/25/03		4/25/03		4/24/03	
Wet Chemistry	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.1	0.43	U	0.43	U	0.43	U	0.42	U	0.44	U	0.44	U	0.44	U	0.43	U
Petroleum Hydrocarbons	5	5.0	U	7.2	U	4.8	U	3.5	U	4.2	U	3.6	U	3.6	U	5.7	U
Sample Number		J00MC8		J00M98		J00M99											
Remarks		E. Blank															
Sample Date		04/24/03		04/22/03		04/22/03											
Wet Chemistry	RDL	Result	Q	Result	Q	Result	Q										
Chromium VI	0.1	NA		0.48		0.42	U										
Petroleum Hydrocarbons	5	NA		4.2	U	14.4	U										
NA = Not analyzed																	

010000

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 05/05/03

CLIENT: TNU-HANFORD B03-015 H2186 LVL LOT #: 0304L294

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00MB0	% Solids	92.2	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Petroleum Hydrocarbons	5.0 U	MG/KG	3.6	1.0
-002	J00MB1	% Solids	92.8	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Petroleum Hydrocarbons	7.2 U	MG/KG	3.6	1.0
-003	J00MB2	% Solids	93.9	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Petroleum Hydrocarbons	4.8 U	MG/KG	3.5	1.0
-004	J00MB3	% Solids	94.0	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Petroleum Hydrocarbons	3.5 u	MG/KG	3.5	1.0
-005	J00MB4	% Solids	91.7	%	0.01	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Petroleum Hydrocarbons	4.2 U	MG/KG	3.6	1.0
-006	J00MB5	% Solids	91.3	%	0.01	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Petroleum Hydrocarbons	3.6 u	MG/KG	3.6	1.0

pr 5/27/03

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/05/03

CLIENT: TNU-HANFORD B03-015 H2186 LVL LOT #: 0304L294

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J00MB6	% Solids	92.0	%	0.01	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Petroleum Hydrocarbons	3.6 u	MG/KG	3.6	1.0
-008	J00MC6	% Solids	93.2	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Petroleum Hydrocarbons	5.7 U	MG/KG	3.6	1.0
-009	J00MC8	% Solids	100	%	0.01	1.0
-010	J00M98	% Solids	91.4	%	0.01	1.0
		Chromium VI	0.48	MG/KG	0.44	1.0
		Petroleum Hydrocarbons	4.2 U	MG/KG	3.6	1.0
-011	J00M99	% Solids	94.4	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Petroleum Hydrocarbons	14.4 U	MG/KG	3.5	1.0

5/27/03

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-015 H2186
LVL#: 0304L294

W.O.#: 11343-606-001-9999-00
Date Received: 04-29-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 11 soil samples.

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

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

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

5. The method blank for chromium VI was within the method criteria, however preparation blank 03LHC021-MB1 for Petroleum Hydrocarbons (PHC) was above the reporting limit of which the result was less than 10 times the reporting limit.

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

7. The matrix spike recoveries for PHC and Chromium VI were within the 75-125% control limits. The matrix spike duplicate for PHC was within the 20% Relative Percent Difference (RPD) control limit.

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

05-07-03
Date

njp\i04-294

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 21 pages.

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

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B03-015-69 | Page 1 of 2

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030217		Bill of Lading/Air Bill No.: 3GE 05PC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000015

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

Sample No.	Matrix *	Sample Date	Sample Time										
~~J00M98~~	~~SOIL~~												
~~J00M99~~	~~SOIL~~												
J00MB0	SOIL	4.24.03	0945	X	X	X	X	X		X			
J00MB1	SOIL	4.24.03	1120	X	X	X	X	X					
J00MB2	SOIL	4.24.03	1324	X	X	X	X	X		X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1600 4.24.03	3B 3728	1600 4.24.03
REF 3B 3728	42803 1000	S JGALES	42803 1000
S JGALES	42803 1000	FED EX	
Fed Ex	4.29.03 1015	D. Mack	4.29.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 128 03

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

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

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B03-015-69	Page 1 of 1
Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH	Price Code: 8B; Data Turnaround: 7 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		SAF No.: B03-015	Air Quality: [ ]
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: CI7HXK671C	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A030217		Bill of Lading/Air Bill No.: SEE 00PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000016

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1				
Sample No. / Matrix * / Sample Date / Sample Time											
J00MB3 / SOIL / 4.24.03 / 1430	X	X	X	X	X		X				
~~J00MB4 / SOIL~~											
~~J00MB5 / SOIL~~											
~~J00MB6 / SOIL~~											

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From	R. Fahlberg R. Fahlberg	4.24.03 1600
Received By/Stored In	3B 3728	4.24.03 1600
Relinquished By/Removed From	REF 3B 3728	42803 1000
Received By/Stored In	SGALLEN	42803 1000
Relinquished By/Removed From	SGALLEN	42803 1000
Received By/Stored In	FED EX	
Relinquished By/Removed From	[illegible]	4.29.03 1015
Received By/Stored In	[illegible]	4.27.03 1015
Relinquished By/Removed From		
Received By/Stored In		
Relinquished By/Removed From		
Received By/Stored In		

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 / 25 / 03

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

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

BHI-FF-011 (03/01/2002)

Bechtel Hanford Inc.

CHAIN OF CUSTODY

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1	SAF No.: B03-015	
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030217		Bill of Lading/Air Bill No.: SEE DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
Sample No.	Matrix *	Sample Date	Sample Time							
~~J00MB3~~	~~SOIL~~									
J00MB4	SOIL	4-25-03	0852	X	X	X	X	X	X	
J00MB5	SOIL	4-25-03	1001	X	X	X	X	X	X	
J00MB6	SOIL	4-25-03	1045	X	X	X	X	X	X	

000017

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers	4-25-03/1345	Ref 3A 3728	4-25-03/1345
Ref 3A 3728	42803 1000	S GALE	42803 1000
S GALE	42803 1000	FED EX	
Fed Ex	4.29.03 1015		4.29.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3A on 4/28/03

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

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

BHLFF-011 (03/01/2002)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		SAF No.: B03-015
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 217		Bill of Lading/Air Bill No.: SEE ASPC

Price Code: 8B

Data Turnaround: 7 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

8100048

SAMPLE ANALYSIS												
Preservation				None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
Type of Container				aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)				1	1	1	1	1	1	1		
Volume				1000mL	60mL	120mL	120mL	120mL	60mL	60mL		
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1		
Sample No.	Matrix *	Sample Date	Sample Time									
J00MC8	SOIL	4.24.03	0945	X	X	X	X	X		X		

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

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: R Fahlberg R Fahlberg 4.24.03	Received By/Stored In: 3B 3728 4.24.03	1600
Relinquished By/Removed From: REF 3B 3728 42803	Received By/Stored In: SJGALT 42803	1000
Relinquished By/Removed From: SJGALT 42803	Received By/Stored In: FED EX	1000
Relinquished By/Removed From: Fed Ex 4.29.03	Received By/Stored In: [illegible] 4.29.03	1015
Relinquished By/Removed From:	Received By/Stored In:	
Relinquished By/Removed From:	Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 128 103

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

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		SAF No.: B03-015
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXKC71C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030717		Bill of Lading/Air Bill No.: 382 0SPC

Price Code: 8B

Air Quality ☐

Data Turnaround: 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000019

Preservation	None	None	Cool 4C	Cool 4C								
Type of Container	aG	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	1000mL	60mL	120mL	60mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)								

Sample No.	Matrix *	Sample Date	Sample Time										
J00MC8	SOIL	4.24.03	0832	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	1600 4.24.03	3.B 3728	1600 4.24.03
REF 3B 3728	42403 1000	3B GALE	42403 1000
SIGALE	42803 1000	FED EX	
	4.25.03 1015		4.25.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); 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)

(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

DO NOT USE FOR QA/QC.

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 28 03

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

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

BHI-EE-011 (03/01/2002)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B03-015-69 | Page 1 of 2

Bechtel Hanford Inc.

Collector: Robert Fahlberg

Company Contact: Renee Nielson | Telephone No.: 521-2090

Project Coordinator: KESSNER, JH

Price Code: 8B | Data Turnaround: 7 Days

Air Quality ☐

Project Designation: Remaining Sites Confirmation Sampling-Soil

Sampling Location: 128-K-1

SAF No.: B03-015

Ice Chest No.: ERC 02 503

Field Logbook No.: EL-1577 | COA: C17HXK671C

Method of Shipment: Federal Express

Shipped To: TMA/RECRA

Offsite Property No.: A030 217

Bill of Lading/Air Bill No.: SEG OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000020

SAMPLE ANALYSIS

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
Sample No.	Matrix *	Sample Date	Sample Time									
J00M98	SOIL	4-22-03	1045	X	X	X	X	X	X			
J00M99	SOIL	4-22-03	1405	X	X	X	X	X	X			
~~J00MB0~~	~~SOIL~~											
~~J00MB1~~	~~SOIL~~											
~~J00MB2~~	~~SOIL~~											

R.C. 4.22.03

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Fahlberg R Fahlberg	1530 4.22.03	3B 3728	1530 4.22.03
REF. 3B 3728	42803 1000	SJOALE	42803 1000
SJOALE	42803 1000	FED EX	
FED EX	4.25.03 1015		4.25.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

Matrix: S=Soil, SB=Soil/Sediment, SO=Solid, Sl=Sludge, W=Water, O=Oil, A=Air, DS=Drum, DL=Drum, 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

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RSCS 128-K-1			DATA PACKAGE: H2186		
VALIDATOR: TLI		LAB: LLI		DATE: 5/27/07	
CASE:			SDG: H2186		
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate	TPH	
SAMPLES/MATRIX					
J00MB0 J00MB1 J00MB2 J00MB3 J00MB4 J00MB5					
J00MB6 J00MC6 J00MC8 J00M98 J00M99					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

Comments:

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

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: FB- NO validated analytes

PH – det in eb all det – U

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

Spike samples analyzed? ..... Yes No N/A
Spike recoveries acceptable? ..... Yes No N/A
Sike standards NIST traceable? (Levels D, E) ..... Yes No N/A
Spike standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: No PAS

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

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

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

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

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

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

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

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

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

Comments: _____

6. HOLDING TIMES (all levels)

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

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

Comments: _____

GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: all CRQL over B1, C6 + 99 over for TPH

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/05/03

CLIENT: TNU-HANFORD B03-015 H2186 LVL LOT #: 0304L294

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LVI040-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	03LHC021-MB1	Petroleum Hydrocarbons	3.5	MG/KG	3.3	1.0

09

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/05/03

CLIENT: TNU-HANFORD B03-015 H2186 LVL LOT #: 0304L294

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J00MB0	Soluble Chromium VI	4.6	0.43u	4.3	102.1	1.0
		Insoluble Chromium VI	1320	0.43u	1220	108.7	100
-006	J00MB5	Petroleum Hydrocarbons	132	3.4	153	83.8	1.0
		Petroleum Hydrocarbons	135	3.4	153	86.1	1.0
BLANK10	03LVI040-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.8	1.0
		Insoluble Chromium VI	1210	0.40u	1080	112.2	100
LCS10	03LHC021-LC1	Petroleum Hydrocarbons	132	3.3 u	140	94.5	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 05/05/03

CLIENT: TNU-HANFORD B03-015 H2186 LVL LOT #: 0304L294

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-006	J00MB5	Petroleum Hydrocarbons	83.8	86.1	2.7

1/1

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/05/03

CLIENT: TNU-HANFORD B03-015 H2186 LVL LOT #: 0304L294

WORK ORDER: 11343-606-Q01-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J00MB0	Chromium VI	0.43u	0.43u	NC	1.0
-002REP	J00MB1	% Solids	92.8	93.9	1.1	1.0

Date: 28 May 2003
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 128-K-1
Subject: Radiochemistry - Data Package No. H2186-EB (SDG No. H2186)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2186-EB which was prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the requested analytes is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J00MB0	4/24/03	Soil	C	See note 1 & 2
J00MB1	4/24/03	Soil	C	See note 1 & 2
J00MB2	4/24/03	Soil	C	See note 1 & 2
J00MB3	4/24/03	Soil	C	See note 1 & 2
J00MB4	4/25/03	Soil	C	See note 1 & 2
J00MB5	4/25/03	Soil	C	See note 1 & 2
J00MB6	4/25/03	Soil	C	See note 1 & 2
J00MC6	4/24/03	Soil	C	See note 1 & 2
J00MC8	4/24/03	Soil	C	See note 1
J00M98	4/22/03	Soil	C	See note 1 & 2
J00M99	4/22/03	Soil	C	See note 1 & 2

1 - Gamma spectroscopy
2 - Gross alpha, gross beta

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL December 2001) 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.

- **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

One equipment blank (J00MC8) was submitted for analysis. Potassium-40, radium-226, radium-228, thorium-228 and thorium-232 were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In

addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

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

All duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples (J00MB0/J00MC6) were submitted for analysis. Duplicates are evaluated based on the same criteria as 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. Thirty-one analytes were reported above their RQL. Under the BHI statement of work, no qualification is required. All other reported results met the analyte specific RQL.

- **Completeness**

  Data package No. H2186 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

Thirty-one analytes were reported above their RQL. 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

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.

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

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

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

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

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H2186	REVIEWER: TLI	DATE: 5/28/03	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

RADIOCHEMISTRY ANALYSIS, SOIL MATRIX, (PCi/G)

Project: BECHTEL-HANFORD																					
Laboratory: EB																					
Case	SDG: H2186																				
Sample Number		J00MB0		J00MB1		J00MB2		J00MB3		J00MB4		J00MB5		J00MB6		J00MC6					
Remarks																Duplicate					
Sample Date		4/24/03		4/24/03		4/24/03		4/24/03		4/25/03		4/25/03		4/25/03		4/24/03					
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Gross Alpha		3.94		5.58		4.04		4.82		2.97	U	2.77	U	3.53	U	3.51					
Gross Beta		15.0		22.2		16.4		13.9		12.3		11.2		14.3		17.2					
Potassium-40		6.56		13.4		9.12		10.7		7.39		8.89		8.83		7.16					
Cobalt 60	0.05	U	U*	U	U	U	U	U	U	U	U*	U	U*	U	U*	U	U*				
Cesium 137	0.05	U	U*	U	U	U	U	U	U	U	U*	U	U*	U	U*	U	U*				
Radium-226		0.372		0.495		0.386		0.375		0.304		0.288		0.438		0.366					
Radium-228		U	U	0.666		0.689		0.694		0.405		0.533		0.435		0.718					
Europium 152	0.1	U	U*	U	U	U	U	U	U	U	U*	U	U*	U	U*	U	U*				
Europium 154	0.1	U	U*	U	U*	U	U	U	U	U	U*	U	U*	U	U*	U	U*				
Europium 155	0.1	U	U*	U	U	U	U*	U	U	U	U*	U	U*	U	U*	U	U*				
Thorium-228		0.396		0.858		0.538		0.576		0.388		0.500		0.437		0.475					
Thorium-232		U	U	0.666		0.689		0.694		0.405		0.533		0.435		0.718					
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U				
NA = Not analyzed																					

000010

* - 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.

RADIOCHEMISTRY ANALYSIS, SOIL MATRIX, (PCi/G)

Project: BECHTEL-HANFORD																					
Laboratory: EB																					
Case	SDG: H2186																				
Sample Number		J00MC8		J00M98		J00M99															
Remarks		E. Blank																			
Sample Date		4/24/03		4/22/03		4/22/03															
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Gross Alpha		NA		3.73	U	4.21															
Gross Beta		NA		18.6		12.9															
Potassium-40		4.31		11.0		12.9															
Cobalt 60	0.05	U	U	U	U*	U	U														
Cesium 137	0.05	U	U	U	U	U	U														
Radium-226		0.150		0.492		0.525															
Radium-228		0.173		0.641		0.753															
Europium 152	0.1	U	U	U	U*	U	U														
Europium 154	0.1	U	U	U	U*	U	U														
Europium 155	0.1	U	U	U	U*	U	U														
Thorium-228		0.208		0.628		0.644															
Thorium-232		0.173		0.641		0.753															
Uranium-235(gea)		U	U	U	U	U	U														
Uranium-238(gea)		U	U	U	U	U	U														
Americium-241(gea)		U	U	U	U	U	U														

000011

* - 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 H2186

7499-003 J00MB0

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-03	Client sample id	J00MB0		
Dept sample id	7499-003	Location/Matrix	128-K-1	SOLID	
Received	04/29/03	Collected/Weight	04/24/03 09:45	1271 g	
% solids	94.0	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.94	3.2	3.8	10		93A
Gross Beta	12587-47-2	15.0	4.2	5.5	15		93B
Potassium 40	13966-00-2	6.56	1.4	0.65			GAM
Cobalt 60	10198-40-0	U		0.093	0.050	U	GAM
Cesium 137	10045-97-3	U		0.087	0.10	U	GAM
Radium 226	13982-63-3	0.372	0.16	0.17			GAM
Radium 228	15262-20-1	U		0.50		U	GAM
Europium 152	14683-23-9	U		0.23	0.10	U	GAM
Europium 154	15585-10-1	U		0.38	0.10	U	GAM
Europium 155	14391-16-3	U		0.23	0.10	U	GAM
Thorium 228	14274-82-9	0.396	0.12	0.15			GAM
Thorium 232	TH-232	U		0.50		U	GAM
Uranium 235	15117-96-1	U		0.35		U	GAM
Uranium 238	U-238	U		13		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

Remaining Sites Confirmation Smplg.

RW 5/22/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-004 J00MB1

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-04	Client sample id	J00MB1		
Dept sample id	7499-004	Location/Matrix	128-K-1	SOLID	
Received	04/29/03	Collected/Weight	04/24/03 11:20	1246 g	
% solids	93.6	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	5.58	3.4	4.3	10		93A
Gross Beta	12587-47-2	22.2	5.0	6.5	15		93B
Potassium 40	13966-00-2	13.4	1.0	0.26			GAM
Cobalt 60	10198-40-0	U		0.034	0.050	U	GAM
Cesium 137	10045-97-3	U		0.035	0.10	U	GAM
Radium 226	13982-63-3	0.495	0.068	0.063			GAM
Radium 228	15262-20-1	0.666	0.15	0.15			GAM
Europium 152	14683-23-9	U		0.081	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.070	0.10	U	GAM
Thorium 228	14274-82-9	0.858	0.063	0.061			GAM
Thorium 232	TH-232	0.666	0.15	0.15			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Americium 241	14596-10-2	U		0.045		U	GAM

Remaining Sites Confirmation Smplg.

R 5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-005 J00MB2

DATA SHEET

SDG	7499	Client/Case no	Hanford		SDG H2186
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-05	Client sample id	J00MB2		
Dept sample id	7499-005	Location/Matrix	128-K-1		SOLID
Received	04/29/03	Collected/Weight	04/24/03 13:24	1320 g	
% solids	94.6	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.04	3.1	3.4	10		93A
Gross Beta	12587-47-2	16.4	4.2	5.5	15		93B
Potassium 40	13966-00-2	9.12	0.69	0.39			GAM
Cobalt 60	10198-40-0	U		0.039	0.050	U	GAM
Cesium 137	10045-97-3	U		0.034	0.10	U	GAM
Radium 226	13982-63-3	0.386	0.067	0.065			GAM
Radium 228	15262-20-1	0.689	0.17	0.16			GAM
Europium 152	14683-23-9	U		0.077	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.538	0.042	0.042			GAM
Thorium 232	TH-232	0.689	0.17	0.16			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		3.7		U	GAM
Americium 241	14596-10-2	U		0.29		U	GAM

Remaining Sites Confirmation Smplg.

5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-006 J00MB3

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-06	Client sample id	J00MB3		
Dept sample id	7499-006	Location/Matrix	128-K-1	SOLID	
Received	04/29/03	Collected/Weight	04/24/03 14:30	1433 g	
% solids	94.8	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.82	3.1	3.1	10		93A
Gross Beta	12587-47-2	13.9	4.2	5.9	15		93B
Potassium 40	13966-00-2	10.7	0.54	0.26			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	0.375	0.048	0.046			GAM
Radium 228	15262-20-1	0.694	0.12	0.097			GAM
Europium 152	14683-23-9	U		0.056	0.10	U	GAM
Europium 154	15585-10-1	U		0.076	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Thorium 228	14274-82-9	0.576	0.031	0.026			GAM
Thorium 232	TH-232	0.694	0.12	0.097			GAM
Uranium 235	15117-96-1	U		0.084		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Americium 241	14596-10-2	U		0.086		U	GAM

Remaining Sites Confirmation Smplg.

5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-007 J00MB4

DATA SHEET

SDG	7499	Client/Case no	Hanford		SDG H2186
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-07	Client sample id	J00MB4		
Dept sample id	7499-007	Location/Matrix	128-K-1		SOLID
Received	04/29/03	Collected/Weight	04/25/03 08:52	1016 g	
% solids	93.0	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	2.97	2.6	3.1	10	U	93A
Gross Beta	12587-47-2	12.3	3.9	5.2	15		93B
Potassium 40	13966-00-2	7.39	3.0	0.59			GAM
Cobalt 60	10198-40-0	U		0.091	0.050	U	GAM
Cesium 137	10045-97-3	U		0.089	0.10	U	GAM
Radium 226	13982-63-3	0.304	0.17	0.15			GAM
Radium 228	15262-20-1	0.405	0.32	0.33			GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	0.388	0.087	0.089			GAM
Thorium 232	TH-232	0.405	0.32	0.33			GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		9.4		U	GAM
Americium 241	14596-10-2	U		0.077		U	GAM

Remaining Sites Confirmation Smplg.

RW 5/22/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-008 J00MB5

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-08	Client sample id	J00MB5		
Dept sample id	7499-008	Location/Matrix	128-K-1	SOLID	
Received	04/29/03	Collected/Weight	04/25/03 10:01	911.2 g	
% solids	91.8	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	2.77	2.5	2.9	10	U	93A
Gross Beta	12587-47-2	11.2	4.0	5.6	15		93B
Potassium 40	13966-00-2	8.89	0.98	0.38			GAM
Cobalt 60	10198-40-0	U		0.061	0.050	U	GAM
Cesium 137	10045-97-3	U		0.052	0.10	U	GAM
Radium 226	13982-63-3	0.288	0.10	0.10			GAM
Radium 228	15262-20-1	0.533	0.30	0.29			GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.500	0.060	0.055			GAM
Thorium 232	TH-232	0.533	0.30	0.29			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		6.6		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM

Remaining Sites Confirmation Smplg.

5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-009 J00MB6

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-09	Client sample id	J00MB6		
Dept sample id	7499-009	Location/Matrix	128-K-1	SOLID	
Received	04/29/03	Collected/Weight	04/25/03 10:45	1188 g	
% solids	93.7	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.53	3.3	4.2	10	U	93A
Gross Beta	12587-47-2	14.3	4.7	6.6	15		93B
Potassium 40	13966-00-2	8.83	1.5	0.66			GAM
Cobalt 60	10198-40-0	U		0.080	0.050	U	GAM
Cesium 137	10045-97-3	U		0.093	0.10	U	GAM
Radium 226	13982-63-3	0.438	0.13	0.12			GAM
Radium 228	15262-20-1	0.435	0.33	0.43			GAM
Europium 152	14683-23-9	U		0.22	0.10	U	GAM
Europium 154	15585-10-1	U		0.28	0.10	U	GAM
Europium 155	14391-16-3	U		0.21	0.10	U	GAM
Thorium 228	14274-82-9	0.437	0.12	0.14			GAM
Thorium 232	TH-232	0.435	0.33	0.43			GAM
Uranium 235	15117-96-1	U		0.31		U	GAM
Uranium 238	U-238	U		11		U	GAM
Americium 241	14596-10-2	U		0.20		U	GAM

Remaining Sites Confirmation Smplg.

5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-010 J00MC6

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-10	Client sample id	J00MC6		
Dept sample id	7499-010	Location/Matrix		SOLID	
Received	04/29/03	Collected/Weight	04/24/03 09:45	1302 g	
% solids	93.9	Custody/SAF No	B03-015-071	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.51	2.9	3.3	10		93A
Gross Beta	12587-47-2	17.2	4.2	5.5	15		93B
Potassium 40	13966-00-2	7.16	1.3	0.81			GAM
Cobalt 60	10198-40-0	U		0.084	0.050	U	GAM
Cesium 137	10045-97-3	U		0.070	0.10	U	GAM
Radium 226	13982-63-3	0.366	0.14	0.14			GAM
Radium 228	15262-20-1	0.718	0.37	0.30			GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.475	0.074	0.076			GAM
Thorium 232	TH-232	0.718	0.37	0.30			GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		8.4		U	GAM
Americium 241	14596-10-2	U		0.37		U	GAM

Remaining Sites Confirmation Smplg.

5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-011 J00MC8

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-11	Client sample id	J00MC8		
Dept sample id	7499-011	Location/Matrix		SOLID	
Received	04/29/03	Collected/Weight	04/24/03 08:32	1401 g	
% solids	99.9	Custody/SAF No	B03-015-073	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	4.31	0.67	0.17			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	U		0.018	0.10	U	GAM
Radium 226	13982-63-3	0.150	0.035	0.032			GAM
Radium 228	15262-20-1	0.173	0.083	0.086			GAM
Europium 152	14683-23-9	U		0.042	0.10	U	GAM
Europium 154	15585-10-1	U		0.056	0.10	U	GAM
Europium 155	14391-16-3	U		0.037	0.10	U	GAM
Thorium 228	14274-82-9	0.208	0.034	0.034			GAM
Thorium 232	TH-232	0.173	0.083	0.086			GAM
Uranium 235	15117-96-1	U		0.063		U	GAM
Uranium 238	U-238	U		2.2		U	GAM
Americium 241	14596-10-2	U		0.024		U	GAM

Remaining Sites Confirmation Smplg.

Pr 5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-001 J00M98

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-01	Client sample id	J00M98		
Dept sample id	7499-001	Location/Matrix	128-K-1	SOLID	
Received	04/29/03	Collected/Weight	04/22/03 10:45	1401 g	
% solids	92.7	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.73	3.3	4.7	10	U	93A
Gross Beta	12587-47-2	18.6	4.8	6.5	15		93B
Potassium 40	13966-00-2	11.0	0.91	0.50			GAM
Cobalt 60	10198-40-0	U		0.051	0.050	U	GAM
Cesium 137	10045-97-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.492	0.087	0.083			GAM
Radium 228	15262-20-1	0.641	0.19	0.21			GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.628	0.048	0.048			GAM
Thorium 232	TH-232	0.641	0.19	0.21			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		4.9		U	GAM
Americium 241	14596-10-2	U		0.15		U	GAM

Remaining Sites Confirmation Smplg.

pr 5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-002 J00M99

DATA SHEET

SDG	7499	Client/Case no	Hanford	SDG H2186	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R304176-02	Client sample id	J00M99		
Dept sample id	7499-002	Location/Matrix	128-K-1	SOLID	
Received	04/29/03	Collected/Weight	04/22/03 14:05	1318 g	
% solids	94.0	Custody/SAF No	B03-015-069	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.21	3.3	3.8	10		93A
Gross Beta	12587-47-2	12.9	4.6	6.6	15		93B
Potassium 40	13966-00-2	12.9	0.64	0.23			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	0.525	0.059	0.052			GAM
Radium 228	15262-20-1	0.753	0.14	0.13			GAM
Europium 152	14683-23-9	U		0.062	0.10	U	GAM
Europium 154	15585-10-1	U		0.096	0.10	U	GAM
Europium 155	14391-16-3	U		0.073	0.10	U	GAM
Thorium 228	14274-82-9	0.644	0.036	0.031			GAM
Thorium 232	TH-232	0.753	0.14	0.13			GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Americium 241	14596-10-2	U		0.10		U	GAM

Remaining Sites Confirmation Smplg.

5/27/03

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2186 was composed of eleven solid (soil) samples designated under SAF No. B03-015 with a Project Designation of: Remaining Sites Confirmation Sampling – Soil, 128-K-1.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on May 6, 2003. The electronic data deliverable (EDD) was transmitted to BHI via e-mail on May 6, 2003.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 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 Mannion
Melissa C. Mannion
Program Manager

5/12/3
Date

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1 H2186 (7499)	SAF No.: B03-015	
Ice Chest No.: ERC 02 405	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 245	Bill of Lading/Air Bill No.: 3EE 05PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

000025

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
				4-24-03		4-24-03	4-24-03			

Sample No.	Matrix *	Sample Date	Sample Time									
~~J00M98~~	~~SOIL~~											
~~J00M99~~	~~SOIL~~											
J00MB0	SOIL	4.24.03	0945	X	X	X	X	X		X		
J00MB1	SOIL	4.24.03	1120	X	X	X	X	X				
J00MB2	SOIL	4.24.03	1324	X	X	X	X	X		X		

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1600 4.24.03	3B 3728	1600 4.24.03
3B 3728	42803 1000	SJGALE	42803 1000
SJGALE	42803 1000	FED EX	
FED EX	4/24/03		4/25/03 1:45pm

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Personnel not available to relinquish samples from the 3728
Ref # 30 on 4/28/03

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Soil
DL=Drum Liq
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

BHI-EE-011 (03/01/2002)

Collector Robert Fahlberg	Company Contact Renee Nielson	Telephone No. 521-2090	Project Coordinator KESSNER, JH
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 128-K-1 H2186 (7499)		SAF No. B03-015
Ice Chest No. ERC 02 405	Field Logbook No. EL-1577	COA C17HXK671C	Method of Shipment Federal Express
Shipped To TMA/RECRA	Offsite Property No. A030245		Bill of Lading/Air Bill No. SEE DSPC

Price Code 8B

Air Quality ☐

Data Turnaround 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

000026

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	sG	sG	sG	sG	sG	sG	sG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time								
~~J00MB3~~	~~SOIL~~										
J00MB4	SOIL	4-25-03	0852	X	X	X	X	X		X	
J00MB5	SOIL	4-25-03	1001	X	X	X	X	X		X	
J00MB6	SOIL	4-25-03	1045	X	X	X	X	X		X	

Ke 4-24-03

FO 4-28-03

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	4-25-03/1345	Ref 3A 3728	4-25-03/1345
REF 3A 3728	42803 1000	SJGALE	42803 1000
SJGALE	42803 1000	FEDEX	
FED Ex	4/29/03		4/29/03 10:45

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Personnel not available to relinquish samples from the 3728 Ref # 34 on 4/28/03

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Soil
DL=Drum Liq
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

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B03-015-69 | Page 2 of 2

Collector: Robert Fahlberg	Company Contact: Renee Nielson; Telephone No.: 521-2090	Project Coordinator: KESSNER, JH; Price Code: 8B; Data Turnaround: 7 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1 HZ186 (7499)	SAF No.: B03-015; Air Quality ☐
Ice Chest No.: ERC 02 405	Field Logbook No.: EL-1577; COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030245	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

270000

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082, Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1				
				4-28-03		4-24-03	4-28-03				

Sample No.	Matrix *	Sample Date	Sample Time										
J00MB3	SOIL	4.24.03	1438	X	X	X	X	X		X			
~~J00MB4~~	~~SOIL~~												
~~J00MB5~~	~~SOIL~~												
~~J00MB6~~	~~SOIL~~												

RE 4-24-03

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	4-24-03 1600	3B 3728	4-24-03 1600
REF 3B 3728	42803 1000	SJGALE	42803 1000
SJGALE	42803 1000	FED EX	
FED EX	4/29/03	[illegible]	4/29/03 10:45

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury - 7471 - (CV)

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

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

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1 H2186 (7499)		SAF No.: B03-015
Ice Chest No.: GRC 02 405	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA / RECRA	Offsite Property No.: A030245		Bill of Lading/Air Bill No.: SEE DSPC

Price Code: 8B

Air Quality ☐

Data Turnaround: 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

000028

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
Sample No.	Matrix *	Sample Date	Sample Time								
J00MC8	SOIL	4.24.03	0945	X	X	X	X	X		X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg	4.24.03 1600	3B 3728	4.24.03 1600
REF 3B 3728	42803 1000	SJ GALES	428 03 1000
SJ GALES	42803 1000	FED EX	
Fed Ex	4/29/03	[illegible]	4/29/03 12:45

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta

(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 12 8 03

Matrix *

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

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

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B03-015-73

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1 H2186 (7499)	SAF No.: B03-015	
Ice Chest No.: ERC 02 405	Field Logbook No.: EL-1577	COA: C17HXKC71C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030245	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	60mL	120mL	60mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)							

620009

Sample No.	Matrix *	Sample Date	Sample Time										
J00MC8	SOIL	4.24.03	0832	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg RR Fahlberg	1600 4.24.03	J.B. 3728	1600 4.24.03
REF 3B 3728	42803 1000	SJGALE SJGale	42803 1000
SJGALE SJGale	42803 1000	FED EX	
FED EX	4/29/03	Fred Davis	4/29/03 10:45AM

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); ~~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)~~ — per Client J. Kooren 4/29/03

(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

MCM 4/29/03

DO NOT USE FOR QA/QC.

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

Matrix *

S=Soil
SE=Sediment
SD=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solid
DL=Drum Liqu
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

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-69	Page 1 of

Collector: Robert Fahlberg	Company Contact: Renee Nielson — Telephone No.: 521-2090	Project Coordinator: KESSNER, JH	Price Code: 8B — Data Turna: 7 Da
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1 H2186 (7499)	SAF No.: B03-015	Air Quality ☐
Ice Chest No.: ERC 02 405	Field Logbook No.: EL-1577 — COA: C17HXK671C	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A030245	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000030

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time								
J00M98	SOIL	4.22.03	1045	X	X	X	X	X		X	
J00M99	SOIL	4.22.03	1409	X	X	X	X	X		X	
~~J00MB0~~	~~SOIL~~										
~~J00MB1~~	~~SOIL~~										
~~J00MB2~~	~~SOIL~~										

R.F. 4/22/03

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: R. Fahlberg — Date/Time: 1530 4.22.03	Received By/Stored In: 3B 3728 — Date/Time: 1530 4.22.03
Relinquished By/Removed From: REF 3B 3728 42803 — Date/Time: 1000	Received By/Stored In: SUGALE — Date/Time: 42803 1000
Relinquished By/Removed From: SUGALE 42803 — Date/Time: 1000	Received By/Stored In: FED EX — Date/Time:
Relinquished By/Removed From: FED EX — Date/Time: 4/24/03	Received By/Stored In: — Date/Time: 4/24/03 10:45
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

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

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RSCS 128-K-1			DATA PACKAGE: H2186		
VALIDATOR: TLI		LAB: ER		DATE: 5/25/03	
CASE:			SDG: H2186		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
J00MB0	J00MB1	J00MB2	J00MB3	J00MB4	
J00MB5	J00MB6	J00MC4	J00MC8	J00M98	
J00M99					

1. Completeness ..... ☒ N/A

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

Comments: _____

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: K-40 Ra 226/228 Th 228/232 in eb

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

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

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

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

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

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

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

Comments:

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

Duplicates Analyzed at required frequency? ..... Yes No N/A
RPD Values Acceptable? ..... Yes No N/A
Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A
Comments:

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

Field duplicate sample(s) analyzed? ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split sample(s) analyzed? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments: NO FS or PAS

12. Holding Times (All levels)

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

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

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

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

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

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

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

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

Comments: 31 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-013 **Method Blank**

METHOD BLANK

SDG	7499	Client/Case no	Hanford	SDG H2186
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R304176-13	Client sample id	Method Blank	
Dept sample id	7499-013	Material/Matrix		SOLID
		SAF No	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.592	1.6	3.0	10	U	93A
Gross Beta	12587-47-2	-1.43	4.4	7.6	15	U	93B
Potassium 40	13966-00-2	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.075	0.050	U	GAM
Cesium 137	10045-97-3	U		0.062	0.10	U	GAM
Radium 226	13982-63-3	U		0.11		U	GAM
Radium 228	15262-20-1	U		0.27		U	GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	U		0.087		U	GAM
Thorium 232	TH-232	U		0.27		U	GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		5.3		U	GAM
Americium 241	14596-10-2	U		0.48		U	GAM

Remaining Sites Confirmation Smplg.

QC-BLANK 44560

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-012

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7499
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2186
Contract No. 630

Lab sample id R304176-12
Dept sample id 7499-012

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B03-015

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	203	15	3.1	10		93A	200	8.0	102	67-133	70-130
Gross Beta	204	10	5.7	15		93B	211	8.4	97	76-124	70-130
Cobalt 60	4.91	0.24	0.067	0.050		GAM	5.00	0.20	98	76-124	80-120
Cesium 137	5.15	0.21	0.13	0.10		GAM	4.84	0.19	106	74-126	80-120

Remaining Sites Confirmation Smplg.

QC-LCS 44559

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/06/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2186

7499-014

J00MB2

DUPLICATE

SDG	7499			Client/Case no	Hanford SDG H2186
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R304176-14	Lab sample id	R304176-05	Client sample id	J00MB2
Dept sample id	7499-014	Dept sample id	7499-005	Location/Matrix	128-K-1 SOLID
		Received	04/29/03	Collected/Weight	04/24/03 13:24 1320 g
% solids	94.6	% solids	94.6	Custody/SAF No	B03-015-069 B03-015

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 PROT TOT LIMIT
Gross Alpha	5.02	3.6	4.9	10		93A	4.04	3.1	3.4		22	163
Gross Beta	14.8	4.6	6.5	15		93B	16.4	4.2	5.5		10	68
Potassium 40	10.8	0.90	0.42			GAM	9.12	0.69	0.39		17	36
Cobalt 60	U		0.043	0.050	U	GAM	U		0.039	U	-	
Cesium 137	U		0.041	0.10	U	GAM	U		0.034	U	-	
Radium 226	0.388	0.071	0.075			GAM	0.386	0.067	0.065		1	49
Radium 228	0.650	0.17	0.18			GAM	0.689	0.17	0.16		6	63
Europium 152	U		0.10	0.10	U	GAM	U		0.077	U	-	
Europium 154	U		0.13	0.10	U	GAM	U		0.10	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.11	U	-	
Thorium 228	0.551	0.046	0.044			GAM	0.538	0.042	0.042		2	36
Thorium 232	0.650	0.17	0.18			GAM	0.689	0.17	0.16		6	63
Uranium 235	U		0.16		U	GAM	U		0.15	U	-	
Uranium 238	U		4.5		U	GAM	U		3.7	U	-	
Americium 241	U		0.14		U	GAM	U		0.29	U	-	

Remaining Sites Confirmation Smplg.

QC-DUP#5 44561

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	05/06/03

Date: 28 May 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 128-K-1
Subject: PCB - Data Package No. H2186-LLI (SDG No. H2186)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2186-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	Analysis
J00MB0	4/24/03	Soil	C	See note 1
J00MB1	4/24/03	Soil	C	See note 1
J00MB2	4/24/03	Soil	C	See note 1
J00MB3	4/24/03	Soil	C	See note 1
J00MB4	4/25/03	Soil	C	See note 1
J00MB5	4/25/03	Soil	C	See note 1
J00MB6	4/25/03	Soil	C	See note 1
J00MC6	4/24/03	Soil	C	See note 1
J00M98	4/22/03	Soil	C	See note 1
J00M99	4/22/03	Soil	C	

1 - Pesticides by 8081A and PCBs by 8082.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL December 2001) 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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

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

All holding times were acceptable.

- **Method Blank**

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

All method blank target compound results were acceptable.

<u>Field Blanks</u>

No equipment blanks were submitted for analysis.

- **Accuracy**

Matrix Spike

Matrix spike 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 analyses are performed in duplicate and must be within control limits of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All matrix spike results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample

concentration is greater than five times the spike concentration, no qualification is required.

All matrix spike/matrix spike duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J00MB0/J00MC6) 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 Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All reported PCB, methoxychlor and toxaphene results exceeded the analyte specific RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

  Data Package No. H2186-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

All reported PCB, methoxychlor and toxaphene results exceeded the analyte specific RQL. 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

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

DATA QUALIFICATION SUMMARY

SDG: H2186	REVIEWER: TLI	DATE: 5/28/03	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																	
Laboratory: Lionville Laboratory Inc.																	
Case:	SDG: H2186																
Sample Number		J00MB0		J00MB1		J00MB2		J00MB3		J00MB4		J00MB5		J00MB6		J00MC6	
Remarks																Duplicate	
Sample Date		4/24/03		4/24/03		4/24/03		4/24/03		4/25/03		4/25/03		4/25/03		4/24/03	
Extraction Date		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03	
Analysis Date		5/1/03		5/1/03		5/1/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	36	U	36	U	35	U	35	U	36	U	36	U	36	U	36	U
Aroclor-1221	20	72	U	72	U	71	U	71	U	73	U	73	U	72	U	72	U
Aroclor-1232	20	36	U	36	U	35	U	35	U	36	U	36	U	36	U	36	U
Aroclor-1242	20	36	U	36	U	35	U	35	U	36	U	36	U	36	U	36	U
Aroclor-1248	20	36	U	36	U	35	U	35	U	36	U	36	U	36	U	36	U
Aroclor-1254	20	36	U	36	U	35	U	35	U	36	U	36	U	36	U	36	U
Aroclor-1260	20	36	U	36	U	35	U	35	U	36	U	36	U	36	U	36	U
Sample Number		J00MB0		J00MB1		J00MB2		J00MB3		J00MB4		J00MB5		J00MB6		J00MC6	
Remarks																Duplicate	
Sample Date		4/24/03		4/24/03		4/24/03		4/24/03		4/25/03		4/25/03		4/25/03		4/24/03	
Extraction Date		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03	
Analysis Date		5/1/03		5/1/03		5/1/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Beta-BHC	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Delta-BHC	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Gamma-BHC (Lindane)	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Heptachlor	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Aldrin	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Heptachlor Epoxide	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Endosulfan I	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Dieldrin	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
4,4'-DDE	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
Endrin	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
Endosulfan II	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
4,4'-DDD	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
Endosulfan Sulfate	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
4,4'-DDT	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
Methoxychlor	5	18	U	18	U	18	U	18	U	18	U	18	U	18	U	18	U
Endrin Ketone	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
Endrin Aldehyde	5	3.6	U	3.6	U	3.5	U	3.5	U	3.6	U	3.6	U	3.6	U	3.6	U
alpha-Chlordane	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
gamma-Chlordane	5	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Toxaphene	5	180	U	180	U	180	U	180	U	180	U	180	U	180	U	180	U

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.

PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																	
Laboratory: Lionville Laboratory Inc.																	
Case:	SDG: H2186																
Sample Number		J00M98		J00M99													
Remarks																	
Sample Date		4/22/03		4/22/03													
Extraction Date		4/30/03		4/30/03													
Analysis Date		5/2/03		5/2/03													
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	16.5	36	U	35	U												
Aroclor-1221	16.5	73	U	71	U												
Aroclor-1232	16.5	36	U	35	U												
Aroclor-1242	16.5	36	U	35	U												
Aroclor-1248	16.5	36	U	35	U												
Aroclor-1254	16.5	36	U	35	U												
Aroclor-1260	16.5	36	U	35	U												
Sample Number		J00M98		J00M99													
Remarks																	
Sample Date		4/22/03		4/22/03													
Extraction Date		4/30/03		4/30/03													
Analysis Date		5/2/03		5/2/03													
Pesticide	TDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.8	U	1.8	U												
Beta-BHC	5	1.8	U	1.8	U												
Delta-BHC	5	1.8	U	1.8	U												
Gamma-BHC (Lindane)	5	1.8	U	1.8	U												
Heptachlor	5	1.8	U	1.8	U												
Aldrin	5	1.8	U	1.8	U												
Heptachlor Epoxide	5	1.8	U	1.8	U												
Endosulfan I	5	1.8	U	1.8	U												
Dieldrin	5	3.6	U	3.5	U												
4,4'-DDE	5	3.6	U	3.5	U												
Endrin	5	3.6	U	3.5	U												
Endosulfan II	5	3.6	U	3.5	U												
4,4'-DDD	5	3.6	U	3.5	U												
Endosulfan Sulfate	5	3.6	U	3.5	U												
4,4'-DDT	5	3.6	U	3.5	U												
Methoxychlor	5	18	U	18	U												
Endrin Ketone	5	3.6	U	3.5	U												
Endrin Aldehyde	5	3.6	U	3.5	U												
alpha-Chlordane	16.5	1.8	U	1.8	U												
gamma-Chlordane	16.5	1.8	U	1.8	U												
Toxaphene	5	180	U	180	U												

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.

000011

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 05/05/03 15:24

RFW Batch Number: 0304L294 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 1

	Cust ID:	J00MB0	J00MB1	J00MB1	J00MB1	J00MB2	J00MB3
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	120 * %	110 %	110 %	95 %	80 %	100 %
	Decachlorobiphenyl	150 * %	150 * %	140 * %	130 * %	115 %	135 * %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		36 U	36 U	93 %	94 %	35 U	35 U
Aroclor-1221		72 U	72 U	72 U	72 U	71 U	71 U
Aroclor-1232		36 U	36 U	36 U	36 U	35 U	35 U
Aroclor-1242		36 U	36 U	36 U	36 U	35 U	35 U
Aroclor-1248		36 U	36 U	36 U	36 U	35 U	35 U
Aroclor-1254		36 U	36 U	36 U	36 U	35 U	35 U
Aroclor-1260		36 U	36 U	126 %	109 %	35 U	35 U

	Cust ID:	J00MB4	J00MB5	J00MB6	J00MC6	J00M98	J00M99
Sample Information	RFW#:	005	006	007	008	010	011
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	90 %	90 %	95 %	95 %	90 %	85 %
	Decachlorobiphenyl	130 * %	125 * %	135 * %	135 * %	130 * %	120 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		36 U	36 U	36 U	36 U	36 U	35 U
Aroclor-1221		73 U	73 U	72 U	72 U	73 U	71 U
Aroclor-1232		36 U	36 U	36 U	36 U	36 U	35 U
Aroclor-1242		36 U	36 U	36 U	36 U	36 U	35 U
Aroclor-1248		36 U	36 U	36 U	36 U	36 U	35 U
Aroclor-1254		36 U	36 U	36 U	36 U	36 U	35 U
Aroclor-1260		36 U	36 U	36 U	36 U	36 U	35 U

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

000012

5/27/03

5/6/03

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 05/05/03 15:24

RFW Batch Number: 0304L294 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 2

	Cust ID:	PBLKSM	PBLKSM BS
Sample Information	RFW#:	03LE0505-MB1	03LE0505-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	100	%	90	%
	Decachlorobiphenyl	145 *	%	135 *	%
Aroclor-1016		33	U	89	%
Aroclor-1221		67	U	67	U
Aroclor-1232		33	U	33	U
Aroclor-1242		33	U	33	U
Aroclor-1248		33	U	33	U
Aroclor-1254		33	U	33	U
Aroclor-1260		33	U	99	%

000013

5/27/03

5/6/03

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

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 05/06/03 13:55

RFW Batch Number: 0304L294 Client: TNUHANFORD B03-015 H2186 Work Order: 11343606001 Page: 1

	Cust ID:	J00MB0	J00MB0	J00MB0	J00MB1	J00MB2	J00MB3
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	160 * %	95 %	95 %	125 * %	90 %	110 %
	Decachlorobiphenyl	235 * %	105 %	115 %	165 * %	115 %	130 * %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Beta-BHC		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Delta-BHC		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
gamma-BHC (Lindane)		1.8 U	72 %	62 %	1.8 U	1.8 U	1.8 U
Heptachlor		1.8 U	84 %	86 %	1.8 U	1.8 U	1.8 U
Aldrin		1.8 U	80 %	82 %	1.8 U	1.8 U	1.8 U
Heptachlor epoxide		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Endosulfan I		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Dieldrin		3.6 U	90 %	93 %	3.6 U	3.5 U	3.5 U
4,4'-DDE		3.6 U	3.6 U	3.6 U	3.6 U	3.5 U	3.5 U
Endrin		3.6 U	106 %	108 %	3.6 U	3.5 U	3.5 U
Endosulfan II		3.6 U	3.6 U	3.6 U	3.6 U	3.5 U	3.5 U
4,4'-DDD		3.6 U	3.6 U	3.6 U	3.6 U	3.5 U	3.5 U
Endosulfan sulfate		3.6 U	3.6 U	3.6 U	3.6 U	3.5 U	3.5 U
4,4'-DDT		3.6 U	91 %	74 %	3.6 U	3.5 U	3.5 U
Methoxychlor		18 U	18 U	18 U	18 U	18 U	18 U
Endrin ketone		3.6 U	3.6 U	3.6 U	3.6 U	3.5 U	3.5 U
Endrin aldehyde		3.6 U	3.6 U	3.6 U	3.6 U	3.5 U	3.5 U
alpha-Chlordane		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
gamma-Chlordane		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Toxaphene		180 U	180 U	180 U	180 U	180 U	180 U

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

000014

5/27/03

5/7/03

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 05/06/03 13:55

RFW Batch Number: 0304L294 Client: TNUHANFORD B03-015 H2186 Work Order: 11343606001 Page: 2

	Cust ID:	J00MB4	J00MB5	J00MB6	J00MC6	J00M98	J00M99
Sample Information	RFW#:	005	006	007	008	010	011
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	95 %	90 %	95 %	95 %	100 %	95 %
	Decachlorobiphenyl	120 %	115 %	120 %	120 %	125 * %	120 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Beta-BHC		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Delta-BHC		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
gamma-BHC (Lindane)		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Heptachlor		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Aldrin		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Heptachlor epoxide		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Endosulfan I		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Dieldrin		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
4,4'-DDE		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
Endrin		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
Endosulfan II		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
4,4'-DDD		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
Endosulfan sulfate		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
4,4'-DDT		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
Methoxychlor		18 U	18 U	18 U	18 U	18 U	18 U
Endrin ketone		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
Endrin aldehyde		3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.5 U
alpha-Chlordane		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
gamma-Chlordane		1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Toxaphene		180 U	180 U	180 U	180 U	180 U	180 U

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

5/27/03

5/27/03

000015

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 05/06/03 13:55

RFW Batch Number: 0304L294 Client: TNUHANFORD B03-015 H2186 Work Order: 11343606001 Page: 3

	Cust ID:	PBLKSM	PBLKSM BS
Sample Information	RFW#:	03LE0505-MB1	03LE0505-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	110 %	95 %	
	Decachlorobiphenyl	130 * %	95 %	
Alpha-BHC		1.7 U	1.7 U	
Beta-BHC		1.7 U	1.7 U	
Delta-BHC		1.7 U	1.7 U	
gamma-BHC (Lindane)		1.7 U	66 %	
Heptachlor		1.7 U	82 %	
Aldrin		1.7 U	78 %	
Heptachlor epoxide		1.7 U	1.7 U	
Endosulfan I		1.7 U	1.7 U	
Dieldrin		3.3 U	84 %	
4,4'-DDE		3.3 U	3.3 U	
Endrin		3.3 U	97 %	
Endosulfan II		3.3 U	3.3 U	
4,4'-DDD		3.3 U	3.3 U	
Endosulfan sulfate		3.3 U	3.3 U	
4,4'-DDT		3.3 U	73 %	
Methoxychlor		17 U	17 U	
Endrin ketone		3.3 U	3.3 U	
Endrin aldehyde		3.3 U	3.3 U	
alpha-Chlordane		1.7 U	1.7 U	
gamma-Chlordane		1.7 U	1.7 U	
Toxaphene		170 U	170 U	

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

5/27/03

5/27/03

0000016

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-015
LVL #: 0304L294
SDG/SAF #: H2186/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 04-29-03

PCB

The set of samples consisted of ten (10) soil samples collected on 04-22,24,25-03.

The samples and their associated QC samples were extracted on 04-30-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-02-03. The extraction procedure was based on method 3540 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 LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All samples and their associated QC samples received Sulfuric Acid and Sulfur cleanups.
4. The method blank was below the reporting limits for all target compounds.
5. Thirteen (13) of twenty-eight (28) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
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. 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

5/7/03
Date

pef\r:\group\data\pesr\tnu hanford\04L-294.pcb

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 16 pages.

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

Sample Discrepancy Report (SDR) SDR #. 080C14

Initiator: Bryce Santoro
Date: 5/5/03
Client: TAN

Batch: 03C4L294
Samples: 001
Method: SW846/MCAWW/CLP/

Parameter: 0608H
Matrix: S,W
Prep Batch: 03LE0505

1. Reason for SDR

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

b. General Discrepancy

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

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

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

① High surrogate recovery in sample 001. Sample is clean.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description: Narrate

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

4. Project Manager Instructions...signature/date: [signature] 5/5/03

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

5. Final Action...signature/date: [signature] 5/5/03 Other Explanation:

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

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file)	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-015
LVL #: 0304L294
SDG/SAF #: H2186/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 04-29-03

PESTICIDE

The set of samples consisted of ten (10) soil samples collected on 04-22,24,25-03.

The samples and their associated QC samples were extracted on 04-30-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-03,04-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081A.

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. All required holding times for extraction and analysis have been met.
3. All samples and their associated QC samples received a Sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Seven (7) of twenty-eight (28) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
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. 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

5/3/03
Date

pefv:\group\data\pest\tnu hanford\04L-294.pes

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 17 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 03GC123

Initiator: Bryce Santoro
Date: 5/6/03
Client: TNU

Batch: 03C4L294
Samples: 001, 002
Method: SW846/MCAWW/CLP/

Parameter: 8081H
Matrix: Soil
Prep Batch: 03LE0505

1. Reason for SDR

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

b. General Discrepancy

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

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

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

(1) High surrogate recoveries in sample 001 and 002. Both are clean.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description: Dilute

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

4. Project Manager Instructions...signature/date: [signature] 5/7/03

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

5. Final Action...signature/date: [signature] 5/7/03 Other Explanation:

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

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file)	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Bechtel Hanford Inc.

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		SAF No.: B03-015
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030217		Bill of Lading/Air Bill No.: 3GE 05?C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000022

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	1000mL	60mL	120mL	120mL	120mL	60mL	60mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time								
~~J00M98~~	~~SOIL~~										
~~J00M99~~	~~SOIL~~										
J00MB0	SOIL	4.24.03	0945	X	X	X	X	X		X	
J00MB1	SOIL	4.24.03	1120	X	X	X	X	X			
J00MB2	SOIL	4.24.03	1324	X	X	X	X	X		X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg	1600 4.24.03	3B 3728	1600 4.24.03
REF 3B 3728	42803 1000	SJGALES	42803 1000
SJGALES	42803 1000	FED EX	
[illegible]	4.29.03 1015	[illegible]	4.29.03 1015
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

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

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B03-015-09

Bechtel Hanford Inc.	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Collector: Robert Fahlberg			Price Code: 8B
			Data Turnaround: 7 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		SAF No.: B03-015
			Air Quality: [ ]
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030217		Bill of Lading/Air Bill No.: SEE OOPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000023

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

Sample No.	Matrix *	Sample Date	Sample Time										
J00MB3	SOIL	4.24.03	1430	X	X	X	X	X		X			
~~J00MB4~~	~~SOIL~~												
~~J00MB5~~	~~SOIL~~												
~~J00MB6~~	~~SOIL~~												

VEE 4.24.03

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: R Gelb Robertson 4.24.03	Date/Time: 1600	Received By/Stored In: 3B 3728 4.24.03
Relinquished By/Removed From: REF 3B 3728 42803	Date/Time: 1000	Received By/Stored In: SGALEWSKI 42803
Relinquished By/Removed From: SGALEWSKI 42803	Date/Time: 1000	Received By/Stored In: FED EX
Relinquished By/Removed From: [illegible] 4.29.03	Date/Time: 1015	Received By/Stored In: [illegible] 4.29.03
Relinquished By/Removed From	Date/Time	Received By/Stored In
Relinquished By/Removed From	Date/Time	Received By/Stored In

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4 / 25 / 03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Sc
DL=Drum Li
T=Tissue
WI=Wipe
L=Liquid
V=Vegetatio
X=Other

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality: ☐	SAF No.: B03-015
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030217		Bill of Lading/Air Bill No.: SEE DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time									
~~J00MB3~~	~~SOIL~~											
J00MB4	SOIL	4-25-03	0852	X	X	X	X	X		X		
J00MB5	SOIL	4-25-03	1001	X	X	X	X	X		X		
J00MB6	SOIL	4-25-03	1045	X	X	X	X	X		X		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug Bowers	Doug Bowers	4-25-03/1345	Ref 3A 3728	4-25-03/1345
Relinquished By/Removed From: REF 3A 3728		42803 1000	Received By/Stored In: SJGALE	42803 1000
Relinquished By/Removed From: SJGALE		42803 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex		4.29.03 10:15	Received By/Stored In: [illegible]	4.29.03 10:15
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3A on 4 128103

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

000024

Bechtel Hanford Inc. — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Robert Fahlberg	Company Contact: Renee Nielson	Telephone No.: 521-2090	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	SAF No.: B03-015
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 128-K-1		
Ice Chest No.: ERC 02 503	Field Logbook No.: EL-1577	COA: C17HXK671C	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A030 217		Bill of Lading/Air Bill No.: SEE ASPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000025

SAMPLE ANALYSIS												
Preservation				None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
Type of Container				aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)				1	1	1	1	1	1	1		
Volume				1000mL	60mL	120mL	120mL	120mL	60mL	60mL		
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1		
Sample No.	Matrix *	Sample Date	Sample Time									
J00MC6	SOIL	4.24.03	0945	X	X	X	X	X		X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg	4.24.03 1600	3B 3728	4.24.03 1600
REF 3B 3728	42803 1000	[illegible]	42803 1000
[illegible]	42803 1000	FED EX	
Fed Ex	4.29.03 1015	[illegible]	4.29.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

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

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

BHI-EE-011 (03/01/2002)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B03-015-69

Bechtel Hanford Inc.

Collector: Robert Fahlberg

Company Contact: Renee Nielson — Telephone No.: 521-2090

Project Coordinator: KESSNER, JH

Price Code: 8B

Data Turnaround: 7 Days

Air Quality ☐

Project Designation: Remaining Sites Confirmation Sampling-Soil

Sampling Location: 128-K-1

SAF No.: B03-015

Ice Chest No.: ERC 02 503

Field Logbook No.: EL-1577

COA: C17HXK671C

Method of Shipment: Federal Express

Shipped To: TMA/(RECRA)

Offsite Property No.: A030 217

Bill of Lading/Air Bill No.: SEG 08PC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000026

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1			
Preservation				None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container				aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)				1	1	1	1	1	1	1			
Volume				1000mL	60mL	120mL	120mL	120mL	60mL	60mL			
J00M98	SOIL	4.22.03	1045	X	X	X	X	X		X			
J00M99	SOIL	4.22.03	1405	X	X	X	X	X		X			
~~J00MB0~~	~~SOIL~~												
~~J00MB1~~	~~SOIL~~												
~~J00MB2~~	~~SOIL~~												

R.F. 4.22.03

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Fahlberg	1530 4.22.03	3B 3728	1530 4.22.03
REF. 3B 3728	42803 1000	SJGALE	42803 1000
SJGALE	42803 1000	FED EX	
FED EX	4.25.03 1015		4.25.03 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gross Alpha & Gross Beta
(2) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

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

Personnel not available to relinquish samples from the 3728 Ref # 3B on 4/28/03

Matrix: S=Soil, SE=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum, DL=Drum, 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

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RSCS 128-K-1			DATA PACKAGE: H2186		
VALIDATOR: TLI		LAB: LLI		DATE: 5/25/03	
CASE:			SDG: H2186		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J00MB0	J00MB1	J00MB2	J00MB3	J00MB4	J00MB5
J00MB6	J00MC6	~~[illegible]~~	J00M98	J00M99	
					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:

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

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

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

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

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

Comments: all PCB toxaphen & methoxyclor ave

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other aborbant) 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 aceptable? ..... 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: