0063546

SAF-B04-016
Lead-Sheathed Telephone Communication Cable Sampling –Soils
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Wendy Thompson	H9-02	JMD / 1-05-05 INITIAL/DATE
Jeanette Duncan	(1)	JMD / 1-05-05 INITIAL/DATE

SDG H2789 **SAF B04-016**

RECEIVED
JAN 31 2005
EDMC

Date: 19 November 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Lead-Sheathed Telephone Communication Cable Sampling - Other Solid - Waste Site 600-235
Subject: PAH - Data Package No. H2789-LLI (SDG No. H2789)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2789 -LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Waste Site	Analysis
J01T73	9/29/04	Soil	C	600-235	See note 1
J01T74	9/29/04	Soil	C	600-235	See note 1
J01T75	9/29/04	Soil	C	600-235	See note 1
J01T76	9/29/04	Soil	C	600-235	See note 1
J01T83	9/29/04	Soil	C	600-235	See note 1
J01T84	9/29/04	Soil	C	600-235	See note 1

1 - PAH by 8310

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Sampling and Analysis Plan for Evaluation of Buried Lead-Sheathed Telephone Communications Cable (BHI-01714, Rev. 0, March 2004). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects 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>

No field blank was submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to a MS (930%) and MSD (414%) recovery outside QC limits, the acenaphthene result in sample J01T73 was qualified as an estimate and flagged "J".

Due to a MS (506%) and MSD (522%) recovery outside QC limits, the fluoranthene results in samples J01T73, J01T74 and J01T84 were qualified as estimates and flagged "J".

Due to a MS (280%) and MSD (233%) recovery outside QC limits, the pyrene result in sample J01T73 was qualified as an estimate and flagged "J".

Due to a MSD (164%) recovery outside QC limits, the benzo(a)anthracene result in sample J01T73 was qualified as an estimate and flagged "J".

Due to a MSD (162%) recovery outside QC limits, the chrysene result in sample J01T83 was qualified as an estimate and flagged "J".

Due to a MS (624%) and MSD (680%) recovery outside QC limits, the benzo(b)fluoranthrene results in samples J01T73, J01T74, J01T83 and J01T84 were qualified as estimates and flagged "J".

Due to a MS (208%) and MSD (216%) recovery outside QC limits, the benzo(k)fluoranthrene result in sample J01T73 was qualified as an estimate and flagged "J".

Due to a MS (416%) and MSD (461%) recovery outside QC limits, the benzo(a)pyrene results in samples J01T73 and J01T74 were qualified as estimates and flagged "J".

Due to a MS (273%) and MSD (361%) recovery outside QC limits, the benzo(ghi)perylene results in samples J01T73 and J01T74 were qualified as estimates and flagged "J".

Due to a MS (323%) and MSD (425%) recovery outside QC limits, the ideno(1,2,3-cd)pyrene results in samples J01T73, J01T74 and J01T84 were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

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

Due to an RPD outside QC limits (53%), all naphthalene results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (77%), all acenaphthene results were qualified as estimates and flagged "J".

All other MS/MSD RPD results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

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

- **Completeness**

Data package No. H2789-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

The following minor deficiencies were noted:

- Due to a MS (930%) and MSD (414%) recovery outside QC limits, the acenaphthene result in sample J01T73 was qualified as an estimate and flagged "J".

- Due to a MS (506%) and MSD (522%) recovery outside QC limits, the fluoranthene results in samples J01T73, J01T74 and J01T84 were qualified as estimates and flagged "J".

- Due to a MS (280%) and MSD (233%) recovery outside QC limits, the pyrene result in sample J01T73 was qualified as an estimate and flagged "J".

- Due to a MSD (164%) recovery outside QC limits, the benzo(a)anthracene result in sample J01T73 was qualified as an estimate and flagged "J".

- Due to a MSD (162%) recovery outside QC limits, the chrysene result in sample J01T83 was qualified as an estimate and flagged "J".

- Due to a MS (624%) and MSD (680%) recovery outside QC limits, the benzo(b)fluoranthrene results in samples J01T73, J01T74, J01T83 and J01T84 were qualified as estimates and flagged "J".

- Due to a MS (208%) and MSD (216%) recovery outside QC limits, the benzo(k)fluoranthrene result in sample J01T73 was qualified as an estimate and flagged "J".

- Due to a MS (416%) and MSD (461%) recovery outside QC limits, the benzo(a)pyrene results in samples J01T73 and J01T74 were qualified as estimates and flagged "J".

- Due to a MS (273%) and MSD (361%) recovery outside QC limits, the benzo(ghi)perylene results in samples J01T73 and J01T74 were qualified as estimates and flagged "J".

- Due to a MS (323%) and MSD (425%) recovery outside QC limits, the ideno(1,2,3-cd)pyrene results in samples J01T73, J01T74 and J01T84 were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (53%), all naphthalene results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (77%), all acenaphthene 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.

Seventeen analytes exceeded the DL. 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-01714, Rev. 0, *Sampling and Analysis Plan for Evaluation of Buried Lead-Sheathed Telephone Communications Cable*, March 2004.

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

PAH DATA QUALIFICATION SUMMARY*

SDG: H2789	REVIEWER: TLI	DATE: 11/19/04	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Acenaphthene Pyrene Benzo(a)anthracene Benzo(k)fluoranthrene	J	J01T73	MS and/or MSD recovery
Fluoranthene Ideno(1,2,3-cd)pyrene	J	J01T73, J01T74, J01T84	MS and/or MSD recovery
Chrysene	J	J01T83	MS and/or MSD recovery
Benzo(ghi)perylene Benzo(a)pyrene	J	J01T73, J01T74	MS and/or MSD recovery
Benzo(b)fluoranthrene	J	J01T73, J01T74, J01T83, J01T84	MS and/or MSD recovery
Napthalene Acenaphthene	J	All	RPD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PAH ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD															
Laboratory: Lionville Laboratory Inc.															
Case:	SDG: H2789														
Sample Number		J01T73		J01T74		J01T75		J01T76		J01T83		J01T84			
Remarks															
Sample Date		9/29/04		9/29/04		9/29/04		9/29/04		9/29/04		9/29/04			
Extraction Date		10/5/04		10/5/04		10/5/04		10/5/04		10/5/04		10/5/04			
Analysis Date		10/6/04		10/6/04		10/6/04		10/6/04		10/6/04		10/6/04			
PAH (8310)	MDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Naphthalene	50	101	UJ	101	UJ	103	UJ	104	UJ	105	UJ	105	UJ		
Acenaphthylene	50	101	U	101	U	103	U	104	U	105	U	105	U		
Acenaphthene	50	150	J	101	UJ	103	UJ	104	UJ	105	UJ	105	UJ		
Fluorene	50	3.8		5.07	U	5.14	U	5.18	U	5.24	U	3.4			
Phenanthrene	50	5.05	U	5.07	U	5.14	U	5.18	U	2.6		2.6			
Anthracene	50	5.05	U	5.07	U	5.14	U	5.18	U	5.24	U	5.25	U		
Fluoranthene	50	49	J	9.9	J	10.3	U	10.4	U	10.5	U	8.4	J		
Pyrene	50	11	J	10.1	U	10.3	U	10.4	U	10.5	U	10.5	U		
Benzo(a)anthracene	50	4.0	J	5.07	U	5.14	U	5.18	U	5.24	U	5.25	U		
Chrysene	50	5.05	U	5.07	U	5.14	U	5.18	U	3.4	J	5.25	U		
Benzo(b)fluoranthrene	50	63	J	25	J	5.14	U	5.18	U	7.3	J	4.2	J		
Benzo(k)fluoranthrene	50	9.1	J	5.07	U	5.14	U	5.18	U	5.24	U	5.25			
Benzo(a)pyrene	50	34	J	7.6	J	5.14	U	5.18	U	5.24	U	5.25	U		
Dibenzo(a,h)anthracene	50	2.5		5.07	U	5.14	U	5.18	U	5.24	U	5.25	U		
Benzo(ghi)perylene	50	29	J	6.8	J	5.14	U	5.18	U	5.24	U	5.25	U		
Indeno(1,2,3-cd)pyrene	50	34	J	5.6	J	5.14	U	5.18	U	5.24	U	2.6	J		

000013

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.

PAH'S by HPLC / Method 8310 Report Date: 10/07/04 14:19

RFW Batch Number: **0410L786** Client: **TNU-HANFORD B04-016** Work Order: 11343606001 Page: 1

	Cust ID:	J01T73	J01T73	J01T73	J01T74	J01T75	J01T76
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
Triphenylene		116 %	230 * %	186 * %	102 %	98 %	100 %
		fl	fl	fl	fl	fl	fl
Naphthalene		101 U J	45 %	26 %	101 U J	103 U J	104 U J
Acenaphthylene		101 U	208 * %	251 * %	101 U	103 U	104 U
Acenaphthene		150 J	930 * %	414 * %	101 U J	103 U J	104 U J
Fluorene		3.8 J	106 %	98 %	5.07 U	5.14 U	5.18 U
Phenanthrene		5.05 U	104 %	94 %	5.07 U	5.14 U	5.18 U
Anthracene		5.05 U	117 %	108 %	5.07 U	5.14 U	5.18 U
Fluoranthene		49 J	506 * %	522 * %	9.9 ~~B~~ J	10.3 U	10.4 U
Pyrene		11 J	280 * %	233 * %	10.1 U	10.3 U	10.4 U
Benzo(a)anthracene		4.0 ~~B~~ J	142 %	164 * %	5.07 U	5.14 U	5.18 U
Chrysene		5.05 U	137 %	162 * %	5.07 U	5.14 U	5.18 U
Benzo(b)fluoranthrene		63 J	624 * %	680 * %	25 J	5.14 U	5.18 U
Benzo(k)fluoranthrene		9.1 J	208 * %	216 * %	5.07 U	5.14 U	5.18 U
Benzo(a)pyrene		34 J	416 * %	461 * %	7.6 J	5.14 U	5.18 U
Dibenzo(a,h)anthracene		2.5 J	130 %	135 %	5.07 U	5.14 U	5.18 U
Benzo(ghi)perylene		29 J	273 * %	361 * %	6.8 J	5.14 U	5.18 U
Indeno(1,2,3-cd)pyrene		34 J	323 * %	425 * %	5.6 J	5.14 U	5.18 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

11/16/04

See relation

Lionville Laboratory, Inc.

PAH'S by HPLC / Method 8310

Report Date: 10/07/04 14:19

RFW Batch Number: **0410L786** Client: **TNU-HANFORD B04-016** Work Order: 11343606001 Page: 2

	Cust ID:	J01T83	J01T84	BLK	BLK BS
Sample Information	RFW#:	005	006	04LE1249-MB1	04LE1249-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Triphenylene	98	%		102	%		121	%		106	%						
Naphthalene	105	U	J	105	U	J	100	U		102	%						
Acenaphthylene	105	U		105	U		100	U		92	%						
Acenaphthene	105	U	J	105	U	J	100	U		83	%						
Fluorene	5.24	U		3.4	J		5.00	U		103	%						
Phenanthrene	2.6	J		2.6	J		5.00	U		107	%						
Anthracene	5.24	U		5.25	U		5.00	U		114	%						
Fluoranthene	10.5	U		8.4	~~B~~	J	10.0	U		111	%						
Pyrene	10.5	U		10.5	U		10.0	U		106	%						
Benzo(a)anthracene	5.24	U		5.25	U		5.00	U		107	%						
Chrysene	3.4	~~B~~	J	5.25	U		5.00	U		96	%						
Benzo(b)fluoranthrene	7.3		J	4.2	~~B~~	J	5.00	U		108	%						
Benzo(k)fluoranthrene	5.24	U		5.25	U		5.00	U		112	%						
Benzo(a)pyrene	5.24	U		5.25	U		5.00	U		110	%						
Dibenzo(a,h)anthracene	5.24	U		5.25	U		5.00	U		113	%						
Benzo(ghi)perylene	5.24	U		5.25	U		5.00	U		109	%						
Indeno(1,2,3-cd)pyrene	5.24	U		2.6	~~B~~	J	5.00	U		108	%						

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

11/14/04

10/7/04

000015

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B04-016
LVL#: 0410L786
SDG/SAF#: H2789/B04-016

W.O.#: 11343-606-001-9999-00
Date Received: 10-01-2004

PAH

Six (6) soil samples were collected on 09-29-2004.

The samples and their associated QC samples were extracted on 10-05-2004 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW846, 3rd Edition for Polyaromatic Hydrocarbons on 10-06-2004. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8310.

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. The required holding time for extraction and analysis was met.

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

4. Two (2) of ten (10) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

5 All blank spike recoveries were within acceptance criteria.

6. Twenty (20) of thirty-two (32) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. All initial calibrations associated with this data set were within acceptance criteria.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

10/29/04
Date

som\r:\group\data\pah\tnu hanford\0410-786.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 1 1 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 04LC553

Initiator: Bryce Santoro
Date: 10/7/04
Client: TAU

Batch: 04LC786
Samples: MS/MSD
Method: SW846/MCAWW/CLP/

Parameter: 08310
Matrix: Soil
Prep Batch: 04LE1249

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 and spike recoveries in MS and MSD.

2. Known or Probable Causes(s)

(1) Heavy matrix and target analyte interference.

3. Discussion and Proposed Action Other Description: Normal

__ 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: _____ 10/7/04

✓ 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: _____ 10/14/04 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): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0301

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-016-02	Page 1 of 1

Collector: Renee Nielson	Company Contact: Wendy Thompson — Telephone No.: 372-9597	Project Coordinator: KESSNER, JH	Price Code: 8J — Data Turnaround: 7 Days
Project Designation: Lead-Sheathed Telephone Communication Cable Sampling -	Sampling Location: 100-N	SAF No.: B04-016	Air Quality:
Ice Chest No.: ERC 03 100	Field Logbook No.: EL-1517-4 — COA: BRASC11P10	Method of Shipment: Federal Express	
Shipped To: LVLI ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A040235	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000019

Preservation	None	Cool 4C	Cool 4C									
Type of Container	nG	nG	nG									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082									
Sample No.	Matrix *	Sample Date	Sample Time									
J01T73	SOIL	9-29-04	1135	X	X	X						
J01T74	SOIL	9-29-04	1148	X	X	X						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: R Nielson	9/29/04 1308	Received By/Stored In: Ref # 2C 3728	9/29/04 1308
Relinquished By/Removed From: REF # 2C 3728	93004 1000	Received By/Stored In: S J GALE	93004 1000
Relinquished By/Removed From: S J GALE	93004 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	10-1-04 10945	Received By/Stored In: D. Smith	10-1-04 10945
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7470 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2C on 9/30/04

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-016-04	Page 1 of 1

Collector: Renee Nielson	Company Contact: Wendy Thompson	Telephone No.: 372-9597	Project Coordinator: KESSNER, JH
Price Code: 8J	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Lead-Sheathed Telephone Communication Cable Sampling -	Sampling Location: 200 East	SAF No.: B04-016	
Ice Chest No.: ERC 03 100	Field Logbook No.: EL-1517-4	COA: BRASC11P10	Method of Shipment: Federal Express
Shipped To: LVL1 ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A040 235		Bill of Lading/Air Bill No.: SEE OPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C									
Type of Container	aG	aG	aG									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082									
Sample No. / Matrix * / Sample Date / Sample Time												
J01T75 / SOIL / 9-29-04 / 0839	X	X	X									
J01T76 / SOIL / 9-29-04 / 0846	X	X	X									

000020

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson	9/29/04 1308	REF #2C 3728	9/29/04 1308
REF 2C 3728	93004 1000	SJ Gale	93004 1000
SJ Gale	93004 1000	FED EX	
FED EX	10-1-04 0945	[illegible]	10-1-04 0945

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref #2C on 9/30/04

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-016-07	Page 1 of 1

Collector: Renee Nielson	Company Contact: Wendy Thompson — Telephone No.: 372-9597	Project Coordinator: KESSNER, JH	Price Code: 8J — Data Turnaround: 7 Days — Air Quality ☐
Project Designation: Lead-Sheathed Telephone Communication Cable Sampling	Sampling Location: 100-D Area (riparian zone)	SAF No.: B04-016	
Ice Chest No.: ERC 03 100	Field Logbook No.: EL-1517-4 — COA: BRASC11P10	Method of Shipment: Federal Express	
Shipped To: LVL1 ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A040235	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C								
Type of Container	aG	aG	aG								
No. of Container(s)	1	1	1								
Volume	250mL	250mL	250mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082								

Sample No.	Matrix *	Sample Date	Sample Time										
J01T83	SOIL	9-29-04	0958	X	X	X							
J01T84	SOIL	9-29-04	1020	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]/R. Nielson	9/29/04 1308	Ref # 2C 3728	9/29/04 1308
Ref 2C 3728	93004 1000	SEALED	93004 1000
SEALED	93004 1000	~~SEALED~~ FED EX	
FedEx	10-1-04 10945	[illegible]	10-1-04 10945
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) ICP Metals - 6010A (Supertrace) [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 4/30/04

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

Matrix *

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

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

000021

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: LSTCC 600-235			DATA PACKAGE: H2789		
VALIDATOR: TLI		LAB: LLI		DATE: 11/12/04	
			SDG: H2789		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX:

J01T73 J01T74 J01T75 J01T76
J01T83 J01T84

soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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:

GENERAL ORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

Comments: No FB

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

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

Comments: MS acenaphthene J - 73 benzo(a)anthracene ~~J~~ 73 - J MSD
or MSD Fluoranthene 73, 74, 84 - J
pyrene - 73, - J benzo(k)fluoranth - J - 73
chrysene - 73, 83 - J benzo(a)pyrene - J 73, 74
benzo(b)fluoranth - 73, 74, 83, 84 - J
benzo(ghi)perylene - 73, 74
ideno(123-cd)pyrene - 73, 74 84 - J

GENERAL ORGANIC 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: napthalene - ~~4790~~ 5370 J Acenapthene - 7790 - J

6. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL ORGANIC ANALYSIS DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, 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: 17 ones

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 aceptable? ..... Yes No N/A

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

Check 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: 19 November 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Lead-Sheathed Telephone Communication Cable Sampling - Other Solid - Waste Site 600-235
Subject: PCB - Data Package No. H2789-LLI (SDG No. H2789)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2789 -LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Waste Site	Analysis
J01T73	9/29/04	Soil	C	600-235	See note 1
J01T74	9/29/04	Soil	C	600-235	See note 1
J01T75	9/29/04	Soil	C	600-235	See note 1
J01T76	9/29/04	Soil	C	600-235	See note 1
J01T83	9/29/04	Soil	C	600-235	See note 1
J01T84	9/29/04	Soil	C	600-235	See note 1

1 - PCBs by 8082

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Sampling and Analysis Plan for Evaluation fo Buried Lead-Sheathed Telephone Communications Cable (BHI-01714, Rev. 0, March 2004). 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 required detection limit (DL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the DL.

All method blank target compound results were acceptable.

<u>Field Blanks</u>

No field blanks were submitted for analysis.

- **Accuracy**

<u>Matrix Spike & Laboratory Control Sample</u>

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 50% to 150% (laboratory CLP limits for chlorinated pesticides). If spike recoveries are outside control limits, detected

sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy spike results were acceptable.

Surrogate Recovery

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

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the BHI-01714 detection limits (DLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the DL.

- **Completeness**

Data Package No. H2789-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-01714, Rev. 0, *Sampling and Analysis Plan for Evaluation of Buried Lead-Sheathed Telephone Communications Cable*, March 2004.

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

PCB DATA QUALIFICATION SUMMARY*

SDG: H2789	REVIEWER: TLI	DATE: 11/19/04	PAGE_1_OF_1_
COMMENTS: No qualifiers assigned			

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD															
Laboratory: Lionville Laboratory Inc.															
Case:	SDG: H2789														
Sample Number		J01T73		J01T74		J01T75		J01T76		J01T83		J01T84			
Remarks															
Sample Date		9/29/04		9/29/04		9/29/04		9/29/04		9/29/04		9/29/04			
Extraction Date		10/5/04		10/5/04		10/5/04		10/5/04		10/5/04		10/5/04			
Analysis Date		10/8/04		10/8/04		10/8/04		10/8/04		10/8/04		10/8/04			
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	13	U	14	U	14	U	14	U	14	U	14	U		
Aroclor-1221	20	13	U	14	U	14	U	14	U	14	U	14	U		
Aroclor-1232	20	13	U	14	U	14	U	14	U	14	U	14	U		
Aroclor-1242	20	13	U	14	U	14	U	14	U	14	U	14	U		
Aroclor-1248	20	13	U	14	U	14	U	14	U	14	U	14	U		
Aroclor-1254	20	13	U	14	U	14	U	14	U	14	U	14	U		
Aroclor-1260	20	13	U	14	U	14	U	14	U	14	U	14	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.

000010

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 10/08/04 14:47

RFW Batch Number: **0410L786** Client: **TNU-HANFORD B04-016** Work Order: 11343606001 Page: 1

	Cust ID:	J01T73	J01T73	J01T73	J01T74	J01T75	J01T76
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	78 %	93 %	91 %	108 %	114 %	80 %
	Decachlorobiphenyl	87 %	97 %	97 %	117 %	126 * %	100 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	106 %	110 %	14 U	14 U	14 U
Aroclor-1221		13 U	13 U	13 U	14 U	14 U	14 U
Aroclor-1232		13 U	13 U	13 U	14 U	14 U	14 U
Aroclor-1242		13 U	13 U	13 U	14 U	14 U	14 U
Aroclor-1248		13 U	13 U	13 U	14 U	14 U	14 U
Aroclor-1254		13 U	13 U	13 U	14 U	14 U	14 U
Aroclor-1260		13 U	109 %	112 %	14 U	14 U	14 U

	Cust ID:	J01T83	J01T84	PBLKXX	PBLKXX BS
Sample Information	RFW#:	005	006	04LE1248-MB1	04LE1248-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	77 %	102 %	89 %	90 %
	Decachlorobiphenyl	87 %	109 %	89 %	93 %
		fl	fl	fl	fl
Aroclor-1016		14 U	14 U	13 U	94 %
Aroclor-1221		14 U	14 U	13 U	13 U
Aroclor-1232		14 U	14 U	13 U	13 U
Aroclor-1242		14 U	14 U	13 U	13 U
Aroclor-1248		14 U	14 U	13 U	13 U
Aroclor-1254		14 U	14 U	13 U	13 U
Aroclor-1260		14 U	14 U	13 U	116 %

11/16/04

10/12/04

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

000014

000004

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B04-016
LVL#: 0410L786
SDG/SAF#: H2789/B04-016

W.O.#: 11343-606-001-9999-00
Date Received: 10-01-2004

PCB

Six (6) soil samples were collected on 09-29-2004.

The samples and their associated QC samples were extracted on 10-05-2004 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 10-08-2004. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received a Sulfuric Acid cleanup according to Lionville Laboratory SOPs based on SW846 method 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. One (1) of twenty (20) surrogate recoveries was outside acceptance criteria. However, the surrogate recovery criteria were met (i.e., no more than one outlier per sample).
6. The 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. The 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

10/29/04
Date

som\r:\group\data\pest\tnu hanford\0410-786.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 9 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	B04-016-02	Page 1 of 1

Collector: Renee Nielson	Company Contact: Wendy Thompson	Telephone No.: 372-9597	Project Coordinator: KESSNER, JH
Price Code: 8J	Data Turnaround: 7 Days	Air Quality:	
Project Designation: Lead-Sheathed Telephone Communication Cable Sampling -	Sampling Location: 100-N	SAF No.: B04-016	
Ice Chest No.: ERC 03 100	Field Logbook No.: EL-1517-4	COA: BRASC11P10	Method of Shipment: Federal Express
Shipped To: LVLI ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A040235		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C									
Type of Container	aG	aG	aG									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082									
Sample No.	Matrix *	Sample Date	Sample Time									
J01T73	SOIL	9-29-04	1135	X	X	X						
J01T74	SOIL	9-29-04	1148	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson / R. Nielson	9/29/04 1308	Ref # 2C 3728	9/29/04 1308
Ref # 2C 3728	93004 1000	S. Gale	93004 1000
S. Gale	93004 1000	FED EX	
Fed Ex	10-1-04 1045	N. Smith	10-1-04 1045

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury - 7470 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2C on 9/30/04

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

Matrix *
S=Soil
SE=Sediment
SO=Solid
St=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	Disposal Method	Disposed By	Date/Time

000014

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-016-04	Page 1 of 1

Collector: Renee Nielson	Company Contact: Wendy Thompson	Telephone No.: 372-9597	Project Coordinator: KESSNER, JH
Project Designation: Lead-Sheathed Telephone Communication Cable Sampling -	Sampling Location: 200 East		SAF No.: B04-016
Ice Chest No.: ERC 03 100	Field Logbook No.: EL-1517-4	COA: BRASC11P10	Method of Shipment: Federal Express
Shipped To: LVL-1 ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A040 235		Bill of Lading/Air Bill No.: SEE OPC

Price Code: 8J

Data Turnaround: 7 Days

Air Quality: ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation			None	Cool 4C	Cool 4C							
Type of Container			aG	aG	aG							
No. of Container(s)			1	1	1							
Volume			250mL	250mL	250mL							
SAMPLE ANALYSIS			See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082							
Sample No.	Matrix *	Sample Date	Sample Time									
J01T75	SOIL	9-29-04	0839	X	X	X						
J01T76	SOIL	9-29-04	0846	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson / R. Nielson	9/29/04 1308	REF # 2C 3728	9/29/04 1308
REF 2C 3728	93004 1000	SJCALC	93004 1000
SJCALC	93004 1000	FED EX	
FED EX	10-1-04 0945	W Smith	10-1-04 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref #2C on 9/30/04

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

Matrix *

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

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

CT0000

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-016-07	Page 1 of 1

Collector Renee Nielson	Company Contact Wendy Thompson	Telephone No. 372-9597	Project Coordinator KESSNER, JH
Project Designation Lead-Sheathed Telephone Communication Cable Sampling -	Sampling Location 100-D Area (riparian zone)		SAF No. B04-016
Ice Chest No. ERC 03 100	Field Logbook No. EL-1517-4	COA BRASC11P10	Method of Shipment Federal Express
Shipped To HVLI ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No. A040235		Bill of Lading/Air Bill No. SEE OSPC

Price Code 8J

Air Quality ☐

Data Turnaround 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation			None	Cool 4C	Cool 4C							
Type of Container			aG	aG	aG							
No. of Container(s)			1	1	1							
Volume			250mL	250mL	250mL							
SAMPLE ANALYSIS			See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082							
Sample No.	Matrix *	Sample Date	Sample Time									
J01T83	SOIL	9-29-04	0958	X	X	X						
J01T84	SOIL	9-29-04	1020	X	X	X						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: R. Nielson	9/29/04 1308	Received By/Stored In: REF # 2C 3728	9/29/04 1308
Relinquished By/Removed From: REF 2C 3728	93004 1000	Received By/Stored In: SEALED	93004 1000
Relinquished By/Removed From: SEALED	93004 1000	Received By/Stored In: ~~SEALED~~ FED EX	
Relinquished By/Removed From: FedEx	10.1.04 1045	Received By/Stored In: Smith	10.1.04 1045
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 9/30/04

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

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

[redacted]

910016

Appendix 5

Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: LSTCC 600-235			DATA PACKAGE: H2789		
VALIDATOR: TCI		LAB: LLI		DATE: 11/12/04	
			SDG: H2789		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J01T73 J01T74 J01T75 J01T76 J01T83					
J01T84					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

PESTICIDE/PCB DATA VALIDATION CHECKLIST

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

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

Comments: No FB

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

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

Comments: No PAS

PESTICIDE/PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments: _____

7. HOLDING TIMES (all levels)

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

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

Comments: _____

PESTICIDE/PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: _____

Date: 19 November 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Lead-Sheathed Telephone Communication Cable Sampling - Other Solid - Waste Site 600-235
Subject: Inorganic - Data Package No. H2789-LLI (SDG No. H2789)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2789 -LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Waste Site	Analysis
J01T73	9/29/04	Soil	C	600-235	See note 1
J01T74	9/29/04	Soil	C	600-235	See note 1
J01T75	9/29/04	Soil	C	600-235	See note 1
J01T76	9/29/04	Soil	C	600-235	See note 1
J01T83	9/29/04	Soil	C	600-235	See note 1
J01T84	9/29/04	Soil	C	600-235	See note 1

1 - ICP metals; mercury by 7471A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Sampling and Analysis Plan for Evaluation of Buried Lead-Sheathed Telephone Communications Cable (BHI-01714, Rev. 0, March 2004). 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

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J".

Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike recovery results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

Due to an RPD outside QC limits (43%), all barium results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the BHI-01714 detection limits (DLs) to ensure that laboratory detection levels meet the required criteria. All reported results met the analyte specific DL.

- **Completeness**

Data package No. H2789-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD outside QC limits (43%), all barium results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

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

BHI-01714, Rev. 0, *Sampling and Analysis Plan for Evaluation of Buried Lead-Sheathed Telephone Communications Cable*, March 2004.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

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

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

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

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

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

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

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

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

Appendix 2

Summary of Data Qualification

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H2789	REVIEWER: TLI	DATE: 11/19/04	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Barium	J	All	RPD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

INORGANIC ANALYSIS, SOIL MATRIX, MG/KG

Project: BECHTEL-HANFORD															
Laboratory: LLI															
Case	SDG: H2789														
Sample Number		J01T73		J01T74		J01T75		J01T76		J01T83		J01T84			
Remarks															
Sample Date		9/29/04		9/29/04		9/29/04		9/29/04		9/29/04		9/29/04			
Inorganics	DL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	1	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U	0.09	U		
Arsenic	10	3.4		3.3		2.8		2.9		1.7		2.8			
Barium	2	56.8	J	57.4	J	88.3	J	91.6	J	65.2	J	63.9	J		
Cadmium	1	0.03	U	0.03	U	0.03	U	0.03	U	0.20		0.42			
Chromium	1	15.0		14.1		7.6		9.1		6.4		6.7			
Mercury	0.2	0.01	U	0.01	U	0.02	U	0.02	U	0.02	U	0.02	U		
Lead	5	4.0		4.1		3.3		3.5		6.4		19.6			
Selenium	10	0.38	U	0.37	U	0.38	U	0.38	U	0.40	U	0.38	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.

000010

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/08/04

CLIENT: TNU-HANFORD B04-016 LVL LOT #: 0410L786

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J01T73	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.4	MG/KG	0.35	1.0
		Barium, Total	56.8 J	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	15.0	MG/KG	0.06	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	4.0	MG/KG	0.19	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
-002	J01T74	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.3	MG/KG	0.34	1.0
		Barium, Total	57.4 J	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	14.1	MG/KG	0.06	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	4.1	MG/KG	0.18	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
-003	J01T75	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.8	MG/KG	0.35	1.0
		Barium, Total	88.3 J	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	7.6	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.3	MG/KG	0.19	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
-004	J01T76	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.9	MG/KG	0.36	1.0
		Barium, Total	91.6 J	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	9.1	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.5	MG/KG	0.19	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0

RC 11/14/04

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/08/04

CLIENT: TNU-HANFORD B04-016

LVL LOT #: 0410L786

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J01T83	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	1.7	MG/KG	0.37	1.0
		Barium, Total	65.2 J	MG/KG	0.02	1.0
		Cadmium, Total	0.20	MG/KG	0.03	1.0
		Chromium, Total	6.4	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	6.4	MG/KG	0.20	1.0
		Selenium, Total	0.40 u	MG/KG	0.40	1.0
-006	J01T84	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.8	MG/KG	0.35	1.0
		Barium, Total	63.9 J	MG/KG	0.02	1.0
		Cadmium, Total	0.42	MG/KG	0.03	1.0
		Chromium, Total	6.7	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	19.6	MG/KG	0.18	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0

11/14/04

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B04-016
LVL#: 0410L786
SDG/SAF#: H /B04-016 H/2789

W.O.#: 11343-606-001-9999-00
Date Received: 10-01-04

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

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

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

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

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

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

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

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 18 pages.

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

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.

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

10/29/04
Date

jjw/m10-786

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-016-02	Page 1 of 1

Collector: Renee Nielson	Company Contact: Wendy Thompson	Telephone No.: 372-9597	Project Coordinator: KESSNER, JH
Price Code: 8J	Data Turnaround: 7 Days	Air Quality:	
Project Designation: Lead-Sheathed Telephone Communication Cable Sampling -	Sampling Location: 100-N		SAF No.: B04-016
Ice Chest No.: ERC 03 100	Field Logbook No.: EL-1517-4	COA: BRASC11P10	Method of Shipment: Federal Express
Shipped To: LVL1 ~~FIBERLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A040235		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C								
Type of Container	aG	aG	aG								
No. of Container(s)	1	1	1								
Volume	250mL	250mL	250mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082								

000016

Sample No.	Matrix *	Sample Date	Sample Time										
J01T73	SOIL	9-29-04	1135	X	X	X							
J01T74	SOIL	9-29-04	1148	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Nielson / R Nielson	9/29/04 1308	Ref # 2C 3728	9/29/04 1308
Ref # 2C 3728	93004 1000	S Gale	93004 1000
S Gale	93004 1000	FED EX	
Fed Ex	10-1-04 1045	D Smith	10-1-04 1045

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury - 7470 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2C on 9/30/04

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

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-016-04	Page 1 of 1

Collector Renee Nielson	Company Contact Wendy Thompson	Telephone No. 372-9597	Project Coordinator KESSNER, JH
Project Designation Lead-Sheathed Telephone Communication Cable Sampling -	Sampling Location 200 East		SAF No. B04-016
Ice Chest No. ERC 03 100	Field Logbook No. EL-1517-4	COA BRASC11P10	Method of Shipment Federal Express
Shipped To LVLI ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No. A040 235		Bill of Lading/Air Bill No. SEE OUPC

Price Code 8J

Air Quality ☐

Data Turnaround 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C									
Type of Container	aG	aG	aG									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082									

000017

Sample No.	Matrix *	Sample Date	Sample Time										
J01T75	SOIL	9-29-04	0839	X	X	X							
J01T76	SOIL	9-29-04	0846	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From R. Nielson	9/29/04 1308	Received By/Stored In REF ZC 3728	9/29/04 1308
Relinquished By/Removed From REF ZC 3728	93004 1000	Received By/Stored In SJGALE	93004 1000
Relinquished By/Removed From SJGALE	93004 1000	Received By/Stored In FED EX	
Relinquished By/Removed From Fed Ex	10-1-04 0945	Received By/Stored In [illegible]	10-1-04 0945
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref #ZC on 9/30/04

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

Matrix *

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

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

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

[redacted]

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-016-07	Page 1 of 1

Collector: Renee Nielson	Company Contact: Wendy Thompson — Telephone No.: 372-9597	Project Coordinator: KESSNER, JH	Price Code: 8J — Data Turnaround: 7 Days
Project Designation: Lead-Sheathed Telephone Communication Cable Sampling -	Sampling Location: 100-D Area (riparian zone)	SAF No.: B04-016	Air Quality ☐
Ice Chest No.: ERC 03 100	Field Logbook No.: EL-1517-4 — COA: BRASC11P10	Method of Shipment: Federal Express	
Shipped To: hVL1 ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A040 235	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C									
Type of Container	aG	aG	aG									
No. of Container(s)	1	1	1									
Volume	250mL	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310	PCBs - 8082									
Sample No. / Matrix * / Sample Date / Sample Time												
J01T83 / SOIL / 9-29-04 / 0958	X	X	X									
J01T84 / SOIL / 9-29-04 / 1020	X	X	X									

0000018

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Renee Nielson/R. Nielson	9/29/04 1308	Ref # 2C 3728	9/29/04 1308
Ref 2C 3728	93004 1000	SIGNED	93004 1000
SIGNED	93004 1000	SIGNED FED EX	
FED EX	10.1.04 1045		10.1.04 1045

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 4/30/04

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

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wt=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)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E

PROJECT: LSTCC 600-235		DATA PACKAGE: H2789	
VALIDATOR: JLI	LAB: LLI	DATE: 11/12/04	
		SDG: H2789	

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

SAMPLES/MATRIX
J01773 J01774 J01775 J01776 J01783 J01789
Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: NO FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: 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: barium - 43% - J

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 10/08/04

CLIENT: TNU-HANFORD B04-016 LVL LOT #: 0410L786

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	04L0619-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	0.36 u	MG/KG	0.36	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.06 u	MG/KG	0.06	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.39 u	MG/KG	0.39	1.0
BLANK1	04C0227-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

0050000510

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/08/04

CLIENT: TNU-HANFORD B04-016

LVL LOT #: 0410L786

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J01T73	Silver, Total	4.3	0.09u	4.9	87.8	1.0
		Arsenic, Total	182	3.4	194	91.8	1.0
		Barium, Total	247	56.8	194	97.9	1.0
		Cadmium, Total	4.4	0.03u	4.9	89.8	1.0
		Chromium, Total	33.0	15.0	19.4	92.8	1.0
		Mercury, Total	0.15	0.01u	0.14	108.0	1.0
		Lead, Total	49.0	4.0	48.6	92.6	1.0
		Selenium, Total	170	0.38u	194	87.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/08/04

CLIENT: TNU-HANFORD B04-016

LVL LOT #: 0410L786

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J01T73	Silver, Total	0.09u	0.09u	NC	1.0
		Arsenic, Total	3.4	3.6	5.7	1.0
		Barium, Total	56.8	88.0	43.1	1.0
		Cadmium, Total	0.03u	0.03u	NC	1.0
		Chromium, Total	15.0	16.0	6.5	1.0
		Mercury, Total	0.01u	0.01u	NC	1.0
		Lead, Total	4.0	4.0	0.00	1.0
		Selenium, Total	0.38u	0.39u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/08/04

CLIENT: TNU-HANFORD B04-016

LVL LOT #: 0410L786

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	04L0619-LC1	Silver, LCS	48.2	50.0	MG/KG	96.4
		Arsenic, LCS	949	1000	MG/KG	94.9
		Barium, LCS	498	500	MG/KG	99.6
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Chromium, LCS	48.2	50.0	MG/KG	96.4
		Lead, LCS	245	250	MG/KG	97.8
		Selenium, LCS	917	1000	MG/KG	91.7
LCS1	04C0227-LC1	Mercury, LCS	6.1	6.2	MG/KG	98.0