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

MAIL COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) 3.29.05
INITIAL/DATE

RECEIVED
APR 05 2005
EDMC

SAF-B03-015 SDG H 2989

Sample Location/Waste Site: 600-202

Date: 7 March 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 600-202
Subject: Inorganic - Data Package No. H2989-LLI (SDG No. H2989)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2989 -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
J02DD1	1/24/05	Soil	C	600-202	See note 1
J02DD2	1/24/05	Soil	C	600-202	See note 1
J02DD3	1/24/05	Soil	C	600-202	See note 1
J02DD4	1/24/05	Soil	C	600-202	See note 1

1 - ICP metals; mercury by 7471A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were met.

- **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.

Due to a MS recovery outside QC limits (57.1%), all antimony results were qualified as estimates and flagged "J".

Due to a MS recovery outside QC limits (-41%), all silicon results were qualified as

estimates and flagged "J".

All other matrix spike recovery results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 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. H2989-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 a MS recovery outside QC limits (57.1%), all antimony results were qualified as estimates and flagged "J". Due to a MS recovery outside QC limits (-41%), all silicon results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H2989	REVIEWER: TLI	DATE: 3/7/05	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony Silicon	J	All	MS recovery

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD									
Laboratory: LLI									
Case	SDG: H2989								
Sample Number		J02DD1		J02DD2		J02DD3		J02DD4	
Remarks									
Sample Date		1/24/05		1/24/05		1/24/05		1/24/05	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.11	U	0.11	U	0.09	U	0.10	U
Aluminum		5720		5630		8540		9400	
Arsenic		3.0		5.4		4.6		5.5	
Boron		1.6		1.9		1.6		0.98	
Barium	20	65.5		56.6		74.1		95.0	
Beryllium		0.69		0.65		0.76		0.88	
Calcium		5020		4800		3720		4310	
Cadmium	0.2	0.03	U	0.20		0.15		0.16	
Cobalt		5.2		5.7		6.9		8.3	
Chromium	1	10.0		11.9		20.0		20.4	
Copper		9.8		12.2		14.5		19.0	
Iron		18800		54400		19700		22100	
Mercury	0.2	0.02	U	0.02	UJ	0.02	U	0.02	U
Potassium		1820		2200		970		1240	
Magnesium		4180		4010		5460		5680	
Manganese		267		399		324		411	
Molybdenum		0.52		0.88		0.41		0.51	
Sodium		141		135		476		204	
Nickel		10.1		11.0		20.6		23.7	
Lead	5	4.9		5.5		5.3		5.9	
Antimony		0.31	J	0.55	J	0.37	J	0.47	J
Selenium	1	0.40	U	0.86		0.34	U	0.37	U
Silicon		414	J	395	J	349	J	912	J
Vanadium		34.1		32.2		39.9		45.3	
Zinc		36.5		35.1		41.4		45.7	

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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.

Project: BECHTEL-HANFORD									
Laboratory: LLI									
Case	SDG: H2989								
Sample Number		J02DD1		J02DD2		J02DD3		J02DD4	
Remarks									
Sample Date		1/24/05		1/24/05		1/24/05		1/24/05	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.11	U	0.11	U	0.09	U	0.10	U
Aluminum		5720		5630		8540		9400	
Arsenic		3.0		5.4		4.6		5.5	
Boron		1.6		1.9		1.6		0.98	
Barium	20	65.5		56.6		74.1		95.0	
Beryllium		0.69		0.65		0.76		0.88	
Calcium		5020		4800		3720		4310	
Cadmium	0.2	0.03	U	0.20		0.15		0.16	
Cobalt		5.2		5.7		6.9		8.3	
Chromium	1	10.0		11.9		20.0		20.4	
Copper		9.8		12.2		14.5		19.0	
Iron		18800		54400		19700		22100	
Mercury	0.2	0.02	U	0.02	U	0.02	U	0.02	U
Potassium		1820		2200		970		1240	
Magnesium		4180		4010		5460		5680	
Manganese		267		399		324		411	
Molybdenum		0.52		0.88		0.41		0.51	
Sodium		141		135		476		204	
Nickel		10.1		11.0		20.6		23.7	
Lead	5	4.9		5.5		5.3		5.9	
Antimony		0.31	J	0.55	J	0.37	J	0.47	J
Selenium	1	0.40	U	0.86		0.34	U	0.37	U
Silicon		414	J	395	J	349	J	912	J
Vanadium		34.1		32.2		39.9		45.3	
Zinc		36.5		35.1		41.4		45.7	

000010

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/04/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J02DD1	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Aluminum, Total	5720	MG/KG	3.4	1.0
		Arsenic, Total	3.0	MG/KG	0.28	1.0
		Boron, Total	1.6	MG/KG	0.32	1.0
		Barium, Total	65.5	MG/KG	0.04	1.0
		Beryllium, Total	0.69	MG/KG	0.01	1.0
		Calcium, Total	5020	MG/KG	3.0	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	5.2	MG/KG	0.07	1.0
		Chromium, Total	10.0	MG/KG	0.09	1.0
		Copper, Total	9.8	MG/KG	0.15	1.0
		Iron, Total	18800	MG/KG	3.0	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1820	MG/KG	2.0	1.0
		Magnesium, Total	4180	MG/KG	0.74	1.0
		Manganese, Total	267	MG/KG	0.03	1.0
		Molybdenum, Total	0.52	MG/KG	0.25	1.0
		Sodium, Total	141	MG/KG	0.55	1.0
		Nickel, Total	10.1	MG/KG	0.13	1.0
		Lead, Total	4.9	MG/KG	0.24	1.0
		Antimony, Total	0.31 J	MG/KG	0.30	1.0
		Selenium, Total	0.40 u	MG/KG	0.40	1.0
		Silicon, Total	414 J	MG/KG	1.5	1.0
		Vanadium, Total	34.1	MG/KG	0.07	1.0
		Zinc, Total	36.5	MG/KG	0.14	1.0

3/6/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/04/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J02DD2	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Aluminum, Total	5630	MG/KG	3.3	1.0
		Arsenic, Total	5.4	MG/KG	0.27	1.0
		Boron, Total	1.9	MG/KG	0.32	1.0
		Barium, Total	56.6	MG/KG	0.04	1.0
		Beryllium, Total	0.65	MG/KG	0.01	1.0
		Calcium, Total	4800	MG/KG	2.9	1.0
		Cadmium, Total	0.20	MG/KG	0.03	1.0
		Cobalt, Total	5.7	MG/KG	0.07	1.0
		Chromium, Total	11.9	MG/KG	0.08	1.0
		Copper, Total	12.2	MG/KG	0.15	1.0
		Iron, Total	54400	MG/KG	5.9	2.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2200	MG/KG	2.0	1.0
		Magnesium, Total	4010	MG/KG	0.73	1.0
		Manganese, Total	399	MG/KG	0.03	1.0
		Molybdenum, Total	0.88	MG/KG	0.24	1.0
		Sodium, Total	135	MG/KG	0.54	1.0
		Nickel, Total	11.0	MG/KG	0.13	1.0
		Lead, Total	5.5	MG/KG	0.23	1.0
		Antimony, Total	0.55 J	MG/KG	0.29	1.0
		Selenium, Total	0.86	MG/KG	0.39	1.0
		Silicon, Total	395 J	MG/KG	1.5	1.0
		Vanadium, Total	32.2	MG/KG	0.07	1.0
		Zinc, Total	35.1	MG/KG	0.14	1.0

3/4/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/04/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J02DD3	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	8540	MG/KG	2.8	1.0
		Arsenic, Total	4.6	MG/KG	0.24	1.0
		Boron, Total	1.6	MG/KG	0.27	1.0
		Barium, Total	74.1	MG/KG	0.04	1.0
		Beryllium, Total	0.76	MG/KG	0.009	1.0
		Calcium, Total	3720	MG/KG	2.5	1.0
		Cadmium, Total	0.15	MG/KG	0.03	1.0
		Cobalt, Total	6.9	MG/KG	0.06	1.0
		Chromium, Total	20.0	MG/KG	0.07	1.0
		Copper, Total	14.5	MG/KG	0.13	1.0
		Iron, Total	19700	MG/KG	2.5	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	970	MG/KG	1.7	1.0
		Magnesium, Total	5460	MG/KG	0.63	1.0
		Manganese, Total	324	MG/KG	0.03	1.0
		Molybdenum, Total	0.41	MG/KG	0.21	1.0
		Sodium, Total	476	MG/KG	0.46	1.0
		Nickel, Total	20.6	MG/KG	0.11	1.0
		Lead, Total	5.3	MG/KG	0.20	1.0
		Antimony, Total	0.37 J	MG/KG	0.25	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Silicon, Total	349 J	MG/KG	1.3	1.0
		Vanadium, Total	39.9	MG/KG	0.06	1.0
		Zinc, Total	41.4	MG/KG	0.12	1.0

3/6/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/04/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J02DD4	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	9400	MG/KG	3.1	1.0
		Arsenic, Total	5.5	MG/KG	0.26	1.0
		Boron, Total	0.98	MG/KG	0.30	1.0
		Barium, Total	95.0	MG/KG	0.04	1.0
		Beryllium, Total	0.88	MG/KG	0.01	1.0
		Calcium, Total	4310	MG/KG	2.8	1.0
		Cadmium, Total	0.16	MG/KG	0.03	1.0
		Cobalt, Total	8.3	MG/KG	0.07	1.0
		Chromium, Total	20.4	MG/KG	0.08	1.0
		Copper, Total	19.0	MG/KG	0.14	1.0
		Iron, Total	22100	MG/KG	2.8	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1240	MG/KG	1.9	1.0
		Magnesium, Total	5680	MG/KG	0.69	1.0
		Manganese, Total	411	MG/KG	0.03	1.0
		Molybdenum, Total	0.51	MG/KG	0.23	1.0
		Sodium, Total	204	MG/KG	0.51	1.0
		Nickel, Total	23.7	MG/KG	0.12	1.0
		Lead, Total	5.9	MG/KG	0.22	1.0
		Antimony, Total	0.47 J	MG/KG	0.28	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Silicon, Total	912 J	MG/KG	1.4	1.0
		Vanadium, Total	45.3	MG/KG	0.07	1.0
		Zinc, Total	45.7	MG/KG	0.13	1.0

3/6/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-015
LVL#: 0501L672
SDG/SAF#: H2989/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 01-26-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Sample J02DD2 was rerun with a 2-fold dilution for Iron due to high concentration.

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. The preparation/method blanks for 2 analytes were outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB results for Potassium and Sodium were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples, except J02DD3 for Sodium, read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

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 21 pages.

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

10. The matrix spike (MS) recoveries for 5 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J02DD1	Aluminum	20,000	81.5
	Iron	20,000	77.5
	Manganese	2,000	87.9
	Antimony	100	94.8
	Silicon	2,000	84.6

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/7/05
Date

jjw/m01-672

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-291	Page 1 of 1

Collector: Landon Collom	Company Contact: Ella Feist — Telephone No.: 372-9140	Project Coordinator: KESSNER, JH	Price Code: 8C — Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 600-202	SAF No.: B03-015	Air Quality
Ice Chest No.: GRC 03106, FS001	Field Logbook No.: EL 1578-5 — COA: C60202 6700	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES (Formerly TMA) LVL1	Offsite Property No.: A050 082	Bill of Lading/Air Bill No.: See Off Site Property Control Form	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4c

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
Type of Container	G/P	G/P	aG	G/P	aG	aG	G	G		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	250mL	120mL	250mL	120mL	250mL	250mL	60mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081; ~~Chloro-Herbicides-8151~~ CKR 1/11/05	See item (2) in Special Instructions	Semi-VOA - 8270A ~~8080~~ TCL	PAHs - 8310 AM 1/25	VOA - 8260A (TCL)	TPH (Total - 418.1		

Sample No.	Matrix *	Sample Date	Sample Time										
J02DD1	SOIL	1/24/05	0820	•	NA	•	•	•	•	NA	•		
J02DD2	"	1/24/05	0840	•	NA	•	•	•	•	NA	•		
J02DD3	"	1/24/05	1250	•	NA	•	•	•	•	NA	•		
J02DD4	"	1/24/05	1400	•	N/A	•	•	•	•	N/A	•		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Landon Collom	1/24/05 1500	Refrig 2C	1/24/05
REF 2C 12505	1100	S GALE	12505 1100
S GALE	12505 1100	FED EX	
FedEx	1-26-05 / 0930	D. Johnson	1-26-05/0930

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (SW846) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 [~~Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate~~, Sulfate]

SAP 12505

Personnel not available to relinquish samples from 3728 Ref # 2C on 1/25/05

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-[redacted]

000018

B2B5B3B3

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RWS ~~[illegible]~~ 600-202 3/1/05			DATA PACKAGE: H2989		
VALIDATOR: TCI		LAB: LLI		DATE: 3/1/05	
			SDG: H2989		

ANALYSES PERFORMED

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

SAMPLES/MATRIX

J02DD1 J02DD2 J02DD3 J02DD4

Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: NO FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: MS – antimony 57.1 – J all
Silicon – 41 – ~~J all~~ ~~UK all~~ J all
3/11/05 3/11/05

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: no FD

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 02/04/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0055-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	3.1 u	MG/KG	3.1	1.0
		Arsenic, Total	0.26 u	MG/KG	0.26	1.0
		Boron, Total	0.30 u	MG/KG	0.30	1.0
		Barium, Total	0.12	MG/KG	0.04	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	6.8	MG/KG	2.8	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.08 u	MG/KG	0.08	1.0
		Copper, Total	0.14 u	MG/KG	0.14	1.0
		Iron, Total	3.1	MG/KG	2.8	1.0
		Potassium, Total	179	MG/KG	1.9	1.0
		Magnesium, Total	9.8	MG/KG	0.69	1.0
		Manganese, Total	0.03	MG/KG	0.03	1.0
		Molybdenum, Total	0.23 u	MG/KG	0.23	1.0
		Sodium, Total	12.0	MG/KG	0.51	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.22 u	MG/KG	0.22	1.0
		Antimony, Total	0.28 u	MG/KG	0.28	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Silicon, Total	1.4 u	MG/KG	1.4	1.0
		Vanadium, Total	0.07 u	MG/KG	0.07	1.0
		Zinc, Total	0.13 u	MG/KG	0.13	1.0
BLANK1	05C0020-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/04/05

CLIENT: TNUHANFORD B03-015 H2989

LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J02DD1	Silver, Total	4.8	0.11u	5.3	90.6	1.0
		Aluminum, Total	7330	5720	210	768.3*	1.0
		Arsenic, Total	191	3.0	210	89.6	1.0
		Boron, Total	91.8	1.6	105	85.8	1.0
		Barium, Total	255	65.5	210	90.1	1.0
		Beryllium, Total	5.6	0.69	5.3	92.6	1.0
		Calcium, Total	7720	5020	2630	103.0	1.0
		Cadmium, Total	4.9	0.03u	5.3	92.5	1.0
		Cobalt, Total	54.0	5.2	52.5	93.0	1.0
		Chromium, Total	31.7	10.0	21.0	103.3	1.0
		Copper, Total	35.4	9.8	26.3	97.3	1.0
		Iron, Total	27200	18800	105	7963 *	1.0
		Mercury, Total	0.18	0.02u	0.17	110.8	1.0
		Potassium, Total	4610	1820	2630	106.1	1.0
		Magnesium, Total	6980	4180	2630	106.8	1.0
		Manganese, Total	351	267	52.5	159.8*	1.0
		Molybdenum, Total	97.3	0.52	105	92.1	1.0
		Sodium, Total	2660	141	2630	96.0	1.0
		Nickel, Total	58.5	10.1	52.5	92.2	1.0
		Lead, Total	52.6	4.9	52.5	90.9	1.0
		Antimony, Total	30.3	0.31	52.5	57.1	1.0
		Selenium, Total	182	0.40u	210	86.5	1.0
		Silicon, Total	370	414	105	-41.	1.0
		Vanadium, Total	87.4	34.1	52.5	101.5	1.0
		Zinc, Total	85.4	36.5	52.5	93.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/04/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J02DD1	Silver, Total	0.11u	0.10u	NC	1.0
		Aluminum, Total	5720	5360	6.5	1.0
		Arsenic, Total	3.0	3.0	0.00	1.0
		Boron, Total	1.6	1.4	13.3	1.0
		Barium, Total	65.5	59.9	8.9	1.0
		Beryllium, Total	0.69	0.64	8.6	1.0
		Calcium, Total	5020	4790	4.5	1.0
		Cadmium, Total	0.03u	0.08	~~NC~~ 200	1.0
		Cobalt, Total	5.2	5.1	1.9 MS-4/05	1.0
		Chromium, Total	10.0	9.7	3.0	1.0
		Copper, Total	9.8	9.8	0.00	1.0
		Iron, Total	18800	20800	10.2	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Potassium, Total	1820	1740	4.4	1.0
		Magnesium, Total	4180	4020	3.9	1.0
		Manganese, Total	267	266	0.49	1.0
		Molybdenum, Total	0.52	0.48	9.4	1.0
		Sodium, Total	141	118	18.1	1.0
		Nickel, Total	10.1	10.0	1.0	1.0
		Lead, Total	4.9	5.1	4.0	1.0
		Antimony, Total	0.31	0.53	51.6	1.0
		Selenium, Total	0.40u	0.37u	NC	1.0
		Silicon, Total	414	424	2.6	1.0
		Vanadium, Total	34.1	31.0	9.5	1.0
		Zinc, Total	36.5	39.5	7.9	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/04/05

CLIENT: TNUHANFORD B03-015 H2989

LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	05L0055-LC1	Silver, LCS	49.7	50.0	MG/KG	99.4
		Aluminum, LCS	488	500	MG/KG	97.6
		Arsenic, LCS	928	1000	MG/KG	92.8
		Boron, LCS	472	500	MG/KG	94.3
		Barium, LCS	487	500	MG/KG	97.3
		Beryllium, LCS	24.7	25.0	MG/KG	98.8
		Calcium, LCS	2480	2500	MG/KG	99.2
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Cobalt, LCS	248	250	MG/KG	99.4
		Chromium, LCS	50.0	50.0	MG/KG	100
		Copper, LCS	124	125	MG/KG	99.5
		Iron, LCS	500	500	MG/KG	100
		Potassium, LCS	2420	2500	MG/KG	96.7
		Magnesium, LCS	2430	2500	MG/KG	97.4
		Manganese, LCS	76.6	75.0	MG/KG	102.1
		Molybdenum, LCS	497	500	MG/KG	99.3
		Sodium, LCS	2390	2500	MG/KG	95.6
		Nickel, LCS	197	200	MG/KG	98.6
		Lead, LCS	244	250	MG/KG	97.6
		Antimony, LCS	283	300	MG/KG	94.2
		Selenium, LCS	883	1000	MG/KG	88.3
		Silicon, LCS	404	500	MG/KG	80.8
		Vanadium, LCS	245	250	MG/KG	98.2
		Zinc, LCS	95.9	100	MG/KG	95.9
LCS1	05C0020-LC1	Mercury, LCS	6.6	6.2	MG/KG	106.2

000000018

Date: 7 February 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 600-202
Subject: Wet Chemistry - Data Package No. H2989-LLI (SDG No. H2989)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2989-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
J02DD3	1/24/05	Soil	C	600-202	See note 1
J02DD4	1/24/05	Soil	C	600-202	See note 1

1 - Total petroleum hydrocarbons by 418.1 and sulfate by 300.0.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 6 provide the following information as indicated below:

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

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

All holding times were acceptable.

- **Method Blanks**

Method Blanks

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

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample

and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicate samples were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. The RQL for TPH was exceeded in all undetected samples. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. H2989-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 RQL for TPH was exceeded in all undetected samples. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H2989	REVIEWER: TLI	DATE: 3/7/05	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

WET CHEMISTRY ANALYSIS, SOIL MATRIX, MG/KG

Project: BECHTEL-HANFORD					
Laboratory: LLI					
Case	SDG: H2989				
Sample Number		J02DD3		J02DD4	
Remarks					
Sample Date		01/24/05		01/24/05	
Wet Chemistry	RQL	Result	Q	Result	Q
Sulfate		248		307	
TPH	5	36.7	U	34.6	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.

600009

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/09/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J02DD1	% Solids	91.5		%	0.01	1.0
-002	J02DD2	% Solids	87.3		%	0.01	1.0
-003	J02DD3	% Solids	90.3		%	0.01	1.0
		Sulfate by IC	248		MG/KG	11.3	10.0
		Petroleum Hydrocarbons	36.7	u	MG/KG	36.7	1.0
-004	J02DD4	% Solids	95.8		%	0.01	1.0
		Sulfate by IC	307		MG/KG	10.4	10.0
		Petroleum Hydrocarbons	34.6	u	MG/KG	34.6	1.0

3/6/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-015 H2989
LVL#: 0501L672

W.O.#: 11343-606-001-9999-00
Dates Received: 01-26-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated 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 blanks were within the method criteria.

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

7. The matrix spike (MS) recovery for Petroleum Hydrocarbon (PHC) was within the 75-125% control limits however MS recovery for Sulfate was outside the control limits at 127.1% that may be attributed to sample inhomogeneity as the MS recovery relative to the replicate result was 109.7%.

8. The replicate analysis for PHC was within the 20% Relative Percent Difference (RPD) control limit however replicate analysis for Sulfate was outside the control limit at 27.2% that may be attributed to sample inhomogeneity.

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

2/10/05
Date

njp\i01-672

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-291	Page 1 of 1

Collector Landon Collom	Company Contact Ella Feist	Telephone No. 372-9140	Project Coordinator KESSNER, JH
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 600-202		SAF No. B03-015
Ice Chest No. GRC 03106, FS001	Field Logbook No. EL 1578-5	COA C60202 6700	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES (Formerly TMA) LVLI	Offsite Property No. A050 082		Bill of Lading/Air Bill No. See Off Site Property Control Form

Price Code 8C

Data Turnaround 15 Days

Air Quality

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4c

05012672

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
Type of Container	G/P	G/P	aG	G/P	aG	aG	G	G	
No. of Container(s)	1	1	1	1	1	1	1	1	
Volume	250mL	120mL	250mL	120mL	250mL	250mL	60mL	250mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081; ~~Chloro-Herbicides - 8151~~ CKR 1/26/05	See item (2) in Special Instructions	Semi-VOA - 8270A ~~(8270)~~ TCL	PAHs - 8310	VOA - 8260A (TCL)	TPH (Total) - 418.1	

Sample No.	Matrix *	Sample Date	Sample Time									
J02DD1	SOIL	1/24/05	0820	•	NA	•	•	•	•	NA	•	
J02DD2	"	1/24/05	0840	•	NA	•	•	•	•	NA	•	
J02DD3	"	1/24/05	1250	•	NA	•	•	•	•	NA	•	
J02DD4	"	1/24/05	1400	•	N/A	•	•	•	•	N/A	•	

0000013

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Landon Collom	1/24/05 1500	Received By/Stored In: Refrig 2C	1/24/05
Relinquished By/Removed From: REF 2C	12505 1100	Received By/Stored In: S J GALE	12505 1100
Relinquished By/Removed From: S J GALE	12505 1100	Received By/Stored In: FED EX	
Relinquished By/Removed From: FedEx	1-26-05 /0930	Received By/Stored In: W. J. Smith	1-26-05/0930
Relinquished By/Removed From:	1/26/05	Received By/Stored In:	1/26/05
Relinquished By/Removed From:	Date/Time	Received By/Stored In:	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (SW846) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 [~~Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate~~, Sulfate]

JJP 12505

Personnel not available to relinquish samples from 3728 Ref #2C on 1/25/05

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-[illegible]

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RWS 600-202			DATA PACKAGE: H2989		
VALIDATOR: TLI		LAB: LLI		DATE: 3/1/05	
			SDG: H2989		
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 K	TDS	TKN	Phosphate	TPH	
SAMPLES/MATRIX					
J02DD3	J02DD4				
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: NO FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: NO PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

6. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: all TPH on

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/09/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LICB06-MB1	Sulfate by IC	12.5	u	MG/KG	12.5	1.0
BLANK10	05LHC009-MB1	Petroleum Hydrocarbons	33.3	u	MG/KG	33.3	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/09/05

CLIENT: TNUHANFORD B03-015 H2989

LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	J02DD3	Sulfate by IC	823	248	452	127.1	20.0
		Petroleum Hydrocarbons	138	8.3	154	84.2	1.0
BLANK10	05LICB06-MB1	Sulfate by IC	248	12.5 u	250	99.2	1.0
BLANK10	05LHC009-MB1	Petroleum Hydrocarbons	124	33.3 u	140	88.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/09/05

CLIENT: TNUHANFORD B03-015 H2989 LVL LOT #: 0501L672

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	J02DD3	Sulfate by IC	248	327	27.2	10.0
		Petroleum Hydrocarbons	36.7 u	36.9 u	NC	1.0

Date: 7 March 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 600-202
Subject: Semivolatile & PAH - Data Package No. H2989-LLI (SDG No. H2989)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2989-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
J02DD3	1/24/05	Soil	C	600-202	See note 1
J02DD4	1/24/05	Soil	C	600-202	See note 1

1 - Semivolatiles by 8270C and PAH by 8310.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

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

All holding times were met.

- **Method Blanks**

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

Due to method blank contamination, the bis(2-ethylhexyl)phthalate results in all samples were qualified as undetected, raised to the RQL and flagged "U".

All other method blank results were acceptable.

Field Blanks

No equipment blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

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

All accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

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

All 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 quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Sixteen semivolatile and six PAH analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2989-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, the bis(2-ethylhexyl)phthalate results in all samples were qualified as undetected, raised to the RQL and flagged "U".

Sixteen semivolatile and six PAH analytes 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 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

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: H2989	REVIEWER: TLI	DATE: 3/7/05	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
bis(2-ethylhexyl)phthalate	U at RQL	All	Blank contamination

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD														
Laboratory: LLI														
Case:	SDG: H2989													
Sample Number		J02DD3		J02DD4				Sample Number		J02DD3		J02DD4	
Remarks								Remarks					
Sample Date		1/24/05		1/24/05				Sample Date		1/24/05		1/24/05	
Extraction Date		1/30/05		1/30/05				Extraction Date		1/31/05		1/31/05	
Analysis Date		2/1/05		2/1/05				Analysis Date		2/2/05		2/2/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	PAH (8310)	MDL	Result	Q	Result	Q
Phenol	660	370	U	350	U			Napthalene	15	55.4	U	52.2	U
bis(2-Chloroethyl)ether	660	370	U	350	U			Acenaphthylene	15	55.4	U	52.2	U
2-Chlorophenol	660	370	U	350	U			Acenaphthene	15	55.4	U	52.2	U
1,3-Dichlorobenzene	660	370	U	350	U			Fluorene	15	5.54	U	13	
1,4-Dichlorobenzene	660	370	U	350	U			Phenanthrene	15	5.54	U	45	
1,2-Dichlorobenzene	660	370	U	350	U			Anthracene	15	5.54	U	5.22	U
2-methylphenol	660	370	U	350	U			Fluoranthene	15	11.1	U	10.4	U
2,2'-oxybis(1-chloropropane)	660	370	U	350	U			Pyrene	15	11.1	U	10.4	U
3 and/or 4-Methylphenol	660	370	U	350	U			Benzo(a)anthracene	15	5.54	U	5.22	U
N-Nitroso-di-n-propylamine	660	370	U	350	U			Chrysene	15	6.1		5.22	U
Hexachloroethane	660	370	U	350	U			Benzo(b)fluoranthrene	15	5.54	U	5.22	U
Nitrobenzene	660	370	U	350	U			Benzo(k)fluoranthrene	15	5.54	U	5.22	U
Isophorone	660	370	U	350	U			Benzo(a)pyrene	15	5.54	U	5.22	U
2-Nitrophenol	660	370	U	350	U			Dibenzo(a,h)anthracene	15	5.54	U	5.22	U
2,4-Dimethylphenol	660	370	U	350	U			Benzo(ghi)perylene	15	5.54	U	5.22	U
bis(2-Chloroethoxy)methane	660	370	U	350	U			Indeno(1,2,3-cd)pyrene	15	5.54	U	5.22	U
2,4-Dichlorophenol	660	370	U	350	U								
1,2,4-Trichlorobenzene	660	370	U	350	U								
Naphthalene	660	370	U	350	U								
4-Chloroaniline	660	370	U	350	U								
Hexachlorobutadiene	660	370	U	350	U								
4-Chloro-3-methylphenol	660	370	U	350	U								
2-Methylnaphthalene	660	370	U	350	U								
Hexachlorocyclopentadiene	660	370	U	350	U								
2,4,6-Trichlorophenol	660	370	U	350	U								
2,4,5-Trichlorophenol	660	920	U	870	U								
2-Chloronaphthalene	660	370	U	350	U								
2-Nitroaniline	660	920	U	870	U								
Dimethylphthalate	660	370	U	350	U								
Acenaphthylene	660	370	U	350	U								
2,6-Dinitrotoluene	660	370	U	350	U								

000010

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

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD													
Laboratory: LLI													
Case:	SDG: H2989												
Sample Number		J02DD3		J02DD4									
Remarks													
Sample Date		1/24/05		1/24/05									
Extraction Date		1/30/05		1/30/05									
Analysis Date		2/1/05		2/1/05									
Semivolatile (8270C)		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	660	920	U	870	U								
Acenaphthene	660	370	U	350	U								
2,4-Dinitrophenol	660	920	U	870	U								
4-Nitrophenol	660	920	U	870	U								
Dibenzofuran	660	370	U	350	U								
2,4-Dinitrotoluene	660	370	U	350	U								
Diethylphthalate	660	370	U	350	U								
4-Chlorophenyl-phenyl ether	660	370	U	350	U								
Fluorene	660	370	U	350	U								
4-Nitroaniline	660	920	U	870	U								
4,6-Dinitro-2-methylphenol	660	920	U	870	U								
N-Nitrosodiphenylamine	660	370	U	350	U								
4-Bromophenyl-phenyl ether	660	370	U	350	U								
Hexachlorobenzene	660	370	U	350	U								
Pentachlorophenol	660	920	U	870	U								
Phenanthrene	660	370	U	350	U								
Anthracene	660	370	U	350	U								
Carbazole	660	370	U	350	U								
Di-n-butylphthalate	660	36		34									
Fluoranthene	660	370	U	350	U								
Pyrene	660	370	U	350	U								
Butylbenzylphthalate	660	370	U	350	U								
3,3'-Dichlorobenzidine	660	370	U	350	U								
Benzo(a)anthracene	660	370	U	350	U								
Chrysene	660	370	U	350	U								
bis(2-Ethylhexyl)phthalate	660	660	U	660	U								
Di-n-octylphthalate	660	370	U	350	U								
Benzo(b)fluoranthene	660	370	U	350	U								
Benzo(k)fluoranthene	660	370	U	350	U								
Benzo(a)pyrene	660	370	U	350	U								
Indeno(1,2,3-cd)pyrene	660	370	U	350	U								
Dibenz(a,h)anthracene	660	370	U	350	U								
Benzo(g,h,i)perylene	660	370	U	350	U								

000011

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.

Semivolatiles by GC/MS, HSL List

Report Date: 02/03/05 15:08

RFW Batch Number: 0501L672 Client: TNUHANFORD B03-015 H2989 Work Order: 11343606001 Page: 1a

	Cust ID:	J02DD3		J02DD3		J02DD3		J02DD4		SBLKEG		SBLKEG BS	
Sample Information	RFW#:	003		003 MS		003 MSD		004		05LE0072-MB1		05LE0072-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	71	%	74	%	70	%	72	%	71	%	68	%
	2-Fluorobiphenyl	81	%	79	%	81	%	83	%	70	%	68	%
	Terphenyl-d14	100	%	89	%	99	%	106	%	114	%	82	%
	Phenol-d5	70	%	76	%	75	%	72	%	76	%	77	%
	2-Fluorophenol	65	%	74	%	71	%	67	%	76	%	82	%
	2,4,6-Tribromophenol	91	%	86	%	98	%	87	%	77	%	72	%
			fl		fl		fl		fl		fl		fl
Phenol		370	U	77	%	75	%	350	U	330	U	76	%
bis(2-Chloroethyl)ether		370	U	370	U	370	U	350	U	330	U	330	U
2-Chlorophenol		370	U	76	%	73	%	350	U	330	U	70	%
1,3-Dichlorobenzene		370	U	370	U	370	U	350	U	330	U	330	U
1,4-Dichlorobenzene		370	U	66	%	62	%	350	U	330	U	56	%
1,2-Dichlorobenzene		370	U	370	U	370	U	350	U	330	U	330	U
2-Methylphenol		370	U	370	U	370	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		370	U	370	U	370	U	350	U	330	U	330	U
3/4-Methylphenol		370	U	370	U	370	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		370	U	72	%	73	%	350	U	330	U	45	%
Hexachloroethane		370	U	370	U	370	U	350	U	330	U	330	U
Nitrobenzene		370	U	370	U	370	U	350	U	330	U	330	U
Isophorone		370	U	370	U	370	U	350	U	330	U	330	U
2-Nitrophenol		370	U	370	U	370	U	350	U	330	U	330	U
2,4-Dimethylphenol		370	U	370	U	370	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		370	U	370	U	370	U	350	U	330	U	330	U
2,4-Dichlorophenol		370	U	370	U	370	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		370	U	68	%	63	%	350	U	330	U	59	%
Naphthalene		370	U	370	U	370	U	350	U	330	U	330	U
4-Chloroaniline		370	U	370	U	370	U	350	U	330	U	330	U
Hexachlorobutadiene		370	U	370	U	370	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		370	U	77	%	82	%	350	U	330	U	74	%
2-Methylnaphthalene		370	U	370	U	370	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		370	U	370	U	370	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		370	U	370	U	370	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		920	U	920	U	920	U	870	U	840	U	840	U

*= Outside of EPA CLP QC limits.

K 3/4/05

000012

RFW Batch Number: 0501L672 Client: TNUHANFORD B03-015 H2989 Work Order: 11343606001 Page: 1b

Cust ID:	J02DD3		J02DD3		J02DD3		J02DD4		SBLKEG		SBLKEG BS	
RFW#:	003		003 MS		003 MSD		004		05LE0072-MB1		05LE0072-MB1	
2-Chloronaphthalene	370	U	370	U	370	U	350	U	330	U	330	U
2-Nitroaniline	920	U	920	U	920	U	870	U	840	U	840	U
Dimethylphthalate	370	U	370	U	370	U	350	U	330	U	330	U
Acenaphthylene	370	U	370	U	370	U	350	U	330	U	330	U
2,6-Dinitrotoluene	370	U	370	U	370	U	350	U	330	U	330	U
3-Nitroaniline	920	U	920	U	920	U	870	U	840	U	840	U
Acenaphthene	370	U	72	%	73	%	350	U	330	U	66	%
2,4-Dinitrophenol	920	U	920	U	920	U	870	U	840	U	840	U
4-Nitrophenol	920	U	74	%	80	%	870	U	840	U	72	%
Dibenzofuran	370	U	370	U	370	U	350	U	330	U	330	U
2,4-Dinitrotoluene	370	U	74	%	80	%	350	U	330	U	68	%
Diethylphthalate	370	U	370	U	370	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	370	U	370	U	370	U	350	U	330	U	330	U
Fluorene	370	U	370	U	370	U	350	U	330	U	330	U
4-Nitroaniline	920	U	920	U	920	U	870	U	840	U	840	U
4,6-Dinitro-2-methylphenol	920	U	920	U	920	U	870	U	840	U	840	U
N-Nitrosodiphenylamine (1)	370	U	370	U	370	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	370	U	370	U	370	U	350	U	330	U	330	U
Hexachlorobenzene	370	U	370	U	370	U	350	U	330	U	330	U
Pentachlorophenol	920	U	69	%	76	%	870	U	840	U	44	%
Phenanthrene	370	U	370	U	370	U	350	U	330	U	330	U
Anthracene	370	U	370	U	370	U	350	U	330	U	330	U
Carbazole	370	U	370	U	370	U	350	U	330	U	330	U
Di-n-butylphthalate	36	J	23	J	39	J	34	J	330	U	17	J
Fluoranthene	370	U	370	U	370	U	350	U	330	U	330	U
Pyrene	370	U	81	%	88	%	350	U	330	U	76	%
Butylbenzylphthalate	370	U	370	U	370	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	370	U	370	U	370	U	350	U	330	U	330	U
Benzo(a)anthracene	370	U	370	U	370	U	350	U	330	U	330	U
Chrysene	370	U	370	U	370	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	660	~~46 JB~~ U	49	JB	56	JB	660	~~69 JB~~ U	62	J	56	JB
Di-n-octyl phthalate	370	U	370	U	370	U	350	U	330	U	330	U
Benzo(b)fluoranthene	370	U	370	U	370	U	350	U	330	U	330	U
Benzo(k)fluoranthene	370	U	370	U	370	U	350	U	330	U	330	U
Benzo(a)pyrene	370	U	370	U	370	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	370	U	370	U	370	U	350	U	330	U	330	U
Dibenz(a,h)anthracene	370	U	370	U	370	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	370	U	370	U	370	U	350	U	330	U	330	U

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

JK 3/4/05

0000013

0000000007

Lionville Laboratory, Inc.

PAH'S by HPLC / Method 8310

Report Date: 02/02/05 14:52

RFW Batch Number: 0501L672 Client: TNUHANFORD B03-015 H2989 Work Order: 11343606001 Page: 1

	Cust ID:	J02DD3		J02DD3		J02DD3		J02DD4		BLK		BLK BS	
Sample Information	RFW#:	003		003 MS		003 MSD		004		05LE0076-MB1		05LE0076-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/kg		ug/kg		ug/kg		ug/kg		ug/kg		ug/kg	
Triphenylene		114	%	114	%	124	%	120	%	121	%	124	%
			fl		fl		fl		fl		fl		fl
Naphthalene		55.4	U	75	%	82	%	52.2	U	50.0	U	88	%
Acenaphthylene		55.4	U	70	%	81	%	52.2	U	50.0	U	84	%
Acenaphthene		55.4	U	78	%	99	%	52.2	U	50.0	U	96	%
Fluorene		5.54	U	80	%	92	%	13		5.00	U	92	%
Phenanthrene		5.54	U	91	%	100	%	45		5.00	U	98	%
Anthracene		5.54	U	94	%	104	%	5.22	U	5.00	U	103	%
Fluoranthene		11.1	U	100	%	90	%	10.4	U	10.0	U	102	%
Pyrene		11.1	U	88	%	92	%	10.4	U	10.0	U	96	%
Benzo(a)anthracene		5.54	U	92	%	102	%	5.22	U	5.00	U	100	%
Chrysene		6.1		83	%	90	%	5.22	U	5.00	U	100	%
Benzo(b)fluoranthrene		5.54	U	95	%	103	%	5.22	U	5.00	U	98	%
Benzo(k)fluoranthrene		5.54	U	100	%	108	%	5.22	U	5.00	U	104	%
Benzo(a)pyrene		5.54	U	100	%	108	%	5.22	U	5.00	U	105	%
Dibenzo(a,h)anthracene		5.54	U	99	%	107	%	5.22	U	5.00	U	102	%
Benzo(ghi)perylene		5.54	U	92	%	100	%	5.22	U	5.00	U	100	%
Indeno(1,2,3-cd)pyrene		5.54	U	100	%	108	%	5.22	U	5.00	U	100	%

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

3/6/05

000014

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD B03-015
LVL#: 0501L672
SDG/SAF#: H2989/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 01-26-2005

SEMIVOLATILE

Two (2) soil samples were collected on 01-24-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 01-30-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 01-31-2005 and 02-01,02-2005.

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 acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
8. Internal standard area criteria were not met for the method blank; however, the GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly and all surrogate recoveries were within QC limits; consequently, the samples were not reanalyzed.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
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

2/8/05
Date

som\gorup\data\bna\tnu-hanford\0501-672.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 3 pages.

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

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD B03-015
LVL#: 0501L672
SDG/SAF#: H2989/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 01-26-2005

PAH

Two (2) soil samples were collected on 01-24-2005.

The samples and their associated QC samples were extracted on 01-31-2005 and analyzed according to criteria set for the in Lionville Laboratory SOPs based on SW846, 3rd Edition for Polyaromatic Hydrocarbons on 02-01,02-2005. 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. Samples were extracted and analyzed within required holding time.

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

4. All surrogate recoveries were within acceptance criteria.

5 All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

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

2/9/05
Date

som\r:\group\data\pah\tnu hanford\0501-672.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 7 pages.

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-291	Page 1 of 1

Collector: Landon Colson	Company Contact: Ella Feist	Telephone No.: 372-9140	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days	Air Quality	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 600-202	SAF No.: B03-015	
Ice Chest No.: GRC 03106, FS001	Field Logbook No.: EL 1578-5	COA: C60202 6700	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES (Formerly TMA) LVL1	Offsite Property No.: A050 08 Z	Bill of Lading/Air Bill No.: See Off Site Property Control Form	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4c

000018

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
Type of Container	G/P	G/P	aG	G/P	aG	aG	G	G		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	250mL	120mL	250mL	120mL	250mL	250mL	60mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081; ~~Chlorinated Herbicides - 8151A~~ CKA VNIOS	See item (2) in Special Instructions	Semi-VOA - 8270A ~~(SIM)~~ TCL	PAHs - 8310	VOA - 8260A (TCL)	TPH (Total) - 418.1		

Sample No.	Matrix *	Sample Date	Sample Time										
J02DD1	SOIL	1/24/05	0820	•	NA	•	•	•	•	NA	•		
J02DD2	"	1/24/05	0840	•	NA	•	•	•	•	NA	•		
J02DD3	"	1/24/05	1250	•	NA	•	•	•	•	NA	•		
J02DD4	"	1/24/05	1400	•	N/A	•	•	•	•	N/A	•		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Landon Colson	1/24/05 1500	Received By/Stored In: Retrig 2C	1/24/05
Relinquished By/Removed From: RET 2C 12505	1100	Received By/Stored In: S GALE	12505 1100
Relinquished By/Removed From: S GALE	12505 1100	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	1-26-05 / 0930	Received By/Stored In: D. Smith	1-26-05/0930
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 - 6010TR (SW846) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 [~~Nitrate, Chloride, Fluoride, Nitrite, Phosphate~~, Sulfate]

JAP 12505

Personnel not available to relinquish samples from 3728 Ref # 2C on 1/25/05

Matrix *

S - Soil
SE - Sediment
SF - 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

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RWS 600-202			DATA PACKAGE: H2989		
VALIDATOR: TLI		LAB: LLI		DATE: 3/1/05	
			SDG: H2989		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270	8310	SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J02DD3	J02DD4				
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

Comments: bis(2-ethylhexyl) phthalate - in mb - to CRQL + U

NO FB

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

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

Comments: NO PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A
Iinternal standard areas acceptable? ..... Yes No N/A
Internal standard retention times acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A
Comments:

7. HOLDING TIMES (all levels)

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

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

Compound identification acceptable? (Levels D, E) ..... Yes No N/A
Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A
Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: 16 SU on 6 PAH on

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 7 March 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 600-202
Subject: PCB/Pesticides - Data Package No. H2989-LLI (SDG No. H2989)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2989-LLI prepared by Lionville Laboratory Incorporated (LLI). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Waste Site	Analysis
J02DD1	1/24/05	Soil	C	600-202	See note 1
J02DD2	1/24/05	Soil	C	600-202	See note 1
J02DD3	1/24/05	Soil	C	600-202	See note 1
J02DD4	1/24/05	Soil	C	600-202	See note 1

1 - PCBs by 8082 and pesticides by 8081A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

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

All holding times were acceptable.

- **Method Blank**

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

All method blank target compound results were acceptable.

Field Blanks

No field blanks were submitted for analysks.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 50% to 150% (laboratory CLP limits for chlorinated pesticides). If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of an MS, MSD or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other 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.

Due to the lack of an MS or MSD analysis, all toxaphene results were qualified as estimates and flagged "J".

All other 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 Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. Toxaphene and methoxychlor were reported above the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data Package No. H2989-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 the lack of an MS, MSD or LCS analysis, all toxaphene results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the 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.

Toxaphene and methoxychlor were reported above 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 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

PEST/PCB DATA QUALIFICATION SUMMARY*

SDG: H2989	REVIEWER: TLI	DATE: 3/7/05	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PEST/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD									
Laboratory: Lionville Laboratory Inc.									
Case:	SDG: H2989								
Sample Number		J02DD1		J02DD2		J02DD3		J02DD4	
Remarks									
Sample Date		1/24/05		1/24/05		1/24/05		1/24/05	
Extraction Date		2/1/05		2/1/05		2/1/05		2/1/05	
Analysis Date		2/3/05		2/3/05		2/3/05		2/3/05	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	15	U	15	U	15	U	14	U
Aroclor-1221	20	15	U	15	U	15	U	14	U
Aroclor-1232	20	15	U	15	U	15	U	14	U
Aroclor-1242	20	15	U	15	U	15	U	14	U
Aroclor-1248	20	15	U	15	U	15	U	14	U
Aroclor-1254	20	15	U	15	U	15	U	14	U
Aroclor-1260	20	15	U	15	U	15	U	14	U
Sample Date		1/24/05		1/24/05		1/24/05		1/24/05	
Extraction Date		2/1/05		2/1/05		2/1/05		2/1/05	
Analysis Date		2/5/05		2/6/05		2/6/05		2/6/05	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.8	U	1.9	U	1.8	U	1.7	U
Beta-BHC	5	1.8	U	1.9	U	1.8	U	1.7	U
Delta-BHC	5	1.8	U	1.9	U	1.8	U	1.7	U
Gamma-BHC (Lindan	5	1.8	U	1.9	U	1.8	U	1.7	U
Heptachlor	5	1.8	U	1.9	U	1.8	U	1.7	U
Aldrin	5	1.8	U	1.9	U	1.8	U	1.7	U
Heptachlor Epoxide	5	1.8	U	1.9	U	1.8	U	1.7	U
Endosulfan I	5	3.6	U	3.8	U	3.8	U	1.7	U
Dieldrin	5	3.6	U	3.8	U	3.8	U	3.5	U
4,4'-DDE	5	3.6	U	3.8	U	3.8	U	3.5	U
Endrin	5	3.6	U	3.8	U	3.8	U	3.5	U
Endosulfan II	5	3.6	U	3.8	U	3.8	U	3.5	U
4,4'-DDD	5	3.6	U	3.8	U	3.8	U	3.5	U
Endosulfan Sulfate	5	3.6	U	3.8	U	3.8	U	3.5	U
4,4'-DDT	5	3.6	U	3.8	U	3.8	U	3.5	U
Methoxychlor	5	18	U	19	U	18	U	17	U
Endrin Ketone	5	3.6	U	3.8	U	3.8	U	3.5	U
Endrin Aldehyde	5	3.6	U	3.8	U	3.8	U	3.5	U
alpha-Chlordane	5	1.8	U	1.9	U	1.8	U	1.7	U
gamma-Chlordane	5	1.8	U	1.9	U	1.8	U	1.7	U
Toxaphene	5	180	UJ	190	UJ	180	UJ	170	UJ

000010

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation. NA - Not analyzed

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/04/05 09:44

RFW Batch Number: 0501L672 Client: TNUHANFORD B03-015 H2989 Work Order: 11343606001 Page: 1

	Cust ID:	J02DD1	J02DD1	J02DD1	J02DD2	J02DD3	J02DD4
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	83 %	85 %	104 %	78 %	75 %	83 %
	Decachlorobiphenyl	114 %	122 %	147 * %	81 %	81 %	86 %
Aroclor-1016		15 U	84 %	108 %	15 U	15 U	14 U
Aroclor-1221		15 U	15 U	15 U	15 U	15 U	14 U
Aroclor-1232		15 U	15 U	15 U	15 U	15 U	14 U
Aroclor-1242		15 U	15 U	15 U	15 U	15 U	14 U
Aroclor-1248		15 U	15 U	15 U	15 U	15 U	14 U
Aroclor-1254		15 U	15 U	15 U	15 U	15 U	14 U
Aroclor-1260		15 U	84 %	110 %	15 U	15 U	14 U

	Cust ID:	PBLKFK	PBLKFK BS
Sample Information	RFW#:	05LE0079-MB1	05LE0079-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	77 %	82 %
	Decachlorobiphenyl	82 %	84 %
Aroclor-1016		13 U	79 %
Aroclor-1221		13 U	13 U
Aroclor-1232		13 U	13 U
Aroclor-1242		13 U	13 U
Aroclor-1248		13 U	13 U
Aroclor-1254		13 U	13 U
Aroclor-1260		13 U	81 %

RS 3/4/05

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

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9999999964

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List

RFW Batch Number: 0501L672 Client: TNUHANFORD B03-015 H2989 Work Order: 11343606001 Page: 1 Report Date: 02/07/05 15:47

Cust ID:	J02DD1	J02DD1	J02DD1	J02DD2	J02DD3	J02DD4
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	102 %	92 %	92 %	91 %	88 %	100 %
Decachlorobiphenyl	144 * %	134 * %	139 * %	93 %	95 %	101 %
	fl	fl	fl	fl	fl	fl
Alpha-BHC	1.8 U	105 %	113 %	1.9 U	1.8 U	1.7 U
Beta-BHC	1.8 U	91 %	98 %	1.9 U	1.8 U	1.7 U
Delta-BHC	1.8 U	92 %	103 %	1.9 U	1.8 U	1.7 U
gamma-BHC (Lindane)	1.8 U	105 %	112 %	1.9 U	1.8 U	1.7 U
Heptachlor	1.8 U	104 %	109 %	1.9 U	1.8 U	1.7 U
Aldrin	1.8 U	100 %	105 %	1.9 U	1.8 U	1.7 U
Heptachlor epoxide	1.8 U	102 %	108 %	1.9 U	1.8 U	1.7 U
Endosulfan I	1.8 U	85 %	89 %	1.9 U	1.8 U	1.7 U
Dieldrin	3.6 U	103 %	109 %	3.8 U	3.7 U	3.5 U
4,4'-DDE	3.6 U	101 %	106 %	3.8 U	3.7 U	3.5 U
Endrin	3.6 U	106 %	113 %	3.8 U	3.7 U	3.5 U
Endosulfan II	3.6 U	96 %	104 %	3.8 U	3.7 U	3.5 U
4,4'-DDD	3.6 U	93 %	104 %	3.8 U	3.7 U	3.5 U
Endosulfan sulfate	3.6 U	102 %	110 %	3.8 U	3.7 U	3.5 U
4,4'-DDT	3.6 U	95 %	99 %	3.8 U	3.7 U	3.5 U
Methoxychlor	18 U	101 %	106 %	19 U	18 U	17 U
Endrin ketone	3.6 U	109 %	114 %	3.8 U	3.7 U	3.5 U
Endrin aldehyde	3.6 U	84 %	88 %	3.8 U	3.7 U	3.5 U
alpha-Chlordane	1.8 U	83 %	87 %	1.9 U	1.8 U	1.7 U
gamma-Chlordane	1.8 U	96 %	101 %	1.9 U	1.8 U	1.7 U
Toxaphene	180 U J	180 U	180 U	190 U J	180 U J	170 U J

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

R 3/6/05

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Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 02/07/05 15:47

RFW Batch Number: 0501L672 Client: TNUHANFORD B03-015 H2989 Work Order: 11343606001 Page: 2

	Cust ID:	PBLKFK	PBLKFK BS
Sample Information	RFW#:	05LE0079-MB1	05LE0079-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	96	%	108	%
	Decachlorobiphenyl	101	%	106	%

Alpha-BHC	1.7	U	113	%
Beta-BHC	1.7	U	102	%
Delta-BHC	1.7	U	110	%
gamma-BHC (Lindane)	1.7	U	112	%
Heptachlor	1.7	U	112	%
Aldrin	1.7	U	107	%
Heptachlor epoxide	1.7	U	109	%
Endosulfan I	1.7	U	96	%
Dieldrin	3.3	U	110	%
4,4'-DDE	3.3	U	109	%
Endrin	3.3	U	112	%
Endosulfan II	3.3	U	103	%
4,4'-DDD	3.3	U	103	%
Endosulfan sulfate	3.3	U	109	%
4,4'-DDT	3.3	U	100	%
Methoxychlor	17	U	106	%
Endrin ketone	3.3	U	109	%
Endrin aldehyde	3.3	U	89	%
alpha-Chlordane	1.7	U	94	%
gamma-Chlordane	1.7	U	105	%
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

3/6/05

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD B03-015
LVL#: 0501L672
SDG/SAF#: H2989/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 01-26-2005

PCB

Four (4) soil samples were collected on 01-24-2005.

The samples and their associated QC samples were extracted on 02-01-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 02-03-2005. 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. Samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
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. 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

2/9/05
Date

som\r:\group\data\pest\tnu hanford\0501-672.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 7 pages.

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

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD B03-015
LVL#: 0501L672
SDG/SAF#: H2989/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 01-26-2005

CHLORINATED PESTICIDES

Four (4) soil samples were collected on 01-24-2005.

The samples and their associated QC samples were extracted on 02-01-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 02-05,06-2005. The extraction procedure was based on method 3540C 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. Samples were extracted and analyzed within required holding time.
3. Samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. Three (3) of sixteen (16) surrogate recoveries were outside acceptance criteria. However, the surrogate recovery criteria were met (i.e., no more than one outlier per sample).
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. 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.

Judy Stone

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/11/05
Date

som\r:\group\data\pest\tnu hanford\0501-672.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 8 pages.

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-291	Page 1 of 1

Collector: Landon Collom	Company Contact: Ella Feist — Telephone No.: 372-9140	Project Coordinator: KESSNER, JH	Price Code: 8C — Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 600-202	SAF No.: B03-015	Air Quality
Ice Chest No.: GRC 03106, FS001	Field Logbook No.: EL 1578-5 — COA: C60202 6700	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES (Formerly TMA) LVLI	Offsite Property No.: A050 082	Bill of Lading/Air Bill No.: See Off Site Property Control Form	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4c

000017

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
Type of Container	G/P	G/P	aG	G/P	aG	aG	G	G		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	250mL	120mL	250mL	120mL	250mL	250mL	60mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081, ~~Chloro-Herbicides - 8150B~~ CKA 1/11/05	See item (2) in Special Instructions	Semi-VOA - 8270A ~~8260B~~ TCL	PAHs - 8310 JM 12/05	VOA - 8260A (TCL)	TPH (Total) - 418.1		

Sample No.	Matrix *	Sample Date	Sample Time									
J02DD1	SOIL	11/24/05	0820	•	NA	•	•	•	•	NA	•	
J02DD2	"	11/24/05	0840	•	NA	•	•	•	•	NA	•	
J02DD3	"	11/24/05	1250	•	NA	•	•	•	•	NA	•	
J02DD4	"	11/24/05	1400	•	N/A	•	•	•	•	N/A	•	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Landon Collom	11/24/05	1500 Received By: Retting 2C	11/24/05
Relinquished By/Removed From: REF 2C	12505 1100	Received By/Stored In: S GALE	12505 1100
Relinquished By/Removed From: S GALE	12505 1100	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	1-26-04 / 0930	Received By/Stored In: D. Smith	1-26-04/0930
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 - 6010TR (SW846) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 [~~Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate~~, Sulfate]

JMP 12505

Personnel not available to relinquish samples from 3728
Ref # 2C on 1 12 5 10 5

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]

000000007

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RWS 600-202			DATA PACKAGE: #2989		
VALIDATOR: TLT		LAB: LLI		DATE: 3/1/05	
			SDG: #2989		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J02DD1	J02DD2	J02DD3	J02DD4		
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: NO FB

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: No taxaphene MS/MSD or LCS - J all NO PAS

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: No toxaphene duplicate (MS/MSD) - Jall

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: toxaphene & methoxychlor only

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: