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SAF-B04-002
100 BC Burial Grounds –
Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) MJP 12/07/05
INITIAL/DATE

SDG H3343 SAF-B04-002

Sample Location/Waste Site: 100-B-1

RECEIVED
DEC 14 2005
EDMC

Date: 21 November 2005
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Grounds- Soil Full Protocol – 100-B-1
Subject: PCB/Pesticide - Data Package No. H3343-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3343-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	Date
J03X15	8/22/05	Soil	C	See note 1
J03X16	8/22/05	Soil	C	See note 1
J03X17	8/22/05	Soil	C	See note 1
J03X18	8/22/05	Soil	C	See note 1
J03X19	8/22/05	Soil	C	See note 1
J03X20	8/22/05	Soil	C	See note 1
J03X21	8/22/05	Soil	C	See note 1
J03X22	8/22/05	Soil	C	See note 1
J03X23	8/22/05	Soil	C	See note 1
J03X24	8/22/05	Soil	C	See note 1
J03X25	8/22/05	Soil	C	See note 1
J03X26	8/22/05	Soil	C	See note 1
J03X27	8/22/05	Soil	C	See note 1
J03X28	8/22/05	Soil	C	See note 1
J03X29	8/22/05	Soil	C	See note 1
J03X30	8/22/05	Soil	C	See note 1
J03X31	8/22/05	Soil	C	See note 1
J03X32	8/22/05	Soil	C	See note 1
J03X33	8/22/05	Soil	C	See note 1
J03X34	8/22/05	Soil	C	See note 1

1 – Pesticides by 8081A and PCBs by 8082.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). 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 results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are

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

Due to matrix spike (134%), matrix spike duplicate (143%) and LCS (134%) recoveries outside QC limits, the beta-BHC result in sample J03X29 was qualified as an estimate and flagged "J".

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

All other accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 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 a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene results exceeded the RQL. Under the WCH validation statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data Package No. H3343 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

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

- Due to matrix spike (134%), matrix spike duplicate (143%) and LCS (134%) recoveries outside QC limits, the beta-BHC result in sample J03X29 was qualified as an estimate 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.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

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: H3343	REVIEWER: TLI	Project: 100-B-1	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Beta-BHC	J	J03X29	MS, MSD and LCS recovery
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

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

Project: WASHINGTON CLOSURE HANFORD

Laboratory: LLI | SDG: H3343

Sample Number		J03X15		J03X16		J03X17		J03X18		J03X19		J03X20		J03X21		J03X22		J03X23		J03X24	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Extraction Date		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05	
Analysis Date		9/2/05		9/2/05		9/2/05		9/2/05		9/8/05		9/2/05		9/2/05		9/2/05		9/2/05		9/2/05	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1221	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1232	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1242	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1248	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1254	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1260	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U

Sample Number		J03X15		J03X16		J03X17		J03X18		J03X19		J03X20		J03X21		J03X22		J03X23		J03X24	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Extraction Date		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05	
Analysis Date		9/2/05		9/2/05		9/2/05		9/2/05		9/8/05		9/2/05		9/2/05		9/2/05		9/2/05		9/2/05	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Gamma-BHC (Lindane)	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Beta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Heptachlor	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Delta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Aldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Heptachlor Epoxide	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Endosulfan I	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Dieldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
4,4'-DDE	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Endrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Endosulfan II	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
4,4'-DDD	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Endosulfan Sulfate	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
4,4'-DDT	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Methoxychlor	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Endrin Ketone	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Endrin Aldehyde	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
alpha-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
gamma-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Toxaphene	5	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ

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

000011

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

Project: BECHTEL-HANFORD	
Laboratory: Lionville Laboratory Inc.	
Case:	SDG: H3343

Sample Number		J03X25		J03X26		J03X27		J03X28		J03X29		J03X30		J03X31		J03X32		J03X33		J03X34	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Extraction Date		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05	
Analysis Date		9/2/05		9/2/05		9/2/05		9/2/05		9/2/05		9/3/05		9/3/05		9/3/05		9/3/05		9/3/05	
PCB/Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	14	U	13	U	13	U
Aroclor-1221	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	14	U	13	U	13	U
Aroclor-1232	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	14	U	13	U	13	U
Aroclor-1242	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	14	U	13	U	13	U
Aroclor-1248	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	14	U	13	U	13	U
Aroclor-1254	20	13	U	20		13	U	13	U	33		13	U	35		14	U	13	U	13	U
Aroclor-1260	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	14	U	13	U	13	U

Sample Number		J03X25		J03X26		J03X27		J03X28		J03X29		J03X30		J03X31		J03X32		J03X33		J03X34	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Extraction Date		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05		8/26/05	
Analysis Date		9/2/05		9/2/05		9/2/05		9/2/05		9/2/05		9/2/05		9/2/05		9/2/05		9/3/05		9/3/05	
Pesticide		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Gamma-BHC (Lindane)	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Beta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	5.8	J	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Heptachlor	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Delta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Aldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Heptachlor Epoxide	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Endosulfan I	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Dieldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
4,4'-DDE	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Endrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Endosulfan II	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
4,4'-DDD	5	1.7	U	1.7	U	1.7	U	1.7	U	1.8		1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Endosulfan Sulfate	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
4,4'-DDT	5	1.7	U	2.9		1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Methoxychlor	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Endrin Ketone	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Endrin Aldehyde	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
alpha-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
gamma-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U
Toxaphene	5	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ	17	UJ	18	UJ	17	UJ	17	UJ

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.

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Lionville Laboratory, Inc.

PCBs by GC

RFW Batch Number: 0508L220 Client: TNUHANFORD B04-002 H3343 Work Order: 11343606001 Page: 1

Report Date: 09/09/05 11:03

	Cust ID:	J03X15	J03X15	J03X15	J03X16	J03X17	J03X18
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	74 %	68 %	77 %	79 %	72 %	78 %
	Decachlorobiphenyl	89 %	86 %	89 %	87 %	88 %	88 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	93 %	97 %	13 U	13 U	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	92 %	94 %	13 U	13 U	13 U

	Cust ID:	J03X19	J03X20	J03X21	J03X22	J03X23	J03X24
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	60 %	74 %	84 %	78 %	76 %	76 %
	Decachlorobiphenyl	86 %	83 %	91 %	91 %	89 %	85 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	13 U	13 U	13 U

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

9/12/05 11/20/05

000013

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 09/09/05 11:03

RFW Batch Number: 0508L220 Client: TNUHANFORD B04-002 H3343 Work Order: 11343606001 Page: 2

	Cust ID:	J03X25	J03X26	J03X27	J03X28	J03X29	J03X30
Sample Information	RFW#:	011	012	013	014	015	016
	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	73 %	72 %	82 %	75 %	74 %	78 %
	Decachlorobiphenyl	89 %	87 %	90 %	90 %	93 %	84 %
Aroclor-1016		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	20	13 U	13 U	33	13 U
Aroclor-1260		13 U	13 U	13 U	13 U	13 U	13 U

	Cust ID:	J03X31	J03X32	J03X33	J03X34	PBLKSN	PBLKSN BS
Sample Information	RFW#:	017	018	019	020	05LE0713-MB1	05LE0713-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	70 %	78 %	84 %	78 %	78 %	81 %
	Decachlorobiphenyl	80 %	76 %	89 %	85 %	88 %	89 %
Aroclor-1016		13 U	14 U	13 U	13 U	13 U	96 %
Aroclor-1221		13 U	14 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	14 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	14 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	14 U	13 U	13 U	13 U	13 U
Aroclor-1254		35	14 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	14 U	13 U	13 U	13 U	94 %

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

11/20/05

000014

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List
Report Date: 11/21/05 14:42

RFW Batch Number: 0508L220 Client: TNUHANFORD B04-002 H3343 Work Order: 11343606001 Page: 1

	Cust ID:	J03X15		J03X15		J03X15		J03X16		J03X17		J03X18	
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	95	%	88	%	112	%	103	%	88	%	100	%
	Decachlorobiphenyl	112	%	113	%	117	%	109	%	114	%	121	%
			fl		fl		fl		fl		fl		fl
Alpha-BHC		1.7	U	99	%	112	%	1.7	U	1.7	U	1.7	U
gamma-BHC (Lindane)		1.7	U	102	%	110	%	1.7	U	1.7	U	1.7	U
Beta-BHC		1.7	U	134 *	%	143 *	%	1.7	U	1.7	U	1.7	U
Heptachlor		1.7	U	105	%	118	%	1.7	U	1.7	U	1.7	U
Delta-BHC		1.7	U	113	%	112	%	1.7	U	1.7	U	1.7	U
Aldrin		1.7	U	94	%	101	%	1.7	U	1.7	U	1.7	U
Heptachlor epoxide		1.7	U	98	%	100	%	1.7	U	1.7	U	1.7	U
gamma-Chlordane		1.7	U	94	%	93	%	1.7	U	1.7	U	1.7	U
Endosulfan I		1.7	U	106	%	102	%	1.7	U	1.7	U	1.7	U
alpha-Chlordane		1.7	U	98	%	96	%	1.7	U	1.7	U	1.7	U
4,4'-DDE		1.7	U	99	%	99	%	1.7	U	1.7	U	1.7	U
Dieldrin		1.7	U	98	%	99	%	1.7	U	1.7	U	1.7	U
Endrin		1.7	U	106	%	105	%	1.7	U	1.7	U	1.7	U
4,4'-DDD		1.7	U	105	%	105	%	1.7	U	1.7	U	1.7	U
Endosulfan II		1.7	U	101	%	98	%	1.7	U	1.7	U	1.7	U
4,4'-DDT		1.7	U	105	%	105	%	1.7	U	1.7	U	1.7	U
Endrin aldehyde		1.7	U	124	%	124	%	1.7	U	1.7	U	1.7	U
Endosulfan sulfate		1.7	U	103	%	100	%	1.7	U	1.7	U	1.7	U
Methoxychlor		1.7	U	131	%	128	%	1.7	U	1.7	U	1.7	U
Endrin ketone		1.7	U	104	%	102	%	1.7	U	1.7	U	1.7	U
Toxaphene		17	U J	17	U	17	U	17	U J	17	U J	17	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

000015

12/1/05

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List
Report Date: 11/21/05 14:42

RFW Batch Number: 0508L220 Client: TNUHANFORD B04-002 H3343 Work Order: 11343606001 Page: 2

	Cust ID:	J03X19	J03X20	J03X21	J03X22	J03X23	J03X24
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	82 %	87 %	101 %	94 %	93 %	103 %
	Decachlorobiphenyl	93 %	106 %	115 %	117 %	115 %	106 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Beta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Delta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Aldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor epoxide		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan I		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
alpha-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDE		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Dieldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDD		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan II		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDT		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endrin aldehyde		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan sulfate		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Methoxychlor		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endrin ketone		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Toxaphene		17 U J	17 U J	17 U J	17 U J	17 U J	17 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

12/1/05

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List
Report Date: 11/21/05 14:42

RFW Batch Number: 0508L220 Client: TNDHANFORD B04-002 H3343 Work Order: 11343606001 Page: 3

	Cust ID:	J03X25	J03X26	J03X27	J03X28	J03X29	J03X30
Sample Information	RFW#:	011	012	013	014	015	016
	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	92 %	97 %	93 %	102 %	95 %	90 %
	Decachlorobiphenyl	107 %	115 %	110 %	126 * %	110 %	104 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Beta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	5.8 .I	1.7 U
Heptachlor		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Delta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Aldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor epoxide		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan I		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
alpha-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDE		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Dieldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDD		1.7 U	1.7 U	1.7 U	1.7 U	1.8 J	1.7 U
Endosulfan II		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDT		1.7 U	2.9	1.7 U	1.7 U	1.7 U	1.7 U
Endrin aldehyde		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan sulfate		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Methoxychlor		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endrin ketone		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Toxaphene		17 U J	17 U J	17 U J	17 U J	17 U J	17 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

VC 12/1/05

000017

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List
Report Date: 11/21/05 14:42

RFW Batch Number: 0508L220 Client: TNUHANFORD B04-002 H3343 Work Order: 11343606001 Page: 4

	Cust ID:	J03X31	J03X32	J03X33	J03X34	PBLKSW	PBLKSW BS
Sample Information	RFW#:	017	018	019	020	05LE0713-MB1	05LE0713-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	81 %	89 %	96 %	102 %	101 %	96 %
	Decachlorobiphenyl	98 %	89 %	107 %	107 %	117 %	115 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	100 %
gamma-BHC (Lindane)		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	101 %
Beta-BHC		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	134 * %
Heptachlor		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	105 %
Delta-BHC		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	108 %
Aldrin		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	94 %
Heptachlor epoxide		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	95 %
gamma-Chlordane		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	90 %
Endosulfan I		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	101 %
alpha-Chlordane		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	93 %
4,4'-DDE		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	94 %
Dieldrin		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	92 %
Endrin		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	100 %
4,4'-DDD		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	98 %
Endosulfan II		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	96 %
4,4'-DDT		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	100 %
Endrin aldehyde		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	115 %
Endosulfan sulfate		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	97 %
Methoxychlor		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	121 %
Endrin ketone		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	98 %
Toxaphene		17 U J	18 U J	17 U J	17 U J	17 U	17 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

12/1/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY, INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0508L220
SDG/SAF # H3343/B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 08-24-2005

PCB

Twenty (20) soil samples were collected on 08-22-2005.

The samples and their associated QC samples were extracted on 08-26-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 09-02,03,08-2005. 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. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
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. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. Patterns for Aroclors-1254 and 1260 were identified in the samples. The reported Aroclors were chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both Aroclors to give the best overall total PCB concentration.
11. 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.
12. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/13/05
Date

000020

soin\r:\group\data\pest\tnu hanford\0508-220.pcbs

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

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

LvLI
LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0508L220
SDG/SAF # H3343/B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 08-24-2005

CHLORINATED PESTICIDES

Twenty (20) soil samples were collected on 08-22-2005.

The samples and their associated QC samples were extracted on 08-26-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 09-02,03-2005. 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. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received 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. One (1) of forty-eight (48) surrogate recoveries was outside acceptance criteria. However, the surrogate recovery criteria were met (i.e., no more than one outlier per sample).
6. One (1) of twenty (20) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. Two (2) of forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards were outside the criteria due to increase in instrument response on RTX-CLP column; however, the column was used for the confirmation only. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
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.
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/13/05
Date

som\r:\group\data\pest\tnu hanford\0508-220.pst

000021

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 18 pages.

~~000000018~~ KDS 9/13

07

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0560429

Initiator: DR
Date: 9/7/05
Client: TMO

Batch: 0508L220
Samples:
Method: SW846/MCAWW/CLP/

Parameter: 060814
Matrix: Soil
Prep Batch: 0516071 3

1. Reason for SDR

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

b. General Discrepancy

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

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

c. Problem (Include all relevant specific results; attach data if necessary) ① CCV's out (all) due to increase in instrument response on RTX-CLP column prior to sample analysis. Column was used for confirmation only - no significant impact. ② high Beta BHC recovery in LCS, MSD. Beta BHC identified in sample 015 - w/interference on RTXCLP2 col. Flag narrate?

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description: narrate

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

4. Project Manager Instructions...signature/date: 9/8/05

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

5. Final Action...signature/date: 9/12/05 Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
2	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

000022

QA-105-A-0805

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 1 of 6

Collector: D Bowers/C Martinez/K. Singleton	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many	Data Turnaround: 21 days
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC		SAF No.: B04-002	Air Quality:	
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 & ERC-03-104	Field Logbook No.: EL 1173-6	COA 2000 DAS R100B12~~600~~ 8/23/00	Method of Shipment: Fed Ex		
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358		Bill of Lading/Air Bill No.: SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J03X15 / SOIL / 8-22-05 / 1318	X	X	X	X							1
J03X16 / SOIL / ↓ / 1322	X	X	X	X							2
J03X17 / SOIL / ↓ / 1325	X	X	X	X							3
J03X18 / SOIL / ↓ / 1333	X	X	X	X							4
J03X19 / SOIL / ↓ / 1337	X	X	X	X							5

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: Doug Bowers / Date/Time: 8-22-05/1700	Received By/Stored In: Ref 2A 3728 / Date/Time: 8-22-05/1700	
Relinquished By/Removed From: 3728 REF 2A / Date/Time: 8/23/05 1000	Received By/Stored In: DAS ST JOHN / Date/Time: 8/23/05 1000	
Relinquished By/Removed From: DAS ST JOHN ERC / Date/Time: 8/23/05 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX / Date/Time: 8-24-05 0935	Received By/Stored In: N. Smith / Date/Time: 8-24-05 0935	
Relinquished By/Removed From: / Date/Time:	Received By/Stored In: / Date/Time:	
Relinquished By/Removed From: / Date/Time:	Received By/Stored In: / Date/Time:	

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

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

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

000023

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 2 of 6

Collector: D Bowers/C Martinez/K. Singleton	Company Contact: Doug Bowers — Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many — Data Turnaround: Air Quality 2 days
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC	SAF No.: B04-002	
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 & ERC-03-104	Field Logbook No.: EL 1173-6 — COA 2000 DAS R100B1~~2600~~ 8/23/05	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358	Bill of Lading/Air Bill No.: SEE OSPL	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J03X20 / SOIL / 8-22-05 / 1255	X	X	X	X							6
J03X21 / SOIL / / 1252	X	X	X	X							7
J03X22 / SOIL / / 1341	X	X	X	X							8
J03X23 / SOIL / / 1347	X	X	X	X							9
J03X24 / SOIL / / 1349	X	X	X	X							10

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers / Bowers	8-22-05 / 1700	R of 2A 3728	8-22-05 / 1700
3728 RCF 2A	8/23/05 1000	DA ST. JOHN / Dave St John	8/23/05 1000
DA ST JOHN ERC / Dave St John	8/23/05 1000	FED EX	
Fed Ex	8-24-05 / 0935	[illegible]	8-24-05 / 0935

SPECIAL INSTRUCTIONS

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

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

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

000024

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-045	Page 3 of 9
Collector D Bowers/C Martinez/K. Singleton	Company Contact Doug Bowers	Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code Many Data Turnaround
Project Designation 100 BC Burial Grounds - Soil Full Protocol	Sampling Location 100-B-1 @ 100 BC		SAF No. B04-002	Air Quality 2/day
Ice Chest No. ERC-02-504, ERC-96-161 AFS-04-050 & ERC-03-104	Field Logbook No. EL 1173-6	COA 2000 DAS R100B1~~2600~~ 8/23/05	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A050358		Bill of Lading/Air Bill No. SEE DSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J03X25	SOIL	8-22-05	1402	X	X	X	X				11
J03X26	SOIL		1409	X	X	X	X				12
J03X27	SOIL		1414	X	X	X	X				13
J03X28	SOIL		1417	X	X	X	X				14
J03X29	SOIL		1420	X	X	X	X				15

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From Date/Time Doug Bowers 8-22-05/1700	Received By/Stored In Date/Time RF 2A 5728 8-22-05/1700	
Relinquished By/Removed From Date/Time 5728 RF 2A 8/23/05 1000	Received By/Stored In Date/Time DAST JDM 8/23/05 1000	
Relinquished By/Removed From Date/Time DAST JDM ERC 8/23/05 1000	Received By/Stored In Date/Time FED EX	
Relinquished By/Removed From Date/Time FED EX 8-24-05 1035	Received By/Stored In Date/Time W. Smith 8-24-05 1035	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

Matrix *

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

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

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

100025

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 4 of 6

Collector: D Bowers/C Martinez/K Singleton	Company Contact: Doug Bowers — Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many — Data Turnaround: Air Quality 2 day
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC	SAF No.: B04-002	
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 + ERC-03-104	Field Logbook No.: EL 1173-6 — COA: 2000 DAS R100B12~~2600~~ 8/23/05	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J03X30 / SOIL / 8-22-05 / 1422	X	X	X	X							16
J03X31 / SOIL / 1431	X	X	X	X							17
J03X32 / SOIL / 1436	X	X	X	X							18
J03X33 / SOIL / 1444	X	X	X	X							19
J03X34 / SOIL / 1449	X	X	X	X							20

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: Doug Bowers Doug Bowers — Date/Time: 8-22-05/1700	Received By/Stored In: Ref 2A 3728 — Date/Time: 8-22-05/1700	
Relinquished By/Removed From: 3728 Ref 2A — Date/Time: 8/23/05 1000	Received By/Stored In: DAS 1000 — Date/Time: 8/23/05 1000	
Relinquished By/Removed From: DAS 1000 ERC — Date/Time: 8/23/05 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex — Date/Time: 8-24-05 0935	Received By/Stored In: — Date/Time: 8-24-05 0935	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	

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

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

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

00092

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100 BC 100-B-1			DATA PACKAGE: H 3343		
VALIDATOR: TLR		LAB: LLI		DATE: 11/19/05	
			SDG: H3343		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J03X15	J03X16	J03X17	J03X18	J03X19	J03X21	J03X20
J03X22	J03X23	J03X24	J03X25	J03X26	J03X27	J03X28
J03X29	J03X30	J03X31	J03X32	J03X33	J03X34	
						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: MSD/MS beta-BHC 134/143% J all detect (X29)
LCS " " 134% J all detect (X29)

no toxaphene MS/MSD/LCS – J all No Pts

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no toxaphene MS/MSD - J all

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: _____

Date: 21 November 2005
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Grounds – Soil Full Protocol – 100-B-1
Subject: Semivolatile - Data Package No. H3343-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3343 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03X15	8/22/05	Soil	C	See note 1
J03X16	8/22/05	Soil	C	See note 1
J03X17	8/22/05	Soil	C	See note 1
J03X18	8/22/05	Soil	C	See note 1
J03X19	8/22/05	Soil	C	See note 1
J03X20	8/22/05	Soil	C	See note 1
J03X21	8/22/05	Soil	C	See note 1
J03X22	8/22/05	Soil	C	See note 1
J03X23	8/22/05	Soil	C	See note 1
J03X24	8/22/05	Soil	C	See note 1
J03X25	8/22/05	Soil	C	See note 1
J03X26	8/22/05	Soil	C	See note 1
J03X27	8/22/05	Soil	C	See note 1
J03X28	8/22/05	Soil	C	See note 1
J03X29	8/22/05	Soil	C	See note 1
J03X30	8/22/05	Soil	C	See note 1
J03X31	8/22/05	Soil	C	See note 1
J03X32	8/22/05	Soil	C	See note 1
J03X33	8/22/05	Soil	C	See note 1
J03X34	8/22/05	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). 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: 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 result in all samples (except J03X16 and J03X18) were qualified as undetected, raised to the RQL and flagged "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in samples J03X16 and J03X18 were qualified as undetected 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 below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike recovery outside QC limits (11%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (187%), all bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

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

qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

Due to an RPD outside QC limits (120%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (36%), all bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

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

- **Completeness**

Data package No. H3343-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples (except J03X16 and J03X18) were qualified as undetected, raised to the RQL and flagged "U".

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in samples J03X16 and J03X18 were qualified as undetected and flagged "U".

- Due to a matrix spike recovery outside QC limits (11%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

- Due to a matrix spike duplicate recovery outside QC limits (187%), all bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (120%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (36%), all bis(2-ethylhexyl)phthalate 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.

One-hundred sixty 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.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

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: H3343	REVIEWER: TLI	Project: 100-B-1	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	All (except J03X16 and J03X18)	Method blank contamination
Bis(2-ethylhexyl)phthalate	U	J03X16 and J03X18	Method blank contamination
2,4-dinitrophenol	J	All	MS recovery
Bis(2-ethylhexyl)phthalate	J	All	MSD recovery
Bis(2-ethylhexyl)phthalate 2,4-dinitrophenol	J	All	RPD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD
Laboratory: LLI SDG: H3343

Sample Number		J03X15		J03X16		J03X17		J03X18		J03X19		J03X20		J03X21		J03X22		J03X23		J03X24	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Extraction Date		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05	
Analysis Date		8/29/05		8/29/05		8/29/05		8/26/05		8/26/05		8/30/05		8/29/05		8/29/05		8/26/05		8/26/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
bis(2-Chloroethyl)ether	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2-Chlorophenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
1,3-Dichlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
1,4-Dichlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
1,2-Dichlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2-Methylphenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2,2'-oxybis(1-chloropropane)	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
3 and/or 4-Methylphenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
N-Nitroso-di-n-propylamine	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Hexachloroethane	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Nitrobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Isophorone	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2-Nitrophenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2,4-Dimethylphenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
bis(2-Chloroethoxy)methane	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2,4-Dichlorophenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
1,2,4-Trichlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Naphthalene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
4-Chloroaniline	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Hexachlorobutadiene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
4-Chloro-3-methylphenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2-Methylnaphthalene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Hexachlorocyclopentadiene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2,4,6-Trichlorophenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2,4,5-Trichlorophenol*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	840	U	830	U	830	U
2-Chloronaphthalene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2-Nitroaniline*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	840	U	830	U	830	U
Dimethylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Acenaphthylene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2,6-Dinitrotoluene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI	SDG: H3343																				
Sample Number		J03X15		J03X16		J03X17		J03X18		J03X19		J03X20		J03X21		J03X22		J03X23		J03X24	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Extraction Date		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05	
Analysis Date		8/29/05		8/29/05		8/29/05		8/26/05		8/26/05		8/30/05		8/29/05		8/29/05		8/26/05		8/26/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	840	U	830	U	830	U
Acenaphthene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2,4-Dinitrophenol*	660	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ	840	UJ	830	UJ	830	UJ
4-Nitrophenol*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	840	U	830	U	830	U
Dibenzofuran	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
2,4-Dinitrotoluene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Diethylphthalate	660	330	U	330	U	330	U	330	U	330	U	48		330	U	340	U	330	U	330	U
4-Chlorophenyl-phenyl ether	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Fluorene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
4-Nitroaniline*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	840	U	830	U	830	U
4,6-Dinitro-2-methylphenol*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	840	U	830	U	830	U
N-Nitrosodiphenylamine	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
4-Bromophenyl-phenyl ether	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Hexachlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Pentachlorophenol*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	840	U	830	U	830	U
Phenanthrene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Anthracene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Carbazole	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Di-n-butylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Fluoranthene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Pyrene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Butylbenzylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(a)anthracene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Chrysene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	660	660	UJ	890	UJ	660	UJ	990	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ
Di-n-octylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(b)fluoranthene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(k)fluoranthene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(a)pyrene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Dibenz(a,h)anthracene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(g,h,i)perylene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	340	U	330	U	330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI	SDG: H3343																				
Sample Number		J03X25		J03X26		J03X27		J03X28		J03X29		J03X30		J03X31		J03X32		J03X33		J03X34	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Extraction Date		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05	
Analysis Date		8/26/05		8/26/05		8/26/05		8/26/05		8/29/05		8/29/05		8/29/05		8/29/05		8/29/05		8/29/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
bis(2-Chloroethyl)ether	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2-Chlorophenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
1,3-Dichlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
1,4-Dichlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
1,2-Dichlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2-Methylphenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2,2'-oxybis(1-chloropropane)	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
3 and/or 4-Methylphenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
N-Nitroso-di-n-propylamine	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Hexachloroethane	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Nitrobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Isophorone	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2-Nitrophenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2,4-Dimethylphenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
bis(2-Chloroethoxy)methane	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2,4-Dichlorophenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
1,2,4-Trichlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Naphthalene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
4-Chloroaniline	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Hexachlorobutadiene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
4-Chloro-3-methylphenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2-Methylnaphthalene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Hexachlorocyclopentadiene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2,4,6-Trichlorophenol	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2,4,5-Trichlorophenol*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U
2-Chloronaphthalene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2-Nitroaniline*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U
Dimethylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Acenaphthylene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2,6-Dinitrotoluene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

000014

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI	SDG: H3343																				
Sample Number		J03X25		J03X26		J03X27		J03X28		J03X29		J03X30		J03X31		J03X32		J03X33		J03X34	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Extraction Date		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05		8/25/05	
Analysis Date		8/26/05		8/26/05		8/26/05		8/26/05		8/29/05		8/29/05		8/29/05		8/29/05		8/29/05		8/29/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U
Acenaphthene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
2,4-Dinitrophenol*	660	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ	830	UJ
4-Nitrophenol*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U
Dibenzofuran	660	330	U	330	U	330	U	330	U	22		330	U	330	U	330	U	330	U	330	U
2,4-Dinitrotoluene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Diethylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
4-Chlorophenyl-phenyl ether	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Fluorene	660	330	U	330	U	330	U	330	U	35		330	U	330	U	330	U	330	U	330	U
4-Nitroaniline*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U
4,6-Dinitro-2-methylphenol*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U
N-Nitrosodiphenylamine	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
4-Bromophenyl-phenyl ether	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Hexachlorobenzene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Pentachlorophenol*	660	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U	830	U
Phenanthrene	660	330	U	330	U	330	U	330	U	730		330	U	330	U	330	U	330	U	330	U
Anthracene	660	330	U	330	U	330	U	330	U	92		330	U	330	U	330	U	330	U	330	U
Carbazole	660	330	U	330	U	330	U	330	U	33		330	U	330	U	330	U	330	U	330	U
Di-n-butylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Fluoranthene	660	330	U	330	U	330	U	330	U	700		330	U	330	U	330	U	330	U	330	U
Pyrene	660	330	U	330	U	330	U	330	U	750		330	U	330	U	330	U	330	U	330	U
Butylbenzylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
3,3'-Dichlorobenzidine	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(a)anthracene	660	330	U	330	U	330	U	330	U	120		330	U	330	U	330	U	330	U	330	U
Chrysene	660	330	U	330	U	330	U	330	U	150		330	U	330	U	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	660	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ	660	UJ
Di-n-octylphthalate	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(b)fluoranthene	660	330	U	330	U	330	U	330	U	55		330	U	330	U	330	U	330	U	330	U
Benzo(k)fluoranthene	660	330	U	330	U	330	U	330	U	65		330	U	330	U	330	U	330	U	330	U
Benzo(a)pyrene	660	330	U	330	U	330	U	330	U	30		330	U	330	U	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Dibenz(a,h)anthracene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(g,h,i)perylene	660	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U	330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

RFW Batch Number: 0508L220 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Report Date: 08/30/05 14:42 Page: 1a

	Cust ID:	J03X15	J03X15	J03X15	J03X16	J03X17	J03X18
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	69 %	69 %	64 %	65 %	70 %	57 %
	2-Fluorobiphenyl	73 %	75 %	74 %	72 %	75 %	61 %
	Terphenyl-d14	88 %	92 %	97 %	78 %	86 %	88 %
	Phenol-d5	68 %	68 %	65 %	65 %	73 %	61 %
	2-Fluorophenol	70 %	69 %	64 %	69 %	71 %	62 %
	2,4,6-Tribromophenol	77 %	79 %	81 %	72 %	64 %	60 %
Phenol		330 U	76 %	69 %	330 U	330 U	330 U
bis(2-Chloroethyl)ether		330 U	66 %	65 %	330 U	330 U	330 U
2-Chlorophenol		330 U	78 %	78 %	330 U	330 U	330 U
1,3-Dichlorobenzene		330 U	74 %	74 %	330 U	330 U	330 U
1,4-Dichlorobenzene		330 U	78 %	74 %	330 U	330 U	330 U
1,2-Dichlorobenzene		330 U	81 %	76 %	330 U	330 U	330 U
2-Methylphenol		330 U	74 %	74 %	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		330 U	67 %	65 %	330 U	330 U	330 U
4-Methylphenol		330 U	74 %	72 %	330 U	330 U	330 U
N-Nitroso-di-n-propylamine		330 U	76 %	74 %	330 U	330 U	330 U
Hexachloroethane		330 U	73 %	68 %	330 U	330 U	330 U
Nitrobenzene		330 U	72 %	73 %	330 U	330 U	330 U
Isophorone		330 U	88 %	85 %	330 U	330 U	330 U
2-Nitrophenol		330 U	79 %	80 %	330 U	330 U	330 U
2,4-Dimethylphenol		330 U	62 %	60 %	330 U	330 U	330 U
bis(2-Chloroethoxy)methane		330 U	79 %	77 %	330 U	330 U	330 U
2,4-Dichlorophenol		330 U	81 %	80 %	330 U	330 U	330 U
1,2,4-Trichlorobenzene		330 U	79 %	78 %	330 U	330 U	330 U
Naphthalene		330 U	79 %	75 %	330 U	330 U	330 U
4-Chloroaniline		330 U	89 %	86 %	330 U	330 U	330 U
Hexachlorobutadiene		330 U	86 %	85 %	330 U	330 U	330 U
4-Chloro-3-methylphenol		330 U	82 %	80 %	330 U	330 U	330 U
2-Methylnaphthalene		330 U	83 %	80 %	330 U	330 U	330 U
Hexachlorocyclopentadiene		330 U	45 %	41 %	330 U	330 U	330 U
2,4,6-Trichlorophenol		330 U	82 %	86 %	330 U	330 U	330 U
2,4,5-Trichlorophenol		830 U	84 %	83 %	830 U	830 U	830 U

*= Outside of EPA CLP QC limits.

11/20/05

000016

RFW Batch Number: 0508L220 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 1b

Cust ID:	J03X15		J03X15		J03X15		J03X16		J03X17		J03X18	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	330	U	82	%	83	%	330	U	330	U	330	U
2-Nitroaniline	830	U	76	%	76	%	830	U	830	U	830	U
Dimethylphthalate	330	U	84	%	84	%	330	U	330	U	330	U
Acenaphthylene	330	U	79	%	80	%	330	U	330	U	330	U
2,6-Dinitrotoluene	330	U	91	%	87	%	330	U	330	U	330	U
3-Nitroaniline	830	U	81	%	78	%	830	U	830	U	830	U
Acenaphthene	330	U	82	%	80	%	330	U	330	U	330	U
2,4-Dinitrophenol	830	UJ	11 *	%	44	%	830	UJ	830	UJ	830	UJ
4-Nitrophenol	830	U	70	%	70	%	830	UJ 11/24/01	830	UJ 11/24/01	830	UJ 11/24/01
Dibenzofuran	330	U	85	%	81	%	330	U	330	U	330	U
2,4-Dinitrotoluene	330	U	88	%	86	%	330	U	330	U	330	U
Diethylphthalate	330	U	86	%	83	%	330	U	330	U	330	U
4-Chlorophenyl-phenylether	330	U	84	%	82	%	330	U	330	U	330	U
Fluorene	330	U	80	%	79	%	330	U	330	U	330	U
4-Nitroaniline	830	U	62	%	59	%	830	U	830	U	830	U
4,6-Dinitro-2-methylphenol	830	U	66	%	82	%	830	U	830	U	830	U
N-Nitrosodiphenylamine (1)	330	U	70	%	72	%	330	U	330	U	330	U
4-Bromophenyl-phenylether	330	U	79	%	78	%	330	U	330	U	330	U
Hexachlorobenzene	330	U	91	%	93	%	330	U	330	U	330	U
Pentachlorophenol	830	U	75	%	89	%	830	U	830	U	830	U
Phenanthrene	330	U	87	%	86	%	330	U	330	U	330	U
Anthracene	330	U	87	%	86	%	330	U	330	U	330	U
Carbazole	330	U	63	%	66	%	330	U	330	U	330	U
Di-n-butylphthalate	330	U	88	%	92	%	330	U	330	U	330	U
Fluoranthene	330	U	81	%	84	%	330	U	330	U	330	U
Pyrene	330	U	99	%	108	%	330	U	330	U	330	U
Butylbenzylphthalate	330	U	104	%	111	%	330	U	330	U	330	U
3,3'-Dichlorobenzidine	330	U	70	%	77	%	330	U	330	U	330	U
Benzo(a)anthracene	330	U	91	%	90	%	330	U	330	U	330	U
Chrysene	330	U	88	%	92	%	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	660 ~~240~~ JB	UJ	130	%	187 *	%	890 ~~B~~	UJ	660 ~~180~~ ~~B~~	UJ	990 ~~B~~	UJ
Di-n-octyl phthalate	330	U	92	%	97	%	330	U	330	U	330	U
Benzo(b)fluoranthene	330	U	77	%	92	%	330	U	330	U	330	U
Benzo(k)fluoranthene	330	U	100	%	84	%	330	U	330	U	330	U
Benzo(a)pyrene	330	U	82	%	83	%	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	98	%	100	%	330	U	330	U	330	U
Dibenz(a,h)anthracene	330	U	99	%	100	%	330	U	330	U	330	U
Benzo(g,h,i)perylene	330	U	97	%	102	%	330	U	330	U	330	U

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

11/20/01

000017

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 08/30/05 14:42

RFW Batch Number: 0508L220 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 2a

	Cust ID:	J03X19		J03X20		J03X21		J03X22		J03X23		J03X24	
Sample Information	RFW#:	005		006		007		008		009		010	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	53	%	83	%	74	%	66	%	59	%	67	%
	2-Fluorobiphenyl	59	%	88	%	78	%	68	%	61	%	72	%
	Terphenyl-d14	90	%	109	%	77	%	70	%	96	%	93	%
	Phenol-d5	57	%	81	%	79	%	67	%	63	%	71	%
	2-Fluorophenol	59	%	83	%	76	%	66	%	61	%	69	%
	2,4,6-Tribromophenol	54	%	90	%	77	%	66	%	72	%	80	%
Phenol		330	U	330	U	330	U	340	U	330	U	330	U
bis(2-Chloroethyl)ether		330	U	330	U	330	U	340	U	330	U	330	U
2-Chlorophenol		330	U	330	U	330	U	340	U	330	U	330	U
1,3-Dichlorobenzene		330	U	330	U	330	U	340	U	330	U	330	U
1,4-Dichlorobenzene		330	U	330	U	330	U	340	U	330	U	330	U
1,2-Dichlorobenzene		330	U	330	U	330	U	340	U	330	U	330	U
2-Methylphenol		330	U	330	U	330	U	340	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		330	U	330	U	330	U	340	U	330	U	330	U
4-Methylphenol		330	U	330	U	330	U	340	U	330	U	330	U
N-Nitroso-di-n-propylamine		330	U	330	U	330	U	340	U	330	U	330	U
Hexachloroethane		330	U	330	U	330	U	340	U	330	U	330	U
Nitrobenzene		330	U	330	U	330	U	340	U	330	U	330	U
Isophorone		330	U	330	U	330	U	340	U	330	U	330	U
2-Nitrophenol		330	U	330	U	330	U	340	U	330	U	330	U
2,4-Dimethylphenol		330	U	330	U	330	U	340	U	330	U	330	U
bis(2-Chloroethoxy)methane		330	U	330	U	330	U	340	U	330	U	330	U
2,4-Dichlorophenol		330	U	330	U	330	U	340	U	330	U	330	U
1,2,4-Trichlorobenzene		330	U	330	U	330	U	340	U	330	U	330	U
Naphthalene		330	U	330	U	330	U	340	U	330	U	330	U
4-Chloroaniline		330	U	330	U	330	U	340	U	330	U	330	U
Hexachlorobutadiene		330	U	330	U	330	U	340	U	330	U	330	U
4-Chloro-3-methylphenol		330	U	330	U	330	U	340	U	330	U	330	U
2-Methylnaphthalene		330	U	330	U	330	U	340	U	330	U	330	U
Hexachlorocyclopentadiene		330	U	330	U	330	U	340	U	330	U	330	U
2,4,6-Trichlorophenol		330	U	330	U	330	U	340	U	330	U	330	U
2,4,5-Trichlorophenol		830	U	830	U	830	U	840	U	830	U	830	U

*= Outside of EPA CLP QC limits.

000018

11/30/05

Cust ID:	J03X19		J03X20		J03X21		J03X22		J03X23		J03X24	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	330	U	330	U	330	U	340	U	330	U	330	U
2-Nitroaniline	830	U	830	U	830	U	840	U	830	U	830	U
Dimethylphthalate	330	U	330	U	330	U	340	U	330	U	330	U
Acenaphthylene	330	U	330	U	330	U	340	U	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U	330	U	340	U	330	U	330	U
3-Nitroaniline	830	U	830	U	830	U	840	U	830	U	830	U
Acenaphthene	330	U	330	U	330	U	340	U	330	U	330	U
2,4-Dinitrophenol	830	U J	830	U J	830	U J	840	U J	830	U J	830	U J
4-Nitrophenol	830	U	830	U	830	U	840	U	830	U	830	U
Dibenzofuran	330	U	330	U	330	U	340	U	330	U	330	U
2,4-Dinitrotoluene	330	U	330	U	330	U	340	U	330	U	330	U
Diethylphthalate	330	U	48	J	330	U	340	U	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U	330	U	340	U	330	U	330	U
Fluorene	330	U	330	U	330	U	340	U	330	U	330	U
4-Nitroaniline	830	U	830	U	830	U	840	U	830	U	830	U
4,6-Dinitro-2-methylphenol	830	U	830	U	830	U	840	U	830	U	830	U
N-Nitrosodiphenylamine (1)	330	U	330	U	330	U	340	U	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U	330	U	340	U	330	U	330	U
Hexachlorobenzene	330	U	330	U	330	U	340	U	330	U	330	U
Pentachlorophenol	830	U	830	U	830	U	840	U	830	U	830	U
Phenanthrene	330	U	330	U	330	U	340	U	330	U	330	U
Anthracene	330	U	330	U	330	U	340	U	330	U	330	U
Carbazole	330	U	330	U	330	U	340	U	330	U	330	U
Di-n-butylphthalate	330	U	330	U	330	U	340	U	330	U	330	U
Fluoranthene	330	U	330	U	330	U	340	U	330	U	330	U
Pyrene	330	U	330	U	330	U	340	U	330	U	330	U
Butylbenzylphthalate	330	U	330	U	330	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(a)anthracene	330	U	330	U	330	U	340	U	330	U	330	U
Chrysene	330	U	330	U	330	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	660 ~~350~~ 11m	~~B~~ UJ	660 ~~100~~ 11m	~~JB~~ UJ	660 ~~84~~ 11m	~~JB~~ UJ	660 ~~71~~ 11m	~~JB~~ UJ	660 ~~630~~ 11m	~~B~~ UJ	660 ~~570~~ 11m	~~B~~ UJ
Di-n-octyl phthalate	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(k)fluoranthene	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(a)pyrene	330	U	330	U	330	U	340	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U	330	U	340	U	330	U	330	U
Dibenz(a,h)anthracene	330	U	330	U	330	U	340	U	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U	330	U	340	U	330	U	330	U

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

11/20/05

000019

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 08/30/05 14:42

RFW Batch Number: 0508L220 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 3a

	Cust ID:	J03X25	J03X26	J03X27	J03X28	J03X29	J03X30
Sample Information	RFW#:	011	012	013	014	015	016
	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	63 %	65 %	70 %	59 %	64 %	63 %
	2-Fluorobiphenyl	68 %	67 %	79 %	64 %	69 %	65 %
	Terphenyl-d14	100 %	103 %	111 %	104 %	92 %	86 %
	Phenol-d5	68 %	68 %	76 %	62 %	65 %	71 %
	2-Fluorophenol	67 %	67 %	71 %	60 %	65 %	65 %
	2,4,6-Tribromophenol	78 %	73 %	97 %	77 %	74 %	78 %
		fl	fl	fl	fl	fl	fl
Phenol		330 U	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether		330 U	330 U	330 U	330 U	330 U	330 U
2-Chlorophenol		330 U	330 U	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene		330 U	330 U	330 U	330 U	330 U	330 U
1,4-Dichlorobenzene		330 U	330 U	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene		330 U	330 U	330 U	330 U	330 U	330 U
2-Methylphenol		330 U	330 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		330 U	330 U	330 U	330 U	330 U	330 U
4-Methylphenol		330 U	330 U	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine		330 U	330 U	330 U	330 U	330 U	330 U
Hexachloroethane		330 U	330 U	330 U	330 U	330 U	330 U
Nitrobenzene		330 U	330 U	330 U	330 U	330 U	330 U
Isophorone		330 U	330 U	330 U	330 U	330 U	330 U
2-Nitrophenol		330 U	330 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol		330 U	330 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy)methane		330 U	330 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol		330 U	330 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene		330 U	330 U	330 U	330 U	330 U	330 U
Naphthalene		330 U	330 U	330 U	330 U	330 U	330 U
4-Chloroaniline		330 U	330 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene		330 U	330 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol		330 U	330 U	330 U	330 U	330 U	330 U
2-Methylnaphthalene		330 U	330 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene		330 U	330 U	330 U	330 U	330 U	330 U
2,4,6-Trichlorophenol		330 U	330 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol		830 U	830 U	830 U	830 U	830 U	830 U

*= Outside of EPA CLP QC limits.

020000

11/20/05

RFW Batch Number: 0508L220 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 3b

Cust ID:	J03X25		J03X26		J03X27		J03X28		J03X29		J03X30	
RFW#:	011		012		013		014		015		016	
2-Chloronaphthalene	330	U	330	U	330	U	330	U	330	U	330	U
2-Nitroaniline	830	U	830	U	830	U	830	U	830	U	830	U
Dimethylphthalate	330	U	330	U	330	U	330	U	330	U	330	U
Acenaphthylene	330	U	330	U	330	U	330	U	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U	330	U	330	U	330	U	330	U
3-Nitroaniline	830	U	830	U	830	U	830	U	830	U	830	U
Acenaphthene	330	U	330	U	330	U	330	U	330	U	330	U
2,4-Dinitrophenol	830	U J	830	U J	830	U J	830	U J	830	U J	830	U J
4-Nitrophenol	830	U	830	U	830	U	830	U	830	U	830	U
Dibenzofuran	330	U	330	U	330	U	330	U	22	J	330	U
2,4-Dinitrotoluene	330	U	330	U	330	U	330	U	330	U	330	U
Diethylphthalate	330	U	330	U	330	U	330	U	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U	330	U	330	U	330	U	330	U
Fluorene	330	U	330	U	330	U	330	U	35	J	330	U
4-Nitroaniline	830	U	830	U	830	U	830	U	830	U	830	U
4,6-Dinitro-2-methylphenol	830	U	830	U	830	U	830	U	830	U	830	U
N-Nitrosodiphenylamine (1)	330	U	330	U	330	U	330	U	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U	330	U	330	U	330	U	330	U
Hexachlorobenzene	330	U	330	U	330	U	330	U	330	U	330	U
Pentachlorophenol	830	U	830	U	830	U	830	U	830	U	830	U
Phenanthrene	330	U	330	U	330	U	330	U	730		330	U
Anthracene	330	U	330	U	330	U	330	U	92	J	330	U
Carbazole	330	U	330	U	330	U	330	U	33	J	330	U
Di-n-butylphthalate	330	U	330	U	330	U	330	U	330	U	330	U
Fluoranthene	330	U	330	U	330	U	330	U	700		330	U
Pyrene	330	U	330	U	330	U	330	U	750		330	U
Butylbenzylphthalate	330	U	330	U	330	U	330	U	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(a)anthracene	330	U	330	U	330	U	330	U	120	J	330	U
Chrysene	330	U	330	U	330	U	330	U	150	J	330	U
bis(2-Ethylhexyl)phthalate	660 ~~370~~ 11/24 B	UJ	660 ~~440~~ 11/24 B	UJ	660 ~~260~~ 11/24 JB	UJ	660 ~~280~~ 11/24 JB	UJ	660 ~~95~~ 11/24 JB	UJ	660 ~~140~~ 11/24 JB	UJ
Di-n-octyl phthalate	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U	330	U	330	U	55	J	330	U
Benzo(k)fluoranthene	330	U	330	U	330	U	330	U	65	J	330	U
Benzo(a)pyrene	330	U	330	U	330	U	330	U	30	J	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U	330	U	330	U	330	U	330	U
Dibenz(a,h)anthracene	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U	330	U	330	U	330	U	330	U

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

11/24/03

000021

SUBMITTED

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 08/30/05 14:42

RFW Batch Number: 0508L220 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 4a

	Cust ID:	J03X31		J03X32		J03X33		J03X34		SBLKNS		SBLKNS BS	
Sample Information	RFW#:	017		018		019		020		05LE0710-MB1		05LE0710-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	69	%	67	%	73	%	55	%	66	%	66	%
	2-Fluorobiphenyl	70	%	70	%	76	%	58	%	72	%	76	%
	Terphenyl-d14	75	%	71	%	84	%	62	%	100	%	92	%
	Phenol-d5	67	%	68	%	70	%	54	%	74	%	67	%
	2-Fluorophenol	67	%	69	%	74	%	55	%	77	%	70	%
	2,4,6-Tribromophenol	75	%	71	%	73	%	58	%	58	%	74	%
Phenol		330	U	350	U	330	U	330	U	330	U	75	%
bis(2-Chloroethyl)ether		330	U	350	U	330	U	330	U	330	U	71	%
2-Chlorophenol		330	U	350	U	330	U	330	U	330	U	78	%
1,3-Dichlorobenzene		330	U	350	U	330	U	330	U	330	U	77	%
1,4-Dichlorobenzene		330	U	350	U	330	U	330	U	330	U	79	%
1,2-Dichlorobenzene		330	U	350	U	330	U	330	U	330	U	82	%
2-Methylphenol		330	U	350	U	330	U	330	U	330	U	75	%
2,2'-oxybis(1-Chloropropane)		330	U	350	U	330	U	330	U	330	U	68	%
4-Methylphenol		330	U	350	U	330	U	330	U	330	U	69	%
N-Nitroso-di-n-propylamine		330	U	350	U	330	U	330	U	330	U	71	%
Hexachloroethane		330	U	350	U	330	U	330	U	330	U	73	%
Nitrobenzene		330	U	350	U	330	U	330	U	330	U	71	%
Isophorone		330	U	350	U	330	U	330	U	330	U	83	%
2-Nitrophenol		330	U	350	U	330	U	330	U	330	U	74	%
2,4-Dimethylphenol		330	U	350	U	330	U	330	U	330	U	59	%
bis(2-Chloroethoxy)methane		330	U	350	U	330	U	330	U	330	U	78	%
2,4-Dichlorophenol		330	U	350	U	330	U	330	U	330	U	78	%
1,2,4-Trichlorobenzene		330	U	350	U	330	U	330	U	330	U	78	%
Naphthalene		330	U	350	U	330	U	330	U	330	U	77	%
4-Chloroaniline		330	U	350	U	330	U	330	U	330	U	83	%
Hexachlorobutadiene		330	U	350	U	330	U	330	U	330	U	88	%
4-Chloro-3-methylphenol		330	U	350	U	330	U	330	U	330	U	75	%
2-Methylnaphthalene		330	U	350	U	330	U	330	U	330	U	78	%
Hexachlorocyclopentadiene		330	U	350	U	330	U	330	U	330	U	45	%
2,4,6-Trichlorophenol		330	U	350	U	330	U	330	U	330	U	83	%
2,4,5-Trichlorophenol		830	U	890	U	830	U	830	U	830	U	80	%

*= Outside of EPA CLP QC limits.

000022

11/20/05

RFW Batch Number: 0508L220 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 4b

Cust ID:	J03X31		J03X32		J03X33		J03X34		SBLKNS		SBLKNS BS	
RFW#:	017		018		019		020		05LE0710-MB1		05LE0710-MB1	
2-Chloronaphthalene	330	U	350	U	330	U	330	U	330	U	81	%
2-Nitroaniline	830	U	890	U	830	U	830	U	830	U	73	%
Dimethylphthalate	330	U	350	U	330	U	330	U	330	U	82	%
Acenaphthylene	330	U	350	U	330	U	330	U	330	U	79	%
2,6-Dinitrotoluene	330	U	350	U	330	U	330	U	330	U	87	%
3-Nitroaniline	830	U	890	U	830	U	830	U	830	U	77	%
Acenaphthene	330	U	350	U	330	U	330	U	330	U	80	%
2,4-Dinitrophenol	830	U J	890	U J	830	U J	830	U J	830	U	38	%
4-Nitrophenol	830	U	890	U	830	U	830	U	830	U	65	%
Dibenzofuran	330	U	350	U	330	U	330	U	330	U	79	%
2,4-Dinitrotoluene	330	U	350	U	330	U	330	U	330	U	82	%
Diethylphthalate	330	U	350	U	330	U	330	U	330	U	81	%
4-Chlorophenyl-phenylether	330	U	350	U	330	U	330	U	330	U	80	%
Fluorene	330	U	350	U	330	U	330	U	330	U	78	%
4-Nitroaniline	830	U	890	U	830	U	830	U	830	U	61	%
4,6-Dinitro-2-methylphenol	830	U	890	U	830	U	830	U	830	U	73	%
N-Nitrosodiphenylamine (1)	330	U	350	U	330	U	330	U	330	U	66	%
4-Bromophenyl-phenylether	330	U	350	U	330	U	330	U	330	U	75	%
Hexachlorobenzene	330	U	350	U	330	U	330	U	330	U	87	%
Pentachlorophenol	830	U	890	U	830	U	830	U	830	U	81	%
Phenanthrene	330	U	350	U	330	U	330	U	330	U	78	%
Anthracene	330	U	350	U	330	U	330	U	330	U	81	%
Carbazole	330	U	350	U	330	U	330	U	330	U	63	%
Di-n-butylphthalate	330	U	350	U	330	U	330	U	330	U	82	%
Fluoranthene	330	U	350	U	330	U	330	U	330	U	72	%
Pyrene	330	U	350	U	330	U	330	U	330	U	98	%
Butylbenzylphthalate	330	U	350	U	330	U	330	U	330	U	96	%
3,3'-Dichlorobenzidine	330	U	350	U	330	U	330	U	330	U	61	%
Benzo(a)anthracene	330	U	350	U	330	U	330	U	330	U	82	%
Chrysene	330	U	350	U	330	U	330	U	330	U	83	%
bis(2-Ethylhexyl)phthalate	LLO ~~53~~ JB UJ		LLO ~~150~~ JB UJ		LLO ~~500~~ B UJ		LLO ~~79~~ JB UJ		~~LLO~~ 130	J	97	%
Di-n-octyl phthalate	330	U	350	U	330	U	330	U	330	U	83	%
Benzo(b)fluoranthene	330	U	350	U	330	U	330	U	330	U	76	%
Benzo(k)fluoranthene	330	U	350	U	330	U	330	U	330	U	84	%
Benzo(a)pyrene	330	U	350	U	330	U	330	U	330	U	77	%
Indeno(1,2,3-cd)pyrene	330	U	350	U	330	U	330	U	330	U	92	%
Dibenz(a,h)anthracene	330	U	350	U	330	U	330	U	330	U	91	%
Benzo(g,h,i)perylene	330	U	350	U	330	U	330	U	330	U	92	%

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

11/20/05

000023

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0508L220
SDG/SAF # H3343 /B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 08-24-2005

SEMIVOLATILE

Twenty (20) soil samples were collected on 08-22-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 08-25-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 08-26,29,30-2005.

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. Two (2) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. All blank spike recoveries were within acceptance criteria.
7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
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. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. 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

9.1.2005
Date

som\gorup\data\bna\mu-hanford\0508-220.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 45 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR#: 05MS275

Initiator: SS
Date: 8-30-05
Client: TNU

Batch: 05OFL220
Samples: 01ms
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: Solid
Prep Batch: 05LE0710

1. Reason for SDR

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

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

Note*: Verified by [Log-in] or [Prep Group] (circle)__signature/date: _____

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

low recovery of 2,4-dinitrophenol in the matrix spike but the matrix spike dup and blank spike are ok

2. Known or Probable Causes(s)

loss during extraction

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

Other Description:
narrate

4. Project Manager Instructions...signature/date: 8/30/05
✓ Concur with Proposed Action
✓ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 9/1/05
✓ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson/Haslett		__ GC/LC: Kiger
	X Technical Mgr: Wesson/Daniels	2	X MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Sooos
__	__ Sample Prep: Beegle/Kiger		__ Other: _____

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 1 of 6

Collector: D Bowers/C Martinez/K. Singleton	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many	Data Turnaround: Air Quality, 21 days
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC		SAF No.: B04-002		
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 / ERC-03-104	Field Logbook No.: EL 1173-6	COA 2000 DAS R100B1~~2600~~ 8/23/05	Method of Shipment: Fed Ex		
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358		Bill of Lading/Air Bill No.: SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No.	Matrix *	Sample Date	Sample Time								
J03X15	SOIL	9-22-05	1318	X	X	X	X				1
J03X16	SOIL		1322	X	X	X	X				2
J03X17	SOIL		1325	X	X	X	X				3
J03X18	SOIL		1333	X	X	X	X				4
J03X19	SOIL		1337	X	X	X	X				5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	8-22-05/1700	Ref 2A 3728	8-22-05/1700
3728 REF 2A	8/23/05 1000	12A ST JOHN	8/23/05 1000
DA ST. JOHN ERC	8/23/05 1000	FED EX	
FED EX	8-24-05/0935	N. Smith	8-24-05/0935

SPECIAL INSTRUCTIONS

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

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

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

000027

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 2 of 6

Collector: D Bowers/C Martinez/K. Singleton	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Price Code: Many	Data Turnaround: Air Quality 2 days		
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC	SAF No.: B04-002	
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 & ERC-03-104	Field Logbook No.: EL 1173-6	COA 2000 DAS R100B12~~600~~ 8/23/05	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J03X20 / SOIL / 8-22-05 / 1255	X	X	X	X							6
J03X21 / SOIL / ↓ / 1252	X	X	X	X							7
J03X22 / SOIL / ↓ / 1341	X	X	X	X							8
J03X23 / SOIL / ↓ / 1347	X	X	X	X							9
J03X24 / SOIL / ↓ / 1349	X	X	X	X							10

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: Doug Bowers, Bowers — Date/Time: 8-22-05/1700	Received By/Stored In: RcF 2A 3728 — Date/Time: 8-22-05/1700	
Relinquished By/Removed From: 3728 RcF 2A — Date/Time: 8/23/05 1000	Received By/Stored In: DAST JOHN — Date/Time: 8/23/05 1000	
Relinquished By/Removed From: DAST JOHN ERC — Date/Time: 8/23/05 1000	Received By/Stored In: FED EX — Date/Time:	
Relinquished By/Removed From: Fed Ex — Date/Time: 8.24.05/0935	Received By/Stored In: — Date/Time: 8.24.05/0935	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	

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

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

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

00008028

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 3 of 6

Collector: D Bowers/C Martinez/K. Singleton	Company Contact: Doug Bowers — Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many — Data Turnaround: Air Quality 21 day
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC	SAF No.: B04-002	
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 & ERC-03-104	Field Logbook No.: EL 1173-6 — COA: 2000 DAS R100B12~~600~~ 8/23/05	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J03X25 / SOIL / 8-22-05 / 1402	X	X	X	X							16
J03X26 / SOIL / / 1409	X	X	X	X							12
J03X27 / SOIL / / 1414	X	X	X	X							17
J03X28 / SOIL / / 1417	X	X	X	X							14
J03X29 / SOIL / / 1420	X	X	X	X							14

000029

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Doug Bowers	8-22-05 1700	Received By/Stored In: RE ZA 3728	8-22-05 1700
Relinquished By/Removed From: 3728 RE ZA	8/23/05 1000	Received By/Stored In: DAS Joint ERC	8/23/05 1000
Relinquished By/Removed From: DAS Joint ERC	8/23/05 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	8/24/05 0935	Received By/Stored In: N. Smith	8/24/05 0935
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 4 of 6

Collector D Bowers/C Martinez/K Singleton	Company Contact Doug Bowers Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code Many Data Turnaround Air Quality 2 day
Project Designation 100 BC Burial Grounds - Soil Full Protocol	Sampling Location 100-B-1 @ 100 BC	SAF No. B04-002	
Ice Chest No. ERC-02-504, ERC-96-161 AFS-04-050 & ERC-03-104	Field Logbook No. EL 1173-6 COA 2000 DAS R100B1~~2600~~ 5/23/05	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A050358	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J03X30 / SOIL / 8-22-05 / 1427	X	X	X	X							16
J03X31 / SOIL / ↓ / 1431	X	X	X	X							17
J03X32 / SOIL / ↓ / 1436	X	X	X	X							18
J03X33 / SOIL / ↓ / 1444	X	X	X	X							19
J03X34 / SOIL / ↓ / 1449	X	X	X	X							20

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From Doug Date/Time Doug Bowers Bowers 8-22-05/1700	Received By/Stored In Date/Time Ref 2A 3728 8-22-05/1700	
Relinquished By/Removed From Date/Time 3728 Ref 2A 8/23/05 1000	Received By/Stored In Date/Time DAS Doug 8/23/05 1000	
Relinquished By/Removed From Date/Time DAS Doug Exc 8/23/05 1000	Received By/Stored In Date/Time FED EX	
Relinquished By/Removed From Date/Time Fed Ex 8-24-05 0935	Received By/Stored In Date/Time 8-24-05 0935	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

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

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

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

000030

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100BC 100-B-1			DATA PACKAGE: H3343		
VALIDATOR: TLI		LAB: LLI		DATE: 11/19/05	
			SDG: H3343		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)

SAMPLES/MATRIX						
J03X15	J03X16	J03X17	J03X18	J03X19	J03X20	J03X21
J03X22	J03X23	J03X24	J03X25	J03X26	J03X27	J03X28
J03X29	J03X30	J03X31	J03X32	~~J03X32~~ 11/14/05	J03X33	J03X34

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

bis(2-ethylhexyl)phthalate – U at RQL all but X16 & X18

X16 & X18 – U at ~~[illegible]~~ 11/10 reported lows

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: MS 2,4-dinitrophenol – 119% recovery J all no PT

" bis(2-ethylhexyl)phthalate – 187% – J all

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: 2,4-dinitrophenol – 120% – J. all
bis(2-ethylhexyl)phthalate – 32% – J all

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

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

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

Comments: 160 over

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: 17 November 2005
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Grounds - Soil Full Protocol - 100-B-1
Subject: Wet Chemistry - Data Package No. H3343-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3343-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	Date
J03X15	8/22/05	Soil	C	See note 1
J03X16	8/22/05	Soil	C	See note 1
J03X17	8/22/05	Soil	C	See note 1
J03X18	8/22/05	Soil	C	See note 1
J03X19	8/22/05	Soil	C	See note 1
J03X20	8/22/05	Soil	C	See note 1
J03X21	8/22/05	Soil	C	See note 1
J03X22	8/22/05	Soil	C	See note 1
J03X23	8/22/05	Soil	C	See note 1
J03X24	8/22/05	Soil	C	See note 1
J03X25	8/22/05	Soil	C	See note 1
J03X26	8/22/05	Soil	C	See note 1
J03X27	8/22/05	Soil	C	See note 1
J03X28	8/22/05	Soil	C	See note 1
J03X29	8/22/05	Soil	C	See note 1
J03X30	8/22/05	Soil	C	See note 1
J03X31	8/22/05	Soil	C	See note 1
J03X32	8/22/05	Soil	C	See note 1
J03X33	8/22/05	Soil	C	See note 1
J03X34	8/22/05	Soil	C	See note 1

1 – Total petroleum hydrocarbons by 418.1.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). 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 14 days for 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 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 the lack of a matrix spike or matrix spike duplicate in the preparation batch, all TPH results in samples J03X27, J03X28, J03X29, J03X30, J03X31, J03X32, J03X33 and J03X34 were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

Due to the lack of a matrix spike or matrix spike duplicate in the preparation batch, all TPH results in samples J03X27, J03X28, J03X29, J03X30, J03X31, J03X32, J03X33 and J03X34 were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

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

- **Completeness**

Data package No. H3343-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 a matrix spike or matrix spike duplicate in the preparation batch, all TPH results in samples J03X27, J03X28, J03X29, J03X30, J03X31, J03X32, J03X33 and J03X34 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.

All 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.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

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: H3343	REVIEWER: TLI	Project: 100-B-1	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	J03X27, J03X28, J03X29, J03X30, J03X31, J03X32, J03X33, J03X34	No MS or MSD in the preparation batch

* - 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	SDG: H3343																				
Sample Number		J03X15		J03X16		J03X17		J03X18		J03X19		J03X20		J03X21		J03X22		J03X23		J03X24	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons	5	133	U	133	U	133	U	133	U	133	U	132	U	133	U	133	U	132	U	132	U
Sample Number		J03X25		J03X26		J03X27		J03X28		J03X29		J03X30		J03X31		J03X32		J03X33		J03X34	
Remarks																					
Sample Date		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05		8/22/05	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons	5	133	U	133	U	133	UJ	133	UJ	133	UJ	133	UJ	132	UJ	142	UJ	133	UJ	133	UJ

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

000010

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/01/05

CLIENT: TNUHANFORD B04-002 H3343 LVL LOT #: 0508L220

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J03X15	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-002	J03X16	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-003	J03X17	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-004	J03X18	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-005	J03X19	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-006	J03X20	% Solids	99.9		%	0.01	1.0
		Petroleum Hydrocarbons	132	u	MG/KG	132	1.0
-007	J03X21	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-008	J03X22	% Solids	99.5		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-009	J03X23	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	132	u	MG/KG	132	1.0
-010	J03X24	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	132	u	MG/KG	132	1.0
-011	J03X25	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-012	J03X26	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-013	J03X27	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

11/18/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/01/05

CLIENT: TNUHANFORD B04-002 H3343
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0508L220

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-014	J03X28	% Solids	100	%	0.01	1.0
		Petroleum Hydrocarbons	133	u J MG/KG	133	1.0
-015	J03X29	% Solids	100	%	0.01	1.0
		Petroleum Hydrocarbons	133	u J MG/KG	133	1.0
-016	J03X30	% Solids	100	%	0.01	1.0
		Petroleum Hydrocarbons	133	u J MG/KG	133	1.0
-017	J03X31	% Solids	100	%	0.01	1.0
		Petroleum Hydrocarbons	132	u J MG/KG	132	1.0
-018	J03X32	% Solids	94.1	%	0.01	1.0
		Petroleum Hydrocarbons	142	u J MG/KG	142	1.0
-019	J03X33	% Solids	100	%	0.01	1.0
		Petroleum Hydrocarbons	133	u J MG/KG	133	1.0
-020	J03X34	% Solids	100	%	0.01	1.0
		Petroleum Hydrocarbons	133	u J MG/KG	133	1.0

11/16/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B04-002 H3343
LVL#: 0508L220

W.O.#: 11343-606-001-9999-00
Date Received: 08-24-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 20 soil samples.

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

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

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 for Petroleum Hydrocarbons (PHC) were within the method criteria.

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

7. The matrix spike recovery for PHC was within the 75-125% control limits.

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/9/05
Date

njp\\08-220

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 19 pages.

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-045	Page 1 of 6
Collector: D Bowers/C Martinez/K. Singleton	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many / Data Turnaround: 15
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC		SAF No.: B04-002	Air Quality: 21 days
Ice Chest No.: ERC-02-504, ERC-96-161, APS-04-050 / ERC-03-104	Field Logbook No.: EL 1173-6	COA 2000 DAS R100B1~~3600~~ 8/23/05	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J03X15 / SOIL / 9-22-05 / 1318	X	X	X	X							1
J03X16 / SOIL / ↓ / 1322	X	X	X	X							2
J03X17 / SOIL / ↓ / 1325	X	X	X	X							3
J03X18 / SOIL / ↓ / 1333	X	X	X	X							4
J03X19 / SOIL / ↓ / 1337	X	X	X	X							5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug	8-22-05	Ref 2A 3728	8-22-05 / 1700
3728 REF 2A	8/23/05 1000	DA ST. JOHN	8/23/05 1000
DA ST. JOHN ERC	8/23/05 1000	FED EX	
FED EX	8.24.05 0935	N. Smith	8.24.05 / 0935

SPECIAL INSTRUCTIONS

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

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

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

000045

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-045	Page 2 of 6
Collector: D Bowers/C Martinez/K. Singleton	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many / Data Turnaround: 10
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC		SAF No.: B04-002	Air Quality: 2 (days)
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 & ERC-03-104	Field Logbook No.: EL 1173-6	COA 2000 DAS R100B12~~600~~ 8/23/05	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J03X20 / SOIL / 8-22-05 / 1255	X	X	X	X							6
J03X21 / SOIL / ↓ / 1252	X	X	X	X							7
J03X22 / SOIL / ↓ / 1341	X	X	X	X							8
J03X23 / SOIL / ↓ / 1347	X	X	X	X							9
J03X24 / SOIL / ↓ / 1349	X	X	X	X							10

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Dowers	8-22-05/1700	A of 2A 3723	8-22-05/1700
3728 RCF 2A	8/23/05 1000	DAS St. John	8/23/05 1000
DAS St John ERC	8/23/05 1000	FED EX	
Fed Ex	8-24-05/0935		8-24-05/0935

SPECIAL INSTRUCTIONS

Matrix *: S=Soil; SE=Sediment; SO=Solid; SL=Sludge; W=Water; O=Oil; A=Air; OS=Other Solids; OL=Other Liquids; T=Tissue; WI=Wipes; L=Liquid; V=Vegetation; N=Other

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

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

0000016

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 2 of 9

Collector: D Bowers/C Martinez / K. Singleton	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Price Code: Many	Data Turnaround: 1		
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC	SAF No.: B04-002	Air Quality: 2/day
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 & ERC-03-104	Field Logbook No.: EL 1173-6	COA: 2000 PAS R100B12~~600~~ 8/23/05	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A0503 58	Bill of Lading/Air Bill No.: SEE DSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J03X25	SOIL	8-22-05	1402	X	X	X	X				11
J03X26	SOIL		1409	X	X	X	X				12
J03X27	SOIL		1414	X	X	X	X				13
J03X28	SOIL		1417	X	X	X	X				14
J03X29	SOIL		1420	X	X	X	X				15

000017

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug Bowers	8-22-05 / 1703	Received By/Stored In: REF 2A 3728	8-22-05 / 1700
Relinquished By/Removed From: 3728 REF 2A	8/23/05 1000	Received By/Stored In: DAST Doug Bowers	8/23/05 1000
Relinquished By/Removed From: DAST Doug ERC	8/23/05 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	8-24-05 1035	Received By/Stored In: W. Smith	8-24-05 1035
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

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-045	Page 4 of 9

Collector: D Bowers/C Martinez / K Singleton	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Price Code: Many	Data Turnaround: ~~14~~ 8	Air Quality: 21 day	
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 100-B-1 @ 100 BC	SAF No.: B04-002	
Ice Chest No.: ERC-02-504, ERC-96-161, AFS-04-050 & ERC-03-104	Field Logbook No.: EL 1173-6	COA: 2000 PAS R100B12~~600~~ 5/23/05	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050358		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

cool to 4 deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							

Sample No.	Matrix *	Sample Date	Sample Time											
J03X30	SOIL	8-22-05	1422	X	X	X	X							16
J03X31	SOIL		1431	X	X	X	X							17
J03X32	SOIL		1436	X	X	X	X							18
J03X33	SOIL		1444	X	X	X	X							19
J03X34	SOIL		1449	X	X	X	X							20

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	8-22-05 / 1700	RCF 2A 3728	8-22-05 / 1700
3728 RCF 2A	8/23/05 1000	DASTOGO [signature]	8/23/05 1000
DASTOGO ERC [signature]	8/23/05 1000	FED EX	
FED EX	8-24-05 / 0935	[signature]	8-24-05 / 0935

SPECIAL INSTRUCTIONS

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

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

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

000018

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B04-002 H3343

DATE RECEIVED: 08/24/05 LVL LOT # :0508L[illegible]

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J03X15						
% SOLIDS	001	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	001	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X16						
% SOLIDS	002	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	002	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X17						
% SOLIDS	003	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	003	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X18						
% SOLIDS	004	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	004	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X19						
% SOLIDS	005	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	005	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X20						
% SOLIDS	006	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	006	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X21						
% SOLIDS	007	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	007	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X22						
% SOLIDS	008	S	05L%S115	08/22/05	08/25/05	08/26/05

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B04-002 H3343

DATE RECEIVED: 08/24/05 LVL LOT # :0508L220

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PETROLEUM HYDROCARBO	008	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X23						
% SOLIDS	009	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	009	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X24						
% SOLIDS	010	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	010	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X25						
% SOLIDS	011	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	011	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X26						
% SOLIDS	012	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	012	S	05LHC056	08/22/05	08/25/05	08/31/05
PETROLEUM HYDROCARBO	012 REP	S	05LHC056	08/22/05	08/25/05	08/31/05
PETROLEUM HYDROCARBO	012 MS	S	05LHC056	08/22/05	08/25/05	08/31/05
J03X27						
% SOLIDS	013	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	013	S	05LHC058	08/22/05	08/25/05	08/31/05
J03X28						
% SOLIDS	014	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	014	S	05LHC058	08/22/05	08/25/05	08/31/05
J03X29						
% SOLIDS	015	S	05L%S115	08/22/05	08/25/05	08/26/05
% SOLIDS	015 REP	S	05L%S115	08/22/05	08/25/05	08/26/05

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B04-002 H3343

DATE RECEIVED: 08/24/05 LVL LOT # :0508L220

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PETROLEUM HYDROCARBO	015	S	05LHC058	08/22/05	08/25/05	08/31/05
J03X30						
% SOLIDS	016	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	016	S	05LHC058	08/22/05	08/25/05	08/31/05
J03X31						
% SOLIDS	017	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	017	S	05LHC058	08/22/05	08/25/05	08/31/05
J03X32						
% SOLIDS	018	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	018	S	05LHC058	08/22/05	08/25/05	08/31/05
J03X33						
% SOLIDS	019	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	019	S	05LHC058	08/22/05	08/25/05	08/31/05
J03X34						
% SOLIDS	020	S	05L%S115	08/22/05	08/25/05	08/26/05
PETROLEUM HYDROCARBO	020	S	05LHC058	08/22/05	08/25/05	08/31/05

LAB QC:

PETROLEUM HYDROCARBO	MB1	S	05LHC056	N/A	08/25/05	08/31/05
PETROLEUM HYDROCARBO	MB1 BS	S	05LHC056	N/A	08/25/05	08/31/05
PETROLEUM HYDROCARBO	MB1	S	05LHC058	N/A	08/25/05	08/31/05
PETROLEUM HYDROCARBO	MB1 BS	S	05LHC058	N/A	08/25/05	08/31/05

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100 BC 100-B-1			DATA PACKAGE: H3343		
VALIDATOR: TLI		LAB: LLF		DATE: 11/19/05	
			SDG: H3343		

ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX					
J03X15	J03X16	J03X17	J03X18	J03X19	J03X20
J03X21	J03X22	J03X23	J03X24	J03X25	J03X26
J03X27	J03X28	J03X29	J03X30	J03X31	J03X32
J03X33	J03X34				
					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 MS/MSD in the prep batch for 27-34 – J

no PA

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: no MS/MSD in prep batch for 27-34 - Jall

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 undetect ones

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/01/05

CLIENT: TNUHANFORD B04-002 H3343 LVL LOT #: 0508L220
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LHC056-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
BLANK10	05LHC058-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/01/05

CLIENT: TNUHANFORD B04-002 H3343 LVL LOT #: 0508L220

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT		SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-012	J03X26	Petroleum Hydrocarbons	513	12.2		555	90.3	1.0
BLANK10	05LHC056-MB1	Petroleum Hydrocarbons	538	133	u	560	96.1	1.0
BLANK10	05LHC058-MB1	Petroleum Hydrocarbons	532	133	u	560	94.9	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/01/05

CLIENT: TNUHANFORD B04-002 H3343 LVL LOT #: 0508L220

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT		REPLICATE		RPD	DILUTION FACTOR(REP)
-012REP	J03X26	Petroleum Hydrocarbons	133	u	133	u	NC	1.0
-015REP	J03X29	% Solids	100		100		0.00	1.0