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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) JMD / 8-4-05
INITIAL/DATE

SDG H3132 SAF-B04-002

Sample Location/Waste Site: 126-B-3

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Date: 27 June 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100BC Burial Grounds - Soil - Full Protocol - Waste Site 126-B-3
Subject: Inorganics - Data Package No. H3132-LLI (SDG No. H3132)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3132-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 Level	Analysis
J030P8	4/15/05	Soil	C	See note 1
J030P9	4/15/05	Soil	C	See note 1
J030R0	4/15/05	Soil	C	See note 1
J030R1	4/15/05	Soil	C	See note 1
J030R2	4/15/05	Soil	C	See note 1
J030P3	4/15/05	Soil	C	See note 1
J030P4	4/15/05	Soil	C	See note 1
J030P5	4/15/05	Soil	C	See note 1
J030P6	4/15/05	Soil	C	See note 1
J030P7	4/15/05	Soil	C	See note 1
J030R3	4/15/05	Soil	C	See note 1
J030R4	4/15/05	Soil	C	See note 1
J030R5	4/15/05	Soil	C	See note 1
J030R6	4/15/05	Soil	C	See note 1
J030R7	4/15/05	Soil	C	See note 1
J030R8	4/15/05	Soil	C	See note 1
J030R9	4/15/05	Soil	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

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 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

Due to method blank contamination, the boron results in samples J030P4 and J030R7 were qualified as estimates and flagged "UJ".

Due to method blank contamination, the beryllium result in sample J030R9 was

qualified as an estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J030R9) was submitted for analysis. Barium, cobalt, chromium, copper, manganese, nickel, lead, vanadium and zinc were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

Due to a matrix spike recovery outside QC limits (51.1%), all antimony results 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.

All laboratory duplicate results were acceptable.
Field Duplicate

One set of field duplicate samples (J030R7/J030R8) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All undetected antimony, silver and selenium results (except J030R9) exceeded the analyte specific RQL. The cadmium results in samples J030P9, J030R0, J030R1 and J030R2 were reported above the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H3132-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 boron results in samples J030P4 and J030R7 were qualified as estimates and flagged "UJ".

Due to method blank contamination, the beryllium result in sample J030R9 was qualified as an estimates and flagged "UJ".

Due to a matrix spike recovery outside QC limits (51.1%), all antimony 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.
All undetected antimony, silver and selenium results (except J030R9) exceeded the analyte specific RQL. The cadmium results in samples J030P9, J030R0, J030R1 and

J030R2 were reported above the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H3132	REVIEWER: TLI	Project: 100 BC Burial Grounds	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Boron	UJ	J030P4, J030R7	Method blank
Beryllium	UJ	J030R9	Method blank
Antimony	J	All	MS recovery

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case	SDG: H3132																		
Sample Number		J030P8		J030P9		J030R0		J030R1		J030R2		J030P3		J030P4		J030P5			
Remarks																			
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05			
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.23	U	0.27	U	0.27	U	0.29	U	0.29	U	0.33	U	0.25	U	0.28	U		
Arsenic	10	4.1		4.0		8.1		4.4		4.1		5.1		1.5		3.0			
Boron		4.5		3.6		3.8		5.2		4.2		5.4		1.5	UJ	2.1			
Barium	2	54.9		57.1		67.9		90.9		71.1		87.5		59.3		70.9			
Beryllium		0.47		0.51		0.54		0.61		0.56		0.49		0.31		0.46			
Cadmium	0.2	0.18	U	0.21	U	0.22	U	0.23	U	0.23	U	0.41		0.20	U	0.33			
Cobalt		10.1		10.2		11.0		11.2		9.9		11.8		9.1		10.6			
Chromium	1	5.0		4.1		5.5		6.6		8.8		15.5		4.9		9.8			
Copper		18.7		15.8		22.7		20.9		19.0		25.1		16.3		20.8			
Mercury	0.2	0.01	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.03		0.02	U		
Manganese		346		350		360		400		374		534		340		439			
Molybdenum		0.83		0.91	U	0.92	U	0.98	U	1.0	U	1.1	U	1.4		0.94	U		
Nickel		8.6		8.2		15.4		11.2		11.8		17.9		7.9		12.8			
Lead	5	3.9		2.3		4.4		4.5		4.6		8.3		2.0		6.1			
Antimony	0.6	1.0	UJ	1.2	UJ	1.2	UJ	1.3	UJ	1.3	UJ	1.4	UJ	1.1	UJ	1.2	UJ		
Selenium	1	1.8	U	2.1	U	2.2	U	2.3	U	2.3	U	2.6	U	2.0	U	2.2	U		
Vanadium		64.3		63.6		66.1		68.2		61.4		59.2		59.4		68.5			
Zinc	1	50.5		47.5		52.8		58.4		50.5		66.7		48.5		58.1			
Sample Number		J030P6		J030P7		J030R3		J030R4		J030R5		J030R6		J030R7		J030R8		J030R9	
Remarks																Duplicate		E. Blank	
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.32	U	0.28	U	0.28	U	0.31	U	0.28	U	0.28	U	0.31	U	0.30	U	0.04	U
Arsenic	10	6.2		2.7		2.0		12.0		3.1		2.3		2.7		2.8		0.25	U
Boron		4.2		7.8		3.7		5.5		6.3		3.3		1.6	UJ	1.8		0.15	U
Barium	2	130		75.1		72.1		163		63.9		65.0		81.9		89.0		1.7	
Beryllium		0.58		0.43		0.45		0.76		0.49		0.34		0.45		0.50		0.04	UJ
Cadmium	0.2	0.37		0.34		0.25		0.39		0.29		0.42		0.36		0.25		0.03	U
Cobalt		12.8		10.0		9.9		15.6		10.9		8.9		10.9		11.6		0.13	
Chromium	1	15.6		11.0		10.1		20.7		8.7		8.6		5.8		5.5		0.11	
Copper		26.3		19.4		19.4		36.0		20.5		17.0		19.9		21.0		0.24	
Mercury	0.2	0.02	U	0.02	U	0.02	U	0.03		0.02	U	0.01	U	0.02	U	0.01	U	0.01	U
Manganese		550		400		392		689		434		409		356		385		12.9	
Molybdenum		1.1	U	0.95	U	0.94	U	1.2		1.1		0.96	U	1.1	U	1.0	U	0.15	U
Nickel		19.2		13.8		12.6		26.2		13.9		12.1		9.3		10.1		0.11	
Lead	5	9.1		6.5		5.8		18.1		5.7		5.7		4.6		5.2		0.51	
Antimony	0.6	1.4	UJ	1.2	UJ	1.2	UJ	1.3	UJ	1.2	UJ	1.2	UJ	1.4	UJ	1.3	UJ	0.19	UJ
Selenium	1	2.5	U	2.2	U	2.2	U	2.4	U	2.2	U	2.3	U	2.5	U	2.4	U	0.35	U
Vanadium		67.3		64.5		65.4		62.4		73.9		56.7		64.8		76.1		0.30	
Zinc	1	71.8		55.1		54.8		84.4		59.0		47.8		52.5		69.3		2.6	

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J030P8	Silver, Total	0.23 u	MG/KG	0.23	6.0
		Arsenic, Total	4.1	MG/KG	1.3	6.0
		Boron, Total	4.5	MG/KG	0.78	6.0
		Barium, Total	54.9	MG/KG	0.09	6.0
		Beryllium, Total	0.47	MG/KG	0.05	6.0
		Cadmium, Total	0.18 u	MG/KG	0.18	6.0
		Cobalt, Total	10.1	MG/KG	0.32	6.0
		Chromium, Total	5.0	MG/KG	0.18	6.0
		Copper, Total	18.7	MG/KG	0.23	6.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	346	MG/KG	0.09	6.0
		Molybdenum, Total	0.83	MG/KG	0.78	6.0
		Nickel, Total	8.6	MG/KG	0.46	6.0
		Lead, Total	3.9	MG/KG	0.88	6.0
		Antimony, Total	1.0 uJ	MG/KG	1.0	6.0
		Selenium, Total	1.8 u	MG/KG	1.8	6.0
		Vanadium, Total	64.3	MG/KG	0.28	6.0
		Zinc, Total	50.5	MG/KG	0.23	6.0

6/22/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J030P9	Silver, Total	0.27 u	MG/KG	0.27	6.0
		Arsenic, Total	4.0	MG/KG	1.6	6.0
		Boron, Total	3.6	MG/KG	0.91	6.0
		Barium, Total	57.1	MG/KG	0.11	6.0
		Beryllium, Total	0.51	MG/KG	0.05	6.0
		Cadmium, Total	0.21 u	MG/KG	0.21	6.0
		Cobalt, Total	10.2	MG/KG	0.38	6.0
		Chromium, Total	4.1	MG/KG	0.21	6.0
		Copper, Total	15.8	MG/KG	0.27	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	350	MG/KG	0.11	6.0
		Molybdenum, Total	0.91 u	MG/KG	0.91	6.0
		Nickel, Total	8.2	MG/KG	0.54	6.0
		Lead, Total	2.3	MG/KG	1.0	6.0
		Antimony, Total	1.2 uJ	MG/KG	1.2	6.0
		Selenium, Total	2.1 u	MG/KG	2.1	6.0
		Vanadium, Total	63.6	MG/KG	0.32	6.0
		Zinc, Total	47.5	MG/KG	0.27	6.0

JR
6/27/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J030R0	Silver, Total	0.27 u	MG/KG	0.27	6.0
		Arsenic, Total	8.1	MG/KG	1.6	6.0
		Boron, Total	3.8	MG/KG	0.92	6.0
		Barium, Total	67.9	MG/KG	0.11	6.0
		Beryllium, Total	0.54	MG/KG	0.05	6.0
		Cadmium, Total	0.22 u	MG/KG	0.22	6.0
		Cobalt, Total	11.0	MG/KG	0.38	6.0
		Chromium, Total	5.5	MG/KG	0.22	6.0
		Copper, Total	22.7	MG/KG	0.27	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	360	MG/KG	0.11	6.0
		Molybdenum, Total	0.92 u	MG/KG	0.92	6.0
		Nickel, Total	15.4	MG/KG	0.54	6.0
		Lead, Total	4.4	MG/KG	1.0	6.0
		Antimony, Total	1.2 uJ	MG/KG	1.2	6.0
		Selenium, Total	2.2 u	MG/KG	2.2	6.0
		Vanadium, Total	66.1	MG/KG	0.32	6.0
		Zinc, Total	52.8	MG/KG	0.27	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J030R1	Silver, Total	0.29 u	MG/KG	0.29	6.0
		Arsenic, Total	4.4	MG/KG	1.7	6.0
		Boron, Total	5.2	MG/KG	0.98	6.0
		Barium, Total	90.9	MG/KG	0.12	6.0
		Beryllium, Total	0.61	MG/KG	0.06	6.0
		Cadmium, Total	0.23 u	MG/KG	0.23	6.0
		Cobalt, Total	11.2	MG/KG	0.40	6.0
		Chromium, Total	6.6	MG/KG	0.23	6.0
		Copper, Total	20.9	MG/KG	0.29	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	400	MG/KG	0.12	6.0
		Molybdenum, Total	0.98 u	MG/KG	0.98	6.0
		Nickel, Total	11.2	MG/KG	0.58	6.0
		Lead, Total	4.5	MG/KG	1.1	6.0
		Antimony, Total	1.3 uJ	MG/KG	1.3	6.0
		Selenium, Total	2.3 u	MG/KG	2.3	6.0
		Vanadium, Total	68.2	MG/KG	0.35	6.0
		Zinc, Total	58.4	MG/KG	0.29	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J030R2	Silver, Total	0.29 u	MG/KG	0.29	6.0
		Arsenic, Total	4.1	MG/KG	1.7	6.0
		Boron, Total	4.2	MG/KG	1.0	6.0
		Barium, Total	71.1	MG/KG	0.12	6.0
		Beryllium, Total	0.56	MG/KG	0.06	6.0
		Cadmium, Total	0.23 u	MG/KG	0.23	6.0
		Cobalt, Total	9.9	MG/KG	0.41	6.0
		Chromium, Total	8.8	MG/KG	0.23	6.0
		Copper, Total	19.0	MG/KG	0.29	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	374	MG/KG	0.12	6.0
		Molybdenum, Total	1.0 u	MG/KG	1.0	6.0
		Nickel, Total	11.8	MG/KG	0.59	6.0
		Lead, Total	4.6	MG/KG	1.1	6.0
		Antimony, Total	1.3 u J	MG/KG	1.3	6.0
		Selenium, Total	2.3 u	MG/KG	2.3	6.0
		Vanadium, Total	61.4	MG/KG	0.35	6.0
		Zinc, Total	50.5	MG/KG	0.29	6.0

6/29/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132 LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J030P3	Silver, Total	0.33	u	MG/KG	0.33	6.0
		Arsenic, Total	5.1		MG/KG	1.9	6.0
		Boron, Total	5.4		MG/KG	1.1	6.0
		Barium, Total	87.5		MG/KG	0.13	6.0
		Beryllium, Total	0.49		MG/KG	0.07	6.0
		Cadmium, Total	0.41		MG/KG	0.26	6.0
		Cobalt, Total	11.8		MG/KG	0.46	6.0
		Chromium, Total	15.5		MG/KG	0.26	6.0
		Copper, Total	25.1		MG/KG	0.33	6.0
		Mercury, Total	0.02	u	MG/KG	0.02	1.0
		Manganese, Total	534		MG/KG	0.13	6.0
		Molybdenum, Total	1.1	u	MG/KG	1.1	6.0
		Nickel, Total	17.9		MG/KG	0.66	6.0
		Lead, Total	8.3		MG/KG	1.2	6.0
		Antimony, Total	1.4	u	MG/KG	1.4	6.0
		Selenium, Total	2.6	u	MG/KG	2.6	6.0
		Vanadium, Total	59.2		MG/KG	0.39	6.0
		Zinc, Total	66.7		MG/KG	0.33	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J030P4	Silver, Total	0.25 u	MG/KG	0.25	6.0
		Arsenic, Total	1.5	MG/KG	1.4	6.0
		Boron, Total	1.5 UJ	MG/KG	0.84	6.0
		Barium, Total	59.3	MG/KG	0.1	6.0
		Beryllium, Total	0.31	MG/KG	0.05	6.0
		Cadmium, Total	0.20 u	MG/KG	0.20	6.0
		Cobalt, Total	9.1	MG/KG	0.35	6.0
		Chromium, Total	4.9	MG/KG	0.20	6.0
		Copper, Total	16.3	MG/KG	0.25	6.0
		Mercury, Total	0.03	MG/KG	0.01	1.0
		Manganese, Total	340	MG/KG	0.1	6.0
		Molybdenum, Total	1.4	MG/KG	0.84	6.0
		Nickel, Total	7.9	MG/KG	0.50	6.0
		Lead, Total	2.0	MG/KG	0.94	6.0
		Antimony, Total	1.1 uJ	MG/KG	1.1	6.0
		Selenium, Total	2.0 u	MG/KG	2.0	6.0
		Vanadium, Total	59.4	MG/KG	0.30	6.0
		Zinc, Total	48.5	MG/KG	0.25	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

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

LVL LOT #: 0504L251

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	J030P5	Silver, Total	0.28	u	MG/KG	0.28	6.0
		Arsenic, Total	3.0		MG/KG	1.6	6.0
		Boron, Total	2.1		MG/KG	0.94	6.0
		Barium, Total	70.9		MG/KG	0.11	6.0
		Beryllium, Total	0.46		MG/KG	0.06	6.0
		Cadmium, Total	0.33		MG/KG	0.22	6.0
		Cobalt, Total	10.6		MG/KG	0.39	6.0
		Chromium, Total	9.8		MG/KG	0.22	6.0
		Copper, Total	20.8		MG/KG	0.28	6.0
		Mercury, Total	0.02	u	MG/KG	0.02	1.0
		Manganese, Total	439		MG/KG	0.11	6.0
		Molybdenum, Total	0.94	u	MG/KG	0.94	6.0
		Nickel, Total	12.8		MG/KG	0.55	6.0
		Lead, Total	6.1		MG/KG	1.0	6.0
		Antimony, Total	1.2	u J	MG/KG	1.2	6.0
		Selenium, Total	2.2	u	MG/KG	2.2	6.0
		Vanadium, Total	68.5		MG/KG	0.33	6.0
		Zinc, Total	58.1		MG/KG	0.28	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J030P6	Silver, Total	0.32 u	MG/KG	0.32	6.0
		Arsenic, Total	6.2	MG/KG	1.8	6.0
		Boron, Total	4.2	MG/KG	1.1	6.0
		Barium, Total	130	MG/KG	0.13	6.0
		Beryllium, Total	0.58	MG/KG	0.06	6.0
		Cadmium, Total	0.37	MG/KG	0.25	6.0
		Cobalt, Total	12.8	MG/KG	0.44	6.0
		Chromium, Total	15.6	MG/KG	0.25	6.0
		Copper, Total	26.3	MG/KG	0.32	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	550	MG/KG	0.13	6.0
		Molybdenum, Total	1.1 u	MG/KG	1.1	6.0
		Nickel, Total	19.2	MG/KG	0.63	6.0
		Lead, Total	9.1	MG/KG	1.2	6.0
		Antimony, Total	1.4 uJ	MG/KG	1.4	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	67.3	MG/KG	0.38	6.0
		Zinc, Total	71.8	MG/KG	0.32	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J030P7	Silver, Total	0.28 u	MG/KG	0.28	6.0
		Arsenic, Total	2.7	MG/KG	1.6	6.0
		Boron, Total	7.8	MG/KG	0.95	6.0
		Barium, Total	75.1	MG/KG	0.11	6.0
		Beryllium, Total	0.43	MG/KG	0.06	6.0
		Cadmium, Total	0.34	MG/KG	0.22	6.0
		Cobalt, Total	10.0	MG/KG	0.39	6.0
		Chromium, Total	11.0	MG/KG	0.22	6.0
		Copper, Total	19.4	MG/KG	0.28	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	400	MG/KG	0.11	6.0
		Molybdenum, Total	0.95 u	MG/KG	0.95	6.0
		Nickel, Total	13.8	MG/KG	0.56	6.0
		Lead, Total	6.5	MG/KG	1.1	6.0
		Antimony, Total	1.2 u J	MG/KG	1.2	6.0
		Selenium, Total	2.2 u	MG/KG	2.2	6.0
		Vanadium, Total	64.5	MG/KG	0.34	6.0
		Zinc, Total	55.1	MG/KG	0.28	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132 LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J030R3	Silver, Total	0.28 u	MG/KG	0.28	6.0
		Arsenic, Total	2.0	MG/KG	1.6	6.0
		Boron, Total	3.7	MG/KG	0.94	6.0
		Barium, Total	72.1	MG/KG	0.11	6.0
		Beryllium, Total	0.45	MG/KG	0.06	6.0
		Cadmium, Total	0.25	MG/KG	0.22	6.0
		Cobalt, Total	9.9	MG/KG	0.39	6.0
		Chromium, Total	10.1	MG/KG	0.22	6.0
		Copper, Total	19.4	MG/KG	0.28	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	392	MG/KG	0.11	6.0
		Molybdenum, Total	0.94 u	MG/KG	0.94	6.0
		Nickel, Total	12.6	MG/KG	0.55	6.0
		Lead, Total	5.8	MG/KG	1.0	6.0
		Antimony, Total	1.2 u J	MG/KG	1.2	6.0
		Selenium, Total	2.2 u	MG/KG	2.2	6.0
		Vanadium, Total	65.4	MG/KG	0.33	6.0
		Zinc, Total	54.8	MG/KG	0.28	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-012	J030R4	Silver, Total	0.31 u	MG/KG	0.31	6.0
		Arsenic, Total	12.0	MG/KG	1.8	6.0
		Boron, Total	5.5	MG/KG	1.0	6.0
		Barium, Total	163	MG/KG	0.12	6.0
		Beryllium, Total	0.76	MG/KG	0.06	6.0
		Cadmium, Total	0.39	MG/KG	0.24	6.0
		Cobalt, Total	15.6	MG/KG	0.43	6.0
		Chromium, Total	20.7	MG/KG	0.24	6.0
		Copper, Total	36.0	MG/KG	0.31	6.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Manganese, Total	689	MG/KG	0.12	6.0
		Molybdenum, Total	1.2	MG/KG	1.0	6.0
		Nickel, Total	26.2	MG/KG	0.61	6.0
		Lead, Total	18.1	MG/KG	1.2	6.0
		Antimony, Total	1.3 u J	MG/KG	1.3	6.0
		Selenium, Total	2.4 u	MG/KG	2.4	6.0
		Vanadium, Total	62.4	MG/KG	0.37	6.0
		Zinc, Total	84.4	MG/KG	0.31	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	J030R5	Silver, Total	0.28	u	MG/KG	0.28	6.0
		Arsenic, Total	3.1		MG/KG	1.6	6.0
		Boron, Total	6.3		MG/KG	0.94	6.0
		Barium, Total	63.9		MG/KG	0.11	6.0
		Beryllium, Total	0.49		MG/KG	0.06	6.0
		Cadmium, Total	0.29		MG/KG	0.22	6.0
		Cobalt, Total	10.9		MG/KG	0.39	6.0
		Chromium, Total	8.7		MG/KG	0.22	6.0
		Copper, Total	20.5		MG/KG	0.28	6.0
		Mercury, Total	0.02	u	MG/KG	0.02	1.0
		Manganese, Total	434		MG/KG	0.11	6.0
		Molybdenum, Total	1.1		MG/KG	0.94	6.0
		Nickel, Total	13.9		MG/KG	0.55	6.0
		Lead, Total	5.7		MG/KG	1.0	6.0
		Antimony, Total	1.2	u J	MG/KG	1.2	6.0
		Selenium, Total	2.2	u	MG/KG	2.2	6.0
		Vanadium, Total	73.9		MG/KG	0.33	6.0
		Zinc, Total	59.0		MG/KG	0.28	6.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

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

LVL LOT #: 0504L251

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-014	J030R6	Silver, Total	0.28 u	MG/KG	0.28	6.0
		Arsenic, Total	2.3	MG/KG	1.6	6.0
		Boron, Total	3.3	MG/KG	0.96	6.0
		Barium, Total	65.0	MG/KG	0.11	6.0
		Beryllium, Total	0.34	MG/KG	0.06	6.0
		Cadmium, Total	0.42	MG/KG	0.23	6.0
		Cobalt, Total	8.9	MG/KG	0.40	6.0
		Chromium, Total	8.6	MG/KG	0.23	6.0
		Copper, Total	17.0	MG/KG	0.28	6.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	409	MG/KG	0.11	6.0
		Molybdenum, Total	0.96 u	MG/KG	0.96	6.0
		Nickel, Total	12.1	MG/KG	0.57	6.0
		Lead, Total	5.7	MG/KG	1.1	6.0
		Antimony, Total	1.2 u J	MG/KG	1.2	6.0
		Selenium, Total	2.3 u	MG/KG	2.3	6.0
		Vanadium, Total	56.7	MG/KG	0.34	6.0
		Zinc, Total	47.8	MG/KG	0.28	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132 LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-015	J030R7	Silver, Total	0.31 u	MG/KG	0.31	6.0
		Arsenic, Total	2.7	MG/KG	1.8	6.0
		Boron, Total	1.6 UJ	MG/KG	1.1	6.0
		Barium, Total	81.9	MG/KG	0.13	6.0
		Beryllium, Total	0.45	MG/KG	0.06	6.0
		Cadmium, Total	0.36	MG/KG	0.25	6.0
		Cobalt, Total	10.9	MG/KG	0.44	6.0
		Chromium, Total	5.8	MG/KG	0.25	6.0
		Copper, Total	19.9	MG/KG	0.31	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	356	MG/KG	0.13	6.0
		Molybdenum, Total	1.1 u	MG/KG	1.1	6.0
		Nickel, Total	9.3	MG/KG	0.63	6.0
		Lead, Total	4.6	MG/KG	1.2	6.0
		Antimony, Total	1.4 uJ	MG/KG	1.4	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	64.8	MG/KG	0.38	6.0
		Zinc, Total	52.5	MG/KG	0.31	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

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

LVL LOT #: 0504L251

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-016	J030R8	Silver, Total	0.30	u	MG/KG	0.30	6.0
		Arsenic, Total	2.8		MG/KG	1.7	6.0
		Boron, Total	1.8		MG/KG	1.0	6.0
		Barium, Total	89.0		MG/KG	0.12	6.0
		Beryllium, Total	0.50		MG/KG	0.06	6.0
		Cadmium, Total	0.25		MG/KG	0.24	6.0
		Cobalt, Total	11.6		MG/KG	0.42	6.0
		Chromium, Total	5.5		MG/KG	0.24	6.0
		Copper, Total	21.0		MG/KG	0.30	6.0
		Mercury, Total	0.01	u	MG/KG	0.01	1.0
		Manganese, Total	385		MG/KG	0.12	6.0
		Molybdenum, Total	1.0	u	MG/KG	1.0	6.0
		Nickel, Total	10.1		MG/KG	0.60	6.0
		Lead, Total	5.2		MG/KG	1.1	6.0
		Antimony, Total	1.3	u J	MG/KG	1.3	6.0
		Selenium, Total	2.4	u	MG/KG	2.4	6.0
		Vanadium, Total	76.1		MG/KG	0.36	6.0
		Zinc, Total	69.3		MG/KG	0.30	6.0

6/29/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-017	J030R9	Silver, Total	0.04 u	MG/KG	0.04	1.0
		Arsenic, Total	0.25 u	MG/KG	0.25	1.0
		Boron, Total	0.15 u	MG/KG	0.15	1.0
		Barium, Total	1.7	MG/KG	0.02	1.0
		Beryllium, Total	0.04 UJ	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.13	MG/KG	0.06	1.0
		Chromium, Total	0.11	MG/KG	0.03	1.0
		Copper, Total	0.24	MG/KG	0.04	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	12.9	MG/KG	0.02	1.0
		Molybdenum, Total	0.15 u	MG/KG	0.15	1.0
		Nickel, Total	0.11	MG/KG	0.09	1.0
		Lead, Total	0.51	MG/KG	0.17	1.0
		Antimony, Total	0.19 u J	MG/KG	0.19	1.0
		Selenium, Total	0.35 u	MG/KG	0.35	1.0
		Vanadium, Total	0.30	MG/KG	0.05	1.0
		Zinc, Total	2.6	MG/KG	0.04	1.0

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6/29/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B04-002
LVL#: 0504L251
SDG/SAF#: H3132/B04-002

W.O.#: 11343-606-001-9999-00
Dates Received: 04-19/20-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 17 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All samples, except for J030R9, were analyzed with 6-fold dilutions for ICP metals due to sample matrix.

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

4. Please refer to the Sample Receipt Check List for sample discrepancies in LvLI's sample acceptance policy.

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

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

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

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

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

10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J030P9	Antimony	100	100.6

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/23/00
Date

jjw/m04-251

LVLI LIONVILLE LABORATORY INC.

US04L251

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-030	Page 2 of 4

Collector: Doug Bowers/Jim Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Price Code: Many	Data Turnaround: Air Quality 21		
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002
Ice Chest No.: GRC 03106 AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4	COA: R126B32000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A050178-179		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG D	aG C	aG A	aG B	aG E						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						
Sample No. / Matrix * / Sample Date / Sample Time											
J030P8 6 / SOIL / 4/15/05 / 1008	✓	✓	✓	✓	✓						
J030P9 7 / SOIL / 4/15/05 / 1022	✓	✓	✓	✓	✓						
J030R0 8 / SOIL / 4/15/05 / 1042	✓	✓	✓	✓	✓						
J030R1 9 / SOIL / 4/15/05 / 1050	✓	✓	✓	✓	✓						
J030R2 10 / SOIL / 4/15/05 / 1100	✓	✓	✓	✓	✓						

0000032

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Doug Bowers/Doug Bowers	4-14-05/1600	RIFJA 3728	4-14-05/1600
Relinquished By/Removed From	REF 2A 3728	4/8/05 1000	SJGALES	4/8/05 1000
Relinquished By/Removed From	GRC SJGALES	4/8/05 1000	Received By/Stored In: FEDEX	
Relinquished By/Removed From		4/8/05 0925	Received By/Stored In	4/8/05 0925
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~. Chromium. Cobalt. Copper. ~~Iron~~. Lead. ~~Magnesium~~. Manganese. Molybdenum. Nickel. ~~Potassium~~. Selenium. ~~Silicon~~. Silver. ~~Sodium~~. Vanadium. Zinc}: Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref #2A on 4/18/05

(1) DJD 4.14.05

Matrix *

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

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

3HI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-030	Page 1 of 1

Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC		SAF No.: B04-002
Air Quality ☐ 21			
Ice Chest No.: ERC03106 AFS04-010,016,017	Field Logbook No.: EFL 1173-4	COA: R126032000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050 178-179		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000033

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						

Sample No.	Matrix *	Sample Date	Sample Time										
J030P3 1	SOIL	4/15/05	0900	✓	✓	✓	✓	✓					
J030P4 2	SOIL	4/15/05	0922	✓	✓	✓	✓	✓					
J030P5 3	SOIL	4/15/05	0934	✓	✓	✓	✓	✓					
J030P6 4	SOIL	4/15/05	0946	✓	✓	✓	✓	✓					
J030P7 5	SOIL	4/15/05	0956	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers / Doug Bowers	4-15-05 1600	A of 2A 3725	4-15-05 1600
REF 2A 3728	41805 1000	SJ Ale	41805 1000
SJ Ale	41805 1000	FED EX	
FED EX	4/19/05 0925		4/19/05 0925

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic. Barium, Beryllium, Boron. Cadmium, ~~Calcium~~, Chromium. Cobalt. Copper, ~~Iron~~. Lead, ~~Magnesium~~; Manganese, Molybdenum. Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~. Vanadium, Zinc}; Mercury - 7470 - (CV)

(1) RJB 4-14-05

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/18/05

Matrix *

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

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

3HI-EE-011 (03/01/2002)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B04-002-030 | Page 3 of 4

Collector	Doug Bowers/Jim Kiesler
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	126-B-3 @ 100 BC
SAF No.	B04-002
Air Quality	2 /
Ice Chest No.	ERC 03 106 AFS 04-010, 016, 017
Field Logbook No.	EFL 1173-4
COA	R1A603 2000
Method of Shipment	FED EX
Shipped To	EBERLINE SERVICES (LIONVILLE)
Offsite Property No.	A050 178-179
Bill of Lading/Air Bill No.	JCE 05PC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						
Sample No. / Matrix * / Sample Date / Sample Time											
J030R3 11 SOIL 4/15/05 1117	✓	✓	✓	✓	✓						
J030R4 12 SOIL 4/15/05 1127	✓	✓	✓	✓	✓						
J030R5 13 SOIL 4/15/05 1133	✓	✓	✓	✓	✓						
J030R6 14 SOIL 4/15/05 1147	✓	✓	✓	✓	✓						
J030R7 15 SOIL 4/15/05 1210	✓	✓	✓	✓	✓						

000034

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers / Doug Bowers	4-15-05 1600	Ref 2A 3728	4-15-05 1600
Ref 2A 3728	41805 1000	S. Gale	41805 1000
S. Gale	41805 1000	FED EX	
FED EX	4/19/05 0925		4/19/05 0925

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals 6010 (Client List) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7470 - (CV)

(1) DTD 4-14-05

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/18/05

Matrix *

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

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

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B04-002-030 | Page 1 of 1

Collector Doug Bowers/Jim Kiesler	**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** 126-B-3 @ 100 BC	**SAF No.** B04-002
Air Quality 21		
Ice Chest No. ERC03 106 AFS04-010, 016, 017	**Field Logbook No.** EFL 1173-4	**COA** R126B32000
Method of Shipment FED EX		
Shipped To EBERLINE SERVICES (LIONVILLE)	**Offsite Property No.** A050178-179	**Bill of Lading/Air Bill No.** SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000035

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J030R8 16	SOIL	4/15/05	1207	✓	✓	✓	✓	✓			
J030R9 17	SOIL	4/15/05	1154	✓	✓	✓	NA	✓			

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	4-15-05 1600	Ref 1A 3728	4-15-05 1600
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
REF 2A 3728	41805 1000	SJGALE	41805 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
SJGALE ERC	41805 1000	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fedex	4/19/05 0925		4/19/05 0925
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

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~ (1). Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~ (1). Chromium. Cobalt. Copper. ~~Iron~~ (1). Lead. ~~Magnesium~~ (1). Manganese. Molybdenum. Nickel. ~~Potassium~~ (1). Selenium, ~~Silicon~~ (1). Silver. ~~Sodium~~ (1). Vanadium. Zinc}: Mercury - 7470 - (CV)

(1) DRD 4-14-05

Personnel not available to relinquish samples from 3728 Ref #2A on 4/18/05

Matrix *

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

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

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

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100BC			DATA PACKAGE: H3132		
VALIDATOR: FLI		LAB: LLI		DATE: 6/24/03	
			SDG: H3132		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J030P8	J030P9	J030R0	J030R1	J030P3	
J030P4	J030P5	J030P6	J030P7	J030R3	
J030R4	J030R5	J030R6	J030R7	J030R8	
J030R9	J030R2				
				Sal	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: Boron P4 + R7 - UJ

beryllium - ~~P8 P3 P4 P5~~ ~~UJ~~ ~~R3 R5 R6 R7~~ R7 - UJ
U22

FB - Barium cobalt chromium copper manganese nickel lead
Vanadium zinc

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

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

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

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

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

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

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

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

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

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

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

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

Comments: antimony 81.1% - J all no MS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

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

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

MSA performed as required? ..... Yes No N/A

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

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

Comments:

8. HOLDING TIMES (all levels)

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: Silver - all but R9

antimony & Selen - all but R9

& cadmium P9 R0 R1 R2

~~[illegible]~~ 7/29/05

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/10/05

CLIENT: TNUHANFORD B04-002 H3132 LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0236-MB1	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Arsenic, Total	0.29 u	MG/KG	0.29	1.0
		Boron, Total	0.33	MG/KG	0.17	1.0
		Barium, Total	0.06	MG/KG	0.02	1.0
		Beryllium, Total	0.01	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.04 u	MG/KG	0.04	1.0
		Copper, Total	0.05 u	MG/KG	0.05	1.0
		Manganese, Total	0.02 u	MG/KG	0.02	1.0
		Molybdenum, Total	0.17 u	MG/KG	0.17	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.40 u	MG/KG	0.40	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.12	MG/KG	0.05	1.0
BLANK1	05C0096-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J030P9	Silver, Total	3.7	0.27u	4.2	88.1	6.0
		Arsenic, Total	162	4.0	169	93.7	6.0
		Boron, Total	79.5	3.6	84.3	90.0	6.0
		Barium, Total	214	57.1	169	92.9	6.0
		Beryllium, Total	4.5	0.51	4.2	95.0	6.0
		Cadmium, Total	4.0	0.21u	4.2	95.2	6.0
		Cobalt, Total	50.4	10.2	42.1	95.5	6.0
		Chromium, Total	19.7	4.1	16.9	92.3	6.0
		Copper, Total	38.6	15.8	21.1	108.1	6.0
		Mercury, Total	0.17	0.02u	0.16	106.4	1.0
		Manganese, Total	390	350	42.1	93.3*	6.0
		Molybdenum, Total	78.9	0.91u	84.3	93.6	6.0
		Nickel, Total	48.1	8.2	42.1	94.8	6.0
		Lead, Total	43.2	2.3	42.1	97.1	6.0
		Antimony, Total	21.5	1.2 u	42.1	51.1	6.0
		Selenium, Total	156	2.1 u	169	92.6	6.0
		Vanadium, Total	112	63.6	42.1	114.0	6.0
		Zinc, Total	97.4	47.5	42.1	118.5	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132 LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J030P9	Silver, Total	0.27u	0.26u	NC	6.0
		Arsenic, Total	4.0	3.0	28.6	6.0
		Boron, Total	3.6	2.3	44.1	6.0
		Barium, Total	57.1	54.5	4.7	6.0
		Beryllium, Total	0.51	0.45	12.4	6.0
		Cadmium, Total	0.21u	0.21u	NC	6.0
		Cobalt, Total	10.2	9.4	8.2	6.0
		Chromium, Total	4.1	3.1	27.8	6.0
		Copper, Total	15.8	16.3	3.1	6.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Manganese, Total	350	340	2.9	6.0
		Molybdenum, Total	0.91u	0.89u	NC	6.0
		Nickel, Total	8.2	7.2	13.0	6.0
		Lead, Total	2.3	2.6	12.2	6.0
		Antimony, Total	1.2 u	1.2 u	NC	6.0
		Selenium, Total	2.1 u	2.1 u	NC	6.0
		Vanadium, Total	63.6	63.8	0.31	6.0
		Zinc, Total	47.5	49.8	4.7	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132

LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	05L0236-LC1	Silver, LCS	49.2	50.0	MG/KG	98.4
		Arsenic, LCS	941	1000	MG/KG	94.1
		Boron, LCS	478	500	MG/KG	95.7
		Barium, LCS	497	500	MG/KG	99.4
		Beryllium, LCS	24.7	25.0	MG/KG	98.8
		Cadmium, LCS	24.4	25.0	MG/KG	97.6
		Cobalt, LCS	249	250	MG/KG	99.6
		Chromium, LCS	50.0	50.0	MG/KG	100
		Copper, LCS	126	125	MG/KG	101.0
		Manganese, LCS	75.7	75.0	MG/KG	100.9
		Molybdenum, LCS	503	500	MG/KG	100.6
		Nickel, LCS	199	200	MG/KG	99.6
		Lead, LCS	247	250	MG/KG	98.8
		Antimony, LCS	290	300	MG/KG	96.6
		Selenium, LCS	918	1000	MG/KG	91.8
		Vanadium, LCS	243	250	MG/KG	97.0
		Zinc, LCS	98.0	100	MG/KG	98.0
LCS1	05C0096-LC1	Mercury, LCS	6.1	6.2	MG/KG	98.2

Date: 29 June 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Ground - Soil - Full Protocol - Waste Site 126-B-3
Subject: PCB/Pesticides - Data Package No. H3132-LLI (SDG No. H3132)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3132-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J030P8	4/15/05	Soil	C	See note 1
J030P9	4/15/05	Soil	C	See note 1
J030R0	4/15/05	Soil	C	See note 1
J030R1	4/15/05	Soil	C	See note 1
J030R2	4/15/05	Soil	C	See note 1
J030P3	4/15/05	Soil	C	See note 1
J030P4	4/15/05	Soil	C	See note 1
J030P5	4/15/05	Soil	C	See note 1
J030P6	4/15/05	Soil	C	See note 1
J030P7	4/15/05	Soil	C	See note 1
J030R3	4/15/05	Soil	C	See note 1
J030R4	4/15/05	Soil	C	See note 1
J030R5	4/15/05	Soil	C	See note 1
J030R6	4/15/05	Soil	C	See note 1
J030R7	4/15/05	Soil	C	See note 1
J030R8	4/15/05	Soil	C	See note 1
J030R9	4/15/05	Soil	C	See note 2

1 - PCBs by 8082 and pesticides by 8081A.
2 - 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 target compound results were acceptable.

Field Blanks

One field blank (J030R9) was submitted for analysis. All field blank results were acceptable.

- **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 the lack of an LCS, matrix spike and matrix spike duplicate 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".

Field Duplicate Samples

One set of field duplicate samples (J030R7/J030R8) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data Package No. H3132-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of an LCS, matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All methoxychlor and toxaphene results 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 procedures herein are as follows:

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: H3132	REVIEWER: TLI	Project: 100 BC Burial Grounds	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No LCS, MS or MSD analysis

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																			
Laboratory: Lionville Laboratory Inc.																			
Case:	SDG: H3132																		
Sample Number		J030P8		J030P9		J030R0		J030R1		J030R2		J030P3		J030P4		J030P5			
Remarks																			
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05			
Extraction Date		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05			
Analysis Date		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/22/05		4/22/05			
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	14	U	14	U	14	U	14	U	14	U	15	U	14	U	14	U		
Aroclor-1221	20	14	U	14	U	14	U	14	U	14	U	15	U	14	U	14	U		
Aroclor-1232	20	14	U	14	U	14	U	14	U	14	U	15	U	14	U	14	U		
Aroclor-1242	20	14	U	14	U	14	U	14	U	14	U	15	U	14	U	14	U		
Aroclor-1248	20	14	U	14	U	14	U	14	U	14	U	15	U	14	U	14	U		
Aroclor-1254	20	14	U	14	U	14	U	14	U	14	U	15	U	14	U	14	U		
Aroclor-1260	20	14	U	14	U	14	U	14	U	14	U	15	U	14	U	14	U		
Sample Number		J030P8		J030P9		J030R0		J030R1		J030R2		J030P3		J030P4		J030P5			
Remarks																			
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05			
Extraction Date		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05			
Analysis Date		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/22/05		4/22/05			
Pesticide	RQL	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	1.9	U	1.7	U	1.8	U		
Beta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
Delta-BHC	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
Gamma-BHC (Lindane)	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
Heptachlor	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
Aldrin	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
Heptachlor Epoxide	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
Endosulfan I	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
Dieldrin	5	3.5	U	3.5	U	3.4	UJ	3.4	UJ	3.5	U	3.8	U	3.4	U	3.5	U		
4,4'-DDE	5	3.5	U	3.5	U	3.4	U	3.4	U	3.5	U	3.8	U	3.4	U	3.5	U		
Endrin	5	3.5	U	3.5	U	3.4	U	3.4	U	3.5	U	3.8	U	3.4	U	3.5	U		
Endosulfan II	5	3.5	U	3.5	U	3.4	UJ	3.4	UJ	3.5	U	3.8	U	3.4	U	3.5	U		
4,4'-DDD	5	3.5	U	3.5	U	3.4	U	3.4	U	3.5	U	3.8	U	3.4	U	3.5	U		
Endosulfan Sulfate	5	3.5	U	3.5	U	3.4	UJ	3.4	UJ	3.5	U	3.8	U	3.4	U	3.5	U		
4,4'-DDT	5	3.5	U	3.5	U	3.4	U	3.4	U	3.5	U	3.8	U	3.4	U	3.5	U		
Methoxychlor	5	17	U	17	U	17	UJ	17	UJ	17	U	19	U	17	U	18	U		
Endrin Ketone	5	3.5	U	3.5	U	3.4	UJ	3.4	UJ	3.5	U	3.8	U	3.4	U	3.5	U		
Endrin Aldehyde	5	3.5	U	3.5	U	3.4	UJ	3.4	UJ	3.5	U	3.8	U	3.4	U	3.5	U		
alpha-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
gamma-Chlordane	5	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U	1.7	U	1.8	U		
Toxaphene	5	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	190	UJ	170	UJ	180	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.

PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																			
Laboratory: Lionville Laboratory Inc.																			
Case:	SDG: H3132																		
Sample Number		J030P6		J030P7		J030R3		J030R4		J030R5		J030R6		J030R7		J030R8		J030R9	
Remarks																Duplicate		E. Blank	
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05	
Extraction Date		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05	
Analysis Date		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	14	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U	13	U
Aroclor-1221	20	14	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U	13	U
Aroclor-1232	20	14	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U	13	U
Aroclor-1242	20	14	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U	13	U
Aroclor-1248	20	14	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U	13	U
Aroclor-1254	20	14	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U	13	U
Aroclor-1260	20	17		14	U	14	U	14	U	14	U	14	U	14	U	14	U	13	U
Sample Number		J030P6		J030P7		J030R3		J030R4		J030R5		J030R6		J030R7		J030R8			
Remarks																Duplicate			
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05			
Extraction Date		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05		4/20/05			
Analysis Date		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05			
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Beta-BHC	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Delta-BHC	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Gamma-BHC (Lindane)	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Heptachlor	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Aldrin	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Heptachlor Epoxide	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Endosulfan I	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Dieldrin	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
4,4'-DDE	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
Endrin	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
Endosulfan II	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
4,4'-DDD	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
Endosulfan Sulfate	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
4,4'-DDT	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
Methoxychlor	5	18	U	18	U	17	U	18	U	17	U	17	U	17	U	17	U		
Endrin Ketone	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
Endrin Aldehyde	5	3.6	U	3.5	U	3.5	U	3.6	U	3.4	U	3.5	U	3.5	U	3.5	U		
alpha-Chlordane	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
gamma-Chlordane	5	1.8	U	1.8	U	1.7	U	1.8	U	1.7	U	1.7	U	1.7	U	1.7	U		
Toxaphene	5	180	UJ	180	UJ	170	UJ	180	UJ	170	UJ	170	UJ	170	UJ	170	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.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 05/02/05 09:54

RFW Batch Number: **0504L251** Client: **TNUHANFORD B04-002 H3132** Work Order: 11343606001 Page: 1

	Cust ID:	J030P8	J030P8	J030P8	J030P9	J030R0	J030R1
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	94 %	84 %	92 %	104 %	98 %	92 %
	Decachlorobiphenyl	100 %	95 %	98 %	105 %	101 %	96 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U	85 %	82 %	14 U	14 U	14 U
Aroclor-1221		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1232		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1242		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1248		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1254		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1260		14 U	93 %	91 %	14 U	14 U	14 U

	Cust ID:	J030R2	J030P3	J030P4	J030P5	J030P6	J030P7
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	92 %	45 %	88 %	87 %	87 %	92 %
	Decachlorobiphenyl	98 %	52 %	89 %	92 %	93 %	99 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U	15 U	14 U	14 U	14 U	14 U
Aroclor-1221		14 U	15 U	14 U	14 U	14 U	14 U
Aroclor-1232		14 U	15 U	14 U	14 U	14 U	14 U
Aroclor-1242		14 U	15 U	14 U	14 U	14 U	14 U
Aroclor-1248		14 U	15 U	14 U	14 U	14 U	14 U
Aroclor-1254		14 U	15 U	14 U	14 U	14 U	14 U
Aroclor-1260		14 U	15 U	14 U	14 U	17	14 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

R 6/27/05

000013

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 05/02/05 09:54

RFW Batch Number: 0504L251 Client: TNUHANFORD B04-002 H3132 Work Order: 11343606001 Page: 2

	Cust ID:	J030R3	J030R4	J030R5	J030R6	J030R7	J030R8
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	86 %	86 %	79 %	85 %	81 %	92 %
	Decachlorobiphenyl	90 %	95 %	101 %	94 %	86 %	104 %
Aroclor-1016		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1221		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1232		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1242		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1248		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1254		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1260		14 U	14 U	14 U	14 U	14 U	14 U

	Cust ID:	J030R9	PBLKJS	PBLKJS BS
Sample Information	RFW#:	017	05LE0306-MB1	05LE0306-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	75 %	94 %	92 %
	Decachlorobiphenyl	91 %	99 %	98 %
Aroclor-1016		13 U	13 U	88 %
Aroclor-1221		13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U
Aroclor-1260		13 U	13 U	91 %

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

6/27/05

000014

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 05/02/05 13:30

RFW Batch Number: 0504L251 Client: TNUHANFORD B04-002 H3132 Work Order: 11343606001 Page: 1

	Cust ID:	J030P8		J030P8		J030P8		J030P9		J030R0		J030R1	
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:	Decachlorobiphenyl	93	%	77	%	91	%	96	%	88	%	89	%
	Tetrachloro-m-xylene	86	%	68	%	80	%	97	%	93	%	83	%
			fl		fl		fl		fl		fl		fl
Alpha-BHC		1.7	U	76	%	93	%	1.7	U	1.7	U	1.7	U
Beta-BHC		1.7	U	72	%	88	%	1.7	U	1.7	U	1.7	U
Delta-BHC		1.7	U	80	%	101	%	1.7	U	1.7	U	1.7	U
gamma-BHC (Lindane)		1.7	U	76	%	93	%	1.7	U	1.7	U	1.7	U
Heptachlor		1.7	U	73	%	88	%	1.7	U	1.7	U	1.7	U
Aldrin		1.7	U	74	%	89	%	1.7	U	1.7	U	1.7	U
Heptachlor epoxide		1.7	U	74	%	93	%	1.7	U	1.7	U	1.7	U
Endosulfan I		1.7	U	76	%	95	%	1.7	U	1.7	U	1.7	U
Dieldrin		1.7	U	81	%	101	%	1.7	U	1.7	U	1.7	U
4,4'-DDE		3.5	U	82	%	104	%	3.5	U	3.4	U	3.4	U
Endrin		3.5	U	80	%	102	%	3.5	U	3.4	U	3.4	U
Endosulfan II		3.5	U	78	%	97	%	3.5	U	3.4	U	3.4	U
4,4'-DDD		3.5	U	79	%	98	%	3.5	U	3.4	U	3.4	U
Endosulfan sulfate		3.5	U	79	%	99	%	3.5	U	3.4	U	3.4	U
4,4'-DDT		3.5	U	74	%	92	%	3.5	U	3.4	U	3.4	U
Methoxychlor		17	U	68	%	84	%	17	U	17	U	17	U
Endrin ketone		3.5	U	80	%	98	%	3.5	U	3.4	U	3.4	U
Endrin aldehyde		3.5	U	76	%	93	%	3.5	U	3.4	U	3.4	U
alpha-Chlordane		1.7	U	74	%	92	%	1.7	U	1.7	U	1.7	U
gamma-Chlordane		1.7	U	75	%	93	%	1.7	U	1.7	U	1.7	U
Toxaphene		170	UJ	170	U	170	U	170	UJ	170	UJ	170	UJ

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

0000015

6/27/05

7/5/05

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 05/02/05 13:30

RFW Batch Number: 0504L251 Client: TNUHANFORD B04-002 H3132 Work Order: 11343606001 Page: 2

	Cust ID:	J030R2	J030P3	J030P4	J030P5	J030P6	J030P7
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:	Decachlorobiphenyl	91 %	44 %	90 %	92 %	94 %	95 %
	Tetrachloro-m-xylene	82 %	39 %	87 %	82 %	93 %	82 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
Beta-BHC		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
Delta-BHC		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
gamma-BHC (Lindane)		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
Heptachlor		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
Aldrin		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
Heptachlor epoxide		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
Endosulfan I		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
Dieldrin		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
4,4'-DDE		3.5 U	3.8 U	3.4 U	3.5 U	3.6 U	3.5 U
Endrin		3.5 U	3.8 U	3.4 U	3.5 U	3.6 U	3.5 U
Endosulfan II		3.5 U	3.8 U	3.4 U	3.5 U	3.6 U	3.5 U
4,4'-DDD		3.5 U	3.8 U	3.4 U	3.5 U	3.6 U	3.5 U
Endosulfan sulfate		3.5 U	3.8 U	3.4 U	3.5 U	3.6 U	3.5 U
4,4'-DDT		3.5 U	3.8 U	3.4 U	3.5 U	3.6 U	3.5 U
Methoxychlor		17 U	19 U	17 U	18 U	18 U	18 U
Endrin ketone		3.5 U	3.8 U	3.4 U	3.5 U	3.6 U	3.5 U
Endrin aldehyde		3.5 U	3.8 U	3.4 U	3.5 U	3.6 U	3.5 U
alpha-Chlordane		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
gamma-Chlordane		1.7 U	1.9 U	1.7 U	1.8 U	1.8 U	1.8 U
Toxaphene		170 UJ	190 UJ	170 UJ	180 UJ	180 UJ	180 UJ

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

000016

6/27/05

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

RFW Batch Number: 0504L251 Client: TNUHANFORD B04-002 H3132 Work Order: 11343606001 Page: 3 Report Date: 05/02/05 13:30

	Cust ID:	J030R3	J030R4	J030R5	J030R6	J030R7	J030R8
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:	Decachlorobiphenyl	81 %	94 %	90 %	88 %	86 %	103 %
	Tetrachloro-m-xylene	76 %	75 %	73 %	76 %	88 %	86 %
Alpha-BHC		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
Beta-BHC		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
Delta-BHC		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
Aldrin		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor epoxide		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan I		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
Dieldrin		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
4,4'-DDE		3.5 U	3.6 U	3.4 U	3.5 U	3.5 U	3.5 U
Endrin		3.5 U	3.6 U	3.4 U	3.5 U	3.5 U	3.5 U
Endosulfan II		3.5 U	3.6 U	3.4 U	3.5 U	3.5 U	3.5 U
4,4'-DDD		3.5 U	3.6 U	3.4 U	3.5 U	3.5 U	3.5 U
Endosulfan sulfate		3.5 U	3.6 U	3.4 U	3.5 U	3.5 U	3.5 U
4,4'-DDT		3.5 U	3.6 U	3.4 U	3.5 U	3.5 U	3.5 U
Methoxychlor		17 U	18 U	17 U	17 U	17 U	17 U
Endrin ketone		3.5 U	3.6 U	3.4 U	3.5 U	3.5 U	3.5 U
Endrin aldehyde		3.5 U	3.6 U	3.4 U	3.5 U	3.5 U	3.5 U
alpha-Chlordane		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-Chlordane		1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U
Toxaphene		170 UJ	180 UJ	170 UJ	170 UJ	170 UJ	170 UJ

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

00017

VR 6/27/05

5/10/05

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

RFW Batch Number: 0504L251 Client: TNUHANFORD B04-002 H3132 Work Order: 11343606001 Page: 4 Report Date: 05/02/05 13:30

	Cust ID:	PBLKJS	PBLKJS BS
Sample Information	RFW#:	05LE0306-MB1	05LE0306-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG

Surrogate:	Decachlorobiphenyl	86	%	82	%
	Tetrachloro-m-xylene	90	%	70	%

==========fl==========fl==========fl==========fl==========fl==========fl==========fl

Alpha-BHC	1.7	U	91	%
Beta-BHC	1.7	U	93	%
Delta-BHC	1.7	U	98	%
gamma-BHC (Lindane)	1.7	U	91	%
Heptachlor	1.7	U	79	%
Aldrin	1.7	U	88	%
Heptachlor epoxide	1.7	U	90	%
Endosulfan I	1.7	U	92	%
Dieldrin	1.7	U	98	%
4,4'-DDE	3.3	U	100	%
Endrin	3.3	U	90	%
Endosulfan II	3.3	U	94	%
4,4'-DDD	3.3	U	95	%
Endosulfan sulfate	3.3	U	92	%
4,4'-DDT	3.3	U	92	%
Methoxychlor	17	U	76	%
Endrin ketone	3.3	U	94	%
Endrin aldehyde	3.3	U	83	%
alpha-Chlordane	1.7	U	91	%
gamma-Chlordane	1.7	U	91	%
Toxaphene	170	U	170	U

000018

VR 6/27/05

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

7/25/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0504-251
SDG/SAF # H3132/B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 04-19-2005

CHLORINATED PESTICIDES

Sixteen (16) soil samples were collected on 04-15-2005.

The samples and their associated QC samples were extracted on 04-20-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 04-21-2005 and 04-22-2005. 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. The samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received Copper-Sulfur cleanups according to Lionville Laboratory SOP's based on SW846 method 3660A.
4. The Method Blank was below the reporting limits for all target compounds.
5. All obtainable surrogate recoveries were within acceptance criteria.
6. All 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. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/23/05
Date

jak\r:\group\data\pest\tnu hanford\0504-251.pes

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

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

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0504L251
SDG/SAF # H3132/B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 04-19-2005

PCB

Seventeen (17) soil samples were collected on 04-15-2005.

The samples and their associated QC samples were extracted on 04-20-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 04-21-2005 and 04-22-2005. 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 Silica Gel cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3630C respectively.

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

5. All obtainable surrogate recoveries were within acceptance criteria.

6. All 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 with the exception of Aroclors analyzed on 4/21/05 at 10:42 and 20:13 on the RTV-CLP column. A copy of the Sample Discrepancy Report (SDR#05GC161) has been enclosed. The data reflected an increase in instrument response, so the ability to identify Aroclor was not impaired.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/23/05
Date

jak\r:\group\data\pest\tnu hanford\0504251.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

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000000002 JK.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 056C161

Initiator: M. McAnally
Date: 5/2/03
Client: TNU Hanford

Batch: 0504L251
Samples: ALL
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix: Soil
Prep Batch: 0526030B

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)

- RT-CLP was high for CCV1. RT-CCP2 was OK. Quantitate AC HITS from RT-CCP2.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

Other Description: None.

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

4. Project Manager Instructions...signature/date: [signature] 5/3/03

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

5. Final Action...signature/date: [signature] 10/03

Other Explanation:

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

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

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

QA-105-A-0801

U3U4L2J1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-030	Page 2 of 4

Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC		SAF No.: B04-002
Air Quality: 21			
Ice Chest No.: GRC 03106 AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4	COA: R126B32000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050178-179		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG D	aG C	aG A	aG B	aG E					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	120mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1					

000023

	Sample No.	Matrix *	Sample Date	Sample Time										
1	J030P8 6	SOIL	4/15/05	1008	✓	✓	✓	✓	✓					
2	J030P9 7	SOIL	4/15/05	1022	✓	✓	✓	✓	✓					
3	J030R0 8	SOIL	4/15/05	1042	✓	✓	✓	✓	✓					
4	J030R1 9	SOIL	4/15/05	1050	✓	✓	✓	✓	✓					
5	J030R2 10	SOIL	4/15/05	1100	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION	Sign/Print Names	Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers/Doug Bowers	4-14-05/1600	RAF 2A 3728	4-14-05/1600		
REF 2A 3728	4/8/05 1000	SJ Gale	4/8/05 1000		
SJ Gale	4/8/05 1000	GRC		FED EX	
FED EX	4/18/05 0925				

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~. Chromium. Cobalt. Copper. ~~Iron~~. Lead. ~~Magnesium~~. Manganese. Molybdenum. Nickel. ~~Potassium~~. Selenium. ~~Silicon~~. Silver. ~~Sodium~~. Vanadium. Zinc}; Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref #2A on 4/18/05

(1) DJD 4-14-05

Matrix *

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-030	Page 1 of 1

Collector: Doug Bowers/Jim Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Price Code: Many	Data Turnaround: Air Quality ☐ 21		
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002
Ice Chest No.: ERC03106 AFS04-010,016,017	Field Logbook No.: EFL 1173-4	COA: R126032000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A050 178-179		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000024

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						

	Sample No.	Matrix *	Sample Date	Sample Time										
6	J030P3 1	SOIL	4/15/05	0900	✓	✓	✓	✓	✓					
7	J030P4 2	SOIL	4/15/05	0922	✓	✓	✓	✓	✓					
8	J030P5 3	SOIL	4/15/05	0934	✓	✓	✓	✓	✓					
9	J030P6 4	SOIL	4/15/05	0946	✓	✓	✓	✓	✓					
10	J030P7 5	SOIL	4/15/05	0956	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Doug Bowers/Doug Bowers — Date/Time: 4-15-05 1600	Received By/Stored In: A 0 F A 3725 — Date/Time: 4-15-05 1600	
Relinquished By/Removed From: REF 2A 3728 — Date/Time: 41805 1000	Received By/Stored In: SJ ALE — Date/Time: 41805 1000	
Relinquished By/Removed From: ERC SJ ALE — Date/Time: 41805 1000	Received By/Stored In: FED EX — Date/Time:	
Relinquished By/Removed From: FED EX — Date/Time: 4/19/05 0925	Received By/Stored In: — Date/Time: 4/19/05 0925	
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

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7470 - (CV)

(1) 4-14-05

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/18/05

Matrix *

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

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

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B04-002-030 | Page 3 of 4

Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC		SAF No.: B04-002
Air Quality: 21			
Ice Chest No.: ERC 03 106; AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4	COA: R126 03 2000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A050 178-179		Bill of Lading/Air Bill No.: JCE 03PC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000025

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	120mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1					

	Sample No.	Matrix *	Sample Date	Sample Time										
11	J030R3 11	SOIL	4/15/05	1117	✓	✓	✓	✓	✓					
12	J030R4 12	SOIL	4/15/05	1127	✓	✓	✓	✓	✓					
13	J030R5 13	SOIL	4/15/05	1133	✓	✓	✓	✓	✓					
14	J030R6 14	SOIL	4/15/05	1147	✓	✓	✓	✓	✓					
15	J030R7 15	SOIL	4/15/05	1210	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers / Doug Bowers	1600 4-15-05	RofZA 3728	4-15-05 1600
RofZA 3728	41805 1000	SJGALES	41805 1000
SJGALES	41805 1000	FED EX	
FED EX	4/19/05 0925		4/19/05 0925

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~. Chromium. Cobalt. Copper. ~~Iron~~. Lead. ~~Magnesium~~. Manganese, Molybdenum. Nickel. ~~Potassium~~. Selenium. ~~Silicon~~. Silver. ~~Sodium~~. Vanadium. Zinc}; Mercury - 7470 - (CV)

(1) DRB 4-14-05

Personnel not available to relinquish samples from 3728 Ref # ZA on 4/18/05

Matrix *

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-030	Page 1 of 1
Collector Doug Bowers/Jim Kiesler	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 126-B-3 @ 100 BC		SAF No. B04-002	Air Quality 21
Ice Chest No. ERC03 106 AFS 04-010, 016, 017	Field Logbook No. EFL 1173-4	COA R126B32000	Method of Shipment FED EX	
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A050178-179		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000026

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
Type of Container	aG	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1	1							
Volume	250mL	120mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1							
Sample No.	Matrix *	Sample Date	Sample Time									
16 J030R8 16	SOIL	4/15/05	1207	✓	✓	✓	✓	✓				
17 J030R9 17	SOIL	4/15/05	1154	✓	✓	✓	NA	✓				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time 4-15-05 1600	Received By/Stored In Ref 1A 3728	Date/Time 4-15-05 1600
Relinquished By/Removed From REF-2A 3728	Date/Time 41805 1000	Received By/Stored In SJ GALE	Date/Time 41805 1000
Relinquished By/Removed From SJ GALE ERE	Date/Time 41805 1000	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From Felder	Date/Time 4/19/05 0925	Received By/Stored In	Date/Time 4/19/05 0925
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

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~ ①, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~ ①, Chromium, Cobalt, Copper, ~~Iron~~ ①, Lead, ~~Magnesium~~ ①, Manganese, Molybdenum, Nickel, ~~Potassium~~ ①, Selenium, ~~Silicon~~ ①, Silver, ~~Sodium~~ ①, Vanadium, Zinc}: Mercury - 7470 - (CV)

① DLD 4-14-05

Personnel not available to relinquish samples from 3728 Ref #2A on 4/18/05

Matrix *

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

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

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

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100BC			DATA PACKAGE: H3132		
VALIDATOR: TLI		LAB: LLI		DATE: 6/24/05	
			SDG: H3132		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J030P8	J030P9	J030R0	J030R1	J030R2	
J030P3	J030P4	J030P5	J030P6	J030P7	
J030R3	J030R4	J030R5	J030R6	J030R7	
J030R8	J030R9				

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: FB – PCB only

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: toxaphene NU MS/MSD/LCS – J all

No PAS

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no toxaphen MS/MSD — Jall

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: toxaphene + methoxychlor over

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: 27 June 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100BC Burial Grounds - Soil - Full Protocol - Waste Site 126-B-3
Subject: Semivolatile - Data Package No. H3132-LLI (SDG No. H3132)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3132-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J030P8	4/15/05	Soil	C	Semivolatiles by 8270C
J030P9	4/15/05	Soil	C	Semivolatiles by 8270C
J030R0	4/15/05	Soil	C	Semivolatiles by 8270C
J030R1	4/15/05	Soil	C	Semivolatiles by 8270C
J030R2	4/15/05	Soil	C	Semivolatiles by 8270C
J030P3	4/15/05	Soil	C	Semivolatiles by 8270C
J030P4	4/15/05	Soil	C	Semivolatiles by 8270C
J030P5	4/15/05	Soil	C	Semivolatiles by 8270C
J030P6	4/15/05	Soil	C	Semivolatiles by 8270C
J030P7	4/15/05	Soil	C	Semivolatiles by 8270C
J030R3	4/15/05	Soil	C	Semivolatiles by 8270C
J030R4	4/15/05	Soil	C	Semivolatiles by 8270C
J030R5	4/15/05	Soil	C	Semivolatiles by 8270C
J030R6	4/15/05	Soil	C	Semivolatiles by 8270C
J030R7	4/15/05	Soil	C	Semivolatiles by 8270C
J030R8	4/15/05	Soil	C	Semivolatiles by 8270C
J030R9	4/15/05	Soil	C	Semivolatiles by 8270C

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-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 di-n-butylphthalate result in samples J030R4, J030R9, J030P3, J030P6, J030P7, J030P8 and J030R1 were qualified as undetected, raised to the RDL and flagged "U".

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

All other method blank results were acceptable.

Field Blanks

One field blank (J030R9) was submitted for analysis. Diethylphthalate was detected in the field blank. Under the BHI statement of work, no qualification is required.

- **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 matrix spike (93%), matrix spike duplicate (90%) and LCS (96%) recoveries outside QC limits, the n-nitrosodiphenylamine results in samples J030P3 and J030R4 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 (68%), all pentachlorophenol, 2,4,6-trichlorophenol and 2,4,5-trichlorophenol results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J030R7/J030R8) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data package No. H3132-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 di-n-butylphthalate result in samples J030R4, J030R9, J030P3, J030P6, J030P7, J030P8 and J030R1 were qualified as undetected, raised to the RDL and flagged "U".

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

Due to matrix spike (93%), matrix spike duplicate (90%) and LCS (96%) recoveries outside QC limits, the n-nitrosodiphenylamine results in samples J030P3 and J030R4 were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (68%), all pentachlorophenol, 2,4,6-trichlorophenol and 2,4,5-trichlorophenol results were qualified as estimates and flagged "J".

One-hundred thirty-six analytes were reported above the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H3132	REVIEWER: TLI	Project: 100 BC Burial Grounds	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Di-n-butylphthalate	U at RQL	J030R4, J030R9 J030P3, J030P6 J030P7, J030P8 J030R1	Method blank
bis(2-Ethylhexyl)phthalate	U at RQL	All	Method blank
n-Nitrosodiphenylamine	J	J030P3, J030R4	MS, MSD and LCS recovery
Pentachlorophenol 2,4,6-trichlorophenol 2,4,5-trichlorophenol	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: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case:	SDG: H3132																		
Sample Number		J030P8		J030P9		J030R0		J030R1		J030R2		J030P3		J030P4		J030P5			
Remarks																			
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05			
Extraction Date		4/21/05		4/21/05		4/21/05		4/21/05		4/22/05		4/22/05		4/22/05		4/22/05			
Analysis Date		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05			
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
bis(2-Chloroethyl)ether	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2-Chlorophenol	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
1,3-Dichlorobenzene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
1,4-Dichlorobenzene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
1,2-Dichlorobenzene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2-Methylphenol	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2,2'-oxybis(1-chloropropane)	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
3 and/or 4-Methylphenol	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
N-Nitroso-di-n-propylamine	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Hexachloroethane	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Nitrobenzene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Isophorone	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2-Nitrophenol	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2,4-Dimethylphenol	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
bis(2-Chloroethoxy)methane	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2,4-Dichlorophenol	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
1,2,4-Trichlorobenzene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Naphthalene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
4-Chloroaniline	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Hexachlorobutadiene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
4-Chloro-3-methylphenol	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2-Methylnaphthalene	660	350	U	350	U	340	U	25		350	U	390		340	U	350	U		
Hexachlorocyclopentadiene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2,4,6-Trichlorophenol	660	350	UJ	350	UJ	340	UJ	340	UJ	350	UJ	380	UJ	340	UJ	350	UJ		
2,4,5-Trichlorophenol*	660	860	UJ	860	UJ	860	UJ	860	UJ	870	UJ	940	UJ	860	UJ	880	UJ		
2-Chloronaphthalene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2-Nitroaniline*	660	860	U	860	U	860	U	860	U	870	U	940	U	860	U	880	U		
Dimethylphthalate	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Acenaphthylene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2,6-Dinitrotoluene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

000011

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case:	SDG: H3132																		
Sample Number		J030P8		J030P9		J030R0		J030R1		J030R2		J030P3		J030P4		J030P5			
Remarks																			
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05			
Extraction Date		4/21/05		4/21/05		4/21/05		4/21/05		4/22/05		4/22/05		4/22/05		4/22/05			
Analysis Date		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05		4/22/05			
Semivolatile (8270C)/8015B	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	860	U	860	U	860	U	860	U	870	U	940	U	860	U	880	U		
Acenaphthene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
2,4-Dinitrophenol*	660	860	U	860	U	860	U	860	U	870	U	940	U	860	U	880	U		
4-Nitrophenol*	660	860	U	860	U	860	U	860	U	870	U	940	U	860	U	880	U		
Dibenzofuran	660	350	U	350	U	340	U	340	U	350	U	99		340	U	350	U		
2,4-Dinitrotoluene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Diethylphthalate	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
4-Chlorophenyl-phenyl ether	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Fluorene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
4-Nitroaniline*	660	860	U	860	U	860	U	860	U	870	U	940	U	860	U	880	U		
4,6-Dinitro-2-methylphenol*	660	860	U	860	U	860	U	860	U	870	U	940	U	860	U	880	U		
N-Nitrosodiphenylamine	660	350	U	350	U	340	U	340	U	350	U	100	J	340	U	350	U		
4-Bromophenyl-phenyl ether	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Hexachlorobenzene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Pentachlorophenol*	660	860	UJ	860	UJ	860	UJ	860	UJ	870	UJ	940	UJ	860	UJ	880	UJ		
Phenanthrene	660	350	U	350	U	340	U	340	U	350	U	200		340	U	350	U		
Anthracene	660	350	U	350	U	340	U	340	U	350	U	36		340	U	350	U		
Carbazole	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Di-n-butylphthalate	660	660	U	350	U	340	U	660	U	350	U	660	U	340	U	350	U		
Fluoranthene	660	350	U	350	U	340	U	340	U	350	U	120		340	U	350	U		
Pyrene	660	350	U	350	U	340	U	340	U	350	U	86		340	U	350	U		
Butylbenzylphthalate	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
3,3'-Dichlorobenzidine	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Benzo(a)anthracene	660	350	U	350	U	340	U	340	U	350	U	53		340	U	350	U		
Chrysene	660	350	U	350	U	340	U	340	U	350	U	84		340	U	350	U		
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U		
Di-n-octylphthalate	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Benzo(b)fluoranthene	660	350	U	350	U	340	U	340	U	350	U	34		340	U	350	U		
Benzo(k)fluoranthene	660	350	U	350	U	340	U	340	U	350	U	21		340	U	350	U		
Benzo(a)pyrene	660	350	U	350	U	340	U	340	U	350	U	28		340	U	350	U		
Indeno(1,2,3-cd)pyrene	660	350	U	350	U	340	U	340	U	350	U	24		340	U	350	U		
Dibenz(a,h)anthracene	660	350	U	350	U	340	U	340	U	350	U	380	U	340	U	350	U		
Benzo(g,h,i)perylene	660	350	U	350	U	340	U	340	U	350	U	26		340	U	350	U		

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case:	SDG: H3132																		
Sample Number		J030P6		J030P7		J030R3		J030R4		J030R5		J030R6		J030R7		J030R8		J030R9	
Remarks																Duplicate		E. Blank	
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05	
Extraction Date		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05	
Analysis Date		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05	
Semivolatile (8270C)/8015B	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
bis(2-Chloroethyl)ether	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2-Chlorophenol	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
1,3-Dichlorobenzene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
1,4-Dichlorobenzene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
1,2-Dichlorobenzene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2-Methylphenol	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2,2'-oxybis(1-chloropropane)	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
3 and/or 4-Methylphenol	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
N-Nitroso-di-n-propylamine	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Hexachloroethane	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Nitrobenzene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Isophorone	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2-Nitrophenol	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2,4-Dimethylphenol	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
bis(2-Chloroethoxy)methane	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2,4-Dichlorophenol	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
1,2,4-Trichlorobenzene	660	360	U	350	U	350	U	52		340	U	350	U	350	U	350	U	330	U
Naphthalene	660	360	U	350	U	350	U	60		340	U	33		350	U	350	U	330	U
4-Chloroaniline	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Hexachlorobutadiene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
4-Chloro-3-methylphenol	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2-Methylnaphthalene	660	360	U	350	U	350	U	77		34		69		350	U	350	U	330	U
Hexachlorocyclopentadiene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2,4,6-Trichlorophenol	660	360	UJ	350	UJ	350	UJ	360	UJ	340	UJ	350	UJ	350	UJ	350	UJ	330	UJ
2,4,5-Trichlorophenol*	660	900	UJ	880	UJ	870	UJ	890	UJ	860	UJ	860	UJ	870	UJ	870	UJ	830	UJ
2-Chloronaphthalene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2-Nitroaniline*	660	900	U	880	U	870	U	890	U	860	U	860	U	870	U	870	U	830	U
Dimethylphthalate	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Acenaphthylene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
2,6-Dinitrotoluene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	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

000013

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case:	SDG: H3132																		
Sample Number		J030P6		J030P7		J030R3		J030R4		J030R5		J030R6		J030R7		J030R8		J030R9	
Remarks																Duplicate		E. Blank	
Sample Date		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05		4/15/05	
Extraction Date		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05		4/21/05	
Analysis Date		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05		4/24/05	
Semivolatile (8270C)/8015B	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	900	U	880	U	870	U	890	U	860	U	860	U	870	U	870	U	830	U
Acenaphthene	660	360	U	350	U	350	U	55		340	U	350	U	350	U	350	U	330	U
2,4-Dinitrophenol*	660	900	U	880	U	870	U	890	U	860	U	860	U	870	U	870	U	830	U
4-Nitrophenol*	660	900	U	880	U	870	U	890	U	860	U	860	U	870	U	870	U	830	U
Dibenzofuran	660	360	U	350	U	350	U	43		340	U	350	U	350	U	350	U	330	U
2,4-Dinitrotoluene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Diethylphthalate	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	41	
4-Chlorophenyl-phenyl ether	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Fluorene	660	360	U	350	U	350	U	71		340	U	350	U	350	U	350	U	330	U
4-Nitroaniline*	660	900	U	880	U	870	U	890	U	860	U	860	U	870	U	870	U	830	U
4,6-Dinitro-2-methylphenol*	660	900	U	880	U	870	U	890	U	860	U	860	U	870	U	870	U	830	U
N-Nitrosodiphenylamine	660	360	U	350	U	350	U	20	J	340	U	350	U	350	U	350	U	330	U
4-Bromophenyl-phenyl ether	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Hexachlorobenzene	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Pentachlorophenol*	660	900	UJ	880	UJ	870	UJ	890	UJ	860	UJ	860	UJ	870	UJ	870	UJ	830	UJ
Phenanthrene	660	360	U	19		350	U	620		33		52		350	U	350	U	330	U
Anthracene	660	360	U	350	U	350	U	150		340	U	350	U	350	U	350	U	330	U
Carbazole	660	360	U	350	U	350	U	75		340	U	350	U	350	U	350	U	330	U
Di-n-butylphthalate	660	660	U	660	U	350	U	660	U	340	U	350	U	350	U	350	U	660	U
Fluoranthene	660	360	U	350	U	350	U	730		20		31		350	U	350	U	330	U
Pyrene	660	360	U	350	U	350	U	700		19		27		350	U	350	U	330	U
Butylbenzylphthalate	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
3,3'-Dichlorobenzidine	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Benzo(a)anthracene	660	360	U	350	U	350	U	350		340	U	17		350	U	350	U	330	U
Chrysene	660	360	U	350	U	350	U	370		18		24		350	U	350	U	330	U
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U
Di-n-octylphthalate	660	360	U	350	U	350	U	360	U	340	U	350	U	350	U	350	U	330	U
Benzo(b)fluoranthene	660	360	U	350	U	350	U	190		340	U	350	U	350	U	350	U	330	U
Benzo(k)fluoranthene	660	360	U	350	U	350	U	240		340	U	350	U	350	U	350	U	330	U
Benzo(a)pyrene	660	360	U	350	U	350	U	270		340	U	350	U	350	U	350	U	330	U
Indeno(1,2,3-cd)pyrene	660	360	U	350	U	350	U	160		340	U	350	U	350	U	350	U	330	U
Dibenz(a,h)anthracene	660	360	U	350	U	350	U	88		340	U	350	U	350	U	350	U	330	U
Benzo(g,h,i)perylene	660	360	U	350	U	350	U	170		340	U	350	U	350	U	350	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

Lionville Laboratory, Inc.
Semivolatiles by GC/MS, HSL List

Report Date: 04/29/05 14:43

RFW Batch Number: **0504L251** Client: **TNUHANFORD B04-002 H3132** Work Order: 11343606001 Page: 1a

	Cust ID:	J030P8		J030P8		J030P8		J030P9		J030R0		J030R1	
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	70	%	82	%	71	%	61	%	69	%	78	%
	2-Fluorobiphenyl	73	%	81	%	75	%	65	%	75	%	83	%
	Terphenyl-d14	91	%	92	%	94	%	93	%	100	%	99	%
	Phenol-d5	73	%	82	%	76	%	67	%	76	%	84	%
	2-Fluorophenol	70	%	83	%	73	%	68	%	74	%	84	%
	2,4,6-Tribromophenol	70	%	84	%	85	%	53	%	75	%	76	%
			fl		fl		fl		fl		fl		fl
Phenol		350	U	78	%	77	%	350	U	340	U	340	U
bis(2-Chloroethyl)ether		350	U	350	U	350	U	350	U	340	U	340	U
2-Chlorophenol		350	U	83	%	79	%	350	U	340	U	340	U
1,3-Dichlorobenzene		350	U	350	U	350	U	350	U	340	U	340	U
1,4-Dichlorobenzene		350	U	84	%	77	%	350	U	340	U	340	U
1,2-Dichlorobenzene		350	U	350	U	350	U	350	U	340	U	340	U
2-Methylphenol		350	U	350	U	350	U	350	U	340	U	340	U
2,2'-oxybis(1-Chloropropane)		350	U	350	U	350	U	350	U	340	U	340	U
4-Methylphenol		350	U	350	U	350	U	350	U	340	U	340	U
N-Nitroso-di-n-propylamine		350	U	94	%	89	%	350	U	340	U	340	U
Hexachloroethane		350	U	350	U	350	U	350	U	340	U	340	U
Nitrobenzene		350	U	350	U	350	U	350	U	340	U	340	U
Isophorone		350	U	350	U	350	U	350	U	340	U	340	U
2-Nitrophenol		350	U	350	U	350	U	350	U	340	U	340	U
2,4-Dimethylphenol		350	U	350	U	350	U	350	U	340	U	340	U
bis(2-Chloroethoxy)methane		350	U	350	U	350	U	350	U	340	U	340	U
2,4-Dichlorophenol		350	U	350	U	350	U	350	U	340	U	340	U
1,2,4-Trichlorobenzene		350	U	87	%	80	%	350	U	340	U	340	U
Naphthalene		350	U	350	U	20	J	350	U	340	U	340	U
4-Chloroaniline		350	U	350	U	350	U	350	U	340	U	340	U
Hexachlorobutadiene		350	U	350	U	350	U	350	U	340	U	340	U
4-Chloro-3-methylphenol		350	U	85	%	85	%	350	U	340	U	340	U
2-Methylnaphthalene		350	U	350	U	38	J	350	U	340	U	25	J
Hexachlorocyclopentadiene		350	U	350	U	350	U	350	U	340	U	340	U
2,4,6-Trichlorophenol		350	U J	350	U	350	U	350	U J	340	U J	340	U J
2,4,5-Trichlorophenol		860	U J	860	U	860	U	860	U J	860	U J	860	U J

*= Outside of EPA CLP QC limits.

000014A

6/27/05

RFW Batch Number: 0504L251 Client: TNUHANFORD B04-002 H3132 Work Order: 11343606001 Page: 1b

Cust ID:	J030P8		J030P8		J030P8		J030P9		J030R0		J030R1	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	350	U	350	U	350	U	350	U	340	U	340	U
2-Nitroaniline	860	U	860	U	860	U	860	U	860	U	860	U
Dimethylphthalate	350	U	350	U	350	U	350	U	340	U	340	U
Acenaphthylene	350	U	350	U	350	U	350	U	340	U	340	U
2,6-Dinitrotoluene	350	U	19	J	20	J	350	U	340	U	340	U
3-Nitroaniline	860	U	860	U	860	U	860	U	860	U	860	U
Acenaphthene	350	U	87	%	86	%	350	U	340	U	340	U
2,4-Dinitrophenol	860	U	860	U	860	U	860	U	860	U	860	U
4-Nitrophenol	860	U	76	%	76	%	860	U	860	U	860	U
Dibenzofuran	350	U	350	U	350	U	350	U	340	U	340	U
2,4-Dinitrotoluene	350	U	93 *	%	90 *	%	350	U	340	U	340	U
Diethylphthalate	350	U	350	U	350	U	350	U	340	U	340	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	350	U	340	U	340	U
Fluorene	350	U	350	U	350	U	350	U	340	U	340	U
4-Nitroaniline	860	U	860	U	860	U	860	U	860	U	860	U
4,6-Dinitro-2-methylphenol	860	U	860	U	860	U	860	U	860	U	860	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	350	U	340	U	340	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	350	U	340	U	340	U
Hexachlorobenzene	350	U	350	U	350	U	350	U	340	U	340	U
Pentachlorophenol	860	UJ	29	%	59	%	860	UJ	860	UJ	860	UJ
Phenanthrene	350	U	350	U	350	U	350	U	340	U	340	U
Anthracene	350	U	350	U	350	U	350	U	340	U	340	U
Carbazole	350	U	350	U	350	U	350	U	340	U	340	U
Di-n-butylphthalate	660 ~~45~~ K 6/27 ~~JB~~ U		38	JB	25	JB	350	U	340	U	660 ~~18~~ K 6/27 ~~JB~~ U	
Fluoranthene	350	U	350	U	350	U	350	U	340	U	340	U
Pyrene	350	U	95	%	96	%	350	U	340	U	340	U
Butylbenzylphthalate	350	U	350	U	350	U	350	U	340	U	340	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	350	U	340	U	340	U
Benzo(a)anthracene	350	U	350	U	350	U	350	U	340	U	340	U
Chrysene	350	U	350	U	350	U	350	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	660 ~~52~~ K 6/27 ~~JB~~ U		48	JB	54	JB	660 ~~26~~ K 6/27 ~~JB~~ U		660 ~~24~~ K 6/27 ~~JB~~ U		660 ~~66~~ K 6/27 ~~JB~~ U	
Di-n-octyl phthalate	350	U	350	U	350	U	350	U	340	U	340	U
Benzo(b)fluoranthene	350	U	350	U	350	U	350	U	340	U	340	U
Benzo(k)fluoranthene	350	U	350	U	350	U	350	U	340	U	340	U
Benzo(a)pyrene	350	U	350	U	350	U	350	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	350	U	340	U	340	U
Dibenz(a,h)anthracene	350	U	350	U	350	U	350	U	340	U	340	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	350	U	340	U	340	U

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

R 6/27/05

000014B

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 04/29/05 14:43

RFW Batch Number: **0504L251** Client: **TNUHANFORD B04-002 H3132** Work Order: 11343606001 Page: 2a

	Cust ID:	J030R2		J030P3		J030P4		J030P5		J030P6		J030P7	
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	81	%	81	%	76	%	72	%	85	%	74	%
	2-Fluorobiphenyl	84	%	82	%	78	%	75	%	90	%	77	%
	Terphenyl-d14	107	%	91	%	93	%	87	%	114	%	96	%
	Phenol-d5	86	%	88	%	82	%	78	%	91	%	80	%
	2-Fluorophenol	85	%	81	%	80	%	76	%	85	%	75	%
	2,4,6-Tribromophenol	88	%	94	%	76	%	78	%	78	%	85	%
			fl		fl		fl		fl		fl		fl
Phenol		350	U	380	U	340	U	350	U	360	U	350	U
bis(2-Chloroethyl)ether		350	U	380	U	340	U	350	U	360	U	350	U
2-Chlorophenol		350	U	380	U	340	U	350	U	360	U	350	U
1,3-Dichlorobenzene		350	U	380	U	340	U	350	U	360	U	350	U
1,4-Dichlorobenzene		350	U	380	U	340	U	350	U	360	U	350	U
1,2-Dichlorobenzene		350	U	380	U	340	U	350	U	360	U	350	U
2-Methylphenol		350	U	380	U	340	U	350	U	360	U	350	U
2,2'-oxybis(1-Chloropropane)		350	U	380	U	340	U	350	U	360	U	350	U
4-Methylphenol		350	U	380	U	340	U	350	U	360	U	350	U
N-Nitroso-di-n-propylamine		350	U	380	U	340	U	350	U	360	U	350	U
Hexachloroethane		350	U	380	U	340	U	350	U	360	U	350	U
Nitrobenzene		350	U	380	U	340	U	350	U	360	U	350	U
Isophorone		350	U	380	U	340	U	350	U	360	U	350	U
2-Nitrophenol		350	U	380	U	340	U	350	U	360	U	350	U
2,4-Dimethylphenol		350	U	380	U	340	U	350	U	360	U	350	U
bis(2-Chloroethoxy)methane		350	U	380	U	340	U	350	U	360	U	350	U
2,4-Dichlorophenol		350	U	380	U	340	U	350	U	360	U	350	U
1,2,4-Trichlorobenzene		350	U	380	U	340	U	350	U	360	U	350	U
Naphthalene		350	U	120	J	340	U	350	U	360	U	350	U
4-Chloroaniline		350	U	380	U	340	U	350	U	360	U	350	U
Hexachlorobutadiene		350	U	380	U	340	U	350	U	360	U	350	U
4-Chloro-3-methylphenol		350	U	380	U	340	U	350	U	360	U	350	U
2-Methylnaphthalene		350	U	390		340	U	350	U	360	U	350	U
Hexachlorocyclopentadiene		350	U	380	U	340	U	350	U	360	U	350	U
2,4,6-Trichlorophenol		350	U J	380	U J	340	U J	350	U J	360	U J	350	U J
2,4,5-Trichlorophenol		870	U J	940	U J	860	U J	880	U J	900	U J	880	U J

*= Outside of EPA CLP QC limits.

000014C

4/27/05

RFW Batch Number: 0504L251 Client: TNUHANFORD B04-002 H3132 Work Order: 11343606001 Page: 2b

Cust ID:	J030R2		J030P3		J030P4		J030P5		J030P6		J030P7	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	350	U	380	U	340	U	350	U	360	U	350	U
2-Nitroaniline	870	U	940	U	860	U	880	U	900	U	880	U
Dimethylphthalate	350	U	380	U	340	U	350	U	360	U	350	U
Acenaphthylene	350	U	380	U	340	U	350	U	360	U	350	U
2,6-Dinitrotoluene	350	U	380	U	340	U	350	U	360	U	350	U
3-Nitroaniline	870	U	940	U	860	U	880	U	900	U	880	U
Acenaphthene	350	U	380	U	340	U	350	U	360	U	350	U
2,4-Dinitrophenol	870	U	940	U	860	U	880	U	900	U	880	U
4-Nitrophenol	870	U	940	U	860	U	880	U	900	U	880	U
Dibenzofuran	350	U	99	J	340	U	350	U	360	U	350	U
2,4-Dinitrotoluene	350	U	380	U	340	U	350	U	360	U	350	U
Diethylphthalate	350	U	380	U	340	U	350	U	360	U	350	U
4-Chlorophenyl-phenylether	350	U	380	U	340	U	350	U	360	U	350	U
Fluorene	350	U	380	U	340	U	350	U	360	U	350	U
4-Nitroaniline	870	U	940	U	860	U	880	U	900	U	880	U
4,6-Dinitro-2-methylphenol	870	U	940	U	860	U	880	U	900	U	880	U
N-Nitrosodiphenylamine (1)	350	U	100	J	340	U	350	U	360	U	350	U
4-Bromophenyl-phenylether	350	U	380	U	340	U	350	U	360	U	350	U
Hexachlorobenzene	350	U	380	U	340	U	350	U	360	U	350	U
Pentachlorophenol	870	UJ	940	UJ	860	UJ	880	UJ	900	UJ	880	UJ
Phenanthrene	350	U	200	J	340	U	350	U	360	U	19	J
Anthracene	350	U	36	J	340	U	350	U	360	U	350	U
Carbazole	350	U	380	U	340	U	350	U	360	U	350	U
Di-n-butylphthalate	350	U	660 ~~21~~ K 6/27/06 ~~JB~~ U		340	U	350	U	660 ~~26~~ K 6/27/06 ~~JB~~ U		660 ~~32~~ K 6/27/06 ~~JB~~ U	
Fluoranthene	350	U	120	J	340	U	350	U	360	U	350	U
Pyrene	350	U	86	J	340	U	350	U	360	U	350	U
Butylbenzylphthalate	350	U	380	U	340	U	350	U	360	U	350	U
3,3'-Dichlorobenzidine	350	U	380	U	340	U	350	U	360	U	350	U
Benzo(a)anthracene	350	U	53	J	340	U	350	U	360	U	350	U
Chrysene	350	U	84	J	340	U	350	U	360	U	350	U
bis(2-Ethylhexyl)phthalate	660 ~~68~~ K 6/27/06 ~~JB~~ U		660 ~~52~~ K 6/27/06 ~~JB~~ U		660 ~~47~~ K 6/27/06 ~~JB~~ U		660 ~~25~~ K 6/27/06 ~~JB~~ U		660 ~~66~~ K 6/27/06 ~~JB~~ U		660 ~~53~~ K 6/27/06 ~~JB~~ U	
Di-n-octyl phthalate	350	U	380	U	340	U	350	U	360	U	350	U
Benzo(b)fluoranthene	350	U	34	J	340	U	350	U	360	U	350	U
Benzo(k)fluoranthene	350	U	21	J	340	U	350	U	360	U	350	U
Benzo(a)pyrene	350	U	28	J	340	U	350	U	360	U	350	U
Indeno(1,2,3-cd)pyrene	350	U	24	J	340	U	350	U	360	U	350	U
Dibenz(a,h)anthracene	350	U	380	U	340	U	350	U	360	U	350	U
Benzo(g,h,i)perylene	350	U	26	J	340	U	350	U	360	U	350	U

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

K 6/22/06

000014

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 04/29/05 14:43

RFW Batch Number: **0504L251** Client: **TNUHANFORD B04-002 H3132** Work Order: 11343606001 Page: 3a

	Cust ID:	J030R3		J030R4		J030R5		J030R6		J030R7		J030R8	
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	76	%	80	%	72	%	77	%	64	%	73	%
	2-Fluorobiphenyl	77	%	82	%	72	%	78	%	67	%	73	%
	Terphenyl-d14	102	%	106	%	89	%	96	%	95	%	96	%
	Phenol-d5	80	%	85	%	76	%	82	%	70	%	80	%
	2-Fluorophenol	78	%	78	%	71	%	74	%	67	%	76	%
	2,4,6-Tribromophenol	82	%	94	%	72	%	86	%	65	%	76	%
			fl		fl		fl		fl		fl		fl
Phenol		350	U	360	U	340	U	350	U	350	U	350	U
bis(2-Chloroethyl)ether		350	U	360	U	340	U	350	U	350	U	350	U
2-Chlorophenol		350	U	360	U	340	U	350	U	350	U	350	U
1,3-Dichlorobenzene		350	U	360	U	340	U	350	U	350	U	350	U
1,4-Dichlorobenzene		350	U	360	U	340	U	350	U	350	U	350	U
1,2-Dichlorobenzene		350	U	360	U	340	U	350	U	350	U	350	U
2-Methylphenol		350	U	360	U	340	U	350	U	350	U	350	U
2,2'-oxybis(1-Chloropropane)		350	U	360	U	340	U	350	U	350	U	350	U
4-Methylphenol		350	U	360	U	340	U	350	U	350	U	350	U
N-Nitroso-di-n-propylamine		350	U	360	U	340	U	350	U	350	U	350	U
Hexachloroethane		350	U	360	U	340	U	350	U	350	U	350	U
Nitrobenzene		350	U	360	U	340	U	350	U	350	U	350	U
Isophorone		350	U	360	U	340	U	350	U	350	U	350	U
2-Nitrophenol		350	U	360	U	340	U	350	U	350	U	350	U
2,4-Dimethylphenol		350	U	360	U	340	U	350	U	350	U	350	U
bis(2-Chloroethoxy)methane		350	U	360	U	340	U	350	U	350	U	350	U
2,4-Dichlorophenol		350	U	360	U	340	U	350	U	350	U	350	U
1,2,4-Trichlorobenzene		350	U	52	J	340	U	350	U	350	U	350	U
Naphthalene		350	U	60	J	340	U	33	J	350	U	350	U
4-Chloroaniline		350	U	360	U	340	U	350	U	350	U	350	U
Hexachlorobutadiene		350	U	360	U	340	U	350	U	350	U	350	U
4-Chloro-3-methylphenol		350	U	360	U	340	U	350	U	350	U	350	U
2-Methylnaphthalene		350	U	77	J	34	J	69	J	350	U	350	U
Hexachlorocyclopentadiene		350	U	360	U	340	U	350	U	350	U	350	U
2,4,6-Trichlorophenol		350	UJ	360	UJ	340	UJ	350	UJ	350	UJ	350	UJ
2,4,5-Trichlorophenol		870	UJ	890	UJ	860	UJ	860	UJ	870	UJ	870	UJ

*= Outside of EPA CLP QC limits.

000015

pr 6/27/05

RFW Batch Number: 0504L251 Client: TNUHANFORD B04-002 H3132 Work Order: 11343606001 Page: 3b

Cust ID:	J030R3		J030R4		J030R5		J030R6		J030R7		J030R8	
RFW#:	011		012		013		014		015		016	
2-Chloronaphthalene	350	U	360	U	340	U	350	U	350	U	350	U
2-Nitroaniline	870	U	890	U	860	U	860	U	870	U	870	U
Dimethylphthalate	350	U	360	U	340	U	350	U	350	U	350	U
Acenaphthylene	350	U	360	U	340	U	350	U	350	U	350	U
2,6-Dinitrotoluene	350	U	360	U	340	U	350	U	350	U	350	U
3-Nitroaniline	870	U	890	U	860	U	860	U	870	U	870	U
Acenaphthene	350	U	55	J	340	U	350	U	350	U	350	U
2,4-Dinitrophenol	870	U	890	U	860	U	860	U	870	U	870	U
4-Nitrophenol	870	U	890	U	860	U	860	U	870	U	870	U
Dibenzofuran	350	U	43	J	340	U	350	U	350	U	350	U
2,4-Dinitrotoluene	350	U	360	U	340	U	350	U	350	U	350	U
Diethylphthalate	350	U	360	U	340	U	350	U	350	U	350	U
4-Chlorophenyl-phenylether	350	U	360	U	340	U	350	U	350	U	350	U
Fluorene	350	U	71	J	340	U	350	U	350	U	350	U
4-Nitroaniline	870	U	890	U	860	U	860	U	870	U	870	U
4,6-Dinitro-2-methylphenol	870	U	890	U	860	U	860	U	870	U	870	U
N-Nitrosodiphenylamine (1)	350	U	20	J	340	U	350	U	350	U	350	U
4-Bromophenyl-phenylether	350	U	360	U	340	U	350	U	350	U	350	U
Hexachlorobenzene	350	U	360	U	340	U	350	U	350	U	350	U
Pentachlorophenol	870	UJ	890	UJ	860	UJ	860	UJ	870	UJ	870	UJ
Phenanthrene	350	U	620		33	J	52	J	350	U	350	U
Anthracene	350	U	150	J	340	U	350	U	350	U	350	U
Carbazole	350	U	75	J	340	U	350	U	350	U	350	U
Di-n-butylphthalate	350	U	660 ~~30~~ ~~JB~~	U	340	U	350	U	350	U	350	U
Fluoranthene	350	U	730		20	J	31	J	350	U	350	U
Pyrene	350	U	700		19	J	27	J	350	U	350	U
Butylbenzylphthalate	350	U	360	U	340	U	350	U	350	U	350	U
3,3'-Dichlorobenzidine	350	U	360	U	340	U	350	U	350	U	350	U
Benzo(a)anthracene	350	U	350	J	340	U	350	U	350	U	350	U
Chrysene	350	U	370		18	J	17	J	350	U	350	U
bis(2-Ethylhexyl)phthalate	660 ~~35~~ ~~JB~~	U	660 ~~55~~ ~~JB~~	U	660 ~~56~~ ~~JB~~	U	660 ~~39~~ ~~JB~~	U	660 ~~46~~ ~~JB~~	U	660 ~~52~~ ~~JB~~	U
Di-n-octyl phthalate	350	U	360	U	340	U	350	U	350	U	350	U
Benzo(b)fluoranthene	350	U	190	J	340	U	350	U	350	U	350	U
Benzo(k)fluoranthene	350	U	240	J	340	U	350	U	350	U	350	U
Benzo(a)pyrene	350	U	270	J	340	U	350	U	350	U	350	U
Indeno(1,2,3-cd)pyrene	350	U	160	J	340	U	350	U	350	U	350	U
Dibenz(a,h)anthracene	350	U	88	J	340	U	350	U	350	U	350	U
Benzo(g,h,i)perylene	350	U	170	J	340	U	350	U	350	U	350	U

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

000016

Lionville Laboratory, Inc.
Semivolatiles by GC/MS, HSL List

RFW Batch Number: **0504L251** Client: **TNUHANFORD B04-002 H3132** Work Order: 11343606001 Report Date: 04/29/05 14:43 Page: 4a

	Cust ID:	J030R9		SBLKII		SBLKII BS	
Sample Information	RFW#:	017		05LE0308-MB1		05LE0308-MB1	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	70	%	68	%	83	%
	2-Fluorobiphenyl	76	%	73	%	86	%
	Terphenyl-d14	108	%	99	%	110	%
	Phenol-d5	69	%	73	%	87	%
	2-Fluorophenol	60	%	69	%	86	%
	2,4,6-Tribromophenol	66	%	76	%	88	%
Phenol		330	U	330	U	84	%
bis(2-Chloroethyl)ether		330	U	330	U	330	U
2-Chlorophenol		330	U	330	U	88	%
1,3-Dichlorobenzene		330	U	330	U	330	U
1,4-Dichlorobenzene		330	U	330	U	91	%
1,2-Dichlorobenzene		330	U	330	U	330	U
2-Methylphenol		330	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		330	U	330	U	330	U
4-Methylphenol		330	U	330	U	330	U
N-Nitroso-di-n-propylamine		330	U	330	U	100	%
Hexachloroethane		330	U	330	U	330	U
Nitrobenzene		330	U	330	U	330	U
Isophorone		330	U	330	U	330	U
2-Nitrophenol		330	U	330	U	330	U
2,4-Dimethylphenol		330	U	330	U	330	U
bis(2-Chloroethoxy)methane		330	U	330	U	330	U
2,4-Dichlorophenol		330	U	330	U	330	U
1,2,4-Trichlorobenzene		330	U	330	U	91	%
Naphthalene		330	U	330	U	330	U
4-Chloroaniline		330	U	330	U	330	U
Hexachlorobutadiene		330	U	330	U	330	U
4-Chloro-3-methylphenol		330	U	330	U	91	%
2-Methylnaphthalene		330	U	330	U	330	U
Hexachlorocyclopentadiene		330	U	330	U	330	U
2,4,6-Trichlorophenol		330	U J	330	U	330	U
2,4,5-Trichlorophenol		830	U J	830	U	830	U

*= Outside of EPA CLP QC limits.

JR 6/27/05

000017

Cust ID:	J030R9		SBLKII		SBLKII BS	
RFW#:	017		05LE0308-MB1		05LE0308-MB1	
2-Chloronaphthalene	330	U	330	U	330	U
2-Nitroaniline	830	U	830	U	830	U
Dimethylphthalate	330	U	330	U	330	U
Acenaphthylene	330	U	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U	330	U
3-Nitroaniline	830	U	830	U	830	U
Acenaphthene	330	U	330	U	93	%
2,4-Dinitrophenol	830	U	830	U	830	U
4-Nitrophenol	830	U	830	U	75	%
Dibenzofuran	330	U	330	U	330	U
2,4-Dinitrotoluene	330	U	330	U	96 *	%
Diethylphthalate	41	J	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U	330	U
Fluorene	330	U	330	U	330	U
4-Nitroaniline	830	U	830	U	830	U
4,6-Dinitro-2-methylphenol	830	U	830	U	830	U
N-Nitrosodiphenylamine (1)	330	U	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U	330	U
Hexachlorobenzene	330	U	330	U	330	U
Pentachlorophenol	830	U J	830	U	23	%
Phenanthrene	330	U	330	U	330	U
Anthracene	330	U	330	U	330	U
Carbazole	330	U	330	U	330	U
Di-n-butylphthalate	660 ~~87~~ ~~JB~~	U	35	J	28	JB
Fluoranthene	330	U	330	U	330	U
Pyrene	330	U	330	U	111	%
Butylbenzylphthalate	330	U	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U	330	U
Benzo(a)anthracene	330	U	330	U	330	U
Chrysene	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	660 ~~68~~ ~~JB~~	U	88	J	58	JB
Di-n-octyl phthalate	330	U	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U	330	U
Benzo(k)fluoranthene	330	U	330	U	330	U
Benzo(a)pyrene	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U	330	U
Dibenz(a,h)anthracene	330	U	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U	330	U

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

000018

6/27/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0504L251
SDG/SAF # H3132 / B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 04-19-2005

SEMIVOLATILE

Seventeen (17) soil samples were collected on 04-15-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 04-21-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for client specified TCL Semivolatile target compounds on 04-22-2005,04-23-2005 and 04-24-2005.

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, with the exceptions indicated on the Sample Receipt Checklist.
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 twenty-two (22) matrix spike recoveries were outside acceptance criteria. Recoveries were biased high therefore no impact on data.
6. Two (2) of eleven (11) blank spike recoveries were outside acceptance criteria. Recoveries were biased high therefore no impact on the data.
7. The method blank contained the common laboratory contaminants Bis (2-Ethylhexyl) phthalate and Di-n-butylphthalate, at levels 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. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/23/05
Date

jak\gorup\data\bna\tnu-hanford\0504-251.bna

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 39 pages.

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

US04L251

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B04-002-030 | Page 2 of 4

Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC	SAF No.: B04-002
Air Quality: 21	Ice Chest No.: ~~GRC~~ C 03106 AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4
COA: B126B32008	Method of Shipment: FED EX	Shipped To: EBERLINE SERVICES / LIONVILLE
Offsite Property No.: A050178-179	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000021

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG D	aG C	aG A	aG B	aG E						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						

	Sample No.	Matrix *	Sample Date	Sample Time										
1	J030P8 6	SOIL	4/15/05	1008	✓	✓	✓	✓	✓					
2	J030P9 7	SOIL	4/15/05	1022	✓	✓	✓	✓	✓					
3	J030R0 8	SOIL	4/15/05	1042	✓	✓	✓	✓	✓					
4	J030R1 9	SOIL	4/15/05	1050	✓	✓	✓	✓	✓					
5	J030R2 10	SOIL	4/15/05	1100	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers/Doug Bowers	4-14-05 1600	RFZA 3728	4-14-05 1600
RFZA 3728	4/8/05 1000	SJGALLAGHER	4/8/05 1000
SJGALLAGHER ~~GRC~~	4/8/05 1000	FED EX	
FED EX	4/8/05 0925	[illegible]	4/8/05 0925

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~. Chromium. Cobalt. Copper. ~~Iron~~. Lead. ~~Magnesium~~. Manganese. Molybdenum. Nickel. ~~Potassium~~. Selenium. ~~Silicon~~. Silver. ~~Sodium~~. Vanadium. Zinc}: Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref RZA on 4/18/05

(1) DJO 4-14-05

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-030	Page 1 of 1

Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC	SAF No.: B04-002	Air Quality ☐ 21
Ice Chest No.: ERC03106 AFS04-010,016,017	Field Logbook No.: EFL 1173-4 — COA: R126032000	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A050 178-179	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000022

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						

	Sample No.	Matrix *	Sample Date	Sample Time											
6	J030P3 1	SOIL	4/15/05	0900	✓	✓	✓	✓	✓						
7	J030P4 2	SOIL	4/15/05	0922	✓	✓	✓	✓	✓						
8	J030P5 3	SOIL	4/15/05	0934	✓	✓	✓	✓	✓						
9	J030P6 4	SOIL	4/15/05	0946	✓	✓	✓	✓	✓						
10	J030P7 5	SOIL	4/15/05	0956	✓	✓	✓	✓	✓						

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: Doug Bowers/Doug Bowers	Received By/Stored In: A O F 2 A 3 7 2 8	4-15-05 1600
Relinquished By/Removed From: REF 2A 3728	Received By/Stored In: SJ OALE	41805 1000
Relinquished By/Removed From: ERC SJ OALE	Received By/Stored In: FED EX	41805 1000
Relinquished By/Removed From: [illegible]	Received By/Stored In: [illegible]	4/19/05 0925
Relinquished By/Removed From:	Received By/Stored In:	
Relinquished By/Removed From:	Received By/Stored In:	

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}: Mercury - 7470 - (CV)

(1) 4-14-05

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/18/05

Matrix *

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-030	Page 3 of 4
Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC		SAF No.: B04-002	Air Quality: 21
Ice Chest No.: ERC 03 106 AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4	COA: R1A603 2000	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A050 178-179		Bill of Lading/Air Bill No.: JEE 03PC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000023

				Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
				Type of Container	aG	aG	aG	aG	aG			
				No. of Container(s)	1	1	1	1	1			
				Volume	250mL	120mL	250mL	250mL	250mL			
				SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1			
	Sample No.	Matrix *	Sample Date	Sample Time								
11	J030R3 11	SOIL	4/15/05	1117	✓	✓	✓	✓	✓			
12	J030R4 12	SOIL	4/15/05	1127	✓	✓	✓	✓	✓			
13	J030R5 13	SOIL	4/15/05	1133	✓	✓	✓	✓	✓			
14	J030R6 14	SOIL	4/15/05	1147	✓	✓	✓	✓	✓			
15	J030R7 15	SOIL	4/15/05	1210	✓	✓	✓	✓	✓			

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Doug Bowers/Doug Bowers	4-15-05 1600	Ref 2A 3728	4-15-05 1600
Relinquished By/Removed From	REF 2A 3728	41805 1000	SJGALE	41805 1000
Relinquished By/Removed From	ERC SJGALE	41805 1000	FED EX	
Relinquished By/Removed From	FED EX	4/19/05 0925		4/19/05 0925
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~. Chromium. Cobalt. Copper. ~~Iron~~. Lead. ~~Magnesium~~. Manganese. Molybdenum. Nickel. ~~Potassium~~. Selenium. ~~Silicon~~. Silver. ~~Sodium~~. Vanadium. Zinc}; Mercury - 7470 - (CV)

(1) 4-14-05

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/18/05

Matrix *

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-030	Page 1 of 1

Collector: Doug Bowers/Jim Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Price Code: Many	Data Turnaround: Air Quality 21		
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002
Ice Chest No.: ERC03 106 AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4	COA: R126BJ2000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A050178-179		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						

000024

	Sample No.	Matrix *	Sample Date	Sample Time										
16	J030R8 16	SOIL	4/15/05	1207	✓	✓	✓	✓	✓					
17	J030R9 17	SOIL	4/15/05	1154	✓	✓	✓	NA	✓					

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Doug Bowers (1)	4-15-05 1600	Received By/Stored In: Ref 1A 3728	4-15-05 1600
Relinquished By/Removed From: REF 2A 3728	41805 1000	Received By/Stored In: S J GALE	41805 1000
Relinquished By/Removed From: S J GALE ERC	41505 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: Felder	4/19/05 0925	Received By/Stored In:	4/19/05 0925
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

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~ (1). Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~ (1). Chromium. Cobalt. Copper. ~~Iron~~ (1). Lead. ~~Magnesium~~ (1). Manganese. Molybdenum. Nickel. ~~Potassium~~ (1). Selenium. ~~Silicon~~ (1). Silver. ~~Sodium~~ (1). Vanadium. Zinc}: Mercury - 7470 - (CV)

(1) SJG 4-14-05

Personnel not available to relinquish samples from 3728 Ref #2A on 4/18/05

Matrix *

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

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

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

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100BC			DATA PACKAGE: #3132		
VALIDATOR: TLI		LAB: LCF		DATE: 6/25/05	
			SDG: #3132		

ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)

SAMPLES/MATRIX				
J030P8	J030P9	J030R0	J030R1	J030R2
J030P3	J030P4	J030P5	J030P6	J030P7
J030R3	J030R4	J030R5	J030R6	J030R7
J030R8	J030R9			
				Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: di-n-butylphthalate - P8, R1, P3, P6, P7, R4, R9 - U at RQL
bis(2-ethylhexyl) phthalate - all U at RQL

~~Mistakes~~
FB - diethyl phthalate

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-93 MSD-9020 - J all (24 dinitro toluene) detected
& associated results - R4+P3 (n-nitrosodiphenylamine)
LCS (9020)
No PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: pentachlorophenol - 68% RPD
J pentachlorophenol, 246 + 245 trichlorophenol

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: 136 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: 27 June 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Grounds - Soil - Full Protocol - Waste Site 126-B-3
Subject: Wet Chemistry - Data Package No. H3132-LLI (SDG No. H3132)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3132-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J030P8	4/15/05	Soil	C	See note 1
J030P9	4/15/05	Soil	C	See note 1
J030R0	4/15/05	Soil	C	See note 1
J030R1	4/15/05	Soil	C	See note 1
J030R2	4/15/05	Soil	C	See note 1
J030P3	4/15/05	Soil	C	See note 1
J030P4	4/15/05	Soil	C	See note 1
J030P5	4/15/05	Soil	C	See note 1
J030P6	4/15/05	Soil	C	See note 1
J030P7	4/15/05	Soil	C	See note 1
J030R3	4/15/05	Soil	C	See note 1
J030R4	4/15/05	Soil	C	See note 1
J030R5	4/15/05	Soil	C	See note 1
J030R6	4/15/05	Soil	C	See note 1
J030R7	4/15/05	Soil	C	See note 1
J030R8	4/15/05	Soil	C	See note 1
J030R9	4/15/05	Soil	C	See note 1

1 - Total petroleum hydrocarbons (TPH) 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, 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 28 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

One field blank (J030R9) was submitted for analysis. No analytes were detected in the equipment blank.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples (J030R7/J030R8) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All undetected TPH results exceeded the RQL. Under the BHI statement of work,

no qualification is required.

- **Completeness**

Data package No. H3132-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

All undetected TPH results 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: H3132	REVIEWER: TLI	PROJECT: 100 BC Burial Grounds	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

WET CHEMISTRY ANALYSIS, SOIL MATRIX, MG/KG

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case	SDG: H3132																		
Sample Number		J030P8		J030P9		J030R0		J030R1		J030R2		J030P3		J030P4		J030P5			
Remarks																			
Sample Date		04/15/05		04/15/05		04/15/05		04/15/05		04/15/05		04/15/05		04/15/05		04/15/05			
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total petroleum hydrocarbons	5	137	U	138	U	137	U	136	U	139	U	150	U	137	U	141	U		
Sample Number		J030P6		J030P7		J030R3		J030R4		J030R5		J030R6		J030R7		J030R8		J030R9	
Remarks																Duplicate		E. Blank	
Sample Date		04/15/05		04/15/05		04/15/05		04/15/05		04/15/05		04/15/05		04/15/05		04/15/05		4/15/05	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total petroleum hydrocarbons	5	144	U	140	U	139	U	142	U	137	U	138	U	138	U	139	U	133	U

000010

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0504L251

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J030P8	% Solids	96.5		%	0.01	1.0
		Petroleum Hydrocarbons	137	u	MG/KG	137	1.0
-002	J030P9	% Solids	96.4		%	0.01	1.0
		Petroleum Hydrocarbons	138	u	MG/KG	138	1.0
-003	J030R0	% Solids	97.4		%	0.01	1.0
		Petroleum Hydrocarbons	137	u	MG/KG	137	1.0
-004	J030R1	% Solids	97.3		%	0.01	1.0
		Petroleum Hydrocarbons	136	u	MG/KG	136	1.0
-005	J030R2	% Solids	95.7		%	0.01	1.0
		Petroleum Hydrocarbons	139	u	MG/KG	139	1.0
-006	J030P3	% Solids	88.6		%	0.01	1.0
		Petroleum Hydrocarbons	150	u	MG/KG	150	1.0
-007	J030P4	% Solids	97.4		%	0.01	1.0
		Petroleum Hydrocarbons	137	u	MG/KG	137	1.0
-008	J030P5	% Solids	94.6		%	0.01	1.0
		Petroleum Hydrocarbons	141	u	MG/KG	141	1.0
-009	J030P6	% Solids	92.1		%	0.01	1.0
		Petroleum Hydrocarbons	144	u	MG/KG	144	1.0
-010	J030P7	% Solids	94.5		%	0.01	1.0
		Petroleum Hydrocarbons	140	u	MG/KG	140	1.0

6/24/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0504L251

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J030R3	% Solids	95.6		%	0.01	1.0
		Petroleum Hydrocarbons	139	u	MG/KG	139	1.0
-012	J030R4	% Solids	93.4		%	0.01	1.0
		Petroleum Hydrocarbons	142	u	MG/KG	142	1.0
-013	J030R5	% Solids	97.0		%	0.01	1.0
		Petroleum Hydrocarbons	137	u	MG/KG	137	1.0
-014	J030R6	% Solids	96.3		%	0.01	1.0
		Petroleum Hydrocarbons	138	u	MG/KG	138	1.0
-015	J030R7	% Solids	95.9		%	0.01	1.0
		Petroleum Hydrocarbons	138	u	MG/KG	138	1.0
-016	J030R8	% Solids	95.7		%	0.01	1.0
		Petroleum Hydrocarbons	139	u	MG/KG	139	1.0
-017	J030R9	% Solids	99.9		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

6/26/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B04-002 H3132
LVL#: 0504L251

W.O.#: 11343-606-001-9999-00
Date Received: 04-19,20-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 17 soil samples.

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

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

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of samples J030R0, J030R1, J030R8 and J030R9 as noted on the Sample Receipt Checklist.

5. The method blank for Petroleum Hydrocarbons (PHC) was within the method criteria.

6. The Laboratory Control Sample (LCS) for PHC was 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

5/19/05
Date

njp\i04-251

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

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU- HANFORD **Date:** 4/19/05

Purchase Order / Project# / SAF# / SOW# / Release #: B04-002

LvLI Batch # : 0504L 257 **Sample Custodian:** V. Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier Fed Ex		Airbill# 7909 8439 0836 7922 5872 0506 7909 8439 0870	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☐ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☐ Yes	☑ No	AFS-04-010 Handle Damaged around	
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient?	Temp 4.3 4-1 3.4	°C	Cooler # AFS-04-010 ERC 03-106 AFS-04-017	
6.	Custody seals on sample containers intact, signed and dated?	☐ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☐ Yes	☑ No	J0 30 R0 R1 R8 R9 not Rec'd	
10.	All sample label information matches coc?	☑ Yes	☐ No		
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☑ Yes	☐ No		
13.	VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A	
14.	QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☐ Yes	☑ No		
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☑ Yes	☐ No	☐ No Discrepancies	

SR-002-B

0504L251

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-030	Page 2 of 4

Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC	SAF No.: B04-002	Air Quality: 21
Ice Chest No.: ~~GRC~~ C03106; AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4; COA: R126B32008	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A050178-179	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000016

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG D	aG C	aG A	aG B	aG E
No. of Container(s)	1	1	1	1	1
Volume	250mL	120mL	250mL	250mL	250mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1

	Sample No.	Matrix *	Sample Date	Sample Time					
1	J030P8 6	SOIL	4/15/05	1008	✓	✓	✓	✓	✓
2	J030P9 7	SOIL	4/15/05	1022	✓	✓	✓	✓	✓
3	J030R0 8	SOIL	4/15/05	1042	✓	✓	✓	✓	✓
4	J030R1 9	SOIL	4/15/05	1050	✓	✓	✓	✓	✓
5	J030R2 10	SOIL	4/15/05	1100	✓	✓	✓	✓	✓

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers/Doug Bowers	4-14-05/1600	REF 2A 3728	4-14-05/1600
REF 2A 3728	4/8/05 1000	SJ Gale	4/8/05 1000
SJ Gale	4/8/05 1000	FED EX	
FED EX	4/9/05 0925		4/9/05 0925

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~. Chromium. Cobalt. Copper. Iron. Lead. ~~Magnesium~~. Manganese, Molybdenum. Nickel. ~~Potassium~~. Selenium. ~~Silicon~~. Silver. ~~Sodium~~. Vanadium. Zinc}; Mercury - 7470 - (CV)

Personnel not available to relinquish samples from 3728 Ref #2A on 4/18/05

(1) DJD 4.14.05

Matrix *

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

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

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B04-002-030 | Page 1 of 1 | 15

Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC		SAF No.: B04-002
Air Quality ☐ 21			
Ice Chest No.: ERC 03 106 AFS04-010,016,017	Field Logbook No.: EFL 1173-4	COA: R126032000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050 178-179		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000017

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						

	Sample No.	Matrix *	Sample Date	Sample Time										
6	J030P3 1	SOIL	4/15/05	0920	✓	✓	✓	✓	✓					
7	J030P4 2	SOIL	4/15/05	0922	✓	✓	✓	✓	✓					
8	J030P5 3	SOIL	4/15/05	0934	✓	✓	✓	✓	✓					
9	J030P6 4	SOIL	4/15/05	0946	✓	✓	✓	✓	✓					
10	J030P7 5	SOIL	4/15/05	0956	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers / Doug Bowers	1600 4-15-05	A 0 2 A 3728	4-15-05 1600
REF 2A 3728	41805 1000	SJ Gale	41805 1000
SJ Gale	41805 1000	FED EX	
FED EX	4/19/05 0925		4/19/05 0925

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt. Copper, ~~Iron~~. Lead, ~~Magnesium~~. Manganese, Molybdenum. Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~. Vanadium, Zinc}; Mercury - 7470 - (CV)

① 2A 4-14-05

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/18/05

Matrix *

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

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

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B04-002-030 | Page 3 of 4 | 16

Collector: Doug Bowers/Jim Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002
Ice Chest No.: ERC03106 AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4	COA: R1A603 2000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050 178-179		Bill of Lading/Air Bill No.: JCE 03PC

Price Code: Many | Data Turnaround: | Air Quality: 21

POSSIBLE SAMPLE HAZARDS/REMARKS: NA

Special Handling and/or Storage: NA

000018

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	120mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1					

	Sample No.	Matrix *	Sample Date	Sample Time										
11	J030R3 11	SOIL	4/15/05	1117	✓	✓	✓	✓	✓					
12	J030R4 12	SOIL	4/15/05	1127	✓	✓	✓	✓	✓					
13	J030R5 13	SOIL	4/15/05	1133	✓	✓	✓	✓	✓					
14	J030R6 14	SOIL	4/15/05	1147	✓	✓	✓	✓	✓					
15	J030R7 15	SOIL	4/15/05	1210	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers / Doug Bowers	4-15-05 1600	Ref 2A 3728	4-15-05 1600
Ref 2A 3728	41805 1000	SJGALE	41805 1000
SJGALE	41805 1000	FED EX	
FED EX	4/19/05 0925		4/19/05 0925

SPECIAL INSTRUCTIONS

Samples are from a non-rad site.

(1) ICP Metals 6010 (Client List) {~~Aluminum~~. Antimony. Arsenic. Barium. Beryllium. Boron. Cadmium. ~~Calcium~~. Chromium. Cobalt. Copper. ~~Iron~~. Lead. ~~Magnesium~~. Manganese. Molybdenum. Nickel. ~~Potassium~~. Selenium. ~~Silicon~~. Silver, ~~Sodium~~. Vanadium. Zinc}; Mercury - 7470 - (CV)

(1) DAB 4-14-05

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/18/05

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-030	Page 4 of 4

Collector: Doug Bowers/Jim Kiesler	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: 126-B-3 @ 100 BC		SAF No.: B04-002
Air Quality: 21			
Ice Chest No.: ERC03 106 AFS 04-010, 016, 017	Field Logbook No.: EFL 1173-4	COA: R126BJ2000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A050178-179		Bill of Lading/Air Bill No.: SEE QSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000019

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	120mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1						
Sample No. / Matrix * / Sample Date / Sample Time											
16 J030R8 16 / SOIL / 4/15/05 / 1207	✓	✓	✓	✓	✓						
17 J030R9 17 / SOIL / 4/15/05 / 1154	✓	✓	✓	NA	✓						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	4-15-05 1600	Ref 1A 3728	4-15-05 1600
REF 2A 3728	41805 1000	SUGALE	41805 1000
SUGALE ERC	41805 1000	FED EX	
Fedex	4/19/05 0925		4/19/05 0925
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

Samples are from a non-rad site.

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~ (1), Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~ (1), Chromium, Cobalt, Copper, ~~Iron~~ (1), Lead, ~~Magnesium~~ (1), Manganese, Molybdenum, Nickel, ~~Potassium~~ (1), Selenium, ~~Silicon~~ (1), Silver, ~~Sodium~~ (1), Vanadium, Zinc}; Mercury - 7470 - (CV)

(1) DRD 4-14-05

Personnel not available to relinquish samples from 3728 Ref #2A on 4/18/05

Matrix *

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

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

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

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-BC			DATA PACKAGE: H3132		
VALIDATOR: TLT		LAB: LLT		DATE: 6/24/05	
			SDG: H3132		

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				
J030P8	J030P9	J030R0	J030R1	J030R2
J030P3	J030P4	J030P5	J030P6	J030P7
J030R3	J030R4	J030R5	J030R6	J030R7
J030R8	J030R9			
				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:

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

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

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

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

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

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

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

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

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

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

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

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

Comments: NO PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

6. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: All undetects ones

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/10/05

CLIENT: TNUHANFORD B04-002 H3132 LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LHC033-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132 LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J030P9	Petroleum Hydrocarbons	539	11.2	578	91.3	1.0
BLANK10	05LHC033-MB1	Petroleum Hydrocarbons	498	133 u	560	89.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/10/05

CLIENT: TNUHANFORD B04-002 H3132 LVL LOT #: 0504L251

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J030P9	Petroleum Hydrocarbons	138 u	138 u	NC	1.0
-015REP	J030R7	% Solids	95.9	95.4	0.47	1.0