

10066690

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

MAIL COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2)

mjp 8-29-05
INITIAL/DATE

1607-D4 Project File

JUD/8-23-05
INITIAL/DATE

SAF-B03-015

1607-D4

H3247

Sample Location/Waste Site: 1607-D4

RECEIVED
SEP 21 2005
EDMC

Date: 8 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 1607-D4 Remaining Sites – Soil Full Protocol
Subject: Inorganics - Data Package No. H3247-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3247-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03716	7/5/05	Soil	C	See note 1
J03717	7/5/05	Soil	C	See note 1
J03718	7/5/05	Soil	C	See note 1
J03719	7/5/05	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.

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· 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 chromium and lead results in sample J03716 were qualified as estimates and flagged "UJ".

Due to method blank contamination, all boron results were qualified as estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J03716) was submitted for analysis. Barium, beryllium, copper, manganese, nickel, 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".

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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 (63.6%), 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

No field duplicates were submitted for analysis.

· **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

· **Completeness**

Data package No. H3247-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%.

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MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to method blank contamination, the chromium and lead results in sample J03716 were qualified as estimates and flagged "UJ". Due to method blank contamination, all boron results were qualified as estimates and flagged "UJ". Due to a matrix spike recovery outside QC limits (63.6%), 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.

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

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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

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INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H3247	REVIEWER: TLI	Project: 1607-D4	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chromium, Lead	UJ	J03716	Method blank contamination
Boron	UJ	All	Method blank contamination
Antimony	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

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Project: BECHTEL-HANFORD											
Laboratory: LLI		SDG: H3247		J03716		J03717		J03718		J03719	
Sample Number		E. Blank		7/5/05		7/5/05		7/5/05		7/5/05	
Remarks											
Sample Date	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Inorganics											
Silver	0.2	0.07 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Arsenic	10	0.37 U	1.5	0.86	0.63 UJ	0.64	0.59 UJ	0.64	0.59 UJ	0.64	0.59 UJ
Boron		0.48 UJ	1.1 UJ	37.3	38.3						
Barium	2	1.2	41.9	0.66	0.62						
Beryllium		0.05	0.90	0.33	0.35						
Cadmium	0.2	0.02 U	0.07	6.0	6.1						
Cobalt		0.07 U	7.4	2.8	3.0						
Chromium	1	0.25 UJ	3.5	13.7	13.9						
Copper		0.09	14.7	0.01 U	0.02 U						
Mercury	0.2	0.02 U	0.01 U	245	252						
Manganese		4.4	269	0.28	0.14 U						
Molybdenum		0.13 U	0.18	6.8	7.0						
Nickel		0.28	8.1	2.2	2.4						
Lead	5	0.36 UJ	2.6	0.35 UJ	0.35 UJ						
Antimony	0.6	0.33 UJ	0.34 UJ	0.42 U	0.43 U						
Selenium	1	0.41 U	0.42 U	49.1	45.8						
Vanadium		0.06	54.5	35.6	35.3						
Zinc	1	3.3	38.1								

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/14/05

CLIENT: TNUHANFORD B03-015 H3247
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0507L906

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J03716	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	0.37 u	MG/KG	0.37	1.0
		Boron, Total	0.48	UJ MG/KG	0.19	1.0
		Barium, Total	1.2	MG/KG	0.02	1.0
		Beryllium, Total	0.05	MG/KG	0.008	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Cobalt, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.25	J MG/KG	0.06	1.0
		Copper, Total	0.09	MG/KG	0.07	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	4.4	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Nickel, Total	0.28	MG/KG	0.18	1.0
		Lead, Total	0.36	J MG/KG	0.21	1.0
		Antimony, Total	0.33 u	J MG/KG	0.33	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0
		Vanadium, Total	0.06	MG/KG	0.05	1.0
		Zinc, Total	3.3	MG/KG	0.04	1.0
-002	J03717	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	1.5	MG/KG	0.38	1.0
		Boron, Total	1.1	UJ MG/KG	0.20	1.0
		Barium, Total	41.9	MG/KG	0.02	1.0
		Beryllium, Total	0.90	MG/KG	0.009	1.0
		Cadmium, Total	0.07	MG/KG	0.03	1.0
		Cobalt, Total	7.4	MG/KG	0.08	1.0
		Chromium, Total	3.5	MG/KG	0.06	1.0
		Copper, Total	14.7	MG/KG	0.07	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	269	MG/KG	0.02	1.0
		Molybdenum, Total	0.18	MG/KG	0.14	1.0
		Nickel, Total	8.1	MG/KG	0.19	1.0
		Lead, Total	2.6	MG/KG	0.21	1.0
		Antimony, Total	0.34 u	J MG/KG	0.34	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
		Vanadium, Total	54.5	MG/KG	0.05	1.0
		Zinc, Total	38.1	MG/KG	0.04	1.0

Handwritten: 8/14/05

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/14/05

CLIENT: TNUHANFORD B03-015 H3247
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0507L906

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J03718	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	0.86	MG/KG	0.39	1.0
		Boron, Total	0.63	u MG/KG	0.20	1.0
		Barium, Total	37.3	MG/KG	0.02	1.0
		Beryllium, Total	0.66	MG/KG	0.009	1.0
		Cadmium, Total	0.33	MG/KG	0.03	1.0
		Cobalt, Total	6.0	MG/KG	0.08	1.0
		Chromium, Total	2.8	MG/KG	0.06	1.0
		Copper, Total	13.7	MG/KG	0.07	1.0
		Mercury, Total	0.01	u MG/KG	0.01	1.0
		Manganese, Total	245	MG/KG	0.02	1.0
		Molybdenum, Total	0.28	MG/KG	0.14	1.0
		Nickel, Total	6.8	MG/KG	0.19	1.0
		Lead, Total	2.2	MG/KG	0.22	1.0
		Antimony, Total	0.35	u MG/KG	0.35	1.0
		Selenium, Total	0.43	u MG/KG	0.43	1.0
		Vanadium, Total	49.1	MG/KG	0.05	1.0
		Zinc, Total	35.6	MG/KG	0.04	1.0
-004	J03719	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	0.64	MG/KG	0.39	1.0
		Boron, Total	0.59	u MG/KG	0.20	1.0
		Barium, Total	38.3	MG/KG	0.02	1.0
		Beryllium, Total	0.62	MG/KG	0.009	1.0
		Cadmium, Total	0.35	MG/KG	0.03	1.0
		Cobalt, Total	6.1	MG/KG	0.08	1.0
		Chromium, Total	3.0	MG/KG	0.06	1.0
		Copper, Total	13.9	MG/KG	0.07	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Manganese, Total	252	MG/KG	0.02	1.0
		Molybdenum, Total	0.14	u MG/KG	0.14	1.0
		Nickel, Total	7.0	MG/KG	0.19	1.0
		Lead, Total	2.4	MG/KG	0.22	1.0
		Antimony, Total	0.35	u MG/KG	0.35	1.0
		Selenium, Total	0.43	u MG/KG	0.43	1.0
		Vanadium, Total	45.8	MG/KG	0.05	1.0
		Zinc, Total	35.3	MG/KG	0.04	1.0

pc 6/14/05

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD B03-015
LVL#: 0507L906
SDG/SAF#: H3247/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 07-07-05

METALS CASE NARRATIVE

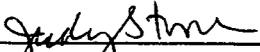
1. This narrative covers the analyses of 4 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LVL's 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 18 pages.

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<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
J03717	Antimony	100	110.8

12. The duplicate analyses for 5 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
 jjw/m07-906

9/19/05

 Date



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00000007

Appendix 5
Data Validation Supporting Documentation

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1607-D4		DATA PACKAGE: H3247		
VALIDATOR:	TLT	LAB:	LLI	DATE: 8/6/05	
			SDG: H3247		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J03716		J03717		J03718 J03719	
soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? Yes No N/A

Comments: _____

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

- Initial calibrations performed on all instruments? Yes No **N/A**
- Initial calibrations acceptable? Yes No **N/A**
- ICP interference checks acceptable? Yes No **N/A**
- ICV and CCV checks performed on all instruments? Yes No **N/A**
- ICV and CCV checks acceptable? Yes No **N/A**
- Standards traceable? Yes No **N/A**
- Standards expired? Yes No **N/A**
- Calculation check acceptable? Yes No **N/A**

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

Laboratory blanks analyzed? Yes No N/A

Laboratory blank results acceptable? Yes No N/A

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

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

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

Comments: Boron - UJ all

Chromium - UJ 16

Lead - UJ 16

FB Barium, beryllium, copper, manganese, nickel, 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: analyzed - J all (63,670) no PAs

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

Comments: _____

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
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: _____

Appendix 6

Additional Documentation Requested by Client

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Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/14/05

CLIENT: TNUHANFORD B03-015 H3247

LVL LOT #: 0507L906

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	05L0393-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	0.45 u	MG/KG	0.45	1.0
		Boron, Total	0.53	MG/KG	0.23	1.0
		Barium, Total	0.06	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.09 u	MG/KG	0.09	1.0
		Chromium, Total	0.11	MG/KG	0.07	1.0
		Copper, Total	0.08 u	MG/KG	0.08	1.0
		Manganese, Total	0.02	MG/KG	0.02	1.0
		Molybdenum, Total	0.16 u	MG/KG	0.16	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Lead, Total	0.42	MG/KG	0.25	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.62	MG/KG	0.49	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	05C0174-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/14/05

CLIENT: TNUHANFORD B03-015 H3247

LVL LOT #: 0507L906

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

SAMPLE	SITE ID	ANALYTE	SPIKED	INITIAL	SPIKED	%RECOV	DILUTION
			SAMPLE	RESULT	AMOUNT		FACTOR (SPK)
-002	J03717	Silver, Total	4.0	0.08u	4.3	93.0	1.0
		Arsenic, Total	162	1.5	173	92.4	1.0
		Boron, Total	74.7	1.1	86.7	84.9	1.0
		Barium, Total	197	41.9	173	89.3	1.0
		Beryllium, Total	5.2	0.90	4.3	99.9	1.0
		Cadmium, Total	4.2	0.07	4.3	96.1	1.0
		Cobalt, Total	48.2	7.4	43.4	94.0	1.0
		Chromium, Total	21.1	3.5	17.3	101.7	1.0
		Copper, Total	34.4	14.7	21.7	90.8	1.0
		Mercury, Total	0.16	0.01u	0.15	108.1	1.0
		Manganese, Total	316	269	43.4	107.8*	1.0
		Molybdenum, Total	80.6	0.18	86.7	92.8	1.0
		Nickel, Total	49.4	8.1	43.4	95.2	1.0
		Lead, Total	43.7	2.6	43.4	94.7	1.0
		Antimony, Total	27.6	0.34u	43.4	63.6	1.0
		Selenium, Total	152	0.42u	173	87.5	1.0
		Vanadium, Total	98.9	54.5	43.4	102.3	1.0
		Zinc, Total	80.9	38.1	43.4	98.6	1.0

000025

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/14/05

CLIENT: TNUHANFORD B03-015 H3247
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0507L906

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-002REP	J03717	Silver, Total	0.08u	0.08u	NC	1.0
		Arsenic, Total	1.5	0.88	52.3	1.0
		Boron, Total	1.1	0.81	30.6	1.0
		Barium, Total	41.9	37.8	10.3	1.0
		Beryllium, Total	0.90	0.86	5.2	1.0
		Cadmium, Total	0.07	0.06	8.2	1.0
		Cobalt, Total	7.4	6.6	11.4	1.0
		Chromium, Total	3.5	3.0	15.4	1.0
		Copper, Total	14.7	12.0	20.2	1.0
		Mercury, Total	0.01u	0.01u	NC	1.0
		Manganese, Total	269	262	2.4	1.0
		Molybdenum, Total	0.18	0.14u	NC	1.0
		Nickel, Total	8.1	6.5	21.9	1.0
		Lead, Total	2.6	2.5	3.9	1.0
		Antimony, Total	0.34u	0.34u	NC	1.0
		Selenium, Total	0.42u	0.42u	NC	1.0
		Vanadium, Total	54.5	48.8	11.0	1.0
		Zinc, Total	38.1	36.8	3.5	1.0

Handwritten note:
 NC 700
 7/14/05

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/14/05

CLIENT: TNUHANFORD B03-015 H3247

LVL LOT #: 0507L906

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

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	05L0393-LC1	Silver, LCS	49.5	50.0	MG/KG	99.0
		Arsenic, LCS	941	1000	MG/KG	94.1
		Boron, LCS	461	500	MG/KG	92.1
		Barium, LCS	487	500	MG/KG	97.3
		Beryllium, LCS	25.2	25.0	MG/KG	100.8
		Cadmium, LCS	24.7	25.0	MG/KG	98.8
		Cobalt, LCS	251	250	MG/KG	100.5
		Chromium, LCS	50.9	50.0	MG/KG	101.8
		Copper, LCS	123	125	MG/KG	98.2
		Manganese, LCS	78.6	75.0	MG/KG	104.8
		Molybdenum, LCS	499	500	MG/KG	99.8
		Nickel, LCS	197	200	MG/KG	98.6
		Lead, LCS	246	250	MG/KG	98.4
		Antimony, LCS	288	300	MG/KG	96.1
		Selenium, LCS	913	1000	MG/KG	91.3
		Vanadium, LCS	248	250	MG/KG	99.4
		Zinc, LCS	97.3	100	MG/KG	97.3
LCS1	05C0174-LC1	Mercury, LCS	6.9	6.2	MG/KG	111.3

000027

Date: 8 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 1607-D4 Remaining Sites – Soil Full Protocol
Subject: Radiochemistry - Data Package No. H3247-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3247-EB prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03717	7/5/05	Soil	C	See note 1
J03718	7/5/05	Soil	C	See note 1
J03719	7/5/05	Soil	C	See note 1

1 – Gross alpha, gross beta, total uranium and gamma spectroscopy.

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 Data Requested by Client

DATA QUALITY PARAMETERS

• Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

000001

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If

000002

either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (40%), all thorium-232 results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

• **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Three analytes exceeded the RQL. Under the BHI statement of work, no qualification is required. All other reported results met the analyte specific RQL.

• **Completeness**

Data package No. H3247 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD outside QC limits (40%), all thorium-232 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.

000003

Three analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

Appendix 1
Glossary of Data Reporting Qualifiers

000005

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

- U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

000006

Appendix 2
Summary of Data Qualification

000007

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H3247	REVIEWER: TLI	Project: 1607-D4	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Thorium-232	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.

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: BECHTEL-HANFORD		J03717		J03718		J03719	
Laboratory: EB		SDG: H3247					
Sample Number		7/5/05		7/5/05		7/5/05	
Sample Date	RQL	Result	Q	Result	Q	Result	Q
Gross Alpha		4.32		7.25		4.71	
Gross Beta		14.4	U	14.7		15.5	U
Total Uranium (ug/g)		1.38		1.56		1.58	
Potassium-40		9.87		8.97		9.58	
Cobalt 60	0.05	U	U	U	U	U	U
Cesium 137	0.05	U	U*	U	U	U	U
Radium-226		0.394		0.348		0.394	
Radium-228		0.673		0.412		0.486	
Europium 152	0.1	U	U	U	U	U	U
Europium 154	0.1	U	U*	U	U*	U	U
Europium 155	0.1	U	U	U	U	U	U
Thorium-228		0.512		0.462		0.566	
Thorium-232		0.673	J	0.412	J	0.486	J
Uranium-235(gea)		U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U

000010

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

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3247

R507033-01

J03717

DATA SHEET

SDG <u>7854</u>	Client/Case no <u>Hanford</u>	SDG <u>H3247</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R507033-01</u>	Client sample id <u>J03717</u>	
Dept sample id <u>7854-001</u>	Location/Matrix <u>1607-D4</u>	<u>SOLID</u>
Received <u>07/07/05</u>	Collected/Weight <u>07/05/05 10:00</u>	<u>1426 g</u>
% solids <u>96.0</u>	Custody/SAF No <u>B03-015-304</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	4.32	2.9	2.7	10		93A
Gross Beta	12587-47-2	14.4	4.0	5.6	15		93B
Total Uranium (ug/g)	7440-61-1	1.38	0.16	0.010	1.0		U_T
Potassium 40	13966-00-2	9.87	0.86	0.47			GAM
Cobalt 60	10198-40-0	U		0.040	0.050	U	GAM
Cesium 137	10045-97-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.394	0.077	0.080	0.10		GAM
Radium 228	15262-20-1	0.673	0.20	0.19	0.20		GAM
Europium 152	14683-23-9	U		0.098	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.12</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.099	0.10	U	GAM
Thorium 228	14274-82-9	0.512	0.042	0.042			GAM
Thorium 232	TH-232	0.673	0.20	0.19		J	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		4.5		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

Remain. Sites Confirm. Sampling-Soil

W
8/6/05

000011

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/20/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3247

R507033-02

J03718

DATA SHEET

SDG <u>7854</u>	Client/Case no <u>Hanford</u>	SDG <u>H3247</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R507033-02</u>	Client sample id <u>J03718</u>	
Dept sample id <u>7854-002</u>	Location/Matrix <u>1607-D4</u>	<u>SOLID</u>
Received <u>07/07/05</u>	Collected/Weight <u>07/05/05 12:40</u>	<u>1216 g</u>
% solids <u>96.0</u>	Custody/SAF No <u>B03-015-304</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	7.25	3.2	3.1	10		93A
Gross Beta	12587-47-2	14.7	4.1	5.7	15		93B
Total Uranium (ug/g)	7440-61-1	1.56	0.18	0.010	1.0		U_T
Potassium 40	13966-00-2	8.97	0.71	0.31			GAM
Cobalt 60	10198-40-0	U		0.035	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.10	U	GAM
Radium 226	13982-63-3	0.348	0.062	0.061	0.10		GAM
Radium 228	15262-20-1	0.412	0.15	0.16	0.20		GAM
Europium 152	14683-23-9	U		0.076	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.13</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.085	0.10	U	GAM
Thorium 228	14274-82-9	0.462	0.039	0.040			GAM
Thorium 232	TH-232	0.412	0.15	0.16		J	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		4.5		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM

Remain. Sites Confirm. Sampling-Soil

V
8/6/05

000012

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/20/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3247

R507033-03

J03719

DATA SHEET

SDG <u>7854</u>	Client/Case no <u>Hanford</u>	SDG <u>H3247</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R507033-03</u>	Client sample id <u>J03719</u>	
Dept sample id <u>7854-003</u>	Location/Matrix <u>1607-D4</u>	<u>SOLID</u>
Received <u>07/07/05</u>	Collected/Weight <u>07/05/05 12:40</u>	<u>1159 g</u>
% solids <u>95.6</u>	Custody/SAF No <u>B03-015-304</u>	<u>B03-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	4.71	2.8	3.4	10		93A
Gross Beta	12587-47-2	15.5	4.0	5.5	15		93B
Total Uranium (ug/g)	7440-61-1	1.58	0.18	0.010	1.0		U_T
Potassium 40	13966-00-2	9.58	0.66	0.32			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Radium 226	13982-63-3	0.394	0.056	0.051	0.10		GAM
Radium 228	15262-20-1	0.486	0.12	0.13	0.20		GAM
Europium 152	14683-23-9	U		0.066	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.093	0.10	U	GAM
Thorium 228	14274-82-9	0.566	0.052	0.050			GAM
Thorium 232	TH-232	0.486	0.12	0.13		J	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Americium 241	14596-10-2	U		0.19		U	GAM

Remain. Sites Confirm. Sampling-Soil

K
8/6/05

000013

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/20/05</u>

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000014

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H3247 was composed of three solid (soil) samples designated under SAF No. B03-015 with a Project Designation of: Remaining Sites Confirmation Sampling-Soil and a Sampling Location of: 1607-D4.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-mail on July 20, 2005.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Total Uranium Analysis

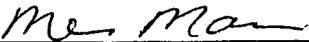
No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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



Melissa C. Mannion
Senior Program Manager



Date

B03-015-304
 Price Code 8C
 Data Turnaround 15 Days

Project Coordinator
 KESSNER, JH

Method of Shipment
 FedEx

Bill of Lading/Air Bill No.
 See OSCP

Offsite Property No.
 A050259

Company Contact
 Lorna Dittmer
 Telephone No.
 (509) 376-9664

Sampling Location
 1607-D4
 H3247 (785A)

Field Logbook No.
 EL-1578-7
 COA
 C607D46700

Bechtel Hanford Inc.
 Collector
 Stankovich/Gale

Project Designation
 Remaining Sites Confirmation Sampling-Soil

Ice Chest No.
 ERC-99-057

Shipped To
 CEBERLINE SERVICES BILIONVILLE

POSSIBLE SAMPLE HAZARDS/REMARKS
 None

Special Handling and/or Storage
 None

000016

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	None	Cool 4C						
J03716	SOIL			None								
J03717	SOIL	7-5-05	1000	G/P								
J03718	SOIL	7-5-05	1240									
J03719	SOIL	7-5-05	1240									
J03720	SOIL											

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotope Phosphorus-32; Phosphorus-32; Phosphorus-33; Phosphorus-33, 34, 35; Uranium-235; Uranium-238; Total Uranium; Technetium-99; Isotope Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium

(2) ICP Metals - 6010TR (SW846) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

(3) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Stankovich/Gale	7-5-05 1500	REF JA 3728	7-5-05 1500
Stankovich/Gale	7-6-05/1100	Stankovich/Gale	7-6-05/1100
Stankovich/Gale	7-6-05/1100	FED EXPRESS	
FED	07/07/05	Stankovich/Gale	07/07/05 9:20

LABORATORY SECTION

Received By

FINAL SAMPLE DISPOSITION

Disposal Method

Disposed By

Date/Time

Appendix 5
Data Validation Supporting Documentation

000017

APPENDIX A
RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1607-D4		DATA PACKAGE:	H 3247	
VALIDATOR:	TLI	LAB:	EK	DATE:	8/6/65
		SDG:	H3247		
ANALYSES PERFORMED					
Gross Alpha/Beta Total Uranium	Strontium-90 Radium-22	Technetium-99 Tritium	Alpha Spectroscopy	Gamma Spectroscopy	
SAMPLES/MATRIX					
J03717 J03718 J03719					
501					

1. Completeness N/A

Technical verification forms present? No N/A

Comments: _____

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

Instruments/detectors calibrated? Yes No N/A

Initial calibration acceptable? Yes No N/A

Standards NIST traceable? Yes No N/A

Standards Expired? Yes No N/A

Calculation check acceptable? Yes No N/A

Comments: _____

3. Continuing Calibration (Levels D, E)

N/A

Calibration checked within required frequency? Yes No N/A

Calibration check acceptable? Yes No N/A

Calibration check standards traceable? Yes No N/A

Calibration check standards expired? Yes No N/A

Calculation check acceptable? Yes No N/A

Comments: _____

4. Background Counts (Levels D, E)

N/A

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

Background Counts acceptable? Yes No N/A

Calculation check acceptable? Yes No N/A

Comments: _____

5. Blanks (Levels B, C, D, E) N/A

Method blank analyzed within required frequency? Yes No N/A

Method blank results acceptable? Yes No N/A

Analytes detected in method blank? Yes No N/A

Field blank(s) analyzed? Yes No N/A

Field blank results acceptable? Yes No N/A

Analytes detected in field blank(s)? Yes No N/A

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

Comments: no mb

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

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

LCS/BSS recoveries acceptable? Yes No N/A

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

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

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

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

Comments: _____

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

Chemical carrier added? Yes No N/A

Chemical recovery acceptable? Yes No N/A

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

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

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

Comments: _____

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

Tracer added? Yes No N/A

Tracer recovery acceptable? Yes No N/A

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

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

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

Comments: _____

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

Matrix spike analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

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

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

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

Comments: _____

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

Duplicates Analyzed at required frequency? Yes No N/A

RPD Values Acceptable? Yes No N/A

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

Comments: Thorium-232 4090 - J cell

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

Field duplicate sample(s) analyzed? Yes No N/A

Field duplicate RPD values acceptable? Yes No N/A

Field split sample(s) analyzed? Yes No N/A

Field split RPD values acceptable? Yes No N/A

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

Performance audit sample results acceptable? Yes No N/A

Comments: no field QC

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments: _____

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

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

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

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

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

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

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

Comments: 3 screens
SK

Appendix 6

Additional Documentation Requested by Client

000024

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3247

R507033-05

Method Blank

METHOD BLANK

SDG <u>7854</u>	Client/Case no <u>Hanford</u>	SDG <u>H3247</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R507033-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7854-005</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B03-015</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	0.030	2.0	4.2	10	U	93A
Gross Beta	12587-47-2	-1.58	3.2	5.7	15	U	93B
Total Uranium (ug/g)	7440-61-1	0	0.004	0.010	1.0	U	U_T
Potassium 40	13966-00-2	U		0.12		U	GAM
Cobalt 60	10198-40-0	U		0.010	0.050	U	GAM
Cesium 137	10045-97-3	U		0.011	0.10	U	GAM
Radium 226	13982-63-3	U		0.017	0.10	U	GAM
Radium 228	15262-20-1	U		0.036	0.20	U	GAM
Europium 152	14683-23-9	U		0.028	0.10	U	GAM
Europium 154	15585-10-1	U		0.027	0.10	U	GAM
Europium 155	14391-16-3	U		0.031	0.10	U	GAM
Thorium 228	14274-82-9	U		0.016		U	GAM
Thorium 232	TH-232	U		0.036		U	GAM
Uranium 235	15117-96-1	U		0.044		U	GAM
Uranium 238	U-238	U		1.2		U	GAM
Americium 241	14596-10-2	U		0.047		U	GAM

Remain. Sites Confirm. Sampling-Soil

QC-BLANK 53516

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/20/05</u>

000025

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3247

R507033-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7854</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R507033-04</u> Dept sample id <u>7854-004</u>	Client/Case no <u>Hanford</u> SDG <u>H3247</u> Contract No. <u>630</u> Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>B03-015</u>
---	---

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS	TEST	pCi/g	pCi/g	&	(TOTAL) LIMITS
Gross Alpha	97.2	12	3.2	10		93A	112	4.5	87	69-131 70-130
Gross Beta	125	8.4	5.7	15		93B	120	4.8	104	74-126 70-130
Total Uranium (ug/g)	36.2	4.3	0.10	1.0		U_T	36.2	1.4	100	77-123 80-120
Cobalt 60	0.614	0.060	0.032	0.050		GAM	0.619	0.025	99	73-127 80-120
Cesium 137	0.683	0.053	0.036	0.10		GAM	0.652	0.026	105	73-127 80-120

Remain. Sites Confirm. Sampling-Soil

QC-LCS 53515

000026

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>07/20/05</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3247

R507033-06

J03718

DUPLICATE

SDG <u>7854</u>	Client/Case no <u>Hanford</u>	SDG <u>H3247</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R507033-06</u>	Lab sample id <u>R507033-02</u>	Client sample id <u>J03718</u>
Dept sample id <u>7854-006</u>	Dept sample id <u>7854-002</u>	Location/Matrix <u>1607-D4</u> <u>SOLID</u>
	Received <u>07/07/05</u>	Collected/Weight <u>07/05/05 12:40</u> <u>1216 g</u>
% solids <u>96.0</u>	% solids <u>96.0</u>	Custody/SAF No <u>B03-015-304</u> <u>B03-015</u>

ANALYTE	DUPLICATE		2σ ERR		MDA	RDL	QUALI-PIERS	TEST	ORIGINAL		2σ ERR		MDA	QUALI-PIERS	RPD %	3σ PROT TOT LIMIT
	pCi/g	(COUNT)	pCi/g	pCi/g					pCi/g	(COUNT)	pCi/g					
Gross Alpha	5.47	2.9	2.7	10			93A		7.25	3.2	3.1			28	110	
Gross Beta	15.2	4.1	5.5	15			93B		14.7	4.1	5.7			3	66	
Total Uranium (ug/g)	1.56	0.18	0.010	1.0			U_T		1.56	0.18	0.010			0	31	
Potassium 40	9.81	0.61	0.25				GAM		8.97	0.71	0.31			9	35	
Cobalt 60	U		0.030	0.050		U	GAM		U		0.035	U		-		
Cesium 137	U		0.025	0.10		U	GAM		U		0.031	U		-		
Radium 226	0.373	0.055	0.052	0.10			GAM		0.348	0.062	0.061			7	47	
Radium 228	0.621	0.14	0.13	0.20			GAM		0.412	0.15	0.16			40	68	
Europium 152	U		0.064	0.10		U	GAM		U		0.076	U		-		
Europium 154	U		0.099	0.10		U	GAM		U		<u>0.13</u>	U		-		
Europium 155	U		0.088	0.10		U	GAM		U		0.085	U		-		
Thorium 228	0.561	0.047	0.047				GAM		0.462	0.039	0.040			19	37	
Thorium 232	0.621	0.14	0.13				GAM		0.412	0.15	0.16			40	68	
Uranium 235	U		0.11			U	GAM		U		0.12	U		-		
Uranium 238	U		3.4			U	GAM		U		4.5	U		-		
Americium 241	U		0.20			U	GAM		U		0.12	U		-		

Remain. Sites Confirm. Sampling-Soil

QC-DUP#2 53517

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 10

000027

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-DUP
 Version 3.06
 Report date 07/20/05

Date: 8 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 1607-D4 Remaining Sites – Soil Full Protocol
Subject: Wet Chemistry - Data Package No. H3247-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3247-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03717	7/5/05	Soil	C	See note 1
J03718	7/5/05	Soil	C	See note 1
J03719	7/5/05	Soil	C	See note 1

1 - IC anions by 300.0 and nitrate/nitrite by 353.2.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

• Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for bromide, chloride, sulfate, fluoride and nitrate/nitrite; and 48 hours for phosphate, nitrate and nitrite.

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".

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Due to the holding time being exceeded by not greater than two times the limit, all nitrate and nitrite results were qualified as estimates and flagged "J".

All other holding times were acceptable.

- **Method Blanks**

Method Blanks

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

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations.

Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR".

Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J".

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

All accuracy results were acceptable.

000002

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. H3247-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 holding time being exceeded by not greater than two times the limit, all nitrate and nitrite results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for

decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

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

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

000005

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

000007

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H3247	REVIEWER: TLI	Project: 1607-D4	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrate Nitrite	J	All	Holding time

* - 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

000009

Project: BECHTEL-HANFORD		SDG: H3247					
Laboratory: LLI	J03717	J03718	J03719				
Sample Number							
Remarks							
Sample Date	7/5/05	7/5/05	7/5/05				
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q
Bromide		1.3	U	1.3	U	1.2	U
Chloride		1.3	U	1.3	U	1.2	U
Flouride		1.3	U	1.3	U	1.2	U
Nitrite		1.28	UJ	1.30	UJ	1.24	UJ
Nitrate		2.46	J	2.28	J	2.23	J
Phosphate		1.3	U	1.3	U	1.2	U
Sulfate	5	4.3		2.1		2.0	
Nitrate/nitrite		0.72		0.55		0.55	

000010

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/14/05

CLIENT: TNUHANFORD B03-015 H3247
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0507L906

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J03716	% Solids	99.7	%	0.01	1.0
-002	J03717	% Solids	96.1	%	0.01	1.0
		Bromide by IC	1.3	u MG/KG	1.3	1.0
		Chloride by IC	1.3	u MG/KG	1.3	1.0
		Fluoride by IC	1.3	u MG/KG	1.3	1.0
		Nitrite by IC	1.28	u J MG/KG	1.28	1.0
		Nitrate by IC	2.46	J MG/KG	1.28	1.0
		Phosphate by IC	1.3	u MG/KG	1.3	1.0
		Sulfate by IC	4.3	MG/KG	1.3	1.0
		Nitrate Nitrite	0.72	MG/KG	0.21	1.0
-003	J03718	% Solids	95.8	%	0.01	1.0
		Bromide by IC	1.3	u MG/KG	1.3	1.0
		Chloride by IC	1.3	u MG/KG	1.3	1.0
		Fluoride by IC	1.3	u MG/KG	1.3	1.0
		Nitrite by IC	1.30	u J MG/KG	1.30	1.0
		Nitrate by IC	2.28	J MG/KG	1.30	1.0
		Phosphate by IC	1.3	u MG/KG	1.3	1.0
		Sulfate by IC	2.1	MG/KG	1.3	1.0
		Nitrate Nitrite	0.55	MG/KG	0.21	1.0
-004	J03719	% Solids	95.9	%	0.01	1.0
		Bromide by IC	1.2	u MG/KG	1.2	1.0
		Chloride by IC	1.2	u MG/KG	1.2	1.0
		Fluoride by IC	1.2	u MG/KG	1.2	1.0
		Nitrite by IC	1.24	u J MG/KG	1.24	1.0
		Nitrate by IC	2.23	J MG/KG	1.24	1.0
		Phosphate by IC	1.2	u MG/KG	1.2	1.0
		Sulfate by IC	2.0	MG/KG	1.2	1.0
		Nitrate Nitrite	0.55	MG/KG	0.21	1.0

ju
 8/6/05

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD B03-015 H3247
LVL#: 0507L906

W.O.#: 11343-606-001-9999-00
Date Received: 07-07-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 4 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
7. The matrix spike recoveries for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate and Nitrate Nitrite were within the 75-125% control limits.
8. The replicate analyses for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate and Nitrate Nitrite 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

7/19/05
Date

njpl07-906

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 12 pages.

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03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B03-015 H3247



DATE RECEIVED: 07/07/05

LVL LOT # :0507L906

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J03716						
% SOLIDS	001	S	05L%S090	07/05/05	07/08/05	07/08/05
J03717						
% SOLIDS	002	S	05L%S090	07/05/05	07/08/05	07/08/05
BROMIDE BY IC	002	S	05LIC050	07/05/05	07/09/05	07/09/05
BROMIDE BY IC	002	REP	S 05LIC050	07/05/05	07/09/05	07/09/05
BROMIDE BY IC	002	MS	S 05LIC050	07/05/05	07/09/05	07/09/05
CHLORIDE BY IC	002	S	05LIC050	07/05/05	07/09/05	07/09/05
CHLORIDE BY IC	002	REP	S 05LIC050	07/05/05	07/09/05	07/09/05
CHLORIDE BY IC	002	MS	S 05LIC050	07/05/05	07/09/05	07/09/05
FLUORIDE BY IC	002	S	05LIC050	07/05/05	07/09/05	07/09/05
FLUORIDE BY IC	002	REP	S 05LIC050	07/05/05	07/09/05	07/09/05
FLUORIDE BY IC	002	MS	S 05LIC050	07/05/05	07/09/05	07/09/05
NITRITE BY IC	002	S	05LIC050	07/05/05	07/09/05	07/09/05
NITRITE BY IC	002	REP	S 05LIC050	07/05/05	07/09/05	07/09/05
NITRITE BY IC	002	MS	S 05LIC050	07/05/05	07/09/05	07/09/05
NITRATE BY IC	002	S	05LIC050	07/05/05	07/09/05	07/09/05
NITRATE BY IC	002	REP	S 05LIC050	07/05/05	07/09/05	07/09/05
NITRATE BY IC	002	MS	S 05LIC050	07/05/05	07/09/05	07/09/05
PHOSPHATE BY IC	002	S	05LIC050	07/05/05	07/09/05	07/09/05
PHOSPHATE BY IC	002	REP	S 05LIC050	07/05/05	07/09/05	07/09/05
PHOSPHATE BY IC	002	MS	S 05LIC050	07/05/05	07/09/05	07/09/05
SULFATE BY IC	002	S	05LIC050	07/05/05	07/09/05	07/09/05
SULFATE BY IC	002	REP	S 05LIC050	07/05/05	07/09/05	07/09/05
SULFATE BY IC	002	MS	S 05LIC050	07/05/05	07/09/05	07/09/05
NITRATE NITRITE	002	S	05LN3A36	07/05/05	07/11/05	07/12/05
NITRATE NITRITE	002	REP	S 05LN3A36	07/05/05	07/11/05	07/12/05
NITRATE NITRITE	002	MS	S 05LN3A36	07/05/05	07/11/05	07/12/05
J03718						
% SOLIDS	003	S	05L%S090	07/05/05	07/08/05	07/08/05
BROMIDE BY IC	003	S	05LIC050	07/05/05	07/09/05	07/09/05
CHLORIDE BY IC	003	S	05LIC050	07/05/05	07/09/05	07/09/05

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B03-015 H3247

DATE RECEIVED: 07/07/05

LVL LOT # :0507L906

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	003	S	05LIC050	07/05/05	07/09/05	07/09/05
NITRITE BY IC	003	S	05LIC050	07/05/05	07/09/05	07/09/05
NITRATE BY IC	003	S	05LIC050	07/05/05	07/09/05	07/09/05
PHOSPHATE BY IC	003	S	05LIC050	07/05/05	07/09/05	07/09/05
SULFATE BY IC	003	S	05LIC050	07/05/05	07/09/05	07/09/05
NITRATE NITRITE	003	S	05LN3A36	07/05/05	07/11/05	07/12/05

J03719

% SOLIDS	004	S	05L&S090	07/05/05	07/08/05	07/08/05
BROMIDE BY IC	004	S	05LIC050	07/05/05	07/09/05	07/09/05
CHLORIDE BY IC	004	S	05LIC050	07/05/05	07/09/05	07/09/05
FLUORIDE BY IC	004	S	05LIC050	07/05/05	07/09/05	07/09/05
NITRITE BY IC	004	S	05LIC050	07/05/05	07/09/05	07/09/05
NITRATE BY IC	004	S	05LIC050	07/05/05	07/09/05	07/09/05
PHOSPHATE BY IC	004	S	05LIC050	07/05/05	07/09/05	07/09/05
SULFATE BY IC	004	S	05LIC050	07/05/05	07/09/05	07/09/05
NITRATE NITRITE	004	S	05LN3A36	07/05/05	07/11/05	07/12/05

LAB QC:

BROMIDE BY IC	MB1	S	05LIC050	N/A	07/09/05	07/09/05
BROMIDE BY IC	MB1 BS	S	05LIC050	N/A	07/09/05	07/09/05
CHLORIDE BY IC	MB1	S	05LIC050	N/A	07/09/05	07/09/05
CHLORIDE BY IC	MB1 BS	S	05LIC050	N/A	07/09/05	07/09/05
FLUORIDE BY IC	MB1	S	05LIC050	N/A	07/09/05	07/09/05
FLUORIDE BY IC	MB1 BS	S	05LIC050	N/A	07/09/05	07/09/05
NITRITE BY IC	MB1	S	05LIC050	N/A	07/09/05	07/09/05
NITRITE BY IC	MB1 BS	S	05LIC050	N/A	07/09/05	07/09/05
NITRATE BY IC	MB1	S	05LIC050	N/A	07/09/05	07/09/05
NITRATE BY IC	MB1 BS	S	05LIC050	N/A	07/09/05	07/09/05
PHOSPHATE BY IC	MB1	S	05LIC050	N/A	07/09/05	07/09/05
PHOSPHATE BY IC	MB1 BS	S	05LIC050	N/A	07/09/05	07/09/05
SULFATE BY IC	MB1	S	05LIC050	N/A	07/09/05	07/09/05
SULFATE BY IC	MB1 BS	S	05LIC050	N/A	07/09/05	07/09/05
NITRATE NITRITE	MB1	S	05LN3A36	N/A	07/11/05	07/12/05
NITRATE NITRITE	MB1 BS	S	05LN3A36	N/A	07/11/05	07/12/05

Appendix 5
Data Validation Supporting Documentation

000017

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1607-D4		DATA PACKAGE: H3247		
VALIDATOR:	JLP	LAB: LCI	DATE: 8/6/05		
			SDG: H3247		
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					
J03717		J03718		J03719	
Sol					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? Yes No N/A

Comments: _____

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

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

Initial calibrations acceptable? Yes No N/A

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

ICV and CCV checks acceptable? Yes No N/A

Standards traceable? Yes No N/A

Standards expired? Yes No N/A

Calculation check acceptable? Yes No N/A

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

ICB and CCB checks performed for all applicable analyses? (Levels D, E) Yes No N/A
ICB and CCB results acceptable? (Levels D, E) Yes No N/A
Laboratory blanks analyzed? Yes No N/A
Laboratory blank results acceptable? Yes No N/A
Field blanks analyzed? (Levels C, D, E) Yes No N/A
Field blank results acceptable? (Levels C, D, E) Yes No N/A
Transcription/calculation errors? (Levels D, E) Yes No N/A
Comments: no FB

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

Spike samples analyzed? Yes No N/A
Spike recoveries acceptable? Yes No N/A
Spike 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 PMS

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: nitrate + nitrate 4 days - J all

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: _____

Appendix 6

Additional Documentation Requested by Client

000022

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/14/05

CLIENT: TNUHANFORD B03-015 H3247
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0507L906

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LIC050-MB1	Bromide by IC	1.2	u MG/KG	1.2	1.0
		Chloride by IC	1.2	u MG/KG	1.2	1.0
		Fluoride by IC	1.2	u MG/KG	1.2	1.0
		Nitrite by IC	1.25	u MG/KG	1.25	1.0
		Nitrate by IC	1.25	u MG/KG	1.25	1.0
		Phosphate by IC	1.2	u MG/KG	1.2	1.0
		Sulfate by IC	1.2	u MG/KG	1.2	1.0
BLANK10	05LN3A36-MB1	Nitrate Nitrite	0.20	u MG/KG	0.20	1.0

000023

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/14/05

CLIENT: TNUHANFORD B03-015 H3247
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0507L906

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	J03717	Bromide by IC	29.7	0.0	25.6	116.2	1.0
		Chloride by IC	29.8	0.62	25.6	113.9	1.0
		Fluoride by IC	30.0	0.03	25.6	117.2	1.0
		Nitrite by IC	29.9	1.28u	25.6	117.0	1.0
		Nitrate by IC	32.8	2.46	25.6	118.6	1.0
		Phosphate by IC	31.5	1.3 u	25.6	123.1	1.0
		Sulfate by IC	34.1	4.3	25.6	116.6	1.0
		Nitrate Nitrite	6.2	0.72	5.2	105.2	1.0
BLANK10	05LIC050-MB1	Bromide by IC	24.8	1.2 u	25.0	99.2	1.0
		Chloride by IC	23.9	1.2 u	25.0	95.5	1.0
		Fluoride by IC	24.4	1.2 u	25.0	97.7	1.0
		Nitrite by IC	24.5	1.25u	25.0	98.0	1.0
		Nitrate by IC	24.8	1.25u	25.0	99.4	1.0
		Phosphate by IC	26.3	1.2 u	25.0	105.2	1.0
		Sulfate by IC	24.9	1.2 u	25.0	99.6	1.0
BLANK10	05LN3A36-MB1	Nitrate Nitrite	5.4	0.20u	5.0	108.4	1.0

000024

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/14/05

CLIENT: TNUHANFORD B03-015 H3247
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0507L906

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD			DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----	-----
-002REP	J03717	Bromide by IC	1.3 u	1.3 u	NC		1.0
		Chloride by IC	1.3 u	1.3 u	NC		1.0
		Fluoride by IC	1.3 u	1.3 u	NC		1.0
		Nitrite by IC	1.28u	1.30u	NC		1.0
		Nitrate by IC	2.46	2.80	13.2		1.0
		Phosphate by IC	1.3 u	1.3 u	NC		1.0
		Sulfate by IC	4.3	4.0	8.0		1.0
		Nitrate Nitrite	0.72	0.69	3.8		1.0

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Date: 8 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 1607-D4 Remaining Sites – Soil Full Protocol
Subject: Semivolatile - Data Package No. H3247-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3247-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03716RE*	7/5/05	Soil	C	8270C
J03717RE*	7/5/05	Soil	C	8270C
J03718RE*	7/5/05	Soil	C	8270C
J03719RE*	7/5/05	Soil	C	8270C

* - Only the re-preparation samples were validated per BHI.

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

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times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

· **Method Blanks**

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

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

Due to method blank contamination, the di-n-butylphthalate results in samples J03717RE, J03718RE and J03719RE were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One field blank (J03716RE) was submitted for analysis. Diethylphthalate and di-n-butylphthalate were 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

000002

recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike duplicate recovery outside QC limits (10%), all 4,6-dinitro-2-methylphenol results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

• Precision

Matrix Spike/Matrix Spike Duplicate Samples

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

Due to an RPD outside QC limits (155%), all 4,6-dinitro-2-methylphenol results were qualified as estimates and flagged "J".

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

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

• **Analytical Detection Levels**

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

• **Completeness**

Data package No. H3247-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples were qualified as undetected, raised to the RDL and flagged "U".
- Due to method blank contamination, the di-n-butylphthalate results in samples J03717RE, J03718RE and J03719RE were raised to the RQL, qualified as undetected and flagged "U".

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- Due to a matrix spike duplicate recovery outside QC limits (10%), all 4,6-dinitro-2-methylphenol results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (155%), all 4,6-dinitro-2-methylphenol results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (43%), all benzo(k)fluoranthene 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.

Thirty-two analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

Appendix 1

Glossary of Data Reporting Qualifiers

000006

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

000008

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: H3247	REVIEWER: TLI	Project: 1607-D4	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
bis(2-Ethylhexyl)phthalate	U at RQL	All	Blank contamination
di-n-Butylphthalate	U at RQL	J03717RE J03718RE J03719RE	Blank contamination
4,6-Dinitro-2-methylphenol	J	All	MS recovery
4,6-Dinitro-2-methylphenol Benzo(k)fluoranthene	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.

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000010

Project: BECHTEL-HANFORD		SDG: H3247	
Laboratory: LLI		J03716RE J03717RE J03718RE J03719RE	
Sample Number	Remarks	7/5/05	7/8/05
Sample Date	Extraction Date	7/19/05	7/19/05
Analysis Date		Result	Q
Semivolatile (8270C)	RQL	Result	Q
Phenol	660	330 U	350 U
bis(2-Chloroethylether)	660	330 U	350 U
2-Chlorophenol	660	330 U	350 U
1,3-Dichlorobenzene	660	330 U	350 U
1,4-Dichlorobenzene	660	330 U	350 U
1,2-Dichlorobenzene	660	330 U	350 U
2-Methylphenol	660	330 U	350 U
2,2'-oxybis(1-chloropropane)	660	330 U	350 U
3 and/or 4-Methylphenol	660	330 U	350 U
N-Nitroso-di-n-propylamine	660	330 U	350 U
Hexachloroethane	660	330 U	350 U
Nitrobenzene	660	330 U	350 U
Isophorone	660	330 U	350 U
2-Nitrophenol	660	330 U	350 U
2,4-Dimethylphenol	660	330 U	350 U
bis(2-Chloroethoxy)methane	660	330 U	350 U
2,4-Dichlorophenol	660	330 U	350 U
1,2,4-Trichlorobenzene	660	330 U	350 U
Naphthalene	660	330 U	350 U
4-Chloroaniline	660	330 U	350 U
Hexachlorobutadiene	660	330 U	350 U
4-Chloro-3-methylphenol	660	330 U	350 U
2-Methylnaphthalene	660	330 U	350 U
Hexachlorocyclopentadiene	660	330 U	350 U
2,4,6-Trichlorophenol	660	330 U	350 U
2,4,5-Trichlorophenol*	660	840 U	870 U
2-Chloronaphthalene	660	330 U	350 U
2-Nitroaniline*	660	840 U	870 U
Dimethylphthalate	660	330 U	350 U
Acenaphthylene	660	330 U	350 U
2,6-Dinitrotoluene	660	330 U	350 U

000011

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

Project: BECHTEL-HANFORD		SDG: H3247		J03716RE		J03717RE		J03718RE		J03719RE	
Laboratory: LLI		E. Blank		7/5/05		7/8/05		7/15/05		7/19/05	
Sample Number	Remarks	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
Sample Date	Extraction Date	7/19/05		7/19/05		7/19/05		7/19/05		7/19/05	
Extraction Date	Analysis Date	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result
Semivolatile (8270C)/8015B		660	840 U	870 U	870 U						
3-Nitroaniline*		660	330 U	350 U	350 U						
Acenaphthene		660	840 U	870 U	870 U						
2,4-Dinitrophenol*		660	840 U	870 U	870 U						
4-Nitrophenol*		660	330 U	350 U	350 U						
Dibenzofuran		660	330 U	350 U	350 U						
2,4-Dinitrotoluene		660	330 U	350 U	350 U						
Diethylphthalate		660	180	350 U	350 U						
4-Chlorophenyl-phenyl ether		660	330 U	350 U	350 U						
Fluorene		660	330 U	350 U	350 U						
4-Nitroaniline*		660	840 U	870 U	870 U						
4,6-Dinitro-2-methylphenol*		660	840 UJ	870 UJ	870 UJ						
N-Nitrosodiphenylamine		660	330 U	350 U	350 U						
4-Bromophenyl-phenyl ether		660	330 U	350 U	350 U						
Hexachlorobenzene		660	330 U	350 U	350 U						
Pentachlorophenol*		660	840 U	870 U	870 U						
Phenanthrene		660	330 U	350 U	350 U						
Anthracene		660	330 U	350 U	350 U						
Carbazole		660	330 U	350 U	350 U						
Di-n-butylphthalate		660	710	660 U	660 U						
Fluoranthene		660	330 U	350 U	350 U						
Pyrene		660	330 U	350 U	350 U						
Butylbenzylphthalate		660	330 U	350 U	350 U						
3,3'-Dichlorobenzidine		660	330 U	350 U	350 U						
Benzo(a)anthracene		660	330 U	350 U	350 U						
Chrysene		660	330 U	350 U	350 U						
bis(2-Ethylhexyl)phthalate		660	660 U	660 U	660 U						
Di-n-octylphthalate		660	330 U	350 U	350 U						
Benzo(b)fluoranthene		660	330 U	350 U	350 U						
Benzo(k)fluoranthene		660	330 UJ	350 UJ	350 UJ						
Benzo(a)pyrene		660	330 U	350 U	350 U						
Indeno(1,2,3-cd)pyrene		660	330 U	350 U	350 U						
Dibenz(a,h)anthracene		660	330 U	350 U	350 U						
Benzo(g,h,i)perylene		660	330 U	350 U	350 U						

000012

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

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Sample Information	RFW#:	Matrix:	D.F.:	Units:	Cust ID:	J03716	J03717	002 MS SOIL	002 MS SOIL	002 MS SOIL		
						001	002	001 RE	002	1.00	1.00	1.00
						SOIL	ug/Kg	ug/Kg	ug/Kg			

Nitrobenzene-d5						75	%	70	%	70	%	70	%	70	%	70	%			
2-Fluorobiphenyl						76	%	72	%	75	%	75	%	75	%	75	%			
Terphenyl-d14						110	%	93	%	111	%	92	%	92	%	92	%			
Phenol-d5						82	%	77	%	82	%	75	%	75	%	75	%			
2-Fluorophenol						77	%	71	%	77	%	69	%	69	%	69	%			
2,4,6-Tribromophenol						83	%	86	%	86	%	86	%	86	%	86	%			
Phenol						330	U	330	U	350	U	350	U	350	U	350	U			
bis(2-Chloroethyl) ether						330	U	330	U	350	U	350	U	350	U	350	U			
2-Chlorophenol						330	U	330	U	350	U	350	U	350	U	350	U			
1,3-Dichlorobenzene						330	U	330	U	350	U	350	U	350	U	350	U			
1,4-Dichlorobenzene						330	U	330	U	350	U	350	U	350	U	350	U			
1,2-Dichlorobenzene						330	U	330	U	350	U	350	U	350	U	350	U			
2-Methylphenol						330	U	330	U	350	U	350	U	350	U	350	U			
2,2'-oxybis(1-Chloropropane)						330	U	330	U	350	U	350	U	350	U	350	U			
4-Methylphenol						330	U	330	U	350	U	350	U	350	U	350	U			
N-Nitroso-di-n-propylamine						330	U	330	U	350	U	350	U	350	U	350	U			
Hexachloroethane						330	U	330	U	350	U	350	U	350	U	350	U			
Nitrobenzene						330	U	330	U	350	U	350	U	350	U	350	U			
Isophorone						330	U	330	U	350	U	350	U	350	U	350	U			
2-Nitrophenol						330	U	330	U	350	U	350	U	350	U	350	U			
2,4-Dimethylphenol						330	U	330	U	350	U	350	U	350	U	350	U			
bis(2-Chloroethoxy)methane						330	U	330	U	350	U	350	U	350	U	350	U			
2,4-Dichlorophenol						330	U	330	U	350	U	350	U	350	U	350	U			
1,2,4-Trichlorobenzene						330	U	330	U	350	U	350	U	350	U	350	U			
Naphthalene						330	U	330	U	350	U	350	U	350	U	350	U			
4-Chloroaniline						330	U	330	U	350	U	350	U	350	U	350	U			
Hexachlorobutadiene						330	U	330	U	350	U	350	U	350	U	350	U			
4-Chloro-3-methylphenol						330	U	330	U	350	U	350	U	350	U	350	U			
2-Methylnaphthalene						330	U	330	U	350	U	350	U	350	U	350	U			
Hexachlorocyclopentadiene						330	U	330	U	350	U	350	U	350	U	350	U			
2,4,6-Trichlorophenol						330	U	330	U	350	U	350	U	350	U	350	U			
2,4,5-Trichlorophenol						840	U	840	U	870	U	870	U	870	U	870	U			

8/1/05

000013

* = Outside of EPA CLP QC limits.

RFW#	001	001 RE	002	002 RE	002 MS	002 MS
2-Chloronaphthalene	330 U	330 U	350 U	350 U	75	75
2-Nitroaniline	110 JB	840 U	100 JB	870 U	75	75
Dimethylphthalate	330 U	330 U	350 U	350 U	80	70
Acenaphthylene	330 U	330 U	350 U	350 U	78	76
2,6-Dinitrotoluene	330 U	330 U	350 U	350 U	84	74
3-Nitroaniline	100 JB	840 U	100 JB	870 U	87	82
Acenaphthene	330 U	330 U	350 U	350 U	80	75
2,4-Dinitrophenol	840 U	840 U	870 U	870 U	39	58
4-Nitrophenol	840 U	840 U	870 U	870 U	87	89
Dibenzofuran	330 U	330 U	350 U	350 U	79	76
2,4-Dinitrotoluene	330 U	330 U	350 U	350 U	88	78
Diethylphthalate	180 J	180 J	350 U	350 U	78	76
4-Chlorophenyl-phenylether	330 U	330 U	350 U	350 U	76	75
Fluorene	330 U	330 U	350 U	350 U	79	77
4-Nitroaniline	80 JB	840 U	82 JB	870 U	71	70
4,6-Dinitro-2-methylphenol	840 U	840 U	870 U	870 U	60	79
N-Nitrosodiphenylamine (1)	330 U	330 U	350 U	350 U	66	62
4-Bromophenyl-phenylether	330 U	330 U	350 U	350 U	70	70
Hexachlorobenzene	330 U	330 U	350 U	350 U	80	80
Pentachlorophenol	840 U	840 U	870 U	870 U	89	87
Phenanthrene	330 U	330 U	350 U	350 U	80	80
Anthracene	330 U	330 U	350 U	350 U	78	71
Carbazole	330 U	330 U	350 U	350 U	79	67
Di-n-butylphthalate	730 B	710 B	56 JB	660 JB	78	73
Fluoranthene	330 U	330 U	350 U	350 U	80	79
Pyrene	330 U	330 U	350 U	350 U	90	77
Butylbenzylphthalate	18 J	330 U	350 U	350 U	87	77
3,3'-Dichlorobenzidine	18 J	330 U	350 U	350 U	87	73
Benzo(a)anthracene	330 U	330 U	350 U	350 U	81	80
Chrysene	330 U	330 U	350 U	350 U	80	70
bis(2-Ethylhexyl)phthalate	330 U	330 U	350 U	350 U	85	73
Di-n-octyl phthalate	330 U	330 U	350 U	350 U	96	72
Benzo(b)fluoranthene	330 U	330 U	350 U	350 U	112	79
Benzo(k)fluoranthene	330 U	330 U	350 U	350 U	61	65
Benzo(a)pyrene	330 U	330 U	350 U	350 U	78	72
Indeno(1,2,3-cd)pyrene	330 U	330 U	350 U	350 U	74	80
Dibenz(a,h)anthracene	330 U	330 U	350 U	350 U	77	81
Benzo(g,h,i)perylene	330 U	330 U	350 U	350 U	65	78

8/6/05

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

6800000000

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 07/21/05 16:05

RFW Batch Number: 0507L906

Client: TNUHANFORD B03-015 H3247

Work Order: 11343606001

Page: 2a

Cust ID:	J03717	J03717	J03718	J03719	J03719
RFW#:	002 MSD	002 MSD	003	004 RE	004 RE
Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
D.F.:	1.00	1.00	1.00	1.00	1.00
Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

Sample Information	002 MSD SOIL	002 MSD SOIL	003 SOIL	004 RE SOIL	004 RE SOIL
	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Nitrobenzene-d5					
2-Fluorobiphenyl	87	79	63	76	72
Terphenyl-d14	85	80	63	76	73
Phenol-d5	104	90	85	93	92
2-Fluorophenol	91	82	70	82	78
2,4,6-Tribromophenol	87	77	67	77	72
	104	98	66	76	79
Phenol	97	85	350	350	350
bis (2-Chloroethyl) ether	119	70	350	350	350
2-Chlorophenol	87	79	350	350	350
1,3-Dichlorobenzene	83	78	350	350	350
1,4-Dichlorobenzene	83	76	350	350	350
1,2-Dichlorobenzene	85	79	350	350	350
2-Methylphenol	92	83	350	350	350
2,2'-oxybis (1-Chloropropane)	86	77	350	350	350
4-Methylphenol	89	81	350	350	350
N-Nitroso-di-n-propylamine	80	85	350	350	350
Hexachloroethane	78	76	350	350	350
Nitrobenzene	88	79	350	350	350
Isophorone	98	93	350	350	350
2-Nitrophenol	92	84	350	350	350
2,4-Dimethylphenol	78	71	350	350	350
bis (2-Chloroethoxy) methane	89	84	350	350	350
2,4-Dichlorophenol	90	87	350	350	350
1,2,4-Trichlorobenzene	83	82	350	350	350
Naphthalene	83	80	350	350	350
4-Chloroaniline	86	88	130 JB	120 JB	350
Hexachlorobutadiene	91	91	350	350	350
4-Chloro-3-methylphenol	94	90	350	350	350
2-Methylnaphthalene	84	77	350	350	350
Hexachlorocyclopentadiene	40	50	350	350	350
2,4,6-Trichlorophenol	86	83	350	350	350
2,4,5-Trichlorophenol	93	85	870	870	870

ke 8/4/05

* = Outside of EPA CLP QC limits.

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RFW Batch Number: 0507L906

Cust ID: J03717

Client: TNUHANFORD B03-015 H3247

Work Order: 11343606001

Page: 2b

RFW#: 002 MSD 003 004 RE 004 RE

Chemical Name	002 MSD	003	004 RE	004 RE
2-Chloronaphthalene	87	850 U	350 U	350 U
2-Nitroaniline	86	110 JB	870 U	870 U
Dimethylphthalate	86	350 U	350 U	350 U
Acenaphthylene	88	350 U	350 U	350 U
2,6-Dinitrotoluene	93	350 U	350 U	350 U
3-Nitroaniline	96	120 JB	870 U	870 U
Acenaphthene	87	350 U	350 U	350 U
2,4-Dinitrophenol	51	870 U	870 U	870 U
4-Nitrophenol	101	870 U	870 U	870 U
Dibenzofuran	91	350 U	350 U	350 U
2,4-Dinitrotoluene	96	350 U	350 U	350 U
Diethylphthalate	86	350 U	350 U	350 U
4-Chlorophenyl-phenylether	84	350 U	350 U	350 U
Fluorene	91	350 U	350 U	350 U
4-Nitroaniline	82	89 JB	870 U	870 U
4,6-Dinitro-2-methylphenol	77	870 U	870 U	870 U
N-Nitrosodiphenylamine (1)	78	350 U	350 U	350 U
4-Bromophenyl-phenylether	84	350 U	350 U	350 U
Hexachlorobenzene	99	350 U	350 U	350 U
Pentachlorophenol	108	870 U	870 U	870 U
Phenanthrene	98	350 U	350 U	350 U
Anthracene	95	350 U	350 U	350 U
Carbazole	98	350 U	350 U	350 U
Di-n-butylphthalate	95	350 U	350 U	350 U
Fluoranthene	96	350 U	350 U	350 U
Pyrene	102	350 U	350 U	350 U
Butylbenzylphthalate	96	350 U	350 U	350 U
3,3'-Dichlorobenzidine	105	350 U	350 U	350 U
Benzo(a)anthracene	95	350 U	350 U	350 U
Chrysene	94	350 U	350 U	350 U
bis(2-Ethylhexyl)phthalate	99	100 JB	350 U	350 U
Di-n-octyl phthalate	104	350 U	350 U	350 U
Benzo(b)fluoranthene	122	350 U	350 U	350 U
Benzo(k)fluoranthene	91	350 U	350 U	350 U
Benzo(a)pyrene	90	350 U	350 U	350 U
Indeno(1,2,3-cd)pyrene	89	350 U	350 U	350 U
Dibenz(a,h)anthracene	92	350 U	350 U	350 U
Benzo(g,h,i)perylene	82	350 U	350 U	350 U

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

8/2/65

0000016

110000000

Sample Information RFW#: 05LE0565-MB1 05LE0565-MB1 05LE0565-MB1 05LE0565-MB1
Matrix: SOIL SOIL SOIL SOIL
D.F.: 1.00 1.00 1.00 1.00
Units: ug/Kg ug/Kg ug/Kg ug/Kg

Surrogate	73 %	56 %	79 %	74 %	SOIL	SOIL	SOIL	SOIL	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Nitrobenzene-d5	330 U	830 U	830 U	830 U	830 U							
2-Fluorobiphenyl	330 U	830 U	830 U	830 U	830 U							
Terphenyl-d14	330 U	830 U	830 U	830 U	830 U							
Phenol-d5	330 U	830 U	830 U	830 U	830 U							
2-Fluorophenol	330 U	830 U	830 U	830 U	830 U							
2,4,6-Tribromophenol	330 U	830 U	830 U	830 U	830 U							
Phenol	330 U	830 U	830 U	830 U	830 U							
bis(2-Chloroethyl)ether	330 U	830 U	830 U	830 U	830 U							
2-Chlorophenol	330 U	830 U	830 U	830 U	830 U							
1,3-Dichlorobenzene	330 U	830 U	830 U	830 U	830 U							
1,4-Dichlorobenzene	330 U	830 U	830 U	830 U	830 U							
1,2-Dichlorobenzene	330 U	830 U	830 U	830 U	830 U							
2-Methylphenol	330 U	830 U	830 U	830 U	830 U							
2,2'-oxybis(1-Chloropropane)	330 U	830 U	830 U	830 U	830 U							
4-Methylphenol	330 U	830 U	830 U	830 U	830 U							
N-Nitroso-di-n-propylamine	330 U	830 U	830 U	830 U	830 U							
Hexachloroethane	330 U	830 U	830 U	830 U	830 U							
Nitrobenzene	330 U	830 U	830 U	830 U	830 U							
Isophorone	330 U	830 U	830 U	830 U	830 U							
2-Nitrophenol	330 U	830 U	830 U	830 U	830 U							
2,4-Dimethylphenol	330 U	830 U	830 U	830 U	830 U							
bis(2-Chloroethoxy)methane	330 U	830 U	830 U	830 U	830 U							
2,4-Dichlorophenol	330 U	830 U	830 U	830 U	830 U							
1,2,4-Trichlorobenzene	330 U	830 U	830 U	830 U	830 U							
Naphthalene	330 U	830 U	830 U	830 U	830 U							
4-Chloroaniline	330 U	830 U	830 U	830 U	830 U							
Hexachlorobutadiene	330 U	830 U	830 U	830 U	830 U							
4-Chloro-3-methylphenol	330 U	830 U	830 U	830 U	830 U							
2-Methylnaphthalene	330 U	830 U	830 U	830 U	830 U							
Hexachlorocyclopentadiene	330 U	830 U	830 U	830 U	830 U							
2,4,6-Trichlorophenol	330 U	830 U	830 U	830 U	830 U							
2,4,5-Trichlorophenol	330 U	830 U	830 U	830 U	830 U							

V/Los

* = Outside of EPA CLP QC limits.

Cust ID: SBLKMB SBLKMB RE SBLKMB BS SBLKMB BS SBLKMB BS

RFW#: 05LE0565-MB1 05LE0565-MB1 05LE0565-MB1 05LE0565-MB1 05LE0565-MB1

2-Chloronaphthalene	330	U	330	U	86	%	83	%
2-Nitroaniline	100	J	830	U	82	%	84	%
Dimethylphthalate	330	U	330	U	92	%	81	%
Acenaphthylene	330	U	330	U	86	%	83	%
2,6-Dinitrotoluene	330	U	330	U	99	%	83	%
3-Nitroaniline	110	J	830	U	99	%	91	%
Acenaphthene	330	U	330	U	86	%	83	%
2,4-Dinitrophenol	830	U	830	U	79	%	68	%
4-Nitrophenol	830	U	830	U	114	%	96	%
Dibenzofuran	330	U	330	U	89	%	85	%
2,4-Dinitrotoluene	330	U	330	U	104	%	87	%
Diethylphthalate	330	U	330	U	91	%	88	%
4-Chlorophenyl-phenylether	330	U	330	U	87	%	85	%
Fluorene	330	U	330	U	90	%	86	%
4-Nitroaniline	94	J	830	U	88	%	79	%
4,6-Dinitro-2-methylphenol	830	U	830	U	107	%	88	%
N-Nitrosodiphenylamine (1)	330	U	330	U	72	%	69	%
4-Bromophenyl-phenylether	330	U	330	U	82	%	78	%
Hexachlorobenzene	330	U	330	U	92	%	89	%
Pentachlorophenol	830	U	830	U	107	%	92	%
Phenanthrene	330	U	330	U	87	%	88	%
Anthracene	330	U	330	U	93	%	81	%
Carbazole	330	U	330	U	99	%	77	%
Di-n-butylphthalate	47	J	36	J	95	%	83	%
Fluoranthene	330	U	330	U	103	%	86	%
Pyrene	330	U	330	U	90	%	96	%
Butylbenzylphthalate	330	U	330	U	91	%	92	%
3,3'-Dichlorobenzidine	330	U	330	U	103	%	83	%
Benzo(a)anthracene	330	U	330	U	94	%	88	%
Chrysene	330	U	330	U	90	%	84	%
bis(2-Ethylhexyl) phthalate	150	J	110	J	88	%	91	%
Di-n-octyl phthalate	330	U	330	U	88	%	96	%
Benzo(b)fluoranthene	330	U	330	U	106	%	80	%
Benzo(k)fluoranthene	330	U	330	U	70	%	88	%
Benzo(a)pyrene	330	U	330	U	87	%	85	%
Indeno(1,2,3-cd)pyrene	330	U	330	U	97	%	90	%
Dibenz(a,h)anthracene	330	U	330	U	97	%	93	%
Benzo(g,h,i)perylene	330	U	330	U	91	%	89	%

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

Handwritten signature/initials

Handwritten signature/initials

000018

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000019



Case Narrative

Client: TNU-HANFORD B03-015
LVL #: 0507L906
SDG/SAF # H3247/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 07-07-2005

SEMIVOLATILE

Four (4) soil samples were collected on 07-05-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 07-08-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 07-13,19-2005.

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 LVL's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within acceptance criteria.
5. One (1) of two hundred fifty-six (256) matrix spike recoveries was outside acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. The method blank contained the common laboratory contaminants Bis (2-Ethylhexy) phthalate and Di-n-butylphthalate at levels less than the CRQL. The method blank also contained the target compounds 4-Chloroaniline, 2-Nitroaniline, 3-Nitroaniline and 4-Nitroaniline at levels less than the CRQL possibly be due to the contamination. Consequently, all samples were reanalyzed on 07-19-2005 and reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. Internal standard area criteria were not met for sample J03717. The GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly.
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. LVL is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7-21-05
Date

son\group\data\bna\tnu-hanford\0507-906.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 25 pages.

000020

Initiator: SS
 Date: 7-18-05
 Client: TNU

Batch: 0507L905, 906, 910
 Samples: all
 Method: SW846/MCAWW/CLPI

Parameter: 8270
 Matrix: Solid
 Prep Batch: 05LE0565

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)

4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline in all samples, blanks, blankspikes, and matrixspikes & spikedys

2. Known or Probable Causes(s)

Contaminated batch of internal standard that did not get pre-tested

3. Discussion and Proposed Action

Other Description:

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

#1 narrate
 #2 reanalyze

4. Project Manager Instructions...signature/date: _____

- Concur with Proposed Action #2 reanalyze
- Disagree with Proposed Action; See Instruction
- Include in Case Narrative
- Client Contacted: Rick Weiss 7/19/05
- Date/Person _____
- Add
- Cancel

5. Final Action...signature/date: SS 7/21/05

Other Explanation:

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

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

Route Distribution of Completed SDR

- X Initiator
- X Lab General Manager: M. Taylor
- X Project Mgr. Stone/Johnson/Haslett
- X Technical Mgr. Wesson/Daniels
- X QA (file): Alberts
- Data Management: Feldman
- Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR

- Metals: Beegle
- Inorganic: Perrone
- GC/LC: Kiger
- MS: Rychlak/Layman
- Log-in: Melnic
- Admin: Soos
- Other: _____

Lionville Laboratory, Inc.
 BNA ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B03-015 H3247

DATE RECEIVED: 07/07/05

LVL LOT # :0507L906

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J03716	001	S	05LE0565	07/05/05	07/08/05	07/13/05
J03716	001	A1	S 05LE0565	07/05/05	07/08/05	07/19/05
J03717	002	S	05LE0565	07/05/05	07/08/05	07/13/05
J03717	002	A1	S 05LE0565	07/05/05	07/08/05	07/19/05
J03717	002 MS	S	05LE0565	07/05/05	07/08/05	07/13/05
J03717	002 MS	A1	S 05LE0565	07/05/05	07/08/05	07/19/05
J03717	002 MSD	S	05LE0565	07/05/05	07/08/05	07/13/05
J03717	002 MSD	A1	S 05LE0565	07/05/05	07/08/05	07/19/05
J03718	003	S	05LE0565	07/05/05	07/08/05	07/13/05
J03718	003	A1	S 05LE0565	07/05/05	07/08/05	07/19/05
J03719	004	S	05LE0565	07/05/05	07/08/05	07/13/05
J03719	004	A1	S 05LE0565	07/05/05	07/08/05	07/19/05

LAB QC:

SBLKMB	MB1	S	05LE0565	N/A	07/08/05	07/13/05
SBLKMB	MB1	S	05LE0565	N/A	07/08/05	07/19/05
SBLKMB	MB1 BS	S	05LE0565	N/A	07/08/05	07/13/05
SBLKMB	MB1 BS	S	05LE0565	N/A	07/08/05	07/19/05

000022

88888881

Appendix 5
Data Validation Supporting Documentation

000024

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1607-D4		DATA PACKAGE: H3247		
VALIDATOR:	TLT	LAB:	LLP	DATE: 8/6/05	
			SDG:	H3247	
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J03716RE J03D17RE J03D19RE J03D19RE					
RE = reanalysis validated - original not validated per BHI					
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 - 19, 18, 17 - 0 at RQL
bis(2-ethylhexyl)phthalate - all 0 at RQL
FRB - di-ethylphthalate + di-n-butylphthalate

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: msd 4,6-dinitrophenol - 2-methylphenol MSD 1090 J all
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: 439 - benzo (k) fluoranthene - J all
1557 - 4,6-dinitro-2-methyl phenol - J all

6. SYSTEM PERFORMANCE (Levels D and E)

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

Comments: _____

7. HOLDING TIMES (all levels)

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

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

Compound identification acceptable? (Levels D, E)..... Yes No N/A
 Compound quantitation acceptable? (Levels D, E)..... Yes No N/A
 Results reported for all requested analyses?..... Yes No N/A
 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: 32 om

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: 8 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 1607-D4 Remaining Sites – Soil Full protocol
Subject: Pesticide/PCB - Data Package No. H3247-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3247-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03717	7/5/05	Soil	C	See note 1
J03718	7/5/05	Soil	C	See note 1
J03719	7/5/05	Soil	C	See note 1

1 - PCBs by 8082 and pesticides by 8081A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 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

000001

associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

· **Method Blank**

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

· **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations.

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

Due to 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

No field duplicates were submitted for analysis.

· **Analytical Detection Levels**

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

• **Completeness**

Data Package No. H3247-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. All pesticide results in samples J03CD2 and J03CD6 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

000005

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

000007

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: H3247	REVIEWER: TLI	Project: 1607-D4	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS 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

000009

Project: BECHTEL-HANFORD		SDG: H3247	
Sample Number	J03717	J03718	J03719
Remarks			
Sample Date	7/5/05	7/5/05	7/5/05
Extraction Date	7/8/05	7/8/05	7/8/05
Analysis Date	7/13/05	7/13/05	7/13/05
PCB/Pesticide	RQL	Result	Q
Aroclor-1016	20	14 U	14 U
Aroclor-1221	20	14 U	14 U
Aroclor-1232	20	14 U	14 U
Aroclor-1242	20	14 U	14 U
Aroclor-1248	20	14 U	14 U
Aroclor-1254	20	14 U	14 U
Aroclor-1260	20	14 U	14 U
Sample Date	7/5/05	7/5/05	7/5/05
Extraction Date	7/8/05	7/8/05	7/8/05
Analysis Date	7/13/05	7/13/05	7/13/05
Alpha-BHC	5	1.7 U	1.7 U
Beta-BHC	5	1.7 U	1.7 U
Delta-BHC	5	1.7 U	1.7 U
Gamma-BHC (Lindane)	5	1.7 U	1.7 U
Heptachlor	5	1.7 U	1.7 U
Aldrin	5	1.7 U	1.7 U
Heptachlor Epoxide	5	1.7 U	1.7 U
Endosulfan I	5	1.7 U	1.7 U
Dieldrin	5	1.7 U	1.7 U
4,4'-DDE	5	3.5 U	3.5 U
Endrin	5	3.5 U	3.5 U
Endosulfan II	5	3.5 U	3.5 U
4,4'-DDD	5	3.5 U	3.5 U
Endosulfan Sulfate	5	3.5 U	3.5 U
4,4'-DDT	5	3.5 U	3.5 U
Methoxychlor	5	17 U	17 U
Endrin Ketone	5	3.5 U	3.5 U
Endrin Aldehyde	5	3.5 U	3.5 U
alpha-Chlordane	5	1.7 U	1.7 U
gamma-Chlordane	5	1.7 U	1.7 U
Toxaphene	5	170 UJ	170 UJ

000010

~~XXXXXXXXXX~~

Sample Information	RFW#:	Matrix:	D.F.:	Units:	J03717	J03717	J03717	J03717	J03718	J03719	PBLKPA
Surrogate: Decachlorobiphenyl	002	SOIL	1.00	UG/KG	100	98	109	101	105		
Tetrachloro-m-xylene	002	SOIL	1.00	UG/KG	83	83	95	100	94		
Alpha-BHC					104	100	100	101	105		
Beta-BHC					117	111	117	117	117		
Delta-BHC					100	101	101	101	101		
gamma-BHC (Lindane)					105	101	101	101	101		
Heptachlor					110	105	105	105	105		
Aldrin					104	102	102	102	102		
Heptachlor epoxide					111	105	105	105	105		
Endosulfan I					108	102	102	102	102		
Dieldrin					118	111	111	111	111		
4,4'-DDE					110	101	101	101	101		
Endrin					127	121	121	121	121		
Endosulfan II					116	112	112	112	112		
4,4'-DDD					121	117	117	117	117		
Endosulfan sulfate					124	117	117	117	117		
4,4'-DDT					96	85	85	85	85		
Methoxychlor					118	113	113	113	113		
Endrin ketone					120	110	110	110	110		
Endrin aldehyde					103	92	92	92	92		
alpha-Chlordane					114	107	107	107	107		
gamma-Chlordane					108	102	102	102	102		
Toxaphene					170	170	170	170	170		

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

000012

Handwritten notes:
PC
8/6/05
8-11-05

Cust ID: PBLKPA BS

Sample Information
 RFW#: 05LE0566-MB1
 Matrix: SOIL
 D.F.: 1.00
 Units: UG/KG

Surrogate:	Decachlorobiphenyl	102	%
	Tetrachloro-m-xylene	89	%
Alpha-BHC		109	%
Beta-BHC		118	%
Delta-BHC		83	%
gamma-BHC (Lindane)		112	%
Heptachlor		108	%
Aldrin		111	%
Heptachlor epoxide		118	%
Endosulfan I		110	%
Dieldrin		124	%
4,4'-DDE		118	%
Endrin		131	%
Endosulfan II		103	%
4,4'-DDD		111	%
Endosulfan sulfate		125	%
4,4'-DDT		90	%
Methoxychlor		108	%
Endrin ketone		119	%
Endrin aldehyde		101	%
alpha-Chlordane		105	%
gamma-Chlordane		115	%
Toxaphene		170	U

Handwritten initials/signature

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

Handwritten signature

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000014



Case Narrative

Client: TNU-HANFORD B03-015
LVL #: 0507L906
SDG/SAF # H3247/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 07-07-2005

PCB

Three (3) soil samples were collected on 07-05-2005.

The samples and their associated QC samples were extracted on 07-08-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 07-13-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

son\group\data\pest\tnu hanford\0507-906.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.

000015



Case Narrative

Client: TNU-HANFORD B03-015
LVL #: 0507L906
SDG/SAF # H3247/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 07-07-2005

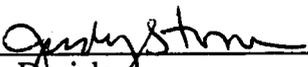
CHLORINATED PESTICIDES

Three (3) soil samples were collected on 07-05-2005.

The samples and their associated QC samples were extracted on 07-08-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 07-13-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. One (1) of twenty (20) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. Two (2) of forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/20/05
Date

son\vr\group\data\pest\tnu hanford\0507-906.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 9 pages.

000017

Initiator: M. McManally Batch: 0507L906 Parameter: 060217
 Date: 7/13/05 Samples: ms, ms1, 135 Matrix: Soil
 Client: TPO HANFORD Method: SWB49/MCAWWW/CLPI Prep Batch: 0525086

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)

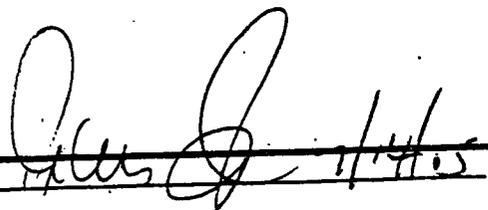
- ms high for recovery of DPO @ 121% (range 1.50 - 120) and Pb sulfate @ 124% (range 1.60 - 120)
 - 135 high for recovery of Cr sulfate @ 125%
 - no hits in samples

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

Other Description:

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

narrative

 7/14/05

4. Project Manager Instructions...signature/date: _____

- 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: _____

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
<input checked="" type="checkbox"/>	X Initiator	<input type="checkbox"/>	Metals: Beegle
<input checked="" type="checkbox"/>	X Lab General Manager: M. Taylor	<input type="checkbox"/>	Inorganic: Perrone
<input checked="" type="checkbox"/>	X Project Mgr. Stone/Johnson/Haslett	<input type="checkbox"/>	GC/LC: Kiger
<input checked="" type="checkbox"/>	X Technical Mgr. Wesson/Daniels	<input type="checkbox"/>	MS: Rychlak/Layman
<input checked="" type="checkbox"/>	X QA (file): Alberts	<input type="checkbox"/>	Log-in: Melnic
<input type="checkbox"/>	Data Management: Feldman	<input type="checkbox"/>	Admin: Soos
<input type="checkbox"/>	Sample Prep: Beegle/Kiger	<input type="checkbox"/>	Other: _____



Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1607-D4		DATA PACKAGE: H3247		
VALIDATOR:	TLI	LAB:	LLI	DATE: 8/6/05	
			SDG:	H3249	
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J03717 J03718 J03719					
Soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

Initial calibrations acceptable? Yes No **N/A**
 Continuing calibrations acceptable? Yes No **N/A**
 Standards traceable? Yes No **N/A**
 Standards expired? Yes No **N/A**
 Calculation check acceptable? Yes No **N/A**
 DDT and endrin breakdowns acceptable? Yes No **N/A**

Comments: _____

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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: methoxychlor + toxaphene are

9. SAMPLE CLEANUP (Levels D and E)

Fluorilil ® (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: _____