SAF-RC-032
100-F Remaining Sites Burial Grounds - Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan **(3)** H9-02 MJP 4/4/06
INITIAL/DATE

COMMENTS:

SDG K0193 **SAF-RC-032**

Waste Site: 132-F-1 and 100-F-33

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Date: 15 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Sites 132-F-1 and 100-F-33
Subject: Inorganics - Data Package No. K0193-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0193 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
J111T4	1/24/06	Soil	C	See note 1
J111T5	1/24/06	Soil	C	See note 1
J111T6	1/24/06	Soil	C	See note 1
J111T7	1/24/06	Soil	C	See note 1
J111T8	1/24/06	Soil	C	See note 1
J111T9	1/24/06	Soil	C	See note 1
J111V0	1/24/06	Soil	C	See note 1
J111V1	1/24/06	Soil	C	See note 1
J111V2	1/24/06	Soil	C	See note 1
J111V3	1/24/06	Soil	C	See note 1
J111V4	1/24/06	Soil	C	See note 1
J111V5	1/24/06	Soil	C	See note 1
J111V6	1/24/06	Soil	C	See note 1
J111V7	1/24/06	Soil	C	See note 1

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

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

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

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

All preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J111V6) was submitted for analysis. Barium, manganese, magnesium, lead, vanadium and zinc were detected in the equipment blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

Due to a matrix spike recovery outside QC limits (141.5%), all lead results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (56.2%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J111V5/J111T6) were submitted for analysis. Field duplicates are assessed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. K0193 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike recovery outside QC limits (141.5%), all lead results were qualified as estimates and flagged "J".
- Due to a matrix spike recovery outside QC limits (56.2%), 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

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0198	REVIEWER: TLH	Project: 100-F-33	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Lead Antimony	J	All	MS recovery

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI	SDG: K0193																		
Sample Number		J111T4		J111T5		J111T6		J111T7		J111T8		J111T9		J111V0		J111V1		J111V2	
Remarks																			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.15	U	0.15	U	0.14	U	0.14	U	0.15	U	0.15	U	0.14	U	0.14	U	0.14	U
Arsenic	10	3.8	U	3.8	U	4.2		3.8		5.4		7.3		4.8		3.7	U	5.2	
Boron		1.9		1.6		1.0		1.4		1.8		1.5		0.55		1.2		0.77	
Barium	2	69.8		66.9		57.8		71.1		65.5		75.4		61.2		64.2		56.5	
Beryllium		0.05		0.05		0.06		0.02		0.01	U	0.05		0.01	U	0.01		0.01	U
Cadmium	0.2	0.08	U	0.07	U	0.07	U	0.07	U	0.14		0.08		0.07	U	0.07	U	0.07	U
Cobalt		5.4		5.8		5.0		6.1		5.4		5.8		5.0		5.1		4.8	
Chromium	1	8.4		9.4		9.7		10.2		8.9		10.1		8.2		8.7		9.2	
Copper		12.2		12.7		9.3		12.1		11.5		13.5		8.9		9.7		9.5	
Mercury	0.2	0.05		0.04		0.01	U	0.02	U	0.02	U	0.04		0.01	U	0.01	U	0.02	U
Manganese		254		265		229		287		254		266		237		241		217	
Molybdenum		0.41		0.31		0.23		0.13	U	0.15		0.16		0.13	U	0.13	U	0.13	U
Nickel		9.0		10.1		10.4		11.2		9.5		10.6		9.4		9.3		9.8	
Lead	5	12.4	J	7.4	J	3.2	J	6.5	J	12.9	J	10.3	J	3.1	J	4.2	J	3.9	J
Antimony		0.43	UJ	0.42	UJ	0.40	UJ	0.41	UJ	0.43	UJ	0.41	UJ	0.39	UJ	0.41	UJ	0.39	UJ
Selenium	1	0.39	U	0.38	U	0.36	U	0.37	U	0.38	U	0.37	U	0.35	U	0.37	U	0.35	U
Vanadium		31.6		34.6		30.2		39.7		36.2		31.1		29.4		32.3		29.6	
Zinc	1	61.7		51.9		31.2		147		55.3		65.9		29.5		37.2		34.9	

000010A

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

Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI	SDG: K0193																		
Sample Number		J111V3		J111V4		J111V5		J111V6		J111V7									
Remarks						Duplicate		E. Blank											
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06									
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.14	U	0.14	U	0.14	U	0.13	U	0.17									
Arsenic	10	3.7	U	3.5	U	3.6	U	3.4	U	3.7	U								
Boron		1.5		0.66		0.75		0.25	U	2.0									
Barium	2	66.5		59.4		56.1		0.99		77.4									
Beryllium		0.01	U	0.01		0.04		0.009	U	0.01	U								
Cadmium	0.2	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U								
Cobalt		4.4		5.0		4.9		0.11	U	5.4									
Chromium	1	6.8		8.3		8.9		0.15	U	9.4									
Copper		9.1		9.7		9.4		0.11	U	12.5									
Mercury	0.2	0.02	U	0.01	U	0.02	U	0.02	U	0.38									
Manganese		205		224		223		2.7		250									
Molybdenum		0.20		0.19		0.20		0.12	U	0.28									
Nickel		8.8		9.7		11.2		0.12	U	9.9									
Lead	5	2.7	J	2.9	J	4.2	J	0.30	J	7.3	J								
Antimony		0.41	UJ	0.39	UJ	0.40	UJ	0.37	UJ	0.41	UJ								
Selenium	1	0.37	U	0.35	U	0.36	U	0.34	U	0.37	U								
Vanadium		28.8		30.1		30.5		0.09		36.1									
Zinc	1	29.5		29.4		33.0		1.0		49.0									

000011

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J111T4	Silver, Total	0.15	u	MG/KG	0.15	1.0
		Arsenic, Total	3.8	u	MG/KG	3.8	1.0
		Boron, Total	1.9		MG/KG	0.29	1.0
		Barium, Total	69.8		MG/KG	0.02	1.0
		Beryllium, Total	0.05		MG/KG	0.01	1.0
		Cadmium, Total	0.08	u	MG/KG	0.08	1.0
		Cobalt, Total	5.4		MG/KG	0.13	1.0
		Chromium, Total	8.4		MG/KG	0.17	1.0
		Copper, Total	12.2		MG/KG	0.13	1.0
		Mercury, Total	0.05		MG/KG	0.02	1.0
		Manganese, Total	254		MG/KG	0.02	1.0
		Molybdenum, Total	0.41		MG/KG	0.14	1.0
		Nickel, Total	9.0		MG/KG	0.14	1.0
		Lead, Total	12.4	J	MG/KG	0.33	1.0
		Antimony, Total	0.43	u J	MG/KG	0.43	1.0
		Selenium, Total	0.39	u	MG/KG	0.39	1.0
		Vanadium, Total	31.6		MG/KG	0.1	1.0
		Zinc, Total	61.7		MG/KG	0.05	1.0
-002	J111T5	Silver, Total	0.15	u	MG/KG	0.15	1.0
		Arsenic, Total	3.8	u	MG/KG	3.8	1.0
		Boron, Total	1.6		MG/KG	0.28	1.0
		Barium, Total	66.9		MG/KG	0.02	1.0
		Beryllium, Total	0.05		MG/KG	0.01	1.0
		Cadmium, Total	0.07	u	MG/KG	0.07	1.0
		Cobalt, Total	5.8		MG/KG	0.13	1.0
		Chromium, Total	9.4		MG/KG	0.17	1.0
		Copper, Total	12.7		MG/KG	0.13	1.0
		Mercury, Total	0.04		MG/KG	0.01	1.0
		Manganese, Total	265		MG/KG	0.02	1.0
		Molybdenum, Total	0.31		MG/KG	0.14	1.0
		Nickel, Total	10.1		MG/KG	0.14	1.0
		Lead, Total	7.4	J	MG/KG	0.33	1.0
		Antimony, Total	0.42	u J	MG/KG	0.42	1.0
		Selenium, Total	0.38	u	MG/KG	0.38	1.0
		Vanadium, Total	34.6		MG/KG	0.09	1.0
		Zinc, Total	51.9		MG/KG	0.05	1.0

3/13/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J111T6	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	4.2	MG/KG	3.6	1.0
		Boron, Total	1.0	MG/KG	0.27	1.0
		Barium, Total	57.8	MG/KG	0.02	1.0
		Beryllium, Total	0.06	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	5.0	MG/KG	0.12	1.0
		Chromium, Total	9.7	MG/KG	0.16	1.0
		Copper, Total	9.3	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	229	MG/KG	0.02	1.0
		Molybdenum, Total	0.23	MG/KG	0.13	1.0
		Nickel, Total	10.4	MG/KG	0.13	1.0
		Lead, Total	3.2 J	MG/KG	0.31	1.0
		Antimony, Total	0.40 u J	MG/KG	0.40	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Vanadium, Total	30.2	MG/KG	0.09	1.0
		Zinc, Total	31.2	MG/KG	0.05	1.0
-004	J111T7	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	3.8	MG/KG	3.6	1.0
		Boron, Total	1.4	MG/KG	0.27	1.0
		Barium, Total	71.1	MG/KG	0.02	1.0
		Beryllium, Total	0.02	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	6.1	MG/KG	0.12	1.0
		Chromium, Total	10.2	MG/KG	0.16	1.0
		Copper, Total	12.1	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	287	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Nickel, Total	11.2 J	MG/KG	0.13	1.0
		Lead, Total	6.5 J	MG/KG	0.32	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	39.7	MG/KG	0.09	1.0
		Zinc, Total	147	MG/KG	0.05	1.0

3/13/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J111T8	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	5.4	MG/KG	3.8	1.0
		Boron, Total	1.8	MG/KG	0.29	1.0
		Barium, Total	65.5	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.14	MG/KG	0.07	1.0
		Cobalt, Total	5.4	MG/KG	0.13	1.0
		Chromium, Total	8.9	MG/KG	0.17	1.0
		Copper, Total	11.5	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	254	MG/KG	0.02	1.0
		Molybdenum, Total	0.15	MG/KG	0.14	1.0
		Nickel, Total	9.5	MG/KG	0.14	1.0
		Lead, Total	12.9 J	MG/KG	0.33	1.0
		Antimony, Total	0.43 uJ	MG/KG	0.43	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Vanadium, Total	36.2	MG/KG	0.1	1.0
		Zinc, Total	55.3	MG/KG	0.05	1.0
-006	J111T9	Silver, Total	0.15 u	MG/KG	0.15	1.0
		Arsenic, Total	7.3	MG/KG	3.7	1.0
		Boron, Total	1.5	MG/KG	0.28	1.0
		Barium, Total	75.4	MG/KG	0.02	1.0
		Beryllium, Total	0.05	MG/KG	0.01	1.0
		Cadmium, Total	0.08	MG/KG	0.07	1.0
		Cobalt, Total	5.8	MG/KG	0.12	1.0
		Chromium, Total	10.1	MG/KG	0.17	1.0
		Copper, Total	13.5	MG/KG	0.12	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Manganese, Total	266	MG/KG	0.02	1.0
		Molybdenum, Total	0.16	MG/KG	0.13	1.0
		Nickel, Total	10.6	MG/KG	0.13	1.0
		Lead, Total	10.3 J	MG/KG	0.32	1.0
		Antimony, Total	0.41 uJ	MG/KG	0.41	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	31.1	MG/KG	0.09	1.0
		Zinc, Total	65.9	MG/KG	0.05	1.0

K 3/13/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193

LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J111V0	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	4.8	MG/KG	3.5	1.0
		Boron, Total	0.55	MG/KG	0.26	1.0
		Barium, Total	61.2	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	5.0	MG/KG	0.12	1.0
		Chromium, Total	8.2	MG/KG	0.16	1.0
		Copper, Total	8.9	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	237	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Nickel, Total	9.4	MG/KG	0.13	1.0
		Lead, Total	3.1 J	MG/KG	0.30	1.0
		Antimony, Total	0.39 u J	MG/KG	0.39	1.0
		Selenium, Total	0.35 u	MG/KG	0.35	1.0
		Vanadium, Total	29.4	MG/KG	0.09	1.0
		Zinc, Total	29.5	MG/KG	0.05	1.0
-008	J111V1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	3.7 u	MG/KG	3.7	1.0
		Boron, Total	1.2	MG/KG	0.28	1.0
		Barium, Total	64.2	MG/KG	0.02	1.0
		Beryllium, Total	0.01	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	5.1	MG/KG	0.12	1.0
		Chromium, Total	8.7	MG/KG	0.16	1.0
		Copper, Total	9.7	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	241	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Nickel, Total	9.3	MG/KG	0.13	1.0
		Lead, Total	4.2 J	MG/KG	0.32	1.0
		Antimony, Total	0.41 u J	MG/KG	0.41	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	32.3	MG/KG	0.09	1.0
		Zinc, Total	37.2	MG/KG	0.05	1.0

PR 3/13/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J111V2	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	5.2	MG/KG	3.5	1.0
		Boron, Total	0.77	MG/KG	0.26	1.0
		Barium, Total	56.5	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	4.8	MG/KG	0.12	1.0
		Chromium, Total	9.2	MG/KG	0.16	1.0
		Copper, Total	9.5	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	217	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Nickel, Total	9.8	MG/KG	0.13	1.0
		Lead, Total	3.9 J	MG/KG	0.30	1.0
		Antimony, Total	0.39 uJ	MG/KG	0.39	1.0
		Selenium, Total	0.35 u	MG/KG	0.35	1.0
		Vanadium, Total	29.6	MG/KG	0.09	1.0
		Zinc, Total	34.9	MG/KG	0.05	1.0
-010	J111V3	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	3.7 u	MG/KG	3.7	1.0
		Boron, Total	1.5	MG/KG	0.28	1.0
		Barium, Total	66.5	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	4.4	MG/KG	0.12	1.0
		Chromium, Total	6.8	MG/KG	0.16	1.0
		Copper, Total	9.1	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	206	MG/KG	0.02	1.0
		Molybdenum, Total	0.20	MG/KG	0.13	1.0
		Nickel, Total	8.8	MG/KG	0.13	1.0
		Lead, Total	2.7 J	MG/KG	0.32	1.0
		Antimony, Total	0.41 uJ	MG/KG	0.41	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	28.8	MG/KG	0.09	1.0
		Zinc, Total	29.5	MG/KG	0.05	1.0

RC 3/13/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J111V4	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	3.5 u	MG/KG	3.5	1.0
		Boron, Total	0.66	MG/KG	0.26	1.0
		Barium, Total	59.4	MG/KG	0.02	1.0
		Beryllium, Total	0.01	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	5.0	MG/KG	0.12	1.0
		Chromium, Total	8.3	MG/KG	0.16	1.0
		Copper, Total	9.7	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	224	MG/KG	0.02	1.0
		Molybdenum, Total	0.19	MG/KG	0.13	1.0
		Nickel, Total	9.7	MG/KG	0.13	1.0
		Lead, Total	2.9 J	MG/KG	0.30	1.0
		Antimony, Total	0.39 u J	MG/KG	0.39	1.0
		Selenium, Total	0.35 u	MG/KG	0.35	1.0
		Vanadium, Total	30.1	MG/KG	0.09	1.0
		Zinc, Total	29.4	MG/KG	0.05	1.0
-012	J111V5	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	3.6 u	MG/KG	3.6	1.0
		Boron, Total	0.75	MG/KG	0.27	1.0
		Barium, Total	56.1	MG/KG	0.02	1.0
		Beryllium, Total	0.04	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	4.9	MG/KG	0.12	1.0
		Chromium, Total	8.9	MG/KG	0.16	1.0
		Copper, Total	9.4	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	223	MG/KG	0.02	1.0
		Molybdenum, Total	0.20	MG/KG	0.13	1.0
		Nickel, Total	11.2	MG/KG	0.13	1.0
		Lead, Total	4.2 J	MG/KG	0.31	1.0
		Antimony, Total	0.40 u J	MG/KG	0.40	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Vanadium, Total	30.5	MG/KG	0.09	1.0
		Zinc, Total	33.0	MG/KG	0.05	1.0

3/13/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	J111V6	Silver, Total	0.13 u	MG/KG	0.13	1.0
		Arsenic, Total	3.4 u	MG/KG	3.4	1.0
		Boron, Total	0.25 u	MG/KG	0.25	1.0
		Barium, Total	0.99	MG/KG	0.02	1.0
		Beryllium, Total	0.009u	MG/KG	0.009	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.11 u	MG/KG	0.11	1.0
		Chromium, Total	0.15 u	MG/KG	0.15	1.0
		Copper, Total	0.11 u	MG/KG	0.11	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	2.7	MG/KG	0.02	1.0
		Molybdenum, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.30 J	MG/KG	0.29	1.0
		Antimony, Total	0.37 uJ	MG/KG	0.37	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Vanadium, Total	0.09	MG/KG	0.08	1.0
		Zinc, Total	1.0	MG/KG	0.05	1.0
-014	J111V7	Silver, Total	0.17	MG/KG	0.14	1.0
		Arsenic, Total	3.7 u	MG/KG	3.7	1.0
		Boron, Total	2.0	MG/KG	0.28	1.0
		Barium, Total	77.4	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	5.4	MG/KG	0.12	1.0
		Chromium, Total	9.4	MG/KG	0.16	1.0
		Copper, Total	12.5	MG/KG	0.12	1.0
		Mercury, Total	0.38	MG/KG	0.02	1.0
		Manganese, Total	250	MG/KG	0.02	1.0
		Molybdenum, Total	0.28	MG/KG	0.13	1.0
		Nickel, Total	9.9	MG/KG	0.13	1.0
		Lead, Total	7.3 J	MG/KG	0.32	1.0
		Antimony, Total	0.41 uJ	MG/KG	0.41	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	36.1	MG/KG	0.09	1.0
		Zinc, Total	49.0	MG/KG	0.05	1.0

3/13/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032
LVL#: 0601L164
SDG/SAF#: K0193/RC-032

W.O.#: 11343-606-001-9999-00
Date Received: 01-27-06

METALS CASE NARRATIVE

1. This narrative covers the analyses of 14 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were rerun for Arsenic on a different instrument due to sample matrix.

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

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

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

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

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

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

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

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

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 37 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J111T4	Lead	200	102.4
	Antimony	100	98.6

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

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

14. 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.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/14/06
Date

jjw/m01-164

LVLI
LIONVILLE LABORATORY INC.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-005 Page 1 of 2

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C	Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation		SAF No.: RC-032	Air Quality ☐	
Ice Chest No.: AFS-04-120	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx		
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060266		Bill of Lading/Air Bill No.: See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G	aG	aG	G							
No. of Container(s)	1	1	1	1							
Volume	500mL	60mL	120mL	125mL							
SAMPLE ANALYSIS	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J111T4 / SOIL / 1-24-06 / 0900	X	X	X	X							
J111T5 / SOIL / 1-24-06 / 0910	X	X	X	X							
J111T6 / SOIL / 1-24-06 / 0920	X	X	X	X							
J111T7 / SOIL / 1-24-06 / 0930	X	X	X	X							
J111T8 / SOIL / 1-24-06 / 0940	X	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: MT Stankovich MT	Received By/Stored In: 3728/2C	1/24/06 1400
Relinquished By/Removed From: 3728/2C	Received By/Stored In: RZ Stoffler RZ Stoffler	1-25-06 1230
Relinquished By/Removed From: RZ Stoffler RZ Stoffler	Received By/Stored In: Fed Ex	1-25-06 1500
Relinquished By/Removed From: Fed Ex	Received By/Stored In: D Smith	1-27-06 10:00
Relinquished By/Removed From:	Received By/Stored In:	
Relinquished By/Removed From:	Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP)~~ - ~~6010~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - ~~7470~~/7470 antimony, beryllium boron cobalt copper manganese molybdenum nickel silver vanadium, zinc

NA 1/24/06

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

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

BHI-EE-011 (08/29/2005)

000022

000000029

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-005	Page 2 of 3

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman; Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-02-406	Field Logbook No.: EFL-1174; COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A060267	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G	aG	aG	G							
No. of Container(s)	1	1	1	1							
Volume	500mL	60mL	120mL	125mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1							

Sample No.	Matrix *	Sample Date	Sample Time										
J111T9	SOIL	1-24-06	0950	x	x	x	x						
J111V0	SOIL	1-24-06	1000	x	x	x	x						
J111V1	SOIL	1-24-06	1010	x	x	x	x						
J111V2	SOIL	1-24-06	1020	x	x	x	x						
J111V3	SOIL	1-24-06	1030	x	x	x	x						

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MT Stankovich MZ	1400 1/24/06	3728/2C	1/24/06 1400
3728/2C	1-25-06 1300	RZ Steffler R.J. Steffler	1300 1-25-06
RZ Steffler R.J. Steffler	1500 WCH 1-25-06	Fed Ex	
Fed Ex	1-27-06 0900	D. Smith	1-27-06 0900

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP)~~ - ~~1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - ~~1311~~/7470 antimony, beryllium, boron cobalt copper manganese molybdenum nickel, Silver vanadium zinc

1/24/06

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

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

BHI-EE-011 (08/29/2005)

000023

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-005	Page 1 of 1
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation		SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-02-406	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060267		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	G	aG	aG	G
No. of Container(s)	1	1	1	1
Volume MD 1/24/06	~~500mL~~ 250	60mL	120mL	125mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1

Sample No.	Matrix *	Sample Date	Sample Time				
J111V4	SOIL	1-24-06	1040	X	X	X	X
J111V5	SOIL	1-24-06	0920	X	X	X	X
J111V6	SOIL	1-24-06	0845	X		X	

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] MStankovich	1/24/06 1400	3728/2C	1/24/06 1400
3728/2C	1-25-06 1300	RZ Steffler [signature]	1-25-06 1300
RZ Steffler [signature]	1-25-06 1500	Fed Ex	
Fed Ex	1-27-06 10800	[signature]	1-27-06 10920

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP) - 1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP) - 1311~~/7470 antimony beryllium, boron cobalt copper manganese molybdenum nickel silver, vanadium, zinc

MD 1/24/06

Matrix *

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

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

BHI-EE-011 (08/29/2005)

000024

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-006	Page 1 of 1
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Staging Area		SAF No.: RC-032	Air Quality ☐
Ice Chest No.: AFS-04-120	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060266		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	G	aG	aG	G
No. of Container(s)	1	1	1	1
Volume	500mL	60mL	120mL	125mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1

Sample No.	Matrix *	Sample Date	Sample Time				
J111V7	SOIL	1-24-06	1145	X	X	X	X

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] MStankovich	1400 1/24/06	3728/2C	1/24/06 1400
3728/2C	1-25-06 1230	R2 Steffler [signature]	1230 1-25-06
R2 Steffler [signature]	1500 wlt 1-25-06	Fed Ex	
FedEx	1-27-06 0900	[signature]	1-27-06 0900

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP)~~ 1/24/06 - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP) - 1311~~/7470 antimony beryllium, boron cobalt copper manganese molybdenum nickel silver vanadium zinc.

Matrix *

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

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

BHI-EE-011 (08/29/2005)

000025

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-33			DATA PACKAGE: K0193		
VALIDATOR:		LAB: LLI		DATE: 3/12/06	
			SDG: K0193		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J111T4	J111T5	J111T6	J111T7	J111T8	J111T9
J111V0	J111V1	J111V2	J111V3	J111V4	
J111V5	J111V6	J111V7			

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:

FB barium, manganese, lead vanadium + zinc

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

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

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

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

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

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

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

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

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

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

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

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

Comments: lead - 141 J all MS

antimony - 54.2 % - J all MS no PA

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

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0068-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Arsenic, Total	3.6 u	MG/KG	3.6	1.0
		Boron, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Manganese, Total	0.03	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	06C0020-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193

LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J111T4	Silver, Total	5.0	0.15u	5.3	94.3	1.0
		Arsenic, Total	195	3.8 u	213	91.7	1.0
		Boron, Total	100	1.9	106	92.7	1.0
		Barium, Total	275	69.8	213	96.6	1.0
		Beryllium, Total	5.3	0.05	5.3	99.1	1.0
		Cadmium, Total	5.3	0.08u	5.3	100	1.0
		Cobalt, Total	57.2	5.4	53.2	97.4	1.0
		Chromium, Total	30.6	8.4	21.3	104.2	1.0
		Copper, Total	39.4	12.2	26.6	102.3	1.0
		Mercury, Total	0.23	0.05	0.17	107.1	1.0
		Manganese, Total	318	254	53.2	119.9*	1.0
		Molybdenum, Total	103	0.41	106	96.6	1.0
		Nickel, Total	61.0	9.0	53.2	97.7	1.0
		Lead, Total	87.7	12.4	53.2	141.5	1.0
		Antimony, Total	29.9	0.43u	53.2	56.2	1.0
		Selenium, Total	185	0.39u	213	86.7	1.0
		Vanadium, Total	84.9	31.6	53.2	100.2	1.0
		Zinc, Total	120	61.7	53.2	110.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J111T4	Silver, Total	0.15u	0.15u	NC	1.0
		Arsenic, Total	3.8 u	6.2	~~NC~~ 20)	1.0
		Boron, Total	1.9	1.9	0.00	1.0
		Barium, Total	69.8	72.1	3.2	1.0
		Beryllium, Total	0.05	0.05	6.6	1.0
		Cadmium, Total	0.08u	0.08u	NC	1.0
		Cobalt, Total	5.4	5.5	1.8	1.0
		Chromium, Total	8.4	9.2	9.1	1.0
		Copper, Total	12.2	12.4	1.6	1.0
		Mercury, Total	0.05	0.05	4.2	1.0
		Manganese, Total	254	270	6.0	1.0
		Molybdenum, Total	0.41	0.22	61.0	1.0
		Nickel, Total	9.0	9.5	5.4	1.0
		Lead, Total	12.4	10.9	12.9	1.0
		Antimony, Total	0.43u	0.43u	NC	1.0
		Selenium, Total	0.39u	0.39u	NC	1.0
		Vanadium, Total	31.6	34.0	7.3	1.0
		Zinc, Total	61.7	66.8	7.9	1.0

PW 2/13/06 corrected entry

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/10/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	06L0068-LC1	Silver, LCS	48.7	50.0	MG/KG	97.4
		Arsenic, LCS	889	1000	MG/KG	88.9
		Boron, LCS	467	500	MG/KG	93.3
		Barium, LCS	495	500	MG/KG	99.0
		Beryllium, LCS	24.5	25.0	MG/KG	98.0
		Cadmium, LCS	24.3	25.0	MG/KG	97.2
		Cobalt, LCS	247	250	MG/KG	98.9
		Chromium, LCS	50.6	50.0	MG/KG	101.2
		Copper, LCS	126	125	MG/KG	100.4
		Manganese, LCS	74.6	75.0	MG/KG	99.5
		Molybdenum, LCS	508	500	MG/KG	101.6
		Nickel, LCS	196	200	MG/KG	98.2
		Lead, LCS	245	250	MG/KG	98.1
		Antimony, LCS	292	300	MG/KG	97.5
		Selenium, LCS	843	1000	MG/KG	84.3
		Vanadium, LCS	249	250	MG/KG	99.5
		Zinc, LCS	95.8	100	MG/KG	95.8
LCS1	06C0020-LC1	Mercury, LCS	6.2	6.2	MG/KG	100.6

Date: 15 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Sites 132-F-1and 100-F-33
Subject: Semivolatile - Data Package No. K0193-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0193 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
J111T4	1/24/06	Soil	C	See note 1
J111T5	1/24/06	Soil	C	See note 1
J111T6	1/24/06	Soil	C	See note 1
J111T7	1/24/06	Soil	C	See note 1
J111T8	1/24/06	Soil	C	See note 1
J111T9	1/24/06	Soil	C	See note 1
J111V0	1/24/06	Soil	C	See note 1
J111V1	1/24/06	Soil	C	See note 1
J111V2	1/24/06	Soil	C	See note 1
J111V3	1/24/06	Soil	C	See note 1
J111V4	1/24/06	Soil	C	See note 1
J111V5	1/24/06	Soil	C	See note 1
J111v6	1/24/06	Soil	C	See note 1
J111V7	1/24/06	Soil	C	See note 1
J111R2	1/25/06	Soil	C	See note 1
J111R3	1/25/06	Soil	C	See note 1
J111R4	1/25/06	Soil	C	See note 1
J111R5	1/25/06	Soil	C	See note 1
J111R6	1/25/06	Soil	C	See note 1
J111R7	1/25/06	Soil	C	See note 1
J111R8	1/25/06	Soil	C	See note 1
J111R9	1/25/06	Soil	C	See note 1
J111T0	1/25/06	Soil	C	See note 1
J111T1	1/25/06	Soil	C	See note 1
J111T2	1/25/06	Soil	C	See note 1
J11263	1/25/06	Soil	C	See note 1
J111T3	1/25/06	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

· Holding Times

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

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

All holding times were met.

· Method Blanks

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

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

All other method blank results were acceptable.

Field Blanks

Two equipment blanks (J111V6 and J11263) were submitted for analysis. Diethylphthalate and di-n-butyphthalate were detected in sample J11263. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike and matrix spike duplicate results outside QC limits (0%), the 2,4-dinitrophenol results in sample J111T4, J111T5, J111T6, J111T7, J111T8, J111T9, J111V0, J111V1, J111V2, J111V3, J111V4, J111V5, J111V6, J111V7, J111R2, J111R3, J111R4, J111R5, J111R6 and J111R7 were qualified as estimates and flagged "J".

Due to matrix spike (14%) and matrix spike duplicate (33%) results outside QC limits, the 4,6-dinitro-2-methylphenol results in sample J111T4, J111T5, J111T6, J111T7, J111T8, J111T9, J111V0, J111V1, J111V2, J111V3, J111V4, J111V5, J111V6, J111V7, J111R2, J111R3, J111R4, J111R5, J111R6 and J111R7 were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (2%), the 2,4-dinitrophenol result in samples J111R8, J111R9, J111T0, J111T1, J111T2, J11263 and J111T3 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".

Due to surrogate recoveries outside QC limits, all 2-nitrophenol, 2,4-dinitrophenol, nitrobenzene, n-nitroso-di-n-propylamine, 4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline, 2,6-dinitrotoluene, n-nitrosodiphenylamine, 2-chlorophenol, 2,4-dichlorophenol and 4-chloro-3-methyl phenol results in sample J111T6 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

All precision results were acceptable.

Field Duplicate Samples

Two sets of field duplicates (J111V5/J111T6 & J111R5/J111T2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Two-hundred and eight analytes and all analytes in sample J111T3 exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0193-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, all bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

Due to matrix spike and matrix spike duplicate results outside QC limits (0%), the 2,4-dinitrophenol results in sample J111T4, J111T5, J111T6, J111T7, J111T8, J111T9, J111V0, J111V1, J111V2, J111V3, J111V4, J111V5, J111V6, J111V7, J111R2, J111R3, J111R4, J111R5, J111R6 and J111R7 were qualified as estimates and flagged "J".

Due to matrix spike (14%) and matrix spike duplicate (33%) results outside QC limits, the 4,6-dinitro-2-methylphenol results in sample J111T4, J111T5, J111T6, J111T7, J111T8, J111T9, J111V0, J111V1, J111V2, J111V3, J111V4,

J111V5, J111V6, J111V7, J111R2, J111R3, J111R4, J111R5, J111R6 and J111R7 were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (2%), the 2,4-dinitrophenol result in samples J111R8, J111R9, J111T0, J111T1, J111T2, J11263 and J111T3 were qualified as estimates and flagged "J".

Due to surrogate recoveries outside QC limits, all 2-nitrophenol, 2,4-dinitrophenol, nitrobenzene, n-nitroso-di-n-propylamine, 4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline, 2,6-dinitrotoluene, n-nitrosodiphenylamine, 2-chlorophenol, 2,4-dichlorophenol and 4-chloro-3-methyl phenol results in sample J111T6 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

Two-hundred and eight analytes and all analytes in sample J111T3 exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K0193	REVIEWER: TLI	PROJECT: 100-F-33 132-F-1	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	All	Blank contamination
2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol	J	J111T4, J111T5 J111T6, J111T7 J111T8, J111T9 J111V0, J111V1 J111V2, J111V3 J111V4, J111V5 J111V6, J111V7 J111R2, J111R3 J111R4, J111R5 J111R6, J111R7	MD/MSD recovery
2,4-Dinitrophenol	J	J111R8, J111R9 J111T0, J111T1 J111T2, J11263 J111T3	LCS recovery
2-Nitrophenol 2,4-Dinitrophenol Nitrobenzene n-Nitroso-di-n-propylamine 4-Chloroaniline 2-Nitroaniline 3-Nitroaniline 4-Nitroaniline 2,6-Dinitrotoluene n-Nitrosodiphenylamine 2-Chlorophenol 2,4-Dichlorophenol 4-Chloro-3-methyl phenol	J	J111T6	Surrogate recovery

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0193																		
Sample Number		J111T4		J111T5		J111T6		J111T7		J111T8		J111T9		J111V0		J111V1		J111TV2	
Remarks																			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Extraction Date		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06	
Analysis Date		2/6/03		2/3/06		2/3/06		2/3/06		2/8/06		2/8/06		2/1/06		2/3/06		2/1/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	380	U	370	U	350	U	360	U	380	U	19		350	U	360	U	350	U
bis(2-Chloroethyl)ether	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2-Chlorophenol	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U
1,3-Dichlorobenzene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
1,4-Dichlorobenzene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
1,2-Dichlorobenzene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2-Methylphenol	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2,2'-oxybis(1-chloropropane)	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
3 and/or 4-Methylphenol	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
N-Nitroso-di-n-propylamine	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U
Hexachloroethane	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Nitrobenzene	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U
Isophorone	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2-Nitrophenol	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U
2,4-Dimethylphenol	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
bis(2-Chloroethoxy)methane	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2,4-Dichlorophenol	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U
1,2,4-Trichlorobenzene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Naphthalene	660	380	U	370	U	350	U	360	U	380	U	22		350	U	360	U	350	U
4-Chloroaniline	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U
Hexachlorobutadiene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
4-Chloro-3-methylphenol	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U
2-Methylnaphthalene	660	380	U	370	U	350	U	360	U	380	U	31		350	U	360	U	350	U
Hexachlorocyclopentadiene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2,4,6-Trichlorophenol	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2,4,5-Trichlorophenol*	660	950	U	920	U	890	U	910	U	950	U	910	U	870	U	900	U	870	U
2-Chloronaphthalene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2-Nitroaniline*	660	950	U	920	U	890	UJ	910	U	950	U	910	U	870	U	900	U	870	U
Dimethylphthalate	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Acenaphthylene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2,6-Dinitrotoluene	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0193																		
Sample Number		J111T4		J111T5		J111T6		J111T7		J111T8		J111T9		J111V0		J111V1		J111TV2	
Remarks																			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Extraction Date		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06	
Analysis Date		2/6/03		2/3/06		2/3/06		2/3/06		2/8/06		2/8/06		2/1/06		2/3/06		2/1/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	950	U	920	U	890	UJ	910	U	950	U	910	U	870	U	900	U	870	U
Acenaphthene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2,4-Dinitrophenol*	660	950	UJ	920	UJ	890	UJ	910	UJ	950	UJ	910	UJ	870	UJ	900	UJ	870	UJ
4-Nitrophenol*	660	950	U	920	U	890	U	910	U	950	U	910	U	870	U	900	U	870	U
Dibenzofuran	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
2,4-Dinitrotoluene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Diethylphthalate	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
4-Chlorophenyl-phenyl ether	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Fluorene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
4-Nitroaniline*	660	950	U	920	U	890	UJ	910	U	950	U	910	U	870	U	900	U	870	U
4,6-Dinitro-2-methylphenol*	660	950	UJ	920	UJ	890	UJ	910	UJ	950	UJ	910	UJ	870	UJ	900	UJ	870	UJ
N-Nitrosodiphenylamine	660	380	U	370	U	350	UJ	360	U	380	U	370	U	350	U	360	U	350	U
4-Bromophenyl-phenyl ether	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Hexachlorobenzene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Pentachlorophenol*	660	950	U	920	U	890	U	910	U	950	U	910	U	870	U	900	U	870	U
Phenanthrene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Anthracene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Carbazole	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Di-n-butylphthalate	660	30		20		350	U	360	U	380	U	22		350	U	19		350	U
Fluoranthene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Pyrene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Butylbenzylphthalate	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
3,3'-Dichlorobenzidine	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Benzo(a)anthracene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Chrysene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U
Di-n-octylphthalate	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Benzo(b)fluoranthene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Benzo(k)fluoranthene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Benzo(a)pyrene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Indeno(1,2,3-cd)pyrene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Dibenz(a,h)anthracene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U
Benzo(g,h,i)perylene	660	380	U	370	U	350	U	360	U	380	U	370	U	350	U	360	U	350	U

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

000013

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0193																		
Sample Number		J111V3		J111V4		J111V5		J111V6		J111V7		J111R2		J111R3		J111R4		J111R5	
Remarks																			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Extraction Date		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06	
Analysis Date		2/1/03		2/1/06		2/2/06		2/3/06		2/6/06		2/6/06		2/6/06		2/6/06		2/6/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
bis(2-Chloroethyl)ether	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2-Chlorophenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
1,3-Dichlorobenzene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
1,4-Dichlorobenzene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
1,2-Dichlorobenzene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2-Methylphenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2,2'-oxybis(1-chloropropane)	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
3 and/or 4-Methylphenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
N-Nitroso-di-n-propylamine	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Hexachloroethane	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Nitrobenzene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Isophorone	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2-Nitrophenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2,4-Dimethylphenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
bis(2-Chloroethoxy)methane	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2,4-Dichlorophenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
1,2,4-Trichlorobenzene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Naphthalene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	240	
4-Chloroaniline	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Hexachlorobutadiene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
4-Chloro-3-methylphenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2-Methylnaphthalene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Hexachlorocyclopentadiene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2,4,6-Trichlorophenol	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2,4,5-Trichlorophenol*	660	920	U	880	U	880	U	830	U	910	U	860	U	860	U	850	U	910	U
2-Chloronaphthalene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2-Nitroaniline*	660	920	U	880	U	880	U	830	U	910	U	860	U	860	U	850	U	910	U
Dimethylphthalate	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Acenaphthylene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2,6-Dinitrotoluene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

000014

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0193																		
Sample Number		J111V3		J111V4		J111V5		J111V6		J111V7		J111R2		J111R3		J111R4		J111R5	
Remarks																			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Extraction Date		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06	
Analysis Date		2/1/03		2/1/06		2/2/06		2/3/06		2/6/06		2/6/06		2/6/06		2/6/06		2/6/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	920	U	880	U	880	U	830	U	910	U	860	U	860	U	850	U	910	U
Acenaphthene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
2,4-Dinitrophenol*	660	920	UJ	880	UJ	880	UJ	830	UJ	910	UJ	860	UJ	860	UJ	850	UJ	910	UJ
4-Nitrophenol*	660	920	U	880	U	880	U	830	U	910	U	860	U	860	U	850	U	910	U
Dibenzofuran	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	44	
2,4-Dinitrotoluene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Diethylphthalate	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
4-Chlorophenyl-phenyl ether	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Fluorene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
4-Nitroaniline*	660	920	U	880	U	880	U	830	U	910	U	860	U	860	U	850	U	910	U
4,6-Dinitro-2-methylphenol*	660	920	UJ	880	UJ	880	UJ	830	UJ	910	UJ	860	UJ	860	UJ	850	UJ	910	UJ
N-Nitrosodiphenylamine	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
4-Bromophenyl-phenyl ether	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Hexachlorobenzene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Pentachlorophenol*	660	920	U	880	U	880	U	830	U	910	U	860	U	860	U	850	U	910	U
Phenanthrene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	43		46	
Anthracene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Carbazole	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Di-n-butylphthalate	660	370	U	350	U	350	U	330	U	30		25		45		23		55	
Fluoranthene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	89		80	
Pyrene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	91		120	
Butylbenzylphthalate	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
3,3'-Dichlorobenzidine	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Benzo(a)anthracene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	34		88	
Chrysene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	43		120	
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U
Di-n-octylphthalate	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Benzo(b)fluoranthene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	21		93	
Benzo(k)fluoranthene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	31		120	
Benzo(a)pyrene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	26		110	
Indeno(1,2,3-cd)pyrene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	43	
Dibenz(a,h)anthracene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	360	U
Benzo(g,h,i)perylene	660	370	U	350	U	350	U	330	U	360	U	340	U	340	U	340	U	39	

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0193																		
Sample Number		J111R6		J111R7		J111R8		J111R9		J111T0		J111T1		J111T2		J11263		J111T3	
Remarks														Duplicate		E. Blank			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Extraction Date		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06	
Analysis Date		2/6/03		2/6/06		2/6/06		2/6/06		2/6/06		2/8/06		2/8/06		2/6/06		2/8/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
bis(2-Chloroethyl)ether	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2-Chlorophenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
1,3-Dichlorobenzene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
1,4-Dichlorobenzene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
1,2-Dichlorobenzene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2-Methylphenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2,2'-oxybis(1-chloropropane)	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
3 and/or 4-Methylphenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
N-Nitroso-di-n-propylamine	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Hexachloroethane	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Nitrobenzene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Isophorone	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2-Nitrophenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2,4-Dimethylphenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
bis(2-Chloroethoxy)methane	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2,4-Dichlorophenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
1,2,4-Trichlorobenzene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Naphthalene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
4-Chloroaniline	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Hexachlorobutadiene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
4-Chloro-3-methylphenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2-Methylnaphthalene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Hexachlorocyclopentadiene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2,4,6-Trichlorophenol	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2,4,5-Trichlorophenol*	660	850	U	850	U	860	U	870	U	870	U	970	U	910	U	830	U	1900	U
2-Chloronaphthalene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2-Nitroaniline*	660	850	U	850	U	860	U	870	U	870	U	970	U	910	U	830	U	1900	U
Dimethylphthalate	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Acenaphthylene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2,6-Dinitrotoluene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0193																		
Sample Number		J111R6		J111R7		J111R8		J111R9		J111T0		J111T1		J111T2		J11263		J111T3	
Remarks														Duplicate		E. Blank			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Extraction Date		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06		1/30/06	
Analysis Date		2/6/03		2/6/06		2/6/06		2/6/06		2/6/06		2/8/06		2/8/06		2/6/06		2/8/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	850	U	850	U	860	U	870	U	870	U	970	U	910	U	830	U	1900	U
Acenaphthene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2,4-Dinitrophenol*	660	850	UJ	850	UJ	860	UJ	870	UJ	870	UJ	970	UJ	910	UJ	830	UJ	1900	UJ
4-Nitrophenol*	660	850	U	850	U	860	U	870	U	870	U	970	U	910	U	830	U	1900	U
Dibenzofuran	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
2,4-Dinitrotoluene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Diethylphthalate	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	26		770	U
4-Chlorophenyl-phenyl ether	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Fluorene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
4-Nitroaniline*	660	850	U	850	U	860	U	870	U	870	U	970	U	910	U	830	U	1900	U
4,6-Dinitro-2-methylphenol*	660	850	UJ	850	UJ	860	U	870	U	870	U	970	U	910	U	830	U	1900	U
N-Nitrosodiphenylamine	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
4-Bromophenyl-phenyl ether	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Hexachlorobenzene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Pentachlorophenol*	660	850	U	850	U	860	U	870	U	870	U	970	U	910	U	830	U	1900	U
Phenanthrene	660	68		340	U	340	U	30		350	U	390	U	360	U	330	U	120	
Anthracene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	270	
Carbazole	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Di-n-butylphthalate	660	25		340	U	17		350	U	350	U	390	U	30		210		770	U
Fluoranthene	660	110		340	U	340	U	69		350	U	390	U	19		330	U	170	
Pyrene	660	120		340	U	340	U	52		350	U	390	U	23		330	U	270	
Butylbenzylphthalate	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
3,3'-Dichlorobenzidine	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Benzo(a)anthracene	660	52		340	U	340	U	23		350	U	390	U	360	U	330	U	530	
Chrysene	660	74		340	U	340	U	32		350	U	390	U	360	U	330	U	2100	
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U
Di-n-octylphthalate	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	770	U
Benzo(b)fluoranthene	660	34		340	U	340	U	22		350	U	390	U	360	U	330	U	840	
Benzo(k)fluoranthene	660	51		340	U	340	U	28		350	U	390	U	360	U	330	U	780	
Benzo(a)pyrene	660	58		340	U	340	U	22		350	U	390	U	360	U	330	U	1100	
Indeno(1,2,3-cd)pyrene	660	32		340	U	340	U	350	U	350	U	390	U	360	U	330	U	620	
Dibenz(a,h)anthracene	660	340	U	340	U	340	U	350	U	350	U	390	U	360	U	330	U	260	
Benzo(g,h,i)perylene	660	33		340	U	340	U	350	U	350	U	390	U	360	U	330	U	760	

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

All other qualifiers shown were applied during validation.

* - RQL exceeded

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 02/15/06 15:03

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 1a

	Cust ID:	J111T4	J111T4	J111T4	J111T5	J111T6	J111T7
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	63 %	78 %	83 %	64 %	16 * %	58 %
	2-Fluorobiphenyl	74 %	93 %	88 %	69 %	49 %	65 %
	Terphenyl-d14	89 %	99 %	99 %	81 %	85 %	84 %
	Phenol-d5	48 %	75 %	81 %	72 %	36 %	65 %
	2-Fluorophenol	62 %	69 %	74 %	68 %	19 * %	62 %
	2,4,6-Tribromophenol	71 %	97 %	99 %	78 %	75 %	74 %
		fl	fl	fl	fl	fl	fl
Phenol		380 U	84 %	91 %	370 U	350 U	360 U
bis(2-Chloroethyl)ether		380 U	103 %	115 %	370 U	350 U	360 U
2-Chlorophenol		380 U	85 %	92 %	370 U	350 U J	360 U
1,3-Dichlorobenzene		380 U	87 %	89 %	370 U	350 U	360 U
1,4-Dichlorobenzene		380 U	89 %	90 %	370 U	350 U	360 U
1,2-Dichlorobenzene		380 U	93 %	95 %	370 U	350 U	360 U
2-Methylphenol		380 U	91 %	98 %	370 U	350 U	360 U
2,2'-oxybis(1-Chloropropane)		380 U	99 %	108 %	370 U	350 U	360 U
4-Methylphenol		380 U	99 %	105 %	370 U	350 U	360 U
N-Nitroso-di-n-propylamine		380 U	122 %	134 * %	370 U	350 U J	360 U
Hexachloroethane		380 U	69 %	72 %	370 U	350 U	360 U
Nitrobenzene		380 U	92 %	101 %	370 U	350 U J	360 U
Isophorone		380 U	106 %	116 %	370 U	350 U	360 U
2-Nitrophenol		380 U	85 %	92 %	370 U	350 U J	360 U
2,4-Dimethylphenol		380 U	107 %	110 %	370 U	350 U	360 U
bis(2-Chloroethoxy)methane		380 U	96 %	104 %	370 U	350 U	360 U
2,4-Dichlorophenol		380 U	84 %	91 %	370 U	350 U J	360 U
1,2,4-Trichlorobenzene		380 U	91 %	94 %	370 U	350 U	360 U
Naphthalene		380 U	79 %	88 %	370 U	350 U	360 U
4-Chloroaniline		380 U	128 * %	125 * %	370 U	350 U J	360 U
Hexachlorobutadiene		380 U	98 %	100 %	370 U	350 U	360 U
4-Chloro-3-methylphenol		380 U	109 %	113 %	370 U	350 U J	360 U
2-Methylnaphthalene		380 U	96 %	100 %	370 U	350 U	360 U
Hexachlorocyclopentadiene		380 U	23 %	29 %	370 U	350 U	360 U
2,4,6-Trichlorophenol		380 U	103 %	105 %	370 U	350 U	360 U
2,4,5-Trichlorophenol		950 U	95 %	99 %	920 U	890 U	910 U

*= Outside of EPA CLP QC limits.

JR 3/13/05

000018

000000007

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 1b

Cust ID:	J111T4	J111T4	J111T4	J111T5	J111T6	J111T7
RFW#:	001	001 MS	001 MSD	002	003	004
2-Chloronaphthalene	380 U	111 %	113 %	370 U	350 U	360 U
2-Nitroaniline	950 U	120 %	121 %	920 U	890 U J	910 U
Dimethylphthalate	380 U	111 %	112 %	370 U	350 U	360 U
Acenaphthylene	380 U	97 %	106 %	370 U	350 U	360 U
2,6-Dinitrotoluene	380 U	102 %	105 %	370 U	350 U J	360 U
3-Nitroaniline	950 U	125 %	123 %	920 U	890 U J	910 U
Acenaphthene	380 U	107 %	111 %	370 U	350 U	360 U
2,4-Dinitrophenol	950 U J	0 * %	0 * %	920 U J	890 U J	910 U J
4-Nitrophenol	950 U	79 %	94 %	920 U	890 U	910 U
Dibenzofuran	380 U	102 %	112 %	370 U	350 U	360 U
2,4-Dinitrotoluene	380 U	101 %	104 %	370 U	350 U	360 U
Diethylphthalate	380 U	108 %	114 %	370 U	350 U	360 U
4-Chlorophenyl-phenylether	380 U	108 %	114 %	370 U	350 U	360 U
Fluorene	380 U	105 %	111 %	370 U	350 U	360 U
4-Nitroaniline	950 U	102 %	107 %	920 U	890 U J	910 U
4,6-Dinitro-2-methylphenol	950 U J	14 * %	33 * %	920 U J	890 U J	910 U J
N-Nitrosodiphenylamine (1)	380 U	109 %	110 %	370 U	350 U J	360 U
4-Bromophenyl-phenylether	380 U	112 %	112 %	370 U	350 U	360 U
Hexachlorobenzene	380 U	129 %	129 %	370 U	350 U	360 U
Pentachlorophenol	950 U	49 %	57 %	920 U	890 U	910 U
Phenanthrene	380 U	102 %	111 %	370 U	350 U	360 U
Anthracene	380 U	103 %	109 %	370 U	350 U	360 U
Carbazole	380 U	110 %	114 %	370 U	350 U	360 U
Di-n-butylphthalate	30 J	87 %	93 %	20 J	350 U	360 U
Fluoranthene	380 U	100 %	107 %	370 U	350 U	360 U
Pyrene	380 U	97 %	106 %	370 U	350 U	360 U
Butylbenzylphthalate	380 U	122 %	125 %	370 U	350 U	360 U
3,3'-Dichlorobenzidine	380 U	113 %	112 %	370 U	350 U	360 U
Benzo(a)anthracene	380 U	106 %	108 %	370 U	350 U	360 U
Chrysene	380 U	110 %	108 %	370 U	350 U	360 U
bis(2-Ethylhexyl)phthalate	660 ~~70~~ JB U 3/30/05	126 %	121 %	660 ~~41~~ JB U 3/30/05	660 ~~44~~ JB U 3/30/05	660 ~~37~~ JB U 3/30/05
Di-n-octyl phthalate	380 U	101 %	105 %	370 U	350 U	360 U
Benzo(b)fluoranthene	380 U	101 %	99 %	370 U	350 U	360 U
Benzo(k)fluoranthene	380 U	102 %	104 %	370 U	350 U	360 U
Benzo(a)pyrene	380 U	99 %	101 %	370 U	350 U	360 U
Indeno(1,2,3-cd)pyrene	380 U	128 %	129 %	370 U	350 U	360 U
Dibenz(a,h)anthracene	380 U	129 %	129 %	370 U	350 U	360 U
Benzo(g,h,i)perylene	380 U	110 %	112 %	370 U	350 U	360 U

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

JR 3/13/05

000019

000000000

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

Report Date: 02/15/06 15:03

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 2a

	Cust ID:	J111T8		J111T9		J111V0		J111V1		J111V2		J111V3	
Sample Information	RFW#:	005		006		007		008		009		010	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	63	%	62	%	42	%	56	%	50	%	41	%
	2-Fluorobiphenyl	66	%	67	%	54	%	59	%	63	%	51	%
	Terphenyl-d14	83	%	77	%	89	%	82	%	92	%	91	%
	Phenol-d5	77	%	67	%	46	%	64	%	57	%	49	%
	2-Fluorophenol	68	%	64	%	48	%	59	%	56	%	46	%
	2,4,6-Tribromophenol	81	%	77	%	63	%	78	%	65	%	64	%
			fl		fl		fl		fl		fl		fl
Phenol		380	U	19	J	350	U	360	U	350	U	370	U
bis(2-Chloroethyl)ether		380	U	370	U	350	U	360	U	350	U	370	U
2-Chlorophenol		380	U	370	U	350	U	360	U	350	U	370	U
1,3-Dichlorobenzene		380	U	370	U	350	U	360	U	350	U	370	U
1,4-Dichlorobenzene		380	U	370	U	350	U	360	U	350	U	370	U
1,2-Dichlorobenzene		380	U	370	U	350	U	360	U	350	U	370	U
2-Methylphenol		380	U	370	U	350	U	360	U	350	U	370	U
2,2'-oxybis(1-Chloropropane)		380	U	370	U	350	U	360	U	350	U	370	U
4-Methylphenol		380	U	370	U	350	U	360	U	350	U	370	U
N-Nitroso-di-n-propylamine		380	U	370	U	350	U	360	U	350	U	370	U
Hexachloroethane		380	U	370	U	350	U	360	U	350	U	370	U
Nitrobenzene		380	U	370	U	350	U	360	U	350	U	370	U
Isophorone		380	U	370	U	350	U	360	U	350	U	370	U
2-Nitrophenol		380	U	370	U	350	U	360	U	350	U	370	U
2,4-Dimethylphenol		380	U	370	U	350	U	360	U	350	U	370	U
bis(2-Chloroethoxy)methane		380	U	370	U	350	U	360	U	350	U	370	U
2,4-Dichlorophenol		380	U	370	U	350	U	360	U	350	U	370	U
1,2,4-Trichlorobenzene		380	U	370	U	350	U	360	U	350	U	370	U
Naphthalene		380	U	22	J	350	U	360	U	350	U	370	U
4-Chloroaniline		380	U	370	U	350	U	360	U	350	U	370	U
Hexachlorobutadiene		380	U	370	U	350	U	360	U	350	U	370	U
4-Chloro-3-methylphenol		380	U	370	U	350	U	360	U	350	U	370	U
2-Methylnaphthalene		380	U	31	J	350	U	360	U	350	U	370	U
Hexachlorocyclopentadiene		380	U	370	U	350	U	360	U	350	U	370	U
2,4,6-Trichlorophenol		380	U	370	U	350	U	360	U	350	U	370	U
2,4,5-Trichlorophenol		950	U	910	U	870	U	900	U	870	U	920	U

*= Outside of EPA CLP QC limits.

JC 3/13/05

000020

000000009

RFW Batch Number: 0601L164

Cust ID:	J111T8		J111T9		J111V0		J111V1		J111V2		J111V3	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	380	U	370	U	350	U	360	U	350	U	370	U
2-Nitroaniline	950	U	910	U	870	U	900	U	870	U	920	U
Dimethylphthalate	380	U	370	U	350	U	360	U	350	U	370	U
Acenaphthylene	380	U	370	U	350	U	360	U	350	U	370	U
2,6-Dinitrotoluene	380	U	370	U	350	U	360	U	350	U	370	U
3-Nitroaniline	950	U	910	U	870	U	900	U	870	U	920	U
Acenaphthene	380	U	370	U	350	U	360	U	350	U	370	U
2,4-Dinitrophenol	950	UJ	910	UJ	870	UJ	900	UJ	870	UJ	920	UJ
4-Nitrophenol	950	U	910	U	870	U	900	U	870	U	920	U
Dibenzofuran	380	U	370	U	350	U	360	U	350	U	370	U
2,4-Dinitrotoluene	380	U	370	U	350	U	360	U	350	U	370	U
Diethylphthalate	380	U	370	U	350	U	360	U	350	U	370	U
4-Chlorophenyl-phenylether	380	U	370	U	350	U	360	U	350	U	370	U
Fluorene	380	U	370	U	350	U	360	U	350	U	370	U
4-Nitroaniline	950	U	910	U	870	U	900	U	870	U	920	U
4,6-Dinitro-2-methylphenol	950	UJ	910	UJ	870	UJ	900	UJ	870	UJ	920	UJ
N-Nitrosodiphenylamine (1)	380	U	370	U	350	U	360	U	350	U	370	U
4-Bromophenyl-phenylether	380	U	370	U	350	U	360	U	350	U	370	U
Hexachlorobenzene	380	U	370	U	350	U	360	U	350	U	370	U
Pentachlorophenol	950	U	910	U	870	U	900	U	870	U	920	U
Phenanthrene	380	U	370	U	350	U	360	U	350	U	370	U
Anthracene	380	U	370	U	350	U	360	U	350	U	370	U
Carbazole	380	U	370	U	350	U	360	U	350	U	370	U
Di-n-butylphthalate	380	U	22	J	350	U	19	J	350	U	370	U
Fluoranthene	380	U	370	U	350	U	360	U	350	U	370	U
Pyrene	380	U	370	U	350	U	360	U	350	U	370	U
Butylbenzylphthalate	380	U	370	U	350	U	360	U	350	U	370	U
3,3'-Dichlorobenzidine	380	U	370	U	350	U	360	U	350	U	370	U
Benzo(a)anthracene	380	U	370	U	350	U	360	U	350	U	370	U
Chrysene	380	U	370	U	350	U	360	U	350	U	370	U
bis(2-Ethylhexyl)phthalate	LLO ~~59~~ 3/13/03 JB U		LLO ~~63~~ 3/13/03 JB U		LLO ~~79~~ 3/13/03 JB U		LLO ~~61~~ 3/13/03 JB U		LLO ~~61~~ 3/13/03 JB U		LLO ~~44~~ 3/13/03 JB U	
Di-n-octyl phthalate	380	U	370	U	350	U	360	U	350	U	370	U
Benzo(b)fluoranthene	380	U	370	U	350	U	360	U	350	U	370	U
Benzo(k)fluoranthene	380	U	370	U	350	U	360	U	350	U	370	U
Benzo(a)pyrene	380	U	370	U	350	U	360	U	350	U	370	U
Indeno(1,2,3-cd)pyrene	380	U	370	U	350	U	360	U	350	U	370	U
Dibenz(a,h)anthracene	380	U	370	U	350	U	360	U	350	U	370	U
Benzo(g,h,i)perylene	380	U	370	U	350	U	360	U	350	U	370	U

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

3/13/03

000000010

000021

	Cust ID:	J111V4	J111V5	J111V6	J111V7	J111R2	J111R3
Sample Information	RFW#:	011	012	013	014	015	016
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	50 %	45 %	53 %	72 %	64 %	69 %
	2-Fluorobiphenyl	62 %	60 %	56 %	67 %	65 %	69 %
	Terphenyl-d14	102 %	90 %	74 %	77 %	87 %	85 %
	Phenol-d5	59 %	50 %	58 %	47 %	63 %	62 %
	2-Fluorophenol	57 %	51 %	52 %	58 %	56 %	50 %
	2,4,6-Tribromophenol	72 %	66 %	60 %	63 %	56 %	72 %
		fl	fl	fl	fl	fl	fl
Phenol		350 U	350 U	330 U	360 U	340 U	340 U
bis(2-Chloroethyl)ether		350 U	350 U	330 U	360 U	340 U	340 U
2-Chlorophenol		350 U	350 U	330 U	360 U	340 U	340 U
1,3-Dichlorobenzene		350 U	350 U	330 U	360 U	340 U	340 U
1,4-Dichlorobenzene		350 U	350 U	330 U	360 U	340 U	340 U
1,2-Dichlorobenzene		350 U	350 U	330 U	360 U	340 U	340 U
2-Methylphenol		350 U	350 U	330 U	360 U	340 U	340 U
2,2'-oxybis(1-Chloropropane)		350 U	350 U	330 U	360 U	340 U	340 U
4-Methylphenol		350 U	350 U	330 U	360 U	340 U	340 U
N-Nitroso-di-n-propylamine		350 U	350 U	330 U	360 U	340 U	340 U
Hexachloroethane		350 U	350 U	330 U	360 U	340 U	340 U
Nitrobenzene		350 U	350 U	330 U	360 U	340 U	340 U
Isophorone		350 U	350 U	330 U	360 U	340 U	340 U
2-Nitrophenol		350 U	350 U	330 U	360 U	340 U	340 U
2,4-Dimethylphenol		350 U	350 U	330 U	360 U	340 U	340 U
bis(2-Chloroethoxy)methane		350 U	350 U	330 U	360 U	340 U	340 U
2,4-Dichlorophenol		350 U	350 U	330 U	360 U	340 U	340 U
1,2,4-Trichlorobenzene		350 U	350 U	330 U	360 U	340 U	340 U
Naphthalene		350 U	350 U	330 U	360 U	340 U	340 U
4-Chloroaniline		350 U	350 U	330 U	360 U	340 U	340 U
Hexachlorobutadiene		350 U	350 U	330 U	360 U	340 U	340 U
4-Chloro-3-methylphenol		350 U	350 U	330 U	360 U	340 U	340 U
2-Methylnaphthalene		350 U	350 U	330 U	360 U	340 U	340 U
Hexachlorocyclopentadiene		350 U	350 U	330 U	360 U	340 U	340 U
2,4,6-Trichlorophenol		350 U	350 U	330 U	360 U	340 U	340 U
2,4,5-Trichlorophenol		880 U	880 U	830 U	910 U	860 U	860 U

*= Outside of EPA CLP QC limits.

JR 3/13/05

000022

000000011

RFW Batch Number: 0601L164 Client: INDIANAPOLIS AC-002 [illegible]

Cust ID:	J111V4		J111V5		J111V6		J111V7		J111R2		J111R3	
RFW#:	011		012		013		014		015		016	
2-Chloronaphthalene	350	U	350	U	330	U	360	U	340	U	340	U
2-Nitroaniline	880	U	880	U	830	U	910	U	860	U	860	U
Dimethylphthalate	350	U	350	U	330	U	360	U	340	U	340	U
Acenaphthylene	350	U	350	U	330	U	360	U	340	U	340	U
2,6-Dinitrotoluene	350	U	350	U	330	U	360	U	340	U	340	U
3-Nitroaniline	880	U	880	U	830	U	910	U	860	U	860	U
Acenaphthene	350	U	350	U	330	U	360	U	340	U	340	U
2,4-Dinitrophenol	880	U J	880	U J	830	U J	910	U J	860	U J	860	U J
4-Nitrophenol	880	U	880	U	830	U	910	U	860	U	860	U
Dibenzofuran	350	U	350	U	330	U	360	U	340	U	340	U
2,4-Dinitrotoluene	350	U	350	U	330	U	360	U	340	U	340	U
Diethylphthalate	350	U	350	U	330	U	360	U	340	U	340	U
4-Chlorophenyl-phenylether	350	U	350	U	330	U	360	U	340	U	340	U
Fluorene	350	U	350	U	330	U	360	U	340	U	340	U
4-Nitroaniline	880	U	880	U	830	U	910	U	860	U	860	U
4,6-Dinitro-2-methylphenol	880	U J	880	U J	830	U J	910	U J	860	U J	860	U J
N-Nitrosodiphenylamine (1)	350	U	350	U	330	U	360	U	340	U	340	U
4-Bromophenyl-phenylether	350	U	350	U	330	U	360	U	340	U	340	U
Hexachlorobenzene	350	U	350	U	330	U	360	U	340	U	340	U
Pentachlorophenol	880	U	880	U	830	U	910	U	860	U	860	U
Phenanthrene	350	U	350	U	330	U	360	U	340	U	340	U
Anthracene	350	U	350	U	330	U	360	U	340	U	340	U
Carbazole	350	U	350	U	330	U	360	U	340	U	340	U
Di-n-butylphthalate	350	U	350	U	330	U	30	J	25	J	45	J
Fluoranthene	350	U	350	U	330	U	360	U	340	U	340	U
Pyrene	350	U	350	U	330	U	360	U	340	U	340	U
Butylbenzylphthalate	350	U	350	U	330	U	360	U	340	U	340	U
3,3'-Dichlorobenzidine	350	U	350	U	330	U	360	U	340	U	340	U
Benzo(a)anthracene	350	U	350	U	330	U	360	U	340	U	340	U
Chrysene	350	U	350	U	330	U	360	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	660 ~~57~~ 3/31/05 JB	U	660 ~~50~~ 3/31/05 JB	U	660 ~~70~~ 3/31/05 JB	U	660 ~~52~~ 3/31/05 JB	U	660 ~~43~~ 3/31/05 JB	U	660 ~~67~~ 3/31/05 JB	U
Di-n-octyl phthalate	350	U	350	U	330	U	360	U	340	U	340	U
Benzo(b)fluoranthene	350	U	350	U	330	U	360	U	340	U	340	U
Benzo(k)fluoranthene	350	U	350	U	330	U	360	U	340	U	340	U
Benzo(a)pyrene	350	U	350	U	330	U	360	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	330	U	360	U	340	U	340	U
Dibenz(a,h)anthracene	350	U	350	U	330	U	360	U	340	U	340	U
Benzo(g,h,i)perylene	350	U	350	U	330	U	360	U	340	U	340	U

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

JB 3/13/05

000000012

000023

	Cust ID:	J111R4		J111R5		J111R6		J111R7		J111R8		J111R8	
Sample Information	RFW#:	017		018		019		020		021		021 MS	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	66	%	72	%	64	%	58	%	80	%	78	%
	2-Fluorobiphenyl	67	%	74	%	64	%	61	%	79	%	84	%
	Terphenyl-d14	77	%	91	%	88	%	84	%	83	%	98	%
	Phenol-d5	59	%	64	%	47	%	60	%	70	%	78	%
	2-Fluorophenol	53	%	55	%	56	%	52	%	63	%	70	%
	2,4,6-Tribromophenol	71	%	78	%	56	%	59	%	79	%	84	%
			fl		fl		fl		fl		fl		fl
Phenol		340	U	360	U	340	U	340	U	340	U	87	%
bis(2-Chloroethyl)ether		340	U	360	U	340	U	340	U	340	U	90	%
2-Chlorophenol		340	U	360	U	340	U	340	U	340	U	84	%
1,3-Dichlorobenzene		340	U	360	U	340	U	340	U	340	U	79	%
1,4-Dichlorobenzene		340	U	360	U	340	U	340	U	340	U	82	%
1,2-Dichlorobenzene		340	U	360	U	340	U	340	U	340	U	86	%
2-Methylphenol		340	U	360	U	340	U	340	U	340	U	85	%
2,2'-oxybis(1-Chloropropane)		340	U	360	U	340	U	340	U	340	U	88	%
4-Methylphenol		340	U	360	U	340	U	340	U	340	U	86	%
N-Nitroso-di-n-propylamine		340	U	360	U	340	U	340	U	340	U	83	%
Hexachloroethane		340	U	360	U	340	U	340	U	340	U	75	%
Nitrobenzene		340	U	360	U	340	U	340	U	340	U	80	%
Isophorone		340	U	360	U	340	U	340	U	340	U	89	%
2-Nitrophenol		340	U	360	U	340	U	340	U	340	U	81	%
2,4-Dimethylphenol		340	U	360	U	340	U	340	U	340	U	74	%
bis(2-Chloroethoxy)methane		340	U	360	U	340	U	340	U	340	U	80	%
2,4-Dichlorophenol		340	U	360	U	340	U	340	U	340	U	76	%
1,2,4-Trichlorobenzene		340	U	360	U	340	U	340	U	340	U	75	%
Naphthalene		340	U	240	J	340	U	340	U	340	U	81	%
4-Chloroaniline		340	U	360	U	340	U	340	U	340	U	84	%
Hexachlorobutadiene		340	U	360	U	340	U	340	U	340	U	80	%
4-Chloro-3-methylphenol		340	U	360	U	340	U	340	U	340	U	87	%
2-Methylnaphthalene		340	U	170	J	340	U	340	U	340	U	88	%
Hexachlorocyclopentadiene		340	U	360	U	340	U	340	U	340	U	58	%
2,4,6-Trichlorophenol		340	U	360	U	340	U	340	U	340	U	87	%
2,4,5-Trichlorophenol		850	U	910	U	850	U	850	U	860	U	82	%

*= Outside of EPA CLP QC limits.

JR 3/13/05

000024

000000013

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 4b

Cust ID:	J111R4		J111R5		J111R6		J111R7		J111R8		J111R8	
RFW#:	017		018		019		020		021		021 MS	
2-Chloronaphthalene	340	U	360	U	340	U	340	U	340	U	85	%
2-Nitroaniline	850	U	910	U	850	U	850	U	860	U	90	%
Dimethylphthalate	340	U	360	U	340	U	340	U	340	U	88	%
Acenaphthylene	340	U	360	U	340	U	340	U	340	U	85	%
2,6-Dinitrotoluene	340	U	360	U	340	U	340	U	340	U	86	%
3-Nitroaniline	850	U	910	U	850	U	850	U	860	U	94	%
Acenaphthene	340	U	360	U	340	U	340	U	340	U	88	%
2,4-Dinitrophenol	850	U J	910	U J	850	U J	850	U J	860	U J	85	%
4-Nitrophenol	850	U	910	U	850	U	850	U	860	U	110	%
Dibenzofuran	340	U	44	J	340	U	340	U	340	U	88	%
2,4-Dinitrotoluene	340	U	360	U	340	U	340	U	340	U	95	%
Diethylphthalate	340	U	360	U	340	U	340	U	340	U	89	%
4-Chlorophenyl-phenylether	340	U	360	U	340	U	340	U	340	U	87	%
Fluorene	340	U	360	U	340	U	340	U	340	U	97	%
4-Nitroaniline	850	U	910	U	850	U	850	U	860	U	100	%
4,6-Dinitro-2-methylphenol	850	U J	910	U J	850	U J	850	U J	860	U	94	%
N-Nitrosodiphenylamine (1)	340	U	360	U	340	U	340	U	340	U	79	%
4-Bromophenyl-phenylether	340	U	360	U	340	U	340	U	340	U	80	%
Hexachlorobenzene	340	U	360	U	340	U	340	U	340	U	88	%
Pentachlorophenol	850	U	910	U	850	U	850	U	860	U	93	%
Phenanthrene	43	J	46	J	68	J	340	U	340	U	94	%
Anthracene	340	U	360	U	340	U	340	U	340	U	94	%
Carbazole	340	U	360	U	340	U	340	U	340	U	91	%
Di-n-butylphthalate	23	J	55	J	25	J	340	U	17	J	91	%
Fluoranthene	89	J	80	J	110	J	340	U	340	U	93	%
Pyrene	91	J	120	J	120	J	340	U	340	U	98	%
Butylbenzylphthalate	340	U	360	U	340	U	340	U	340	U	98	%
3,3'-Dichlorobenzidine	340	U	360	U	340	U	340	U	340	U	94	%
Benzo(a)anthracene	34	J	88	J	52	J	340	U	340	U	95	%
Chrysene	43	J	120	J	74	J	340	U	340	U	95	%
bis(2-Ethylhexyl)phthalate	LGO ~~55~~ JB U 3/30/05		LGO ~~80~~ JB U 3/30/05		LGO ~~55~~ JB U 3/30/05		LGO ~~62~~ JB U 3/30/05		LGO ~~66~~ JB U 3/30/05		96	%
Di-n-octyl phthalate	340	U	360	U	340	U	340	U	340	U	99	%
Benzo(b)fluoranthene	21	J	93	J	34	J	340	U	340	U	96	%
Benzo(k)fluoranthene	31	J	120	J	51	J	340	U	340	U	96	%
Benzo(a)pyrene	26	J	110	J	58	J	340	U	340	U	94	%
Indeno(1,2,3-cd)pyrene	340	U	43	J	32	J	340	U	340	U	97	%
Dibenz(a,h)anthracene	340	U	360	U	340	U	340	U	340	U	100	%
Benzo(g,h,i)perylene	340	U	39	J	33	J	340	U	340	U	94	%

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

3/13/05

000025

000000014

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Report Date: 02/15/06 15:03 Page: 5a

	Cust ID:	J111R8		J111R9		J111T0		J111T1		J111T2		J11263	
Sample Information	RFW#:	021 MSD		022		023		024		025		026	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	79	%	73	%	72	%	72	%	72	%	72	%
	2-Fluorobiphenyl	82	%	75	%	75	%	79	%	71	%	73	%
	Terphenyl-d14	91	%	88	%	84	%	113	%	85	%	86	%
	Phenol-d5	78	%	66	%	67	%	74	%	77	%	68	%
	2-Fluorophenol	70	%	56	%	59	%	72	%	75	%	62	%
	2,4,6-Tribromophenol	79	%	77	%	79	%	90	%	77	%	65	%
			fl		fl		fl		fl		fl		fl
Phenol		89	%	350	U	350	U	390	U	360	U	330	U
bis(2-Chloroethyl)ether		91	%	350	U	350	U	390	U	360	U	330	U
2-Chlorophenol		85	%	350	U	350	U	390	U	360	U	330	U
1,3-Dichlorobenzene		80	%	350	U	350	U	390	U	360	U	330	U
1,4-Dichlorobenzene		81	%	350	U	350	U	390	U	360	U	330	U
1,2-Dichlorobenzene		84	%	350	U	350	U	390	U	360	U	330	U
2-Methylphenol		82	%	350	U	350	U	390	U	360	U	330	U
2,2'-oxybis(1-Chloropropane)		90	%	350	U	350	U	390	U	360	U	330	U
4-Methylphenol		85	%	350	U	350	U	390	U	360	U	330	U
N-Nitroso-di-n-propylamine		83	%	350	U	350	U	390	U	360	U	330	U
Hexachloroethane		75	%	350	U	350	U	390	U	360	U	330	U
Nitrobenzene		84	%	350	U	350	U	390	U	360	U	330	U
Isophorone		92	%	350	U	350	U	390	U	360	U	330	U
2-Nitrophenol		83	%	350	U	350	U	390	U	360	U	330	U
2,4-Dimethylphenol		70	%	350	U	350	U	390	U	360	U	330	U
bis(2-Chloroethoxy)methane		83	%	350	U	350	U	390	U	360	U	330	U
2,4-Dichlorophenol		75	%	350	U	350	U	390	U	360	U	330	U
1,2,4-Trichlorobenzene		75	%	350	U	350	U	390	U	360	U	330	U
Naphthalene		81	%	350	U	350	U	390	U	360	U	330	U
4-Chloroaniline		86	%	350	U	350	U	390	U	360	U	330	U
Hexachlorobutadiene		79	%	350	U	350	U	390	U	360	U	330	U
4-Chloro-3-methylphenol		84	%	350	U	350	U	390	U	360	U	330	U
2-Methylnaphthalene		86	%	350	U	350	U	390	U	360	U	330	U
Hexachlorocyclopentadiene		57	%	350	U	350	U	390	U	360	U	330	U
2,4,6-Trichlorophenol		86	%	350	U	350	U	390	U	360	U	330	U
2,4,5-Trichlorophenol		82	%	870	U	870	U	970	U	910	U	830	U

*= Outside of EPA CLP QC limits.

pr 3/13/05

000000015

000026

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 5b

Cust ID:	J111R8		J111R9		J111T0		J111T1		J111T2		J11263	
RFW#:	021 MSD		022		023		024		025		026	
2-Chloronaphthalene	85	%	350	U	350	U	390	U	360	U	330	U
2-Nitroaniline	88	%	870	U	870	U	970	U	910	U	830	U
Dimethylphthalate	87	%	350	U	350	U	390	U	360	U	330	U
Acenaphthylene	83	%	350	U	350	U	390	U	360	U	330	U
2,6-Dinitrotoluene	85	%	350	U	350	U	390	U	360	U	330	U
3-Nitroaniline	94	%	870	U	870	U	970	U	910	U	830	U
Acenaphthene	85	%	350	U	350	U	390	U	360	U	330	U
2,4-Dinitrophenol	74	%	870	U J	870	U J	970	U J	910	U J	830	U J
4-Nitrophenol	104	%	870	U	870	U	970	U	910	U	830	U
Dibenzofuran	84	%	350	U	350	U	390	U	360	U	330	U
2,4-Dinitrotoluene	91	%	350	U	350	U	390	U	360	U	330	U
Diethylphthalate	87	%	350	U	350	U	390	U	360	U	26	J
4-Chlorophenyl-phenylether	85	%	350	U	350	U	390	U	360	U	330	U
Fluorene	94	%	350	U	350	U	390	U	360	U	330	U
4-Nitroaniline	99	%	870	U	870	U	970	U	910	U	830	U
4,6-Dinitro-2-methylphenol	90	%	870	U	870	U	970	U	910	U	830	U
N-Nitrosodiphenylamine (1)	75	%	350	U	350	U	390	U	360	U	330	U
4-Bromophenyl-phenylether	77	%	350	U	350	U	390	U	360	U	330	U
Hexachlorobenzene	82	%	350	U	350	U	390	U	360	U	330	U
Pentachlorophenol	91	%	870	U	870	U	970	U	910	U	830	U
Phenanthrene	89	%	30	J	350	U	390	U	360	U	330	U
Anthracene	89	%	350	U	350	U	390	U	360	U	330	U
Carbazole	87	%	350	U	350	U	390	U	360	U	330	U
Di-n-butylphthalate	87	%	350	U	350	U	390	U	30	J	210	J
Fluoranthene	89	%	69	J	350	U	390	U	19	J	330	U
Pyrene	93	%	52	J	350	U	390	U	23	J	330	U
Butylbenzylphthalate	93	%	350	U	350	U	390	U	360	U	330	U
3,3'-Dichlorobenzidine	93	%	350	U	350	U	390	U	360	U	330	U
Benzo(a)anthracene	91	%	23	J	350	U	390	U	360	U	330	U
Chrysene	92	%	32	J	350	U	390	U	360	U	330	U
bis(2-Ethylhexyl)phthalate	91	%	660 ~~140~~ K 3/30/05 ~~JB~~ U		660 ~~73~~ K 3/30/05 ~~JB~~ U		660 ~~110~~ K 3/30/05 ~~JB~~ U		660 ~~72~~ K 3/30/05 ~~JB~~ U		660 ~~31~~ K 3/30/05 ~~JB~~ U	
Di-n-octyl phthalate	98	%	350	U	350	U	390	U	360	U	330	U
Benzo(b)fluoranthene	96	%	22	J	350	U	390	U	360	U	330	U
Benzo(k)fluoranthene	92	%	28	J	350	U	390	U	360	U	330	U
Benzo(a)pyrene	92	%	22	J	350	U	390	U	360	U	330	U
Indeno(1,2,3-cd)pyrene	95	%	350	U	350	U	390	U	360	U	330	U
Dibenz(a,h)anthracene	97	%	350	U	350	U	390	U	360	U	330	U
Benzo(g,h,i)perylene	93	%	350	U	350	U	390	U	360	U	330	U

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

K 3/13/05

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000000016

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List — Report Date: 02/15/06 15:03

RFW Batch Number: 0601L164 — Client: TNUHANFORD RC-032 K0193 — Work Order: 11343606001 — Page: 6a

	Cust ID:	J111T3		SBLKTE		SBLKTE BS		SBLKTH		SBLKTH BS		SBLKTH BSD	
Sample Information	RFW#:	027		06LE0070-MB1		06LE0070-MB1		06LE0073-MB1		06LE0073-MB1		06LE0073-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	2.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	68	%	73	%	66	%	74	%	59	%	67	%
	2-Fluorobiphenyl	73	%	76	%	83	%	78	%	70	%	76	%
	Terphenyl-d14	91	%	97	%	105	%	103	%	77	%	81	%
	Phenol-d5	77	%	84	%	70	%	82	%	70	%	75	%
	2-Fluorophenol	71	%	76	%	73	%	78	%	68	%	71	%
	2,4,6-Tribromophenol	79	%	78	%	83	%	82	%	76	%	87	%
			fl		fl		fl		fl		fl		fl
Phenol		770	U	330	U	74	%	330	U	78	%	82	%
bis(2-Chloroethyl)ether		770	U	330	U	76	%	330	U	74	%	80	%
2-Chlorophenol		770	U	330	U	90	%	330	U	76	%	82	%
1,3-Dichlorobenzene		770	U	330	U	93	%	330	U	75	%	78	%
1,4-Dichlorobenzene		770	U	330	U	91	%	330	U	74	%	77	%
1,2-Dichlorobenzene		770	U	330	U	95	%	330	U	77	%	82	%
2-Methylphenol		770	U	330	U	74	%	330	U	65	%	69	%
2,2'-oxybis(1-Chloropropane)		770	U	330	U	78	%	330	U	73	%	79	%
4-Methylphenol		770	U	330	U	78	%	330	U	78	%	83	%
N-Nitroso-di-n-propylamine		770	U	330	U	71	%	330	U	71	%	76	%
Hexachloroethane		770	U	330	U	86	%	330	U	70	%	75	%
Nitrobenzene		770	U	330	U	69	%	330	U	64	%	72	%
Isophorone		770	U	330	U	81	%	330	U	72	%	80	%
2-Nitrophenol		770	U	330	U	80	%	330	U	64	%	73	%
2,4-Dimethylphenol		770	U	330	U	60	%	330	U	57	%	64	%
bis(2-Chloroethoxy)methane		770	U	330	U	80	%	330	U	69	%	78	%
2,4-Dichlorophenol		770	U	330	U	89	%	330	U	68	%	76	%
1,2,4-Trichlorobenzene		770	U	330	U	89	%	330	U	66	%	75	%
Naphthalene		770	U	330	U	85	%	330	U	65	%	73	%
4-Chloroaniline		770	U	330	U	123 *	%	330	U	90	%	101	%
Hexachlorobutadiene		770	U	330	U	100	%	330	U	72	%	82	%
4-Chloro-3-methylphenol		770	U	330	U	87	%	330	U	79	%	89	%
2-Methylnaphthalene		770	U	330	U	94	%	330	U	69	%	78	%
Hexachlorocyclopentadiene		770	U	330	U	74	%	330	U	58	%	67	%
2,4,6-Trichlorophenol		770	U	330	U	89	%	330	U	86	%	92	%
2,4,5-Trichlorophenol		1900	U	830	U	88	%	830	U	78	%	82	%

*= Outside of EPA CLP QC limits.

3/13/05

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Cust ID:	J111T3		SBLKTE		SBLKTE BS		SBLKTH		SBLKTH BS		SBLKTH BSD	
RFW#:	027		06LE0070-MB1		06LE0070-MB1		06LE0073-MB1		06LE0073-MB1		06LE0073-MB1	
2-Chloronaphthalene	770	U	330	U	92	%	330	U	77	%	84	%
2-Nitroaniline	1900	U	830	U	75	%	830	U	80	%	85	%
Dimethylphthalate	770	U	330	U	96	%	330	U	83	%	91	%
Acenaphthylene	770	U	330	U	90	%	330	U	76	%	81	%
2,6-Dinitrotoluene	770	U	330	U	97	%	330	U	79	%	85	%
3-Nitroaniline	1900	U	830	U	123	%	830	U	101	%	110	%
Acenaphthene	770	U	330	U	91	%	330	U	76	%	82	%
2,4-Dinitrophenol	1900	U J	830	U	30	%	830	U	2 *	%	16 *	%
4-Nitrophenol	1900	U	830	U	100	%	830	U	87	%	96	%
Dibenzofuran	770	U	330	U	96	%	330	U	79	%	85	%
2,4-Dinitrotoluene	770	U	330	U	98	%	330	U	84	%	92	%
Diethylphthalate	770	U	330	U	95	%	330	U	84	%	90	%
4-Chlorophenyl-phenylether	770	U	330	U	94	%	330	U	79	%	86	%
Fluorene	770	U	330	U	93	%	330	U	77	%	84	%
4-Nitroaniline	1900	U	830	U	104	%	830	U	90	%	96	%
4,6-Dinitro-2-methylphenol	1900	U	830	U	78	%	830	U	55	%	73	%
N-Nitrosodiphenylamine (1)	770	U	330	U	80	%	330	U	64	%	74	%
4-Bromophenyl-phenylether	770	U	330	U	84	%	330	U	68	%	77	%
Hexachlorobenzene	770	U	330	U	94	%	330	U	76	%	87	%
Pentachlorophenol	1900	U	830	U	77	%	830	U	75	%	93	%
Phenanthrene	120	J	330	U	100	%	330	U	75	%	84	%
Anthracene	270	J	330	U	93	%	330	U	80	%	90	%
Carbazole	770	U	330	U	93	%	330	U	81	%	91	%
Di-n-butylphthalate	770	U	330	U	93	%	330	U	78	%	88	%
Fluoranthene	170	J	330	U	89	%	330	U	81	%	92	%
Pyrene	270	J	330	U	106	%	330	U	81	%	86	%
Butylbenzylphthalate	770	U	330	U	110	%	330	U	82	%	91	%
3,3'-Dichlorobenzidine	770	U	330	U	96	%	330	U	89	%	101	%
Benzo(a)anthracene	530	J	330	U	99	%	330	U	78	%	89	%
Chrysene	2100		330	U	98	%	330	U	80	%	89	%
bis(2-Ethylhexyl)phthalate	660 ~~57 JB~~ U		41 ~~41 J~~		112	%	48	J	81	%	98	%
Di-n-octyl phthalate	770	U	330	U	120	%	330	U	78	%	89	%
Benzo(b)fluoranthene	840		330	U	104	%	330	U	76	%	88	%
Benzo(k)fluoranthene	780		330	U	99	%	330	U	80	%	90	%
Benzo(a)pyrene	1100		330	U	99	%	330	U	78	%	90	%
Indeno(1,2,3-cd)pyrene	620	J	330	U	110	%	330	U	89	%	102	%
Dibenz(a,h)anthracene	260	J	330	U	110	%	330	U	90	%	103	%
Benzo(g,h,i)perylene	760	J	330	U	106	%	330	U	88	%	102	%

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

JK 3/13/05

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0601L164
SDG/SAF # K0193/RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 01-27-2006

SEMIVOLATILE

Twenty-seven (27) soil samples were collected on 01-24,25-2006.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 01-30,31-2006 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 02-01,02,03,06,08-2006.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. Sample J111T3 required a 2-fold dilution due to high levels of non-target compounds.
5. Two (2) of two hundred sixteen (216) surrogate recoveries were outside acceptance criteria. However, the surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%.
6. Seven (7) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria.

   Three (3) of one hundred ninety-two (192) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. The method blanks contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at levels less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. 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

2/17/06
Date

som\gorup\data\bna\tnu-hanford\0601-164.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 5 9 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06MS047

Initiator: Sharon Saylor
Date: 0601L164 2-9-06
Client: TNU

Batch: 0601L164
Samples: 001ms, msd BS BSD
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: Solid
Prep Batch: 06LE0070 06LE0073

1. Reason for SDR

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

b. General Discrepancy

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

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

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

1) Sample 001 ms + msd low or zero recovery of 2,4-dinitrophenol + 4-nitroaniline but Sample matrix spike and spike dup of sample 021 is ok & blank spike 070 is ok
2) low recovery of 2,4-dinitrophenol in BS+BSD 06LE0073 but BS 06LE0070 is ok

2. Known or Probable Causes(s)

loss during extraction

3. Discussion and Proposed Action

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

Other Description: narrate

4. Project Manager Instructions...signature/date: [signature] 2/17/06

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

Not lost due to concentration very polar compds exhibit erratic recoveries due to poor chromatography etc. CA 2/17

5. Final Action...signature/date: [signature] 2/17/06

Other Explanation:

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

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

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

QA-105-A-0805

RECEIVED
MAR 2006

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K0193

DATE RECEIVED: 01/27/06 LVL LOT # :0601L164

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J111T4	001	S	06LE0070	01/24/06	01/30/06	02/06/06
J111T4	001 MS	S	06LE0070	01/24/06	01/30/06	02/06/06
J111T4	001 MSD	S	06LE0070	01/24/06	01/30/06	02/06/06
J111T5	002	S	06LE0070	01/24/06	01/30/06	02/03/06
J111T6	003	S	06LE0070	01/24/06	01/30/06	02/03/06
J111T7	004	S	06LE0070	01/24/06	01/30/06	02/03/06
J111T8	005	S	06LE0070	01/24/06	01/30/06	02/08/06
J111T9	006	S	06LE0070	01/24/06	01/30/06	02/08/06
J111V0	007	S	06LE0070	01/24/06	01/30/06	02/01/06
J111V1	008	S	06LE0070	01/24/06	01/30/06	02/03/06
J111V2	009	S	06LE0070	01/24/06	01/30/06	02/01/06
J111V3	010	S	06LE0070	01/24/06	01/30/06	02/01/06
J111V4	011	S	06LE0070	01/24/06	01/30/06	02/01/06
J111V5	012	S	06LE0070	01/24/06	01/30/06	02/02/06
J111V6	013	S	06LE0070	01/24/06	01/30/06	02/03/06
J111V7	014	S	06LE0070	01/24/06	01/30/06	02/06/06
J111R2	015	S	06LE0070	01/25/06	01/30/06	02/06/06
J111R3	016	S	06LE0070	01/25/06	01/30/06	02/06/06
J111R4	017	S	06LE0070	01/25/06	01/30/06	02/06/06
J111R5	018	S	06LE0070	01/25/06	01/30/06	02/06/06
J111R6	019	S	06LE0070	01/25/06	01/30/06	02/06/06
J111R7	020	S	06LE0070	01/25/06	01/30/06	02/06/06
J111R8	021	S	06LE0073	01/25/06	01/31/06	02/06/06
J111R8	021 MS	S	06LE0073	01/25/06	01/31/06	02/06/06
J111R8	021 MSD	S	06LE0073	01/25/06	01/31/06	02/06/06
J111R9	022	S	06LE0073	01/25/06	01/31/06	02/06/06
J111T0	023	S	06LE0073	01/25/06	01/31/06	02/06/06
J111T1	024	S	06LE0073	01/25/06	01/31/06	02/08/06
J111T2	025	S	06LE0073	01/25/06	01/31/06	02/08/06
J11263	026	S	06LE0073	01/25/06	01/31/06	02/06/06
J111T3	027	S	06LE0073	01/25/06	01/31/06	02/08/06

LAB QC:

SBLKTE	MB1	S	06LE0070	N/A	01/30/06	02/03/06
SBLKTE	MB1 BS	S	06LE0070	N/A	01/30/06	02/01/06
SBLKTH	MB1	S	06LE0073	N/A	01/31/06	02/03/06
SBLKTH	MB1 BS	S	06LE0073	N/A	01/31/06	02/03/06
SBLKTH	MB1 BSD	S	06LE0073	N/A	01/31/06	02/03/06

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-005	Page 1 of 3
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation		SAF No.: RC-032	Air Quality ☐
Ice Chest No.: AFS-04-120	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060266		Bill of Lading/Air Bill No.: See OSPC	

000000051

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

000034

Preservation	None	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G	aG	aG	G						
No. of Container(s)	1	1	1	1						
Volume	500mL	60mL	120mL	125mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1						

Sample No.	Matrix *	Sample Date	Sample Time										
J111T4	SOIL	1-24-06	0900	X	X	X	X						
J111T5	SOIL	1-24-06	0910	X	X	X	X						
J111T6	SOIL	1-24-06	0920	X	X	X	X						
J111T7	SOIL	1-24-06	0930	X	X	X	X						
J111T8	SOIL	1-24-06	0940	X	X	X	X						

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MT Stankovich [signature]	1400 1/24/06	3728/2C	1/24/06 1400
3728/2C	1-25-06 1230	R2 Steffler R.J. Steffler	1230 1-25-06
R2 Steffler R.J. Steffler	1500 1-25-06	Fed Ex	
Fed Ex	1-27-06 1090	[signature]	1-27-06 1090

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP)~~ - ~~1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - ~~1311~~/7470 antimony, beryllium boron cobalt copper manganese molybdenum nickel silver vanadium, zinc

NA 1/24/06

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-005	Page 2 of 2

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15days	Air Quality ☐	
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation	SAF No.: RC-032	
Ice Chest No.: ERC-02-406	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060267	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G	aG	aG	G							
No. of Container(s)	1	1	1	1							
Volume	500mL	60mL	120mL	125mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1							
Sample No.	Matrix *	Sample Date	Sample Time								
J111T9	SOIL	1-24-06	0950	X	X	X	X				
J111V0	SOIL	1-24-06	1000	X	X	X	X				
J111V1	SOIL	1-24-06	1010	X	X	X	X				
J111V2	SOIL	1-24-06	1020	X	X	X	X				
J111V3	SOIL	1-24-06	1030	X	X	X	X				

000035

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: MT Stankovich	Date/Time: 1400 1/24/06	Received By/Stored In: 3728/2C	Date/Time: 1/24/06 1400
Relinquished By/Removed From: 3728/2C	Date/Time: 1-25-06 1300	Received By/Stored In: R2 Stettler R.J. Stettler	Date/Time: 1300 1-25-06
Relinquished By/Removed From: R2 Stettler R.J. Stettler	Date/Time: 1500 1-25-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 1-27-06 0900	Received By/Stored In: D. Smith	Date/Time: 1-27-06 1090
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

1/26/06

(1) Metals by ICP ~~(TCLP)~~ - ~~4341~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - ~~7471~~/7470 antimony, beryllium, Boron cobalt copper manganese molybdenum nickel, Silver vanadium zinc

Matrix *

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

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

BHI-EE-011 (08/29/2005)

000000052

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-005	Page 3 of 3

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman; Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15days; Air Quality ☐
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation	SAF No.: RC-032	
Ice Chest No.: ERC-02-406	Field Logbook No.: EFL-1174; COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060267	Bill of Lading/Air Bill No.: See OSPC	

000000053

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	G	aG	aG	G
No. of Container(s)	1	1	1	1
Volume mo 1/24/06	~~500mL~~ 250	60mL	120mL	125mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1

000036

Sample No.	Matrix *	Sample Date	Sample Time				
J111V4	SOIL	1-24-06	1040	X	X	X	X
J111V5	SOIL	1-24-06	0920	X	X	X	X
J111V6	SOIL	1-24-06	0845	X		X	

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] MStankovich	1/24/06 1400	3728/2C	1/24/06 1400
3728/2C	1-25-06 1300	RZ Steffler [signature]	1-25-06 1300
RZ Steffler [signature]	1-25-06 1500 wH	Fed Ex	
Fed Ex	1-27-06 10900	[signature]	1-27-06 10920

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP) - 1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP) - 1311~~/7470 mo 1/24/06 antimony beryllium, boron cobalt copper manganese molybdenum nickel silver, vanadium, zinc

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-006	Page 1 of 1

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 days	Air Quality ☐	
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Staging Area	SAF No.: RC-032	
Ice Chest No.: AFS-04-120	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060266	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G	aG	aG	G							
No. of Container(s)	1	1	1	1							
Volume	500mL	60mL	120mL	125mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1							
Sample No. / Matrix * / Sample Date / Sample Time											
J111V7 / SOIL / 1-24-06 / 1145	X	X	X	X							

000037

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: MStankovich	1400 1/24/06	Received By/Stored In: 3728/2C	1/24/06 1400
Relinquished By/Removed From: 3728/2C	1-25-06 1230	Received By/Stored In: RZ Steffler	1230 1-25-06
Relinquished By/Removed From: RZ Steffler	1500 with 1-25-06	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: FedEx	1-27-06 10900	Received By/Stored In: D. Smith	1-27-06 10900
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

1/24/06

(1) Metals by ICP ~~(TCLP)~~ - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP) - 1311~~/7470 antimony beryllium, boron cobalt copper manganese molybdenum nickel silver vanadium zinc.

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

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

BHI-EE-011 (08/29/2005)

000000054

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-003	Page 1 of 3
Collector Coffman/Stankovich	Company Contact R.T. Coffman	Telephone No. 528-6409	Project Coordinator KESSNER, JH	Price Code 8C Data Turnaround 15days
Project Designation 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location 132-F-1 Excavation		SAF No. RC-032	Air Quality ☐
Ice Chest No. ERC-03-107	Field Logbook No. EFL-1174	COA R132F12000	Method of Shipment FedEx	
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060271		Bill of Lading/Air Bill No. See OSPC	

000000055

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

Cool 4°C

Preservation	Cool 4C	None	Cool 4C									
Type of Container	aG	G/P	aG									
No. of Container(s)	1	1	1									
Volume	120mL	60mL	125mL									
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	Nickel-63; Strontium-89,90 -- Total Sr	Pesticides - 8081									

000038

Sample No.	Matrix *	Sample Date	Sample Time										
J111R2	SOIL	1-25-06	0900	X		X							
J111R3	SOIL	1-25-06	0908	X		X							
J111R4	SOIL	1-25-06	0916	X		X							
J111R5	SOIL	1-25-06	0924	X		X							
J111R6	SOIL	1-25-06	0936	X		X							

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] mstankovich	1/25/06 1500	3728/1C	1/25/06 1500
3728/1C	1-26-06 1330	RZ Steffler [signature]	1-26-06 1330
RZ Steffler [signature]	1-26-06 1500	Fed Ex	
[signature]	1-27-06 0920	[signature]	1-27-06 0900

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-003	Page 2 of 3

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman; Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Excavation	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-03-107	Field Logbook No.: EFL-1174; COA: R132F12000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060271	Bill of Lading/Air Bill No.: See OSPC	

000000056

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < POT Limits

Special Handling and/or Storage

Cool 4°C

Preservation	Cool 4C	None	Cool 4C									
Type of Container	aG	G/P	aG									
No. of Container(s)	1	1	1									
Volume	120mL	60mL	125mL									
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	Nickel 63; Strontium-89,90 -- Total Sr	Pesticides - 8081									

000039

Sample No.	Matrix *	Sample Date	Sample Time										
J111R7	SOIL	1-25-06	0944	X		X							
J111R8	SOIL	1-25-06	0952	X		X							
J111R9	SOIL	1-25-06	1000	X		X							
J111T0	SOIL	1-25-06	1008	X		X							
J111T1	SOIL	1-25-06	1016	X		X							

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From: [signature] MStankovich; Date/Time: 1500 1/25/06	Received By/Stored In: 3728/1C; Date/Time: 1/25/06 1500			S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From: 3728/1C 1-26-06; Date/Time: 1330	Received By/Stored In: RZ Steffler [signature]; Date/Time: 1330 1-26-06			
Relinquished By/Removed From: RZ Steffler [signature]; Date/Time: 1500 with 1-26-06	Received By/Stored In: Fed EX; Date/Time:			
Relinquished By/Removed From: [signature] 1-27-06 0900	Received By/Stored In: [signature] 1-27-06 0900			
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:	
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:	

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-003	Page 3 of 3
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Excavation		SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-03-107	Field Logbook No.: EFL-1174	COA: R132F12000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060271		Bill of Lading/Air Bill No.: See OSPC	

000000057

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

Cool 4°C

000040

Preservation				Cool 4C	None	Cool 4C							
Type of Container				aG	G/P	aG							
No. of Container(s)				1	1	1							
Volume				120mL	60mL	125mL							
SAMPLE ANALYSIS				Semi-VOA - 8270A (TCL)	Nickel-63; Strontium-89,90 – Total Sr	Pesticides - 8081							
Sample No.	Matrix *	Sample Date	Sample Time										
J111T2	SOIL	1-25-06	0924	X		X							
J11263	soil	1-25-06	0845	X									

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
M Stankovich [signature]	1500 1/25/06	3728/1C 1/25/06	1500
3728/1C 1-26-06	1330	RZ Steffler [signature]	1330 1-26-06
RZ Steffler [signature]	1500 1-26-06	Fed Ex	
Fed Ex 1-27-06	0900	[signature]	1-27-06 0900

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-004	Page 1 of 1

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman — Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C — Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Staging Area	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-03-107	Field Logbook No.: EFL-1174 — COA: R132F12000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060271	Bill of Lading/Air Bill No.: See OSPC	

0000000058

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

Cool 4°C

000041

Preservation	Cool 4C	None	Cool 4C										
Type of Container	aG	G/P	aG										
No. of Container(s)	1	1	1										
Volume	120mL	50mL	125mL										
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	Nickel-63; Strontium-89,90 – Total Sr	Pesticides - 8081										

Sample No.	Matrix *	Sample Date	Sample Time										
J111T3	SOIL	1-25-06	1030	X		X							

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: [signature]	Date/Time: 1500 1/25/06	Received By/Stored In: 3728/IC	Date/Time: 1/25/06 1500
Relinquished By/Removed From: 3728/IC 1-26-06	Date/Time: 1330	Received By/Stored In: RZ Steffler R.J. Steffler	Date/Time: 1330 1-26-06
Relinquished By/Removed From: RZ Steffler R.J. Steffler	Date/Time: 1500 1-26-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 1-27-06 0900	Received By/Stored In: [signature]	Date/Time: 1-27-06 0900
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 132-F-1 100-F-33			DATA PACKAGE: K0193		
VALIDATOR: TLI		LAB: LLI		DATE: 5/12/06	
			SDG: K0193		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)

SAMPLES/MATRIX						
J111T0	J111T1	J111T2	J111T3	J111T4	J111T5	J111T6
J111T7	J111T8	J111T9	J111V0	J111V1	J111V2	J111V6
J111V7	~~J111V8~~	~~J111V9~~	J111R2	J111R3	J111R4	J111R5
J111R6	J111R7	J111R8	J111R9	J1126 3		
J111V3	J111V4	J111V5				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: MB bis(2-ethylhexyl) phthalate - U all at RQL

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: TL - nitrobenzene + 2 fluorophenol - J all assoc in TL
2,4 dinitrophenol
MS/MSD ~~acenaphthene~~ ~~acenaphthylene~~ - J all assoc
4,6-dinitrophenol - J all assoc
LCS 2,4 dinitrophenol - J all assoc no PAT

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: 2,4,6-dimethylphenol 8020 — J all assoc

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

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

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

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A

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

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

Comments: 208 + all in ~~3/3~~ 3/m T3

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: 15 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Sites 132-F-1 and 100-F-33
Subject: PCB/Pesticide - Data Package No. K0193-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0193 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
J111T4	1/24/06	Soil	C	See note 1
J111T5	1/24/06	Soil	C	See note 1
J111T6	1/24/06	Soil	C	See note 1
J111T7	1/24/06	Soil	C	See note 1
J111T8	1/24/06	Soil	C	See note 1
J111T9	1/24/06	Soil	C	See note 1
J111V0	1/24/06	Soil	C	See note 1
J111V1	1/24/06	Soil	C	See note 1
J111V2	1/24/06	Soil	C	See note 1
J111V3	1/24/06	Soil	C	See note 1
J111V4	1/24/06	Soil	C	See note 1
J111V5	1/24/06	Soil	C	See note 1
J111V7	1/24/06	Soil	C	See note 1
J111R2	1/25/06	Soil	C	See note 2
J111R3	1/25/06	Soil	C	See note 2
J111R4	1/25/06	Soil	C	See note 2
J111R5	1/25/06	Soil	C	See note 2
J111R6	1/25/06	Soil	C	See note 2
J111R7	1/25/06	Soil	C	See note 2
J111R8	1/25/06	Soil	C	See note 2
J111R9	1/25/06	Soil	C	See note 2
J111T0	1/25/06	Soil	C	See note 2
J111T1	1/25/06	Soil	C	See note 2
J111T2	1/25/06	Soil	C	See note 2
J111T3	1/25/06	Soil	C	See note 2

1 – PCBs by 8082
2 – Pesticides by 8081.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

· Holding Times

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

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

All holding times were acceptable.

· Method Blank

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

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

Due to interference with the matrix spike and matrix spike duplicate analysis, all PCB results (except aroclor 1016) 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.

All precision results were acceptable.

Field Duplicate Samples

Two sets of field duplicates (J111V5/J111T6 & J111R5/J111T2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data Package No. K0193 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

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

- Due to interference with the matrix spike and matrix spike duplicate analysis, all PCB results (except aroclor 1016) 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

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

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

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

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0193	REVIEWER: TLI	Project: 132-F-1 100-F-33	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS analysis
All PCB except aroclor-1016	J	All	MS interference

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0193																		
Sample Number		J111T4		J111T5		J111T6		J111T7		J111T8		J111T9		J111V0		J111V1		J111V2	
Remarks																			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Extraction Date		2/1/06		2/1/06		2/1/06		2/1/06		2/1/06		2/1/06		2/1/06		2/1/06		2/1/06	
Analysis Date		2/3/06		2/3/06		2/3/06		2/3/06		2/3/06		2/3/06		2/3/06		2/3/06		2/3/06	
PCB	**RQL**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Aroclor-1016	**100**	15	U	15	U	14	U	15	U	15	U	15	U	14	U	14	U	14	U
Aroclor-1221	**100**	15	UJ	15	UJ	14	UJ	15	UJ	15	UJ	15	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1232	**100**	15	UJ	15	UJ	14	UJ	15	UJ	15	UJ	15	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1242	**100**	15	UJ	15	UJ	14	UJ	15	UJ	15	UJ	15	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1248	**100**	15	UJ	15	UJ	14	UJ	15	UJ	15	UJ	15	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1254	**100**	260	J	210	J	5.0	J	13	J	16	J	110	J	14	UJ	6.1	J	24	J
Aroclor-1260	**100**	15	UJ	15	UJ	14	UJ	15	UJ	15	UJ	15	UJ	14	UJ	14	UJ	14	UJ
Sample Number		J111V3		J111V4		J111V5		J111V7											
Remarks						Duplicate													
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06											
Extraction Date		2/1/06		2/1/06		2/1/06		2/1/06											
Analysis Date		2/3/06		2/3/06		2/3/06		2/3/06											
PCB	**RQL**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**										
Aroclor-1016	**100**	15	U	14	U	14	U	15	U										
Aroclor-1221	**100**	15	UJ	14	UJ	14	UJ	15	UJ										
Aroclor-1232	**100**	15	UJ	14	UJ	14	UJ	15	UJ										
Aroclor-1242	**100**	15	UJ	14	UJ	14	UJ	15	UJ										
Aroclor-1248	**100**	15	UJ	14	UJ	14	UJ	15	UJ										
Aroclor-1254	**100**	21	J	14	UJ	100	J	48	J										
Aroclor-1260	**100**	15	UJ	14	UJ	14	UJ	15	UJ										

000010

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

PESTICIDE ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																	
Laboratory: LLI	SDG: K0193																
Sample Number		J111R2		J111R3		J111R4		J111R5		J111R6		J111R7		J111R8		J111R9	
Remarks																	
Sample Date		1/25/06		1/25/06		1/25/06		1/25/06		1/25/06		1/25/06		1/25/06		1/25/06	
Extraction Date		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06		1/31/06	
Analysis Date		2/1/06		2/2/06		2/2/06		2/2/06		2/2/06		2/2/06		2/2/06		2/2/06	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Gamma-BHC (Lindane)	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Beta-BHC	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.8	
Heptachlor	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Delta-BHC	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Aldrin	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Heptachlor Epoxide	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
gamma-Chlordane	5	1.4	U	1.4	U	1.4	U	1.4	U	3.4		1.4	U	1.4	U	1.4	U
Endosulfan I	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
alpha-Chlordane	5	1.4	U	1.4	U	1.4	U	1.4	U	2.7		1.4	U	1.4	U	1.4	U
4,4'-DDE	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Dieldrin	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Endrin	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
4,4'-DDD	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Endosulfan II	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
4,4'-DDT	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Endrin Aldehyde	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Endosulfan Sulfate	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Methoxychlor	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Endrin Ketone	5	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Toxaphene	5	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ

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

000041

PESTICIDE ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																	
Laboratory: LLI	SDG: K0193																
Sample Number		J111T0		J111T1		J111T2		J111T3									
Remarks						Duplicate											
Sample Date		1/25/06		1/25/06		1/25/06		1/25/06									
Extraction Date		1/31/06		1/31/06		1/31/06		1/31/06									
Analysis Date		2/2/06		2/2/06		2/2/06		2/2/06									
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.4	U	1.6	U	1.5	U	1.5	U								
Gamma-BHC (Lindane)	5	1.4	U	1.6	U	1.5	U	1.5	U								
Beta-BHC	5	1.4	U	1.6	U	1.5	U	1.5	U								
Heptachlor	5	1.4	U	1.6	U	1.5	U	1.5	U								
Delta-BHC	5	1.4	U	1.6	U	1.5	U	1.5	U								
Aldrin	5	1.4	U	1.6	U	1.5	U	1.5	U								
Heptachlor Epoxide	5	1.4	U	1.6	U	1.5	U	1.5	U								
gamma-Chlordane	5	1.7		1.6	U	1.5	U	1.5	U								
Endosulfan I	5	1.4	U	1.6	U	1.5	U	1.5	U								
alpha-Chlordane	5	1.5		1.6	U	1.5	U	1.5	U								
4,4'-DDE	5	1.4	U	1.6	U	1.5	U	1.5	U								
Dieldrin	5	1.4	U	1.6	U	1.5	U	1.5	U								
Endrin	5	1.4	U	1.6	U	1.5	U	1.5	U								
4,4'-DDD	5	1.4	U	1.6	U	1.5	U	1.5	U								
Endosulfan II	5	1.4	U	1.6	U	1.5	U	1.5	U								
4,4'-DDT	5	1.4	U	1.6	U	1.5	U	2.7									
Endrin Aldehyde	5	1.4	U	1.6	U	1.5	U	1.5	U								
Endosulfan Sulfate	5	1.4	U	1.6	U	1.5	U	1.5	U								
Methoxychlor	5	1.4	U	1.6	U	1.5	U	1.5	U								
Endrin Ketone	5	1.4	U	1.6	U	1.5	U	1.5	U								
Toxaphene	5	14	UJ	1.6	UJ	15	UJ	15	UJ								

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.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/08/06 13:00

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 1

000000004

	Cust ID:	J111T4	J111T4	J111T4	J111T5	J111T6	J111T7
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	84 %	83 %	84 %	80 %	89 %	86 %
	Decachlorobiphenyl	85 %	86 %	90 %	83 %	90 %	90 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		15 U	112 %	103 %	15 U	14 U	15 U
Aroclor-1221		15 U J	15 U	15 U	15 U J	14 U J	15 U J
Aroclor-1232		15 U	15 U	15 U	15 U	14 U	15 U
Aroclor-1242		15 U	15 U	15 U	15 U	14 U	15 U
Aroclor-1248		15 U	15 U	15 U	15 U	14 U	15 U
Aroclor-1254		260	I	I	210	5.0	13
Aroclor-1260		15 U	I %	I %	15 U	14 U	15 U

	Cust ID:	J111T8	J111T9	J111V0	J111V1	J111V2	J111V3
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	83 %	83 %	76 %	80 %	79 %	80 %
	Decachlorobiphenyl	84 %	86 %	81 %	82 %	85 %	81 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		15 U	15 U	14 U	14 U	14 U	15 U
Aroclor-1221		15 U J	15 U J	14 U J	14 U J	14 U J	15 U J
Aroclor-1232		15 U	15 U	14 U	14 U	14 U	15 U
Aroclor-1242		15 U	15 U	14 U	14 U	14 U	15 U
Aroclor-1248		15 U	15 U	14 U	14 U	14 U	15 U
Aroclor-1254		16	110	14 U	6.1	24	21
Aroclor-1260		15 U	15 U	14 U	14 U	14 U	15 U

000000013

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

3/13/06 2/9/06

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 02/08/06 13:00

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 2

	Cust ID:	J111V4	J111V5	J111V7	PBLKAX	PBLKAX BS
Sample Information	RFW#:	011	012	014	06LE0076-MB1	06LE0076-MB1
	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
Surrogate:	Tetrachloro-m-xylene	65 %	76 %	75 %	80 %	89 %
	Decachlorobiphenyl	80 %	82 %	82 %	85 %	90 %
		fl	fl	fl	fl	fl
Aroclor-1016		14 U	14 U	15 U	13 U	107 %
Aroclor-1221		14 U J	14 U J	15 U J	13 U	13 U
Aroclor-1232		14 U	14 U	15 U	13 U	13 U
Aroclor-1242		14 U	14 U	15 U	13 U	13 U
Aroclor-1248		14 U	14 U	15 U	13 U	13 U
Aroclor-1254		14 U	100	48	13 U	13 U
Aroclor-1260		14 U	14 U	15 U	13 U	114 %

000005

000014

R 3/13/05

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

2/16

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List Report Date: 02/07/06 14:08

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 1

000000004

	Cust ID:	J111R2	J111R2	J111R2	J111R3	J111R4	J111R5
Sample Information	RFW#:	015	015 MS	015 MSD	016	017	018
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	69 %	61 %	56 %	62 %	64 %	62 %
	Decachlorobiphenyl	81 %	71 %	68 %	74 %	75 %	76 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.4 U	84 %	77 %	1.4 U	1.4 U	1.4 U
gamma-BHC (Lindane)		1.4 U	88 %	82 %	1.4 U	1.4 U	1.4 U
Beta-BHC		1.4 U	84 %	82 %	1.4 U	1.4 U	1.4 U
Heptachlor		1.4 U	87 %	80 %	1.4 U	1.4 U	1.4 U
Delta-BHC		1.4 U	79 %	74 %	1.4 U	1.4 U	1.4 U
Aldrin		1.4 U	82 %	78 %	1.4 U	1.4 U	1.4 U
Heptachlor epoxide		1.4 U	87 %	82 %	1.4 U	1.4 U	1.4 U
gamma-Chlordane		1.4 U	88 %	82 %	1.4 U	1.4 U	1.4 U
Endosulfan I		1.4 U	86 %	80 %	1.4 U	1.4 U	1.4 U
alpha-Chlordane		1.4 U	90 %	84 %	1.4 U	1.4 U	1.4 U
4,4'-DDE		1.4 U	82 %	79 %	1.4 U	1.4 U	1.4 U
Dieldrin		1.4 U	86 %	79 %	1.4 U	1.4 U	1.4 U
Endrin		1.4 U	101 %	94 %	1.4 U	1.4 U	1.4 U
4,4'-DDD		1.4 U	88 %	82 %	1.4 U	1.4 U	1.4 U
Endosulfan II		1.4 U	89 %	83 %	1.4 U	1.4 U	1.4 U
4,4'-DDT		1.4 U	70 %	69 %	1.4 U	1.4 U	1.4 U
Endrin aldehyde		1.4 U	73 %	63 %	1.4 U	1.4 U	1.4 U
Endosulfan sulfate		1.4 U	87 %	80 %	1.4 U	1.4 U	1.4 U
Methoxychlor		1.4 U	102 %	91 %	1.4 U	1.4 U	1.4 U
Endrin ketone		1.4 U	92 %	86 %	1.4 U	1.4 U	1.4 U
Toxaphene		14 U J	14 U	14 U	14 U J	14 U J	14 U J

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

000015

3/13/06

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

Report Date: 02/07/06 14:08

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 2

Cust ID:	J111R6		J111R7		J111R8		J111R9		J111T0		J111T1	
Sample Information RFW#:	019		020		021		022		023		024	
Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
D.F.:	4.00		4.00		4.00		4.00		4.00		4.00	
Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate: Tetrachloro-m-xylene	57	%	60	%	59	%	82	%	70	%	58	%
Decachlorobiphenyl	68	%	70	%	72	%	84	%	78	%	67	%
		fl		fl		fl		fl		fl		fl
Alpha-BHC	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
gamma-BHC (Lindane)	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Beta-BHC	1.4	U	1.4	U	1.4	U	1.8		1.4	U	1.6	U
Heptachlor	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Delta-BHC	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Aldrin	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Heptachlor epoxide	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
gamma-Chlordane	3.4		1.4	U	1.4	U	1.4	U	1.7		1.6	U
Endosulfan I	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
alpha-Chlordane	2.7		1.4	U	1.4	U	1.4	U	1.5		1.6	U
4,4'-DDE	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Dieldrin	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Endrin	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
4,4'-DDD	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Endosulfan II	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
4,4'-DDT	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Endrin aldehyde	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Endosulfan sulfate	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Methoxychlor	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Endrin ketone	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.6	U
Toxaphene	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	16	UJ

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

3/13/06

2/9/06

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

Report Date: 02/07/06 14:08

RFW Batch Number: 0601L164 Client: TNUHANFORD RC-032 K0193 Work Order: 11343606001 Page: 3

000000006

	Cust ID:	J111T2		J111T3		PBLKAR		PBLKAR BS		PBLKAR BSD	
Sample Information	RFW#:	025		027		06LE0074-MB1		06LE0074-MB1		06LE0074-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	4.00		4.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	56	%	68	%	64	%	63	%	57	%
	Decachlorobiphenyl	70	%	77	%	66	%	66	%	61	%
Alpha-BHC		1.5	U	1.5	U	0.33	U	97	%	92	%
gamma-BHC (Lindane)		1.5	U	1.5	U	0.33	U	95	%	92	%
Beta-BHC		1.5	U	1.5	U	0.33	U	84	%	85	%
Heptachlor		1.5	U	1.5	U	0.33	U	91	%	90	%
Delta-BHC		1.5	U	1.5	U	0.33	U	92	%	90	%
Aldrin		1.5	U	1.5	U	0.33	U	93	%	91	%
Heptachlor epoxide		1.5	U	1.5	U	0.33	U	92	%	90	%
gamma-Chlordane		1.5	U	1.5	U	0.33	U	90	%	89	%
Endosulfan I		1.5	U	1.5	U	0.33	U	91	%	90	%
alpha-Chlordane		1.5	U	1.5	U	0.33	U	89	%	89	%
4,4'-DDE		1.5	U	1.5	U	0.33	U	92	%	90	%
Dieldrin		1.5	U	1.5	U	0.33	U	96	%	95	%
Endrin		1.5	U	1.5	U	0.33	U	109	%	108	%
4,4'-DDD		1.5	U	1.5	U	0.33	U	98	%	98	%
Endosulfan II		1.5	U	1.5	U	0.33	U	95	%	94	%
4,4'-DDT		1.5	U	2.7		0.33	U	85	%	83	%
Endrin aldehyde		1.5	U	1.5	U	0.33	U	68	%	62	%
Endosulfan sulfate		1.5	U	1.5	U	0.33	U	94	%	92	%
Methoxychlor		1.5	U	1.5	U	0.33	U	95	%	94	%
Endrin ketone		1.5	U	1.5	U	0.33	U	93	%	92	%
Toxaphene		15	UJ	15	UJ	3.3	U	3.3	U	3.3	U

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

RC 3/13/01

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0601L164
SDG/SAF # K0193/RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 01-27-2006

PCB

Thirteen (13) soil samples were collected on 01-24-2006.

The samples and their associated QC samples were extracted on 02-01-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 02-03-2006. 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. All blank spike recoveries were within acceptance criteria.
7. The obtainable matrix spike recoveries were within acceptance criteria. The matrix spike recoveries of Aroclor-1260 were unobtainable due to the matrix interferences.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. Patterns for Aroclors-1254 and 1260 were identified in these samples. The reported Aroclors were chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both Aroclors to give best overall total PCB concentration.
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.
12. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/10/06
Date

som\r:\group\data\pest\tnu hanford\0601-164.pcbs
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 7 pages.

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

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0601L164
SDG/SAF # K0193/RC-031

W.O. #: 11343-606-001-9999-00
Date Received: 01-27-2006

CHLORINATED PESTICIDES

Twelve (12) soil samples were collected on 01-25-2006.

The samples and their associated QC samples were extracted on 01-31-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 02-01,02,06-2006. 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. The 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. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All samples required a 4-fold dilution due to the nature of the sample matrix. The reporting limits were adjusted to reflect the necessary dilution.
9. The initial calibrations associated with this data set were within acceptance criteria.
10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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.
12. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/9/06
Date

som\r:\group\data\pest\tnu hanford\0601-164.pst
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 8 pages.

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-005	Page 1 of 3
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8c; Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation		SAF No.: RC-032	Air Quality ☐
Ice Chest No.: AFS-04-120	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060266		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

000021

Preservation	None	Cool 4C	Cool 4C	Cool 4C									
Type of Container	G	aG	aG	G									
No. of Container(s)	1	1	1	1									
Volume	500mL	60mL	120mL	125mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1									
Sample No.	Matrix *	Sample Date	Sample Time										
J111T4	SOIL	1-24-06	0900	X	X	X	X						
J111T5	SOIL	1-24-06	0910	X	X	X	X						
J111T6	SOIL	1-24-06	0920	X	X	X	X						
J111T7	SOIL	1-24-06	0930	X	X	X	X						
J111T8	SOIL	1-24-06	0940	X	X	X	X						

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: MT Stankovich	Date/Time: 1400 1/24/06	Received By/Stored In: 3728/2C	Date/Time: 1/24/06 1400
Relinquished By/Removed From: 3728/2C	Date/Time: 1-25-06 1230	Received By/Stored In: RZ Steffler R.Z. Steffler	Date/Time: 1230 1-25-06
Relinquished By/Removed From: RZ Steffler R.Z. Steffler	Date/Time: 1500 1-25-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 1-27-06 0900	Received By/Stored In: [signature]	Date/Time: 1-27-06 0900
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP)~~ - ~~1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - ~~1311~~/7470 antimony, beryllium boron cobalt copper manganese molybdenum nickel silver vanadium, zinc

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-005	Page 2 of 3

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 days		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation		SAF No.: RC-032
Air Quality: ☐			
Ice Chest No.: ERC-02-406	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060267		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G	aG	aG	G							
No. of Container(s)	1	1	1	1							
Volume	500mL	60mL	120mL	125mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1							

220000

Sample No.	Matrix *	Sample Date	Sample Time										
J111T9	SOIL	1-24-06	0950	X	X	X	X						
J111V0	SOIL	1-24-06	1000	X	X	X	X						
J111V1	SOIL	1-24-06	1010	X	X	X	X						
J111V2	SOIL	1-24-06	1020	X	X	X	X						
J111V3	SOIL	1-24-06	1030	X	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MT Stankovich MZH	1400 1/24/06	3728/2C	1/24/06 1400
3728/2C	1-25-06 1300	RZ Stiffler R.Z. Stiffler	1-25-06 1300
RZ Stiffler R.Z. Stiffler	1500 WEH 1-25-06	Fed Ex	
Fed Ex	1-27-06 0900	D. Munster	1-27-06 1090

SPECIAL INSTRUCTIONS

1/26/06

(1) Metals by ICP ~~(TCLP)~~ - ~~6010~~ 6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - ~~7470~~ 7470 antimony, beryllium, Boron cobalt copper manganese molybdenum nickel, Silver vanadium zinc

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-005	Page 3 of 3

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman — Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C — Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-02-406	Field Logbook No.: EFL-1174 — COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060267	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G	aG	aG	G							
No. of Container(s)	1	1	1	1							
Volume	~~500mL~~ 250	60mL	120mL	125mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1							

000023

Sample No.	Matrix *	Sample Date	Sample Time										
J111V4	SOIL	1-24-06	1040	X	X	X	X						
J111V5	SOIL	1-24-06	0920	X	X	X	X						
J111V6	SOIL	1-24-06	0845	X		X							

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] MStankovich	1400 1/24/06	3728/2C	1/24/06 1400
3728/2C	1-25-06 1300	RZ Steffler [signature]	1-25-06 1300
RZ Steffler [signature]	1500 1-25-06	Fed Ex	
Fed Ex	1-27-06 10800	[signature]	1-27-06 10920

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP) - 1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP) - 1311~~/7470 antimony beryllium, boron cobalt copper manganese molybdenum nickel silver, vanadium, zinc

MM 1/24/06

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-006	Page 1 of 1

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 days	Air Quality ☐	
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Staging Area	SAF No.: RC-032	
Ice Chest No.: AFS-04-120	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060266	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G	aG	aG	G							
No. of Container(s)	1	1	1	1							
Volume	500mL	60mL	120mL	125mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1							
Sample No.	Matrix *	Sample Date	Sample Time								
J111V7	SOIL	1-24-06	1145	X	X	X	X				

000020

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: MSTankovich	1400 1/24/06	Received By/Stored In: S728/2C	1/24/06 1400
Relinquished By/Removed From: S728/2C	1-25-06 1230	Received By/Stored In: RZ Stoffler	1-25-06 1230
Relinquished By/Removed From: RZ Stoffler	1500 wt# 1-25-06	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	1-27-06 10900	Received By/Stored In: D. Smith	1-27-06 10900
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

1/24/06

(1) Metals by ICP ~~(TCLP)~~ - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - 1311/7470 antimony beryllium, boron cobalt copper manganese molybdenum nickel silver vanadium zinc.

Matrix *

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

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

BHI-EE-011 (08/29/2005)

000000012

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-003	Page 1 of 3

Collector Coffman/Stankovich	Company Contact R.T. Coffman	Telephone No. 528-6409	Project Coordinator KESSNER, JH
Project Designation 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location 132-F-1 Excavation		SAF No. RC-032
Ice Chest No. ERC-03-107	Field Logbook No. EFL-1174	COA R132F12000	Method of Shipment FedEx
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060271		Bill of Lading/Air Bill No. See 05PC

Price Code 8C

Data Turnaround 15 days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

Cool 4°C

Preservation	Cool 4C	None	Cool 4C								
Type of Container	aG	G/P	aG								
No. of Container(s)	1	1	1								
Volume	120mL	500mL	125mL								
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	Nickel-63; Strontium-89,90 -- Total Sr	Pesticides - 8081								
Sample No. / Matrix * / Sample Date / Sample Time											
J111R2 / SOIL / 1-25-06 / 0900	X		X								
J111R3 / SOIL / 1-25-06 / 0908	X		X								
J111R4 / SOIL / 1-25-06 / 0916	X		X								
J111R5 / SOIL / 1-25-06 / 0924	X		X								
J111R6 / SOIL / 1-25-06 / 0936	X		X								

000025

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
mstankovich 1/25/06	1500	3728/1C 1/25/06	1500
3728/1C 1-26-06	1330	RZ Steffler 1-26-06	1330
RZ Steffler 1-26-06	1500	Fed Ex	
1-27-06	1020	1-27-06	1000

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-003	Page 2 of 2

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 days		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Excavation	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-03-107	Field Logbook No.: EFL-1174	COA: R132F12000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060271	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

Cool 4°C

Preservation	Cool 4C	None	Cool 4C								
Type of Container	aG	G/P	aG								
No. of Container(s)	1	1	1								
Volume	120mL	60mL	125mL								
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	Nickel-63; Strontium-89,90 – Total Sr	Pesticides - 8081								
Sample No. / Matrix * / Sample Date / Sample Time											
J111R7 / SOIL / 1-25-06 / 0944	X		X								
J111R8 / SOIL / 1-25-06 / 0952	X		X								
J111R9 / SOIL / 1-25-06 / 1000	X		X								
J111T0 / SOIL / 1-25-06 / 1008	X		X								
J111T1 / SOIL / 1-25-06 / 1016	X		X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: MZ MStankovich	Date/Time: 1506 1/25/06	Received By/Stored In: 3728/1C	Date/Time: 1/25/06 1500
Relinquished By/Removed From: 3728/1C	Date/Time: 1-26-06 1330	Received By/Stored In: RZ Stiffler	Date/Time: 1330 1-26-06
Relinquished By/Removed From: RZ Stiffler	Date/Time: 1500 1-26-06	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time: 1-27-06 1090	Received By/Stored In: D. Mills	Date/Time: 1-27-06 1090
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-003	Page 3 of 3

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Excavation		SAF No.: RC-032
Ice Chest No.: ERC-03-107	Field Logbook No.: EFL-1174	COA: R132F12000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060271		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8C Data Turnaround: 15 days

Air Quality ☐

000000015

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

Cool 4°C

Preservation	Cool 4C	None	Cool 4C								
Type of Container	aG	G/P	aG								
No. of Container(s)	1	1	1								
Volume	120mL	60mL	125mL								
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	Nickel-63; Strontium-89,90 -- Total Sr	Pesticides - 8081								

000027

Sample No.	Matrix *	Sample Date	Sample Time										
J111T2	SOIL	1-25-06	0924	X		X							
J11263	soil	1-25-06	0845	X									

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MStankovich [signature]	1500 1/25/06	3728/IC 1/25/06	1500
3728/IC 1-26-06	1330	RZ Steffler [signature]	1330 1-26-06
RZ Steffler [signature]	1500 1-26-06	Fed Ex	
Fed Ex	1-27-06 0900	[signature]	1-27-06 0900

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-004	Page 1 of 1

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 days	Air Quality ☐	
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Staging Area	SAF No.: RC-032	
Ice Chest No.: ERC-03-107	Field Logbook No.: EFL-1174	COA: R132F12000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060271	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

< DOT Limits

Special Handling and/or Storage

Cool 4°C

SAMPLE ANALYSIS													
Preservation				Cool 4C	None	Cool 4C							
Type of Container				aG	G/P	aG							
No. of Container(s)				1	1	1							
Volume				120mL	500mL	125mL							
				Semi-VOA - 8270A (TCL)	Nickel-63; Strontium-89,90 – Total Sr	Pesticides - 8081							
Sample No.	Matrix *	Sample Date	Sample Time										
J111T3	SOIL	1-25-06	1030	X		X							

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time 1520 1/25/06	Received By/Stored In 3728/IC	Date/Time 1/25/06 1500
Relinquished By/Removed From 3728 /IC	Date/Time 1-26-06 1330	Received By/Stored In RL Stoffler	Date/Time 1330 1-26-06
Relinquished By/Removed From RL Stoffler	Date/Time 1500 1-26-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 1-27-06 1090	Received By/Stored In	Date/Time 1-27-06 1090
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 132-F-1		DATA PACKAGE: K0193	
VALIDATOR: FLE	LAB: LLI		DATE: 3/12/02
		SDG: K0193	

ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		

SAMPLES/MATRIX					
J111R2	J111R3	J111R4	J111R5	J111R6	J111R7
J111R8	J111R9	J111T0	J111T1	J111T2	J111T3
J111T4	J111T5	J111T6	J111T7	J111T8	J111T9
J111V0	J111V1	J111V2	J111V3	J111V4	J111V5
J111V7					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 - interference in MS/MSD - J all but 1016

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:

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries acceptable? ..... Yes No N/A
GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A
Comments:

Date: 15 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Sites 132-F-1 and 100-F-33
Subject: Radiochemistry - Data Package No. K0193-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0193 prepared by Eberline Services (EB). 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
J111R2	1/25/06	Soil	C	See note 1
J111R3	1/25/06	Soil	C	See note 1
J111R4	1/25/06	Soil	C	See note 1
J111R5	1/25/06	Soil	C	See note 1
J111R6	1/25/06	Soil	C	See note 1
J111R7	1/25/06	Soil	C	See note 1
J111R8	1/25/06	Soil	C	See note 1
J111R9	1/25/06	Soil	C	See note 1
J111T0	1/25/06	Soil	C	See note 1
J111T1	1/25/06	Soil	C	See note 1
J111T2	1/25/06	Soil	C	See note 1
J111T3	1/25/06	Soil	C	See note 1

1 – Total strontium.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) 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.

- **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 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 duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J111R5/J111T2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicates were acceptable.

- **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. All results met the RQL.

- **Completeness**

Data package No. K0193 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

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

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI 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.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0193	REVIEWER: TLI	PROJECT: 132-F-1	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

RADIOCHEMISTRY ANALYSIS, SOIL MATRIX, (PCi/G)

Project: WASHINGTON CLOSURE HANFORD																	
Laboratory: EB																	
Case	SDG: K0193																
Sample Number		J111R2		J111R3		J111R4		J111R5		J111R6		J111R7		J111R8		J111R9	
Remarks																	
Sample Date		1/25/06		1/25/06		1/25/06		1/25/06		1/25/06		1/25/06		1/25/06		1/25/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Strontium	1	0.046	U	0.045	U	0.011	U	0.004	U	0.013	U	0.010	U	0.020	U	-0.072	U
Sample Number		J111T0		J111T1		J111T2		J111T3									
Remarks						Duplicate											
Sample Date		1/25/06		1/25/06		1/25/06		1/25/06									
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q								
Total Strontium	1	0.015	U	-0.054	U	0.027	U	0.005	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.

E B E R L I N E S E R V I C E S / R I C H M O N D

SAMPLE DELIVERY GROUP K0193

7370-001 J111R2

D A T A S H E E T

SDG	7370	Client/Case no	Hanford	SDG K0193	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R601174-01	Client sample id	J111R2		
Dept sample id	7370-001	Location/Matrix	132-F-1 Excavation	SOLID	
Received	01/27/06	Collected/Weight	01/25/06 09:00	77.2 g	
% solids	98.0	Custody/SAF No	RC-032-003	RC-032	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.046	0.20	0.36	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-002 J111R3

DATA SHEET

SDG	7370	Client/Case no	Hanford	SDG K0193	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R601174-02	Client sample id	J111R3		
Dept sample id	7370-002	Location/Matrix	132-F-1 Excavation	SOLID	
Received	01/27/06	Collected/Weight	01/25/06 09:08	64.4 g	
% solids	97.2	Custody/SAF No	RC-032-003	RC-032	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.045	0.16	0.31	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-003 J111R4

DATA SHEET

SDG	7370	Client/Case no	Hanford SDG K0193
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R601174-03	Client sample id	J111R4
Dept sample id	7370-003	Location/Matrix	132-F-1 Excavation SOLID
Received	01/27/06	Collected/Weight	01/25/06 09:16 70.0 g
% solids	98.3	Custody/SAF No	RC-032-003 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.011	0.15	0.30	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-004 J111R5

DATA SHEET

SDG	7370	Client/Case no	Hanford	SDG K0193	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R601174-04	Client sample id	J111R5		
Dept sample id	7370-004	Location/Matrix	132-F-1 Excavation	SOLID	
Received	01/27/06	Collected/Weight	01/25/06 09:24	57.0 g	
% solids	94.1	Custody/SAF No	RC-032-003	RC-032	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.004	0.14	0.28	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/24/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-005 J111R6

DATA SHEET

SDG	7370	Client/Case no	Hanford	SDG K0193	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R601174-05	Client sample id	J111R6		
Dept sample id	7370-005	Location/Matrix	132-F-1 Excavation	SOLID	
Received	01/27/06	Collected/Weight	01/25/06 09:36	79.5 g	
% solids	96.1	Custody/SAF No	RC-032-003	RC-032	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.013	0.13	0.28	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/17/01

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-006 J111R7

DATA SHEET

SDG	7370	Client/Case no	Hanford SDG K0193
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R601174-06	Client sample id	J111R7
Dept sample id	7370-006	Location/Matrix	132-F-1 Excavation SOLID
Received	01/27/06	Collected/Weight	01/25/06 09:44 87.4 g
% solids	98.3	Custody/SAF No	RC-032-003 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.010	0.15	0.30	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-007 J111R8

DATA SHEET

SDG	7370	Client/Case no	Hanford	SDG K0193	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R601174-07	Client sample id	J111R8		
Dept sample id	7370-007	Location/Matrix	132-F-1 Excavation	SOLID	
Received	01/27/06	Collected/Weight	01/25/06 09:52	71.1 g	
% solids	95.5	Custody/SAF No	RC-032-003	RC-032	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.020	0.16	0.31	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-008 J111R9

DATA SHEET

SDG	7370	Client/Case no	Hanford SDG K0193
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R601174-08	Client sample id	J111R9
Dept sample id	7370-008	Location/Matrix	132-F-1 Excavation SOLID
Received	01/27/06	Collected/Weight	01/25/06 10:00 64.3 g
% solids	96.0	Custody/SAF No	RC-032-003 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.072	0.19	0.35	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-009 J111T0

DATA SHEET

SDG	7370	Client/Case no	Hanford	SDG K0193	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R601174-09	Client sample id	J111T0		
Dept sample id	7370-009	Location/Matrix	132-F-1 Excavation	SOLID	
Received	01/27/06	Collected/Weight	01/25/06 10:08	73.3 g	
% solids	96.6	Custody/SAF No	RC-032-003	RC-032	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.015	0.15	0.30	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-010 J111T1

DATA SHEET

SDG	7370	Client/Case no	Hanford SDG K0193
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R601174-10	Client sample id	J111T1
Dept sample id	7370-010	Location/Matrix	132-F-1 Excavation SOLID
Received	01/27/06	Collected/Weight	01/25/06 10:16 62.7 g
% solids	88.5	Custody/SAF No	RC-032-003 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.054	0.13	0.28	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-011 J111T2

DATA SHEET

SDG	7370	Client/Case no	Hanford SDG K0193
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R601174-11	Client sample id	J111T2
Dept sample id	7370-011	Location/Matrix	132-F-1 Excavation SOLID
Received	01/27/06	Collected/Weight	01/25/06 09:24 68.5 g
% solids	91.8	Custody/SAF No	RC-032-003 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.027	0.16	0.33	1.0	U	SR

100-F Remaining Sites Burial Grounds

3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-012 J111T3

DATA SHEET

SDG	7370	Client/Case no	Hanford SDG K0193
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R601174-12	Client sample id	J111T3
Dept sample id	7370-012	Location/Matrix	132-F-1 Staging Area SOLID
Received	01/27/06	Collected/Weight	01/25/06 10:30 67.5 g
% solids	90.1	Custody/SAF No	RC-032-004 RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.005	0.14	0.30	1.0	U	SR

100-F Remaining Sites Burial Grounds

R
3/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0193 was composed of twelve solid (soil) samples designated under SAF No. RC-032 with a Project Designation of: 100-F Remaining Sites Burial Grounds – Soil Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on February 13, 2006.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analysis

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 Mannion

Melissa C. Mannion
Senior Program Manager

2/15/6

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-003	Page 1 of 3
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8c; Data Turnaround: 15days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Excavation	K0193 (7370)	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: AFS-04-040	Field Logbook No.: EFL-1174	COA: R132F12000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060237		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

None

000025

Preservation	Cool 4C	None	Cool 4C							
Type of Container	aG	G/P	aG							
No. of Container(s)	1	1	1							
Volume	125mL	60mL	125mL							
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	Nickel-60, Strontium-89,90 – Total Sr	Pesticides - 8081							

Sample No.	Matrix *	Sample Date	Sample Time										
J111R2	SOIL	1-25-06	0900		X								
J111R3	SOIL	1-25-06	0908		X								
J111R4	SOIL	1-25-06	0916		X								
J111R5	SOIL	1-25-06	0924		X								
J111R6	SOIL	1-25-06	0936		X								

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: M Stankovich [signature] Date/Time: 1/25/06 1500	Received By/Stored In: 3728/1C Date/Time: 1/25/06 1500	
Relinquished By/Removed From: 3728/1C Date/Time: 1-26-06 1000	Received By/Stored In: RZ Steffler [signature] Date/Time: 1-26-06 1000	
Relinquished By/Removed From: RZ Steffler [signature] Date/Time: WCH 1-26-06 1500	Received By/Stored In: Fed Ex Date/Time:	
Relinquished By/Removed From: FED EX Date/Time:	Received By/Stored In: Alex Kleuchel Date/Time: 1/27/06 10:00	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-003	Page 2 of 3

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Excavation K0193 (7370)		SAF No.: RC-032
Ice Chest No.: AFS-04-040	Field Logbook No.: EFL-1174	COA: R132F12000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060237		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8C

Data Turnaround: 15 days

Air Quality: ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

None

000026

SAMPLE ANALYSIS													
Preservation				Cool 4C	None	Cool 4C							
Type of Container				aG	G/P	aG							
No. of Container(s)				1	1	1							
Volume				120mL	60mL	120mL							
				Semi-VOA - 8270A (TCL)	~~Nickel-63~~, Stronium-89,90 -- Total Sr	Pesticides - 8081							
Sample No.	Matrix *	Sample Date	Sample Time										
J111R7	SOIL	1-25-06	0944		X								
J111R8	SOIL	1-25-06	0952		X								
J111R9	SOIL	1-25-06	1000		X								
J111T0	SOIL	1-25-06	1008		X								
J111T1	SOIL	1-25-06	1016		X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: nstankovich	Date/Time: 1500 1/25/06	Received By/Stored In: 3728/IC	Date/Time: 1/25/06 1500
Relinquished By/Removed From: 3728/IC	Date/Time: 1-26-06 1000	Received By/Stored In: RZ Stoffler	Date/Time: 1000 1-26-06
Relinquished By/Removed From: RZ Stoffler	Date/Time: 1500 1-26-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time:	Received By/Stored In: Alex Kellum	Date/Time: 1/27/06 10:00
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-003	Page 3 of 3
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Excavation	KO193 (7370)	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: AFS-04-040	Field Logbook No.: EFL-1174	COA: R132F12000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060237		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

NA None

000027

Preservation	Cool 4C	None	Cool 4C										
Type of Container	aG	G/P	aG										
No. of Container(s)	1	1	1										
Volume	120mL	60mL	125mL										
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	~~Nickel-63~~ Strontium-89,90 – Total Sr	Pesticides - 3081										
Sample No.	Matrix *	Sample Date	Sample Time										
J111T2	SOIL		0924		X								
~~JH~~	1/25/06		~~0845~~										

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: MStankovich	Date/Time: 1/25/06 1500	Received By/Stored In: 3728/1C	Date/Time: 1/25/06 1500
Relinquished By/Removed From: 3728/1C 1-26-06	Date/Time: 1000	Received By/Stored In: RZ Steffler R.J. Steffler	Date/Time: 1-26-06 1000
Relinquished By/Removed From: RZ Steffler R.J. Steffler	Date/Time: 1-26-06 1500 WCH	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time:	Received By/Stored In: Alex Kelenchuk	Date/Time: 1/27/06 10:00
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-004	Page 1 of 1

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman; Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 132-F-1 Staging Area K0193 (7370)	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: AFS-04-040	Field Logbook No.: EFL-1174; COA: R132F12000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060237	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

None

Preservation	Cool 4C	None	Cool 4C									
Type of Container	aG	G/P	aG									
No. of Container(s)	1	1	1									
Volume	120mL	60mL	125mL									
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	~~Nickel 63~~ Strontium-89,90 -- Total Sr	Pesticides - 808									

000028

Sample No.	Matrix *	Sample Date	Sample Time										
J111T3	SOIL	1-25-06	1030		X								

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From: MTStankovich MTS 1/25/06 Date/Time 1500	Received By/Stored In: 3728/IC 1/25/06 Date/Time 1500		S=Soil SE=Sediment SO=Solid SI=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From: 3728/IC 1-26-06 Date/Time 1000	Received By/Stored In: RZ Steffler R.J. Steffler 1-26-06 Date/Time 1000		
Relinquished By/Removed From: RZ Steffler R.J. Steffler with 1-26-06 Date/Time 1500	Received By/Stored In: Fed Ex Date/Time		
Relinquished By/Removed From: FED EX Date/Time	Received By/Stored In: Alex Kelwehl 1/27/06 Date/Time 10:00		
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time		
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time		

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 132-F-1			DATA PACKAGE: K0103		
VALIDATOR: TLE		LAB:		DATE: 5/12/06	
			SDG: K0103		

ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			

SAMPLES/MATRIX							
J1J1R2	J1J1R3	J1J1R4	J1J1R5	J1J1R6	J1J1R7	J1J1R8	
J1J1R9	J1J1T0	J1J1T1	J1J1T2	J1J1T3	~~Blank~~ T/S		
							Soil

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes 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 FB

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: _____

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:

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-014 Method Blank

METHOD BLANK

SDG	7370	Client/Case no	Hanford SDG K0193
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R601174-14	Client sample id	Method Blank
Dept sample id	7370-014	Material/Matrix	SOLID
		SAF No	RC-032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.068	0.14	0.30	1.0	U	SR

100-F Remaining Sites Burial Grounds

QC-BLANK #55889

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-013

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7370
Contact Melissa C. Mannion

Client/Case no Hanford SDG K0193
Contract No. 630

Lab sample id R601174-13
Dept sample id 7370-013

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No RC-032

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	11.6	0.62	0.26	1.0		SR	10.8	0.43	107	81-119	80-120

100-F Remaining Sites Burial Grounds

QC-LCS #55888

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 02/13/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0193

7370-015 J111T1

DUPLICATE

SDG	7370			Client/Case no	Hanford SDG K0193
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R601174-15	Lab sample id	R601174-10	Client sample id	J111T1
Dept sample id	7370-015	Dept sample id	7370-010	Location/Matrix	132-F-1 Excavation SOLID
		Received	01/27/06	Collected/Weight	01/25/06 10:16 62.7 g
% solids	88.5	% solids	88.5	Custody/SAF No	RC-032-003 RC-032

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Strontium	-0.084	0.14	0.30	1.0	U	SR	-0.054	0.13	0.28	U	-		0.3

100-F Remaining Sites Burial Grounds

QC-DUP#10 55890

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	02/13/06

Date: 15 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Sites 132-F-1and 100-F-33
Subject: Wet Chemistry - Data Package No. K0193-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0193 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
J111T4	1/24/06	Soil	C	See note 1
J111T5	1/24/06	Soil	C	See note 1
J111T6	1/24/06	Soil	C	See note 1
J111T7	1/24/06	Soil	C	See note 1
J111T8	1/24/06	Soil	C	See note 1
J111T9	1/24/06	Soil	C	See note 1
J111V0	1/24/06	Soil	C	See note 1
J111V1	1/24/06	Soil	C	See note 1
J111V2	1/24/06	Soil	C	See note 1
J111V3	1/24/06	Soil	C	See note 1
J111V4	1/24/06	Soil	C	See note 1
J111V5	1/24/06	Soil	C	See note 1
J111V7	1/24/06	Soil	C	See note 1

1 – Total petroleum hydrocarbons by 9071/418.1.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) 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 TPH.

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

All holding times were acceptable.

- **Method Blanks**

Method Blanks

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

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

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

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J111V5/J111T6) were submitted for analysis. Field duplicates are analyzed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data package K0193 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

All analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0193	REVIEWER: TLI	PROJECT: 100-F-33	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI	SDG: K0193																		
Sample Number		J111T4		J111T5		J111T6		J111T7		J111T8		J111T9		J111V0		J111V1		J111V2	
Remarks																			
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06		1/24/06	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons	5	152	U	146	U	142	U	144	U	151	U	146	U	139	U	143	U	139	U
Sample Number		J111V3		J111V4		J111V5		J111V7											
Remarks						Duplicate													
Sample Date		1/24/06		1/24/06		1/24/06		1/24/06											
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q										
Total Petroleum Hydrocarbons	5	146	U	141	U	139	U	133	U										

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

000010

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/15/06

CLIENT: TNUHANFORD RC-032 K0193

LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J111T4	% Solids	87.8		%	0.01	1.0
		Petroleum Hydrocarbons	152	u	MG/KG	152	1.0
-002	J111T5	% Solids	90.7		%	0.01	1.0
		Petroleum Hydrocarbons	146	u	MG/KG	146	1.0
-003	J111T6	% Solids	94.1		%	0.01	1.0
		Petroleum Hydrocarbons	142	u	MG/KG	142	1.0
-004	J111T7	% Solids	91.8		%	0.01	1.0
		Petroleum Hydrocarbons	144	u	MG/KG	144	1.0
-005	J111T8	% Solids	87.8		%	0.01	1.0
		Petroleum Hydrocarbons	151	u	MG/KG	151	1.0
-006	J111T9	% Solids	91.1		%	0.01	1.0
		Petroleum Hydrocarbons	146	u	MG/KG	146	1.0
-007	J111V0	% Solids	96.2		%	0.01	1.0
		Petroleum Hydrocarbons	139	u	MG/KG	139	1.0
-008	J111V1	% Solids	92.5		%	0.01	1.0
		Petroleum Hydrocarbons	143	u	MG/KG	143	1.0
-009	J111V2	% Solids	95.5		%	0.01	1.0
		Petroleum Hydrocarbons	139	u	MG/KG	139	1.0
-010	J111V3	% Solids	90.8		%	0.01	1.0
		Petroleum Hydrocarbons	146	u	MG/KG	146	1.0

3/14/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/15/06

CLIENT: TNUHANFORD RC-032 K0193
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0601L164

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J111V4	% Solids	94.9		%	0.01	1.0
		Petroleum Hydrocarbons	141	u	MG/KG	141	1.0
-012	J111V5	% Solids	94.8		%	0.01	1.0
		Petroleum Hydrocarbons	139	u	MG/KG	139	1.0
-013	J111V6	% Solids	99.9		%	0.01	1.0
-014	J111V7	% Solids	91.9		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

3/14/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032 K0193
LVL#: 0601L164

W.O.#: 11343-606-001-9999-00
Date Received: 01-27-06

INORGANIC NARRATIVE

1. This narrative covers the analysis of 14 soil samples.

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

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

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

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

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

6. The Laboratory Control Sample (LCS) for PHC was within the laboratory control limits

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

8. The replicate analysis for PHC was 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

2/17/06
Date

njp\i01-164

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 22 pages.

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-005	Page 1 of 3
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8c; Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation		SAF No.: RC-032	Air Quality ☐
Ice Chest No.: AFS-04-120	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060266		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

000015

Preservation	None	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G	aG	aG	G						
No. of Container(s)	1	1	1	1						
Volume	500mL	60mL	120mL	125mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1						

Sample No.	Matrix *	Sample Date	Sample Time										
J111T4	SOIL	1-24-06	0900	X	X	X	X						
J111T5	SOIL	1-24-06	0910	X	X	X	X						
J111T6	SOIL	1-24-06	0920	X	X	X	X						
J111T7	SOIL	1-24-06	0930	X	X	X	X						
J111T8	SOIL	1-24-06	0940	X	X	X	X						

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: MTStankovich [signature]	Date/Time: 1400 1/24/06	Received By/Stored In: 3728/2C	Date/Time: 1/24/06 1400
Relinquished By/Removed From: 3728/2C	Date/Time: 1-25-06 1230	Received By/Stored In: RZ Steffler [signature]	Date/Time: 1230 1-25-06
Relinquished By/Removed From: RZ Steffler [signature]	Date/Time: 1500 WH 1-25-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 1-27-06 10900	Received By/Stored In: [signature]	Date/Time: 1-27-06 10900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP)~~ - ~~1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - ~~1311~~/7470 antimony, beryllium boron cobalt copper manganese molybdenum nickel silver vanadium, zinc

NA 1/24/06

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-005	Page 2 of 3

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman — Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C — Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation	SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-02-406	Field Logbook No.: EFL-1174 — COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060267	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C							
Type of Container	G	aG	aG	G							
No. of Container(s)	1	1	1	1							
Volume	500mL	60mL	120mL	125mL							
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1							

000016

Sample No.	Matrix *	Sample Date	Sample Time										
J111T9	SOIL	1-24-06	0950	X	X	X	X						
J111V0	SOIL	1-24-06	1000	X	X	X	X						
J111V1	SOIL	1-24-06	1010	X	X	X	X						
J111V2	SOIL	1-24-06	1020	X	X	X	X						
J111V3	SOIL	1-24-06	1030	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
pit Stankovich MZH	1400 1/24/06	3728/2C	1/24/06 1400
3728/2C	1-25-06 1300	RZ Stoffler R.J. Stoffler	1-25-06 1300
RZ Stoffler R.J. Stoffler MZH	1-25-06 1500	Fed Ex	
Fed Ex	1-27-06 0900	D. Smith	1-27-06 0900

SPECIAL INSTRUCTIONS

1/26/06

(1) Metals by ICP ~~(TCLP)~~ - ~~1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP)~~ - ~~1311~~/7470 antimony, beryllium, boron cobalt copper manganese molybdenum nickel, silver vanadium zinc

Matrix *

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

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-032-005	Page 3 of 3
Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 days
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Excavation		SAF No.: RC-032	Air Quality ☐
Ice Chest No.: ERC-02-406	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060267		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA < DOT Limits

Special Handling and/or Storage

4°C

000017

Preservation	None	Cool 4C	Cool 4C	Cool 4C									
Type of Container	G	aG	aG	G									
No. of Container(s)	1	1	1	1									
Volume	~~500mL~~ 250	60mL	120mL	125mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1									
Sample No.	Matrix *	Sample Date	Sample Time										
J111V4	SOIL	1-24-06	1040	X	X	X	X						
J111V5	SOIL	1-24-06	0920	X	X	X	X						
J111V6	SOIL	1-24-06	0845	X		X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: [signature] Mstankovich	Date/Time: 1400 1/24/06	Received By/Stored In: 3728/2C	Date/Time: 1/24/06 1400
Relinquished By/Removed From: 3728/2C	Date/Time: 1-25-06 1300	Received By/Stored In: RZ Steffler [signature]	Date/Time: 1300 1-25-06
Relinquished By/Removed From: RZ Steffler [signature]	Date/Time: 1500 1-25-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 1-27-06 10900	Received By/Stored In: [signature]	Date/Time: 1-27-06 10920
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Metals by ICP ~~(TCLP) - 1311~~/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury ~~(TCLP) - 1311~~/7470 antimony beryllium, boron cobalt copper manganese molybdenum nickel silver, vanadium, zinc

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-006	Page 1 of 1

Collector: Coffman/Stankovich	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 100-F-33 Staging Area		SAF No.: RC-032
Ice Chest No.: AFS-04-120	Field Logbook No.: EFL-1174	COA: R10F332000	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060266		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8C
Data Turnaround: 15 days
Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS
NA < DOT Limits

Special Handling and/or Storage
4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G	aG	aG	G								
No. of Container(s)	1	1	1	1								
Volume	500mL	60mL	120mL	125mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1								

000018

Sample No.	Matrix *	Sample Date	Sample Time										
J111V7	SOIL	1-24-06	1145	X	X	X	X						

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: [signature] MStankovich	Date/Time: 1400 1/24/06	Received By/Stored In: 3728/2C	Date/Time: 1/24/06 1400
Relinquished By/Removed From: 3728/2C 1-25-06	Date/Time: 1230	Received By/Stored In: RZ Steffler [signature]	Date/Time: 1230 1-25-06
Relinquished By/Removed From: RZ Steffler [signature]	Date/Time: 1500 WH 1-25-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: FedEx	Date/Time: 1-27-06 10900	Received By/Stored In: [signature]	Date/Time: 1-27-06 10900
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS
1/24/06
(1) Metals by ICP ~~(TCLP) - 1311~~/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury ~~(TCLP) - 1311~~/7470 antimony beryllium, boron cobalt copper manganese molybdenum nickel silver vanadium zinc.

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

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-F-37			DATA PACKAGE: K0193		
VALIDATOR: TLI		LAB: LLI		DATE: 3/12/06	
			SDG: K0193		
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					
J111T4	J111T5	J111T6	J111T7	J111T8	J111T9
J111V0	J111V1	J111V2	J111V3	J111V4	J111V5
J111V7					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

6. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: all ok

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/15/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	06LHC010-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/15/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J111T4	Petroleum Hydrocarbons	680	82.3	635	94.1	1.0
BLANK10	06LHC010-MB1	Petroleum Hydrocarbons	478	133 u	560	85.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/15/06

CLIENT: TNUHANFORD RC-032 K0193 LVL LOT #: 0601L164

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT		REPLICATE		RPD	DILUTION FACTOR(REP)
-001REP	J111T4	Petroleum Hydrocarbons	152	u	152	u	NC	1.0