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

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H4-21

COMMENTS:

SDG K0912 SAF-RC-032

Waste Site: 1607-F4

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OCT 17 2007
EDMC

Date: 17 September 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol - Waste Site 1607-F4
Subject: Semivolatile - Data Package No. K0912-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0912 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	Analyte
J15F21	8/7/07	Soil	C	See note 1
J15F22	8/7/07	Soil	C	See note 1
J15F23	8/7/07	Soil	C	See note 1
J15F24	8/7/07	Soil	C	See note 1
J15F25	8/7/07	Soil	C	See note 1
J15F26	8/7/07	Soil	C	See note 1
J15F27	8/7/07	Soil	C	See note 1
J15F28	8/7/07	Soil	C	See note 1
J15F29	8/7/07	Soil	C	See note 1
J15F30	8/7/07	Soil	C	See note 1
J15F31	8/7/07	Soil	C	See note 1
J15F32	8/7/07	Soil	C	See note 1
J15F20	8/7/07	Soil	C	See note 1

1 – Semivolatiles by 8270C.

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. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

· Holding Times

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

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

All holding times were met.

· Method Blanks

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

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

All other method blank results were acceptable.

Field Blanks

One field (equipment) blank (J15F32) was submitted for analysis. Di-n-butylphthalate was detected in the equipment blank. Under the WCH statement of work, no qualification is required. No other analytes were detected in the field blank

- **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/or matrix spike duplicate recoveries outside QC limits, all nitrobenzene (48%), isophorone (59%), 2,4-dimethylphenol (29%), 1,2,4-trichlorobenzene (48% & 54%), 4-chloroanaline (18%), 4-chloro-3-methylphenol (54% & 54%), 2-methylnaphthalene (56% & 59%) and 3-nitroanaline (42%) results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all nitrobenzene (49%), 1,2,4-trichlorobenzene (48%), 4-chloroanaline (18%), 4-chloro-3-methylphenol (56%), 2-methylnapthtalene (55%), 3,3-dichlorobenzidine (30%) and 2,4,6-trichlorophenol (49%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

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

Due to a surrogate recovery outside QC limits (21%), all nitrobenzene related results (2-nitrophenol, 2,4-dinitrophenol, nitrobenzene, n-nitroso-di-n-propylamine, 4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline, 2,6-dinitrotoluene and n-nitrosodiphenylamine) in sample J15F22 were qualified as estimates and lagged "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.

Due to RPDs outside QC limits, all 2,4-dimethylphenol (62%) and 4-nitrophenol (57%) results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J15F31/J15F20) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data package No. K0912 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

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

- Due to matrix spike and/or matrix spike duplicate recoveries outside QC limits, all nitrobenzene (48%), isophorone (59%), 2,4-dimethylphenol (29%), 1,2,4-trichlorobenzene (48% & 54%), 4-chloroanaline (18%), 4-chloro-3-methylphenol (54% & 54%), 2-methylnaphthalene (56% & 59%) and 3-nitroanaline (42%) results were qualified as estimates and flagged "J".

- Due to LCS recoveries outside QC limits, all nitrobenzene (49%), 1,2,4-trichlorobenzene (48%), 4-chloroanaline (18%), 4-chloro-3-methylphenol (56%), 2-methylnapthtalene (55%), 3,3-dichlorobenzidine (30%) and 2,4,6-trichlorophenol (49%) results were qualified as estimates and flagged "J".

- Due to a surrogate recovery outside QC limits (21%), all nitrobenzene related results (2-nitrophenol, 2,4-dinitrophenol, nitrobenzene, n-nitroso-di-n-propylamine, 4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline, 2,6-dinitrotoluene and n-nitrosodiphenylamine) in sample J15F22 were qualified as estimates and lagged "J".

- Due to RPDs outside QC limits, all 2,4-dimethylphenol (62%) and 4-nitrophenol (57%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

One-hundred four semivolatile 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 the WCH 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: K0912	REVIEWER: ELR	Project: 1607-F4	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	All	Method blank contamination
Nitrobenzene Isophorone 2,4-dimethylphenol 1,2,4-trichlorobenzene 4-chloroanaline 4-chloro-3-methylphenol 2-methylnaphthalene 3-nitroanaline	J	All	MS & MSD recovery
Nitrobenzene 1,2,4-trichlorobenzene 4-chloroanaline 4-chloro-3-methylphenol 2-methylnapthtalene 3,3-dichlorobenzidine 2,4,6-trichlorophenol	J	All	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	J	F15F22	Surrogate recovery
2,4-dimethylphenol 4-nitrophenol	J	All	RPD

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

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 08/14/07 11:36

RFW Batch Number: 0708L732 Client: TNU-HANFORD RC-032 Work Order: 11343606001 Page: 1a

	Cust ID:	J15F21	J15F21	J15F21	J15F22	J15F23	J15F24
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	67 %	47 %	59 %	21 * %	76 %	68 %
	2-Fluorobiphenyl	68 %	66 %	81 %	73 %	75 %	78 %
	Terphenyl-d14	91 %	80 %	90 %	110 %	92 %	98 %
	Phenol-d5	67 %	63 %	81 %	64 %	70 %	68 %
	2-Fluorophenol	77 %	58 %	81 %	32 %	78 %	71 %
	2,4,6-Tribromophenol	67 %	61 %	60 %	84 %	53 %	57 %
		fl	fl	fl	fl	fl	fl
Phenol		350 U	64 %	79 %	350 U	340 U	330 U
bis(2-Chloroethyl)ether		350 U	62 %	75 %	350 U	340 U	330 U
2-Chlorophenol		350 U	66 %	77 %	350 U	340 U	330 U
1,3-Dichlorobenzene		350 U	58 %	69 %	350 U	340 U	330 U
1,4-Dichlorobenzene		350 U	56 %	68 %	350 U	340 U	330 U
1,2-Dichlorobenzene		350 U	59 %	73 %	350 U	340 U	330 U
2-Methylphenol		350 U	62 %	74 %	350 U	340 U	330 U
2,2'-oxybis(1-Chloropropane)		350 U	60 %	76 %	350 U	340 U	330 U
3/4 Methylphenol		350 U	65 %	77 %	350 U	340 U	330 U
N-Nitroso-di-n-propylamine		350 U	74 %	85 %	350 U J	340 U	330 U
Hexachloroethane		350 U	54 %	67 %	350 U	340 U	330 U
Nitrobenzene		350 U J	48 * %	57 %	350 U J	340 U J	330 U J
Isophorone		350 U J	59 * %	62 %	350 U J	340 U J	330 U J
2-Nitrophenol		350 U	50 %	57 %	350 U J	340 U	330 U
2,4-Dimethylphenol		350 U J	29 * %	55 %	350 U J	340 U J	330 U J
bis(2-Chloroethoxy)methane		350 U	56 %	61 %	350 U	340 U	330 U
2,4-Dichlorophenol		350 U	58 %	59 %	350 U	340 U	330 U
1,2,4-Trichlorobenzene		350 U J	48 * %	54 * %	350 U J	340 U J	330 U J
Naphthalene		350 U	53 %	58 %	350 U	340 U	330 U
4-Chloroaniline		350 U J	20 %	18 * %	350 U J	340 U J	330 U J
Hexachlorobutadiene		350 U	54 %	59 %	350 U	340 U	330 U
4-Chloro-3-methylphenol		350 U J	54 * %	54 * %	350 U	340 U	330 U
2-Methylnaphthalene		350 U J	56 * %	59 * %	350 U	340 U	330 U
Hexachlorocyclopentadiene		350 U	56 %	73 %	350 U	340 U	330 U
2,4,6-Trichlorophenol		350 U J	55 %	58 %	350 U J	340 U J	330 U J
2,4,5-Trichlorophenol		870 U	73 %	79 %	860 U	850 U	840 U

*= Outside of EPA CLP QC limits.

9/28/07

000012

000000008

RFW Batch Number: 0708L732 Client: TNU-HANFORD RC-032 Work Order: 11343606001 Page: 1b

Cust ID:	J15F21		J15F21		J15F21		J15F22		J15F23		J15F24	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	350	U	67	%	78	%	350	U	340	U	330	U
2-Nitroaniline	870	U	83	%	87	%	860	U J	850	U	840	U
Dimethylphthalate	350	U	86	%	86	%	350	U	340	U	330	U
Acenaphthylene	350	U	73	%	80	%	350	U	340	U	330	U
2,6-Dinitrotoluene	350	U	80	%	78	%	350	U J	340	U	330	U
3-Nitroaniline	870	U J	55	%	42 *	%	860	U J	850	U J	840	U J
Acenaphthene	350	U	72	%	79	%	350	U	340	U	330	U
2,4-Dinitrophenol	870	U	128 *	%	117	%	860	U J	850	U	840	U
4-Nitrophenol	870	U J	106	%	59	%	860	U J	850	U J	840	U J
Dibenzofuran	350	U	78	%	82	%	350	U	340	U	330	U
2,4-Dinitrotoluene	350	U	92	%	86	%	350	U	340	U	330	U
Diethylphthalate	350	U	90	%	86	%	350	U	340	U	330	U
4-Chlorophenyl-phenylether	350	U	83	%	83	%	350	U	340	U	330	U
Fluorene	350	U	80	%	80	%	350	U	340	U	330	U
4-Nitroaniline	870	U	76	%	59	%	860	U J	850	U	840	U
4,6-Dinitro-2-methylphenol	870	U	91	%	94	%	860	U	850	U	840	U
N-Nitrosodiphenylamine (1)	350	U	60	%	68	%	350	U J	340	U	330	U
4-Bromophenyl-phenylether	350	U	66	%	75	%	350	U	340	U	330	U
Hexachlorobenzene	350	U	78	%	85	%	350	U	340	U	330	U
Pentachlorophenol	870	U	88	%	91	%	860	U	850	U	840	U
Phenanthrene	350	U	79	%	82	%	350	U	340	U	330	U
Anthracene	350	U	82	%	86	%	350	U	340	U	330	U
Carbazole	350	U	80	%	75	%	350	U	340	U	330	U
Di-n-butylphthalate	350	U	92	%	86	%	28	J	25	J	24	J
Fluoranthene	350	U	92	%	84	%	350	U	340	U	330	U
Pyrene	350	U	81	%	86	%	350	U	340	U	330	U
Butylbenzylphthalate	350	U	91	%	88	%	350	U	340	U	330	U
3,3'-Dichlorobenzidine	350	U J	36	%	33	%	350	U J	340	U J	330	U J
Benzo(a)anthracene	350	U	82	%	83	%	350	U	340	U	330	U
Chrysene	350	U	81	%	84	%	350	U	340	U	330	U
bis(2-Ethylhexyl)phthalate	660 ~~73~~ JB 9/28/07	U	89	%	85	%	660 ~~120~~ JB 9/28/07	U	660 ~~98~~ JB 9/28/07	U	660 ~~75~~ JB 9/28/07	U
Di-n-octyl phthalate	350	U	83	%	83	%	350	U	340	U	330	U
Benzo(b)fluoranthene	350	U	77	%	81	%	350	U	340	U	330	U
Benzo(k)fluoranthene	350	U	78	%	83	%	350	U	340	U	330	U
Benzo(a)pyrene	350	U	81	%	86	%	350	U	340	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	85	%	88	%	350	U	340	U	330	U
Dibenz(a,h)anthracene	350	U	85	%	87	%	350	U	340	U	330	U
Benzo(g,h,i)perylene	350	U	84	%	83	%	350	U	340	U	330	U

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

JR 9/28/07

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Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 08/14/07 11:36

RFW Batch Number: 0708L732 Client: TNU-HANFORD RC-032 Work Order: 11343606001 Page: 2a

	Cust ID:	J15F25		J15F26		J15F27		J15F28		J15F29		J15F30	
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	69	%	57	%	77	%	83	%	74	%	69	%
	2-Fluorobiphenyl	73	%	56	%	75	%	83	%	72	%	68	%
	Terphenyl-d14	98	%	82	%	101	%	113	%	86	%	91	%
	Phenol-d5	78	%	61	%	81	%	85	%	73	%	69	%
	2-Fluorophenol	81	%	66	%	89	%	94	%	82	%	77	%
	2,4,6-Tribromophenol	96	%	74	%	67	%	57	%	58	%	73	%
			fl		fl		fl		fl		fl		fl
Phenol		19		330	U	330	U	330	U	330	U	17	J
bis(2-Chloroethyl)ether		330	U	330	U	330	U	330	U	330	U	330	U
2-Chlorophenol		330	U	330	U	330	U	330	U	330	U	330	U
1,3-Dichlorobenzene		330	U	330	U	330	U	330	U	330	U	330	U
1,4-Dichlorobenzene		330	U	330	U	330	U	330	U	330	U	330	U
1,2-Dichlorobenzene		330	U	330	U	330	U	330	U	330	U	330	U
2-Methylphenol		330	U	330	U	330	U	330	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		330	U	330	U	330	U	330	U	330	U	330	U
3/4 Methylphenol		330	U	330	U	330	U	330	U	330	U	330	U
N-Nitroso-di-n-propylamine		330	U	330	U	330	U	330	U	330	U	330	U
Hexachloroethane		330	U	330	U	330	U	330	U	330	U	330	U
Nitrobenzene		330	UJ	330	UJ	330	UJ	330	UJ	330	UJ	330	UJ
Isophorone		330	UJ	330	UJ	330	UJ	330	UJ	330	UJ	330	UJ
2-Nitrophenol		330	U	330	U	330	U	330	U	330	U	330	U
2,4-Dimethylphenol		330	UJ	330	UJ	330	UJ	330	UJ	330	UJ	330	UJ
bis(2-Chloroethoxy)methane		330	U	330	U	330	U	330	U	330	U	330	U
2,4-Dichlorophenol		330	U	330	U	330	U	330	U	330	U	330	U
1,2,4-Trichlorobenzene		330	UJ	330	UJ	330	UJ	330	UJ	330	UJ	330	UJ
Naphthalene		330	U	330	U	330	U	330	U	330	U	330	U
4-Chloroaniline		330	UJ	330	UJ	330	UJ	330	UJ	330	UJ	330	UJ
Hexachlorobutadiene		330	U	330	U	330	U	330	U	330	U	330	U
4-Chloro-3-methylphenol		330	UJ	330	UJ	330	UJ	330	UJ	330	UJ	330	UJ
2-Methylnaphthalene		330	UJ	330	UJ	330	UJ	330	UJ	330	UJ	330	UJ
Hexachlorocyclopentadiene		330	U	330	U	330	U	330	U	330	U	330	U
2,4,6-Trichlorophenol		330	UJ	330	UJ	330	UJ	330	UJ	330	UJ	330	UJ
2,4,5-Trichlorophenol		840	U	840	U	840	U	840	U	830	U	840	U

*= Outside of EPA CLP QC limits.

R 9/28/07

000014

000000010

Cust ID:	J15F25		J15F26		J15F27		J15F28		J15F29		J15F30	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	330	U	330	U	330	U	330	U	330	U	330	U
2-Nitroaniline	840	U	840	U	840	U	840	U	830	U	840	U
Dimethylphthalate	330	U	330	U	330	U	330	U	330	U	330	U
Acenaphthylene	330	U	330	U	330	U	330	U	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U	330	U	330	U	330	U	330	U
3-Nitroaniline	840	U J	840	U J	840	U J	840	U J	830	U J	840	U J
Acenaphthene	330	U	330	U	330	U	330	U	330	U	330	U
2,4-Dinitrophenol	840	U	840	U	840	U	840	U	830	U	840	U
4-Nitrophenol	840	U J	840	U J	840	U J	840	U J	830	U J	840	U J
Dibenzofuran	330	U	330	U	330	U	330	U	330	U	330	U
2,4-Dinitrotoluene	330	U	330	U	330	U	330	U	330	U	330	U
Diethylphthalate	330	U	330	U	330	U	330	U	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U	330	U	330	U	330	U	330	U
Fluorene	330	U	330	U	330	U	330	U	330	U	330	U
4-Nitroaniline	840	U	840	U	840	U	840	U	830	U	840	U
4,6-Dinitro-2-methylphenol	840	U	840	U	840	U	840	U	830	U	840	U
N-Nitrosodiphenylamine (1)	330	U	330	U	330	U	330	U	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U	330	U	330	U	330	U	330	U
Hexachlorobenzene	330	U	330	U	330	U	330	U	330	U	330	U
Pentachlorophenol	840	U	840	U	840	U	840	U	830	U	840	U
Phenanthrene	330	U	330	U	330	U	330	U	330	U	330	U
Anthracene	330	U	330	U	330	U	330	U	330	U	330	U
Carbazole	330	U	330	U	330	U	330	U	330	U	330	U
Di-n-butylphthalate	27	J	20	J	28	J	24	J	35	J	22	J
Fluoranthene	44	J	330	U	330	U	330	U	330	U	330	U
Pyrene	38	J	330	U	330	U	330	U	330	U	330	U
Butylbenzylphthalate	330	U	330	U	330	U	330	U	330	U	330	U
3,3'-Dichlorobenzidine	330	U J	330	U J	330	U J	330	U J	330	U J	330	U J
Benzo(a)anthracene	22	J	330	U	330	U	330	U	330	U	330	U
Chrysene	26	J	330	U	330	U	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	660	JB U	660	JB U	660	JB U	660	JB U	660	JB U	660	JB U
Di-n-octyl phthalate	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(k)fluoranthene	18	J	330	U	330	U	330	U	330	U	330	U
Benzo(a)pyrene	330	U	330	U	330	U	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U	330	U	330	U	330	U	330	U
Dibenz(a,h)anthracene	330	U	330	U	330	U	330	U	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U	330	U	330	U	330	U	330	U

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

9/16/07

000000011

000015

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

Report Date: 08/14/07 11:36

RFW Batch Number: 0708L732 Client: TNU-HANFORD RC-032 Work Order: 11343606001 Page: 3a

	Cust ID:	J15F31	J15F20	J15F32	SBLKNF	SBLKNF BS
Sample Information	RFW#:	011	012	013	07LE0435-MB1	07LE0435-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 Recovery	Nitrobenzene-d5	67 %	67 %	64 %	67 %	49 %
	2-Fluorobiphenyl	66 %	72 %	67 %	65 %	75 %
	Terphenyl-d14	90 %	100 %	107 %	81 %	87 %
	Phenol-d5	67 %	69 %	66 %	66 %	74 %
	2-Fluorophenol	77 %	73 %	72 %	73 %	69 %
	2,4,6-Tribromophenol	82 %	92 %	70 %	53 %	53 %
		fl	fl	fl	fl	fl fl
Phenol		340 U	29 J	330 U	330 U	73 %
bis(2-Chloroethyl)ether		340 U	330 U	330 U	330 U	63 %
2-Chlorophenol		340 U	330 U	330 U	330 U	71 %
1,3-Dichlorobenzene		340 U	330 U	330 U	330 U	60 %
1,4-Dichlorobenzene		340 U	330 U	330 U	330 U	60 %
1,2-Dichlorobenzene		340 U	330 U	330 U	330 U	61 %
2-Methylphenol		340 U	330 U	330 U	330 U	64 %
2,2'-oxybis(1-Chloropropane)		340 U	330 U	330 U	330 U	63 %
3/4 Methylphenol		340 U	330 U	330 U	330 U	72 %
N-Nitroso-di-n-propylamine		340 U	330 U	330 U	330 U	79 %
Hexachloroethane		340 U	330 U	330 U	330 U	58 %
Nitrobenzene		340 UJ	330 UJ	330 UJ	330 U	49 * %
Isophorone		340 UJ	330 UJ	330 UJ	330 U	60 %
2-Nitrophenol		340 U	330 U	330 U	330 U	51 %
2,4-Dimethylphenol		340 UJ	330 UJ	330 UJ	330 U	54 %
bis(2-Chloroethoxy)methane		340 U	330 U	330 U	330 U	57 %
2,4-Dichlorophenol		340 U	330 U	330 U	330 U	58 %
1,2,4-Trichlorobenzene		340 UJ	330 UJ	330 UJ	330 U	48 * %
Naphthalene		340 U	330 U	330 U	330 U	53 %
4-Chloroaniline		340 UJ	330 UJ	330 UJ	330 U	18 * %
Hexachlorobutadiene		340 U	330 U	330 U	330 U	53 %
4-Chloro-3-methylphenol		340 UJ	330 UJ	330 UJ	330 U	56 * %
2-Methylnaphthalene		340 UJ	330 UJ	330 UJ	330 U	55 * %
Hexachlorocyclopentadiene		340 U	330 U	330 U	330 U	62 %
2,4,6-Trichlorophenol		340 UJ	330 UJ	330 UJ	330 U	49 %
2,4,5-Trichlorophenol		840 U	840 U	830 U	830 U	71 %

*= Outside of EPA CLP QC limits.

9/28/07

000016

000000012

Cust ID:	J15F31		J15F20		J15F32		SBLKNF		SBLKNF BS	
RFW#:	011		012		013		07LE0435-MB1		07LE0435-MB1	
2-Chloronaphthalene	340	U	330	U	330	U	330	U	72	%
2-Nitroaniline	840	U	840	U	830	U	830	U	82	%
Dimethylphthalate	340	U	330	U	330	U	330	U	87	%
Acenaphthylene	340	U	330	U	330	U	330	U	75	%
2,6-Dinitrotoluene	340	U	330	U	330	U	330	U	78	%
3-Nitroaniline	840	UJ	840	UJ	830	UJ	830	U	56	%
Acenaphthene	340	U	330	U	330	U	330	U	75	%
2,4-Dinitrophenol	840	U	840	U	830	U	830	U	129 *	%
4-Nitrophenol	840	UJ	840	UJ	830	UJ	830	U	110	%
Dibenzofuran	340	U	330	U	330	U	330	U	80	%
2,4-Dinitrotoluene	340	U	330	U	330	U	330	U	90	%
Diethylphthalate	340	U	330	U	330	U	330	U	90	%
4-Chlorophenyl-phenylether	340	U	330	U	330	U	330	U	82	%
Fluorene	340	U	330	U	330	U	330	U	78	%
4-Nitroaniline	840	U	840	U	830	U	830	U	66	%
4,6-Dinitro-2-methylphenol	840	U	840	U	830	U	830	U	92	%
N-Nitrosodiphenylamine (1)	340	U	330	U	330	U	330	U	66	%
4-Bromophenyl-phenylether	340	U	330	U	330	U	330	U	72	%
Hexachlorobenzene	340	U	330	U	330	U	330	U	82	%
Pentachlorophenol	840	U	840	U	830	U	830	U	93	%
Phenanthrene	340	U	330	U	330	U	330	U	82	%
Anthracene	340	U	330	U	330	U	330	U	85	%
Carbazole	340	U	330	U	330	U	330	U	80	%
Di-n-butylphthalate	31	J	50	J	95	J	330	U	92	%
Fluoranthene	340	U	330	U	330	U	330	U	87	%
Pyrene	340	U	330	U	330	U	330	U	82	%
Butylbenzylphthalate	340	U	330	U	330	U	330	U	92	%
3,3'-Dichlorobenzidine	340	UJ	330	UJ	330	UJ	330	U	30	%
Benzo(a)anthracene	340	U	330	U	330	U	330	U	79	%
Chrysene	340	U	330	U	330	U	330	U	79	%
bis(2-Ethylhexyl)phthalate	660 ~~71~~ JBU 9/25/12		660 ~~120~~ JBU 9/25/12		660 ~~190~~ JBU 9/25/12		64	J	85	%
Di-n-octyl phthalate	340	U	330	U	330	U	330	U	93	%
Benzo(b)fluoranthene	340	U	330	U	330	U	330	U	81	%
Benzo(k)fluoranthene	340	U	330	U	330	U	330	U	85	%
Benzo(a)pyrene	340	U	330	U	330	U	330	U	84	%
Indeno(1,2,3-cd)pyrene	340	U	330	U	330	U	330	U	77	%
Dibenz(a,h)anthracene	340	U	330	U	330	U	330	U	77	%
Benzo(g,h,i)perylene	340	U	330	U	330	U	330	U	70	%

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

R 9/16/07

000017

0000000013

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0708L732
SDG/SAF # K0912 /RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 08-09-2007

SEMIVOLATILE

Thirteen (13) soil samples were collected on 08-07-2007.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 08-09-2007 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 08-10,12,13-2007.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted and analyzed within required holding time.

2. Non-target compounds were detected in the samples.

3. One (1) of one hundred two (102) surrogate recoveries was 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%).

4. Twelve (12) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

5. Six (6) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.

7. Internal standard area and retention time criteria were met.

8. 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").

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 3 3 pages.

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

LvLI
LIONVILLE LABORATORY INC.

9. 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.

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/20/07
Date

som\gorup\data\bna\tmu-hanford\0708-732.doc

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 07MS47

Initiator: Sharon Saylor
Date: 8-13-07
Client: TNU RC032

Batch: 07OFL732
Samples: ovlms, ovlmsd, BS
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: SOLID
Prep Batch: 07IE0435

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)

Several low spike recoveries in the ms, msd, & BS

2. Known or Probable Causes(s) acid & phenols, chloroanilines, nitroanilines are subject to erratic chromatographic behavior, often sporadic RC 8/13/07

3. Discussion and Proposed Action Other Description: narrate

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

4. Project Manager Instructions...signature/date: 8/13/07

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

5. Final Action...signature/date: 8/13/07 Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	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

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-144 | Page 1 of 1

Collector: TONI UELCH-KOELLING	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification / BCL		SAF No.: RC-032
Ice Chest No.: EAC-02-006	Field Logbook No.: EFL-1174-3	COA: R607F42000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES KLONVILLE	Offsite Property No.: A070394		Bill of Lading/Air Bill No.: 8e OSPC

000000030

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250mL SED 8-7-07						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						

000022

Sample No.	Matrix *	Sample Date	Sample Time										
J16F21	SOIL	8-7-07	09:35	X	X	X	X	X					1
J15F22	SOIL	8-7-07	09:45	X	X	X	X	X					2
J15F23	SOIL	8-7-07	09:55	X	X	X	X	X					3
J15F24	SOIL	8-7-07	10:05	X	X	X	X	X					4
J15F25	SOIL	8-7-07	10:15	X	X	X	X	X					5

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TONI UELCH-KOELLING	8-7-07 1310	JR DeBuigne JRDBuigne	1310 8-7-07
JR DeBuigne JRDBuigne	Date/Time 1500 8-7-07	MM Simpkins	Date/Time 8-7-07 1500
MM Simpkins	Date/Time UCH 8-8-07 1500	FED EX	Date/Time
[illegible]	Date/Time 8-9-07 0930	[illegible]	Date/Time 8-9-07 0930
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

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

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-144	Page 2 of 3

Collector: TONI WELCH-KOELLING	Company Contact: R.T. Coffman — Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 4B — Data Turnaround: 7 DAY 3 day
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification / DCL	SAF No.: RC-032	
Ice Chest No.: ERC-02-006	Field Logbook No.: EFL-1174-3 — COA: R607F42000	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A070394	Bill of Lading/Air Bill No.: See OSAC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000023

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ JRD 250 mL 8-7-07						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J15F26 / SOIL / 8-7-07 / 11:50	X	X	X	X	X						6
J15F27 / SOIL / 8-7-07 / 12:00	X	X	X	X	X						7
J15F28 / SOIL / 8-7-07 / 10:25	X	X	X	X	X						8
J15F29 / SOIL / 8-7-07 / 12:10	X	X	X	X	X						9
J15F30 / SOIL / 8-7-07 / 12:20	X	X	X	X	X						10

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TONI WELCH-KOELLING	8-7-07 13:10	JRDeBruyne JRDeBruyne	1310 8-7-07
JRDeBruyne JRDeBruyne	8-7-07 1500	KMSingleton	8-7-07 1500
KMSingleton	8-8-07 1500 WCH	FED EX	
FED EX	8-9-07 0930	D. Smith	8-9-07 0930

SPECIAL INSTRUCTIONS

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

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

WCH-EF-011

000000031

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-144	Page 3 of 3

Collector: TONI WELCH-KOELING	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 4B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification / BCL		SAF No.: RC-032
Ice Chest No.: SML-429	Field Logbook No.: EFL-1174-3	COA: R607F42000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A070394		Bill of Lading/Air Bill No.: See OSRC

000000032

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000024

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250 mL SPD 8-7-07						
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
Sample No.	Matrix *	Sample Date	Sample Time								
J15F31	SOIL	8-7-07	10:35	X	X	X	X	X			10D
J15F20	Soil	8-7-07	10:35	X	X	X	X	X			BCL
J15F32	Soil	8-7-07	09:25	X			X				EB

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TONI WELCH-KOELING	8-7-07 1310	Received By/Stored In: JR DeBruyne JR DeBruyne	8-7-07 1316
Relinquished By/Removed From: JR DeBruyne JR DeBruyne	8-7-07 1500	Received By/Stored In: KM Singleton	8-7-07 1500
Relinquished By/Removed From: KM Singleton	8-8-07 1500	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	8-9-07 0930	Received By/Stored In: D. Smith	8-9-07 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

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

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

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 1607-F4			DATA PACKAGE: K0912		
VALIDATOR: ELR		LAB: LLI		DATE: 9/15/07	
			SDG: K0912		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J15F21	J15F22	J15F23	J15F24	J15F25	J15F26
J15F27	J15F28	J15F29	J15F30	J15F31	J15F20
J15F32					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: bis(2-ethylhexyl)phthalate - U at RQL - all

FD - di-n-butyl phthalate

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

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: Surr - F22 - all nitrobenzene related - J

no PAS

MS/MSD - 8 out - J all

LCS - ~~6~~ 10/12 out - J all

7 out

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-dimethylphenol (C27o) + 4-nitrophenol (S77o) - Jal

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: 104 over

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

Comments:

Date: 17 September 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol – Waste Site 1607-F4
Subject: PCB - Data Package No. K0912-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0912 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	Analyte
J15F21	8/7/07	Soil	C	See note 1
J15F22	8/7/07	Soil	C	See note 1
J15F23	8/7/07	Soil	C	See note 1
J15F23R	8/7/07	Soil	C	See note 1
J15F24	8/7/07	Soil	C	See note 1
J15F25	8/7/07	Soil	C	See note 1
J15F26	8/7/07	Soil	C	See note 1
J15F27	8/7/07	Soil	C	See note 1
J15F28	8/7/07	Soil	C	See note 1
J15F29	8/7/07	Soil	C	See note 1
J15F30	8/7/07	Soil	C	See note 1
J15F31	8/7/07	Soil	C	See note 1
J15F20	8/7/07	Soil	C	See note 1

1 – PCBs by 8082 and 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. 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, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike and matrix spike duplicate analysis, all pesticide and PCB results in sample J15F23R were qualified as estimates and flagged "J".

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.

Due to a surrogate recovery outside QC limits (121%), the aroclor-1260 result in sample J15F22 was qualified as an estimate and flagged "J".

Due to a surrogate recovery outside QC limits (31%), all PCB results in sample J15F23 were qualified as estimates and flagged "J".

Due to surrogate recoveries outside QC limits (21% & 30%), all pesticide results in sample J15F23 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

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

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

Due to the lack of a matrix spike and matrix spike duplicate analysis, all pesticide and PCB results in sample J15F23R were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J15F31/J15F20) were submitted for analysis. Field duplicates are compared using the same criteria as for field 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. All other results met the RQL.

- **Completeness**

Data Package No. K0912 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

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

- Due to the lack of a matrix spike and matrix spike duplicate analysis, all pesticide and PCB results in sample J15F23R were qualified as estimates and flagged "J".

- Due to a surrogate recovery outside QC limits (121%), the aroclor-1260 result in sample J15F22 was qualified as an estimate and flagged "J".

- Due to a surrogate recovery outside QC limits (31%), all PCB results in sample J15F23 were qualified as estimates and flagged "J".

- Due to surrogate recoveries outside QC limits (21% & 30%), all pesticide results in sample J15F23 were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

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

REFERENCES

Fluor Hanford Data Validation Contract #29776 (June 2006), *Validation Statement of Work*, through Washington Closure Hanford Work Order #WB6081.

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

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0912	REVIEWER: ELR	Project: 1607-F4	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS/MSD/LCS
All	J	J15F23R	No MS/MSD
Aroclor-1260	J	J15F22	Surrogate recovery
All PCBs	J	J15F23	Surrogate recovery
All pesticides	J	J15F23	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

Annotated Laboratory Reports

PCBs by GC

Report Date: 08/21/07 09:03

RFW Batch Number: 0708L732 Client: TNUHANFORD RC-032 K0912 Work Order: 11343606001 Page: 1

	Cust ID:	J15F21	J15F21	J15F21	J15F22	J15F23	J15F23
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	003
	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 REPREP
Surrogate:	Tetrachloro-m-xylene	127 * %	121 * %	115 %	122 * %	30 %	60 %
	Decachlorobiphenyl	120 %	115 %	108 %	118 %	31 * %	103 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U	100 %	96 %	14 U	14 U J	14 U J
Aroclor-1221		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1232		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1242		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1248		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1254		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1260		14 U	114 %	103 %	6.7 J	3.9	14 U

	Cust ID:	J15F24	J15F25	J15F26	J15F27	J15F28	J15F29
Sample Information	RFW#:	004	005	006	007	008	009
	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	112 %	117 %	118 %	98 %	118 %	129 * %
	Decachlorobiphenyl	115 %	111 %	113 %	107 %	116 %	128 * %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	46	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	13 U	13 U	13 U

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

9/14/07

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000011

	Cust ID:	J15F30	J15F31	J15F20	PBLKEL	PBLKEL BS	PBLKEU
Sample Information	RFW#:	010	011	012	07LE0436-MB1	07LE0436-MB1	07LE0455-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		129 * %	127 * %	124 * %	116 %	121 * %	99 %
Decachlorobiphenyl		118 %	118 %	116 %	119 %	124 * %	98 %
Aroclor-1016		13 U	13 U	13 U	13 U	103 %	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	13 U	115 %	13 U

	Cust ID:	PBLKEU BS
Sample Information	RFW#:	07LE0455-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate: Tetrachloro-m-xylene		94 %
Decachlorobiphenyl		85 %
Aroclor-1016		89 %
Aroclor-1221		13 U
Aroclor-1232		13 U
Aroclor-1242		13 U
Aroclor-1248		13 U
Aroclor-1254		13 U
Aroclor-1260		90 %

R 9/19/07

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

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	Cust ID:	J15F21	J15F21	J15F21	J15F22	J15F23	J15F23
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	003
	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 REPREP
Surrogate:	Tetrachloro-m-xylene	110 %	98 %	101 %	104 %	21 * %	52 %
	Decachlorobiphenyl	112 %	115 %	110 %	119 %	30 * %	119 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.4 U	74 %	72 %	1.4 U	1.4 U J	1.4 U J
gamma-BHC (Lindane)		1.4 U	93 %	91 %	1.4 U	1.4 U	1.4 U
Beta-BHC		1.4 U	105 %	103 %	1.4 U	1.4 U	1.4 U
Heptachlor		1.4 U	112 %	108 %	1.4 U	1.4 U	1.4 U
Delta-BHC		1.4 U	78 %	76 %	1.4 U	1.4 U	1.4 U
Aldrin		1.4 U	96 %	90 %	1.4 U	1.4 U	1.4 U
Heptachlor epoxide		1.4 U	109 %	105 %	1.4 U	1.4 U	1.4 U
gamma-Chlordane		1.4 U	107 %	102 %	4.5 J	1.4 U	1.4 U
Endosulfan I		1.4 U	109 %	105 %	1.4 U	1.4 U	1.4 U
alpha-Chlordane		1.4 U	109 %	104 %	5.6 J	1.4 U	1.4 U
4,4'-DDE		1.4 U	109 %	105 %	2.1 J	1.4 U	1.4 U
Dieldrin		1.4 U	104 %	100 %	1.4 U	1.4 U	1.4 U
Endrin		1.4 U	114 %	108 %	1.4 U	1.4 U	1.4 U
4,4'-DDD		1.4 U	100 %	96 %	1.4 U	1.4 U	1.4 U
Endosulfan II		1.4 U	115 %	110 %	1.4 U	1.4 U	1.4 U
4,4'-DDT		1.4 U	102 %	100 %	2.8 J.I	1.4 U	1.4 U
Endrin aldehyde		1.4 U	107 %	100 %	1.4 U	1.4 U	1.4 U
Endosulfan sulfate		1.4 U	112 %	108 %	1.4 U	1.4 U	1.4 U
Methoxychlor		1.4 U	118 %	114 %	1.4 U	1.4 U	1.4 U
Endrin ketone		1.4 U	117 %	110 %	1.4 U	1.4 U	1.4 U
Toxaphene		14 U J	14 U	14 U	14 U J	14 U	14 U

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

9/14/07

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	Cust ID:	J15F24		J15F25		J15F26		J15F27		J15F28		J15F29	
Sample Information	RFW#:	004		005		006		007		008		009	
	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	94	%	103	%	105	%	82	%	105	%	105	%
	Decachlorobiphenyl	112	%	116	%	115	%	108	%	121	%	118	%
			fl		fl		fl		fl		fl		fl
Alpha-BHC		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
gamma-BHC (Lindane)		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Beta-BHC		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Heptachlor		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Delta-BHC		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Aldrin		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Heptachlor epoxide		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
gamma-Chlordane		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Endosulfan I		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
alpha-Chlordane		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
4,4'-DDE		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Dieldrin		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Endrin		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
4,4'-DDD		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Endosulfan II		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
4,4'-DDT		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Endrin aldehyde		1.3	U	1.8	J	1.3	U	1.3	U	1.3	U	1.3	U
Endosulfan sulfate		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Methoxychlor		1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Endrin ketone		1.3	U	2.9	J	1.3	U	1.3	U	1.3	U	1.3	U
Toxaphene		13	U J	13	U J	13	U J	13	U J	13	U J	13	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

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9/14/07

	Cust ID:	J15F30	J15F31	J15F20	PBLKEL	PBLKEL BS	PBLKEU
Sample Information	RFW#:	010	011	012	07LE0436-MB1	07LE0436-MB1	07LE0455-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	113 %	112 %	110 %	94 %	106 %	104 %
	Decachlorobiphenyl	122 %	124 * %	119 %	94 %	100 %	95 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.3 U	1.3 U	1.3 U	0.33 U	102 %	0.33 U
gamma-BHC (Lindane)		1.3 U	1.3 U	1.3 U	0.33 U	103 %	0.33 U
Beta-BHC		1.3 U	1.3 U	1.3 U	0.33 U	116 %	0.33 U
Heptachlor		1.3 U	1.3 U	1.3 U	0.33 U	117 %	0.33 U
Delta-BHC		1.3 U	1.3 U	1.3 U	0.33 U	100 %	0.33 U
Aldrin		1.3 U	1.3 U	1.3 U	0.33 U	114 %	0.33 U
Heptachlor epoxide		1.3 U	1.3 U	1.3 U	0.33 U	115 %	0.33 U
gamma-Chlordane		1.3 U	1.3 U	1.3 U	0.33 U	115 %	0.33 U
Endosulfan I		1.3 U	1.3 U	1.3 U	0.33 U	116 %	0.33 U
alpha-Chlordane		1.3 U	1.3 U	1.3 U	0.33 U	116 %	0.33 U
4,4'-DDE		1.3 U	1.3 U	1.3 U	0.33 U	116 %	0.33 U
Dieldrin		1.3 U	1.3 U	1.3 U	0.33 U	117 %	0.33 U
Endrin		1.3 U	1.3 U	1.3 U	0.33 U	123 %	0.33 U
4,4'-DDD		1.3 U	1.3 U	1.3 U	0.33 U	112 %	0.33 U
Endosulfan II		1.3 U	1.3 U	1.3 U	0.33 U	117 %	0.33 U
4,4'-DDT		1.3 U	1.3 U	1.3 U	0.33 U	115 %	0.33 U
Endrin aldehyde		1.3 U	1.3 U	1.3 U	0.33 U	98 %	0.33 U
Endosulfan sulfate		1.3 U	1.3 U	1.3 U	0.33 U	114 %	0.33 U
Methoxychlor		1.3 U	1.3 U	1.3 U	0.33 U	104 %	0.33 U
Endrin ketone		1.3 U	1.3 U	1.3 U	0.33 U	119 %	0.33 U
Toxaphene		13 UJ	13 UJ	13 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

9/14/07

000015

000000008

Cust ID: PBLKEU BS

Sample Information

RFW#: 07LE0455-MB1
Matrix: SOIL
D.F.: 1.00
Units: UG/KG

Surrogate:	Tetrachloro-m-xylene	83	%
	Decachlorobiphenyl	98	%

Alpha-BHC	91		%
gamma-BHC (Lindane)	97		%
Beta-BHC	103		%
Heptachlor	104		%
Delta-BHC	92		%
Aldrin	108		%
Heptachlor epoxide	108		%
gamma-Chlordane	107		%
Endosulfan I	113		%
alpha-Chlordane	108		%
4,4'-DDE	121	*	%
Dieldrin	110		%
Endrin	110		%
4,4'-DDD	110		%
Endosulfan II	108		%
4,4'-DDT	119		%
Endrin aldehyde	94		%
Endosulfan sulfate	101		%
Methoxychlor	102		%
Endrin ketone	101		%
Toxaphene	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

JR 9/14/07

000046

000000009

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0708L732
SDG/SAF # K0912/RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 08-09-2007

PCB

Twelve (12) soil samples were collected on 08-07-2007.

The samples and their associated QC samples were extracted on 08-09,16-2007 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 08-11,18,19-2007. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted and analyzed within required holding time.

2. 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.

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

4. Eleven (11) of thirty-eight (38) surrogate recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report has been enclosed.

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. The initial calibrations associated with this data set were within acceptance criteria.

8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

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9. 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.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/23/07
Date

kim\r:\group\data\pest\tmu hanford\0708-732.pcb

LvLI
LIONVILLE LABORATORY INC.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 07GC213

Initiator: CAL
Date: 8-15-07
Client: TNL

Batch: 0708L732
Samples: 001 MS, 002, 009, 010
Method: SW846/MCAWW/CLP/011, 012 BS

Parameter: OPCB
Matrix: SOIL
Prep Batch: 07LE0436

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)

Surrogates out high
Surrogate low in 003.

2. Known or Probable Causes(s)

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:

High surrogates have no impact on data, since all samples with high surrogate and therefore possible high bias, are all below reporting limit for all analytes. Sample 003 will be reextracted.

4. Project Manager Instructions...signature/date: 8/23/07

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

Narrate all but 003

5. Final Action...signature/date: 8/21/07

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

Other Explanation:

003 reextracted in hold and is good. DS.

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

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

QA-105-A-0805

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FO
TNUHANFORD RC-032 K0912

RECEIVED AUG 2007

DATE RECEIVED: 08/09/07 LVL LOT # 0708L732

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J15F21	001	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F21	001 MS	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F21	001 MSD	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F22	002	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F23	003	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F23	003 R1	S	07LE0455	08/07/07	08/16/07	08/~~18~~/07 ID 8/21/07
J15F24	004	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F25	005	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F26	006	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F27	007	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F28	008	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F29	009	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F30	010	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F31	011	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F20	012	S	07LE0436	08/07/07	08/09/07	08/11/07

LAB QC:

PBLKEL	MB1	S	07LE0436	N/A	08/09/07	08/11/07
PBLKEL	MB1 BS	S	07LE0436	N/A	08/09/07	08/11/07
PBLKEU	MB1	S	07LE0455	N/A	08/16/07	08/18/07
PBLKEU	MB1 BS	S	07LE0455	N/A	08/16/07	08/18/07

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0708L732
SDG/SAF # K0912/RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 08-09-2007

CHLORINATED PESTICIDES

Twelve (12) soil samples were collected on 08-07-2007.

The samples and their associated QC samples were extracted on 08-09,16-2007 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 08-10,11-2007. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

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

2. Samples were extracted and analyzed within required holding time.

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

4. Three (3) of thirty-eight (38) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report has been enclosed.

5. One (1) of forty (40) blank spike recoveries was outside acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. The samples and their associated matrix spike samples required a 4-fold instrument dilution due to the sample matrix. The reporting limits were adjusted to reflect the necessary dilution.

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.

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

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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

8/23/07
Date

kim\r:\group\data\pest\tm hanford\0708s732a.pst

LvLI
LIONVILLE LABORATORY INC.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 076C012

Initiator: CAC
Date: 8-14-07
Client: TNU

Batch: 07081782
Samples: 003
Method: SW846/MCAWW/CLP/

Parameter: 0608Hj
Matrix: soil
Prep Batch: 07LE0932

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)

both surrogates out low

2. Known or Probable Causes(s)

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: Suggest we re extract 1D

4. Project Manager Instructions...signature/date: [signature] 8/16/07

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

5. Final Action...signature/date: _____

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

Other Explanation: Re extracted in hold on 8/16, analyzed on 8/20. Everything good. 2D.

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

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

QA-105-A-0805

Lionville Laboratory, Inc.
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K0912

RECEIVED

DATE RECEIVED: 08/09/07 LVL LOT #:0708L732

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J15F21	001	S	07LE0436	08/07/07	08/09/07	08/10/07
J15F21	001 MS	S	07LE0436	08/07/07	08/09/07	08/10/07
J15F21	001 MSD	S	07LE0436	08/07/07	08/09/07	08/10/07
J15F22	002	S	07LE0436	08/07/07	08/09/07	08/10/07
J15F23	003	S	07LE0436	08/07/07	08/09/07	08/10/07
J15F23	003 R1	S	07LE0455	08/07/07	08/16/07	08/20/07
J15F24	004	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F25	005	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F26	006	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F27	007	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F28	008	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F29	009	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F30	010	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F31	011	S	07LE0436	08/07/07	08/09/07	08/11/07
J15F20	012	S	07LE0436	08/07/07	08/09/07	08/11/07

LAB QC:

PBLKEL	MB1	S	07LE0436	N/A	08/09/07	08/10/07
PBLKEL	MB1 BS	S	07LE0436	N/A	08/09/07	08/10/07
PBLKEU	MB1	S	07LE0455	N/A	08/16/07	08/20/07
PBLKEU	MB1 BS	S	07LE0455	N/A	08/16/07	08/20/07

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
TONI WELCH-KOELLING	R.T. Coffman	528-6409	KESSNER, JH	8B	7DAY 5DAY

Project Designation	Sampling Location	SAF No.
100-F Remaining Sites Burial Grounds - Soil Full Protocol	1607-F4 Excavation Footprint/Verification / DLL	RC-032

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
EAC-02-006	EFL-1174-3	R607F42000	FED EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES (LIONVILLE)	A070394	See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250mL 8-7-07						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						

920000

Sample No.	Matrix *	Sample Date	Sample Time										Matrix *
J15F21	SOIL	8-7-07	09:35	X	X	X	X	X					1
J15F22	SOIL	8-7-07	09:45	X	X	X	X	X					2
J15F23	SOIL	8-7-07	09:55	X	X	X	X	X					3
J15F24	SOIL	8-7-07	10:05	X	X	X	X	X					4
J15F25	SOIL	8-7-07	10:15	X	X	X	X	X					5

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TONI WELCH-KOELLING	8-7-07 13:10	JR DeBruyne JR DeBruyne	1310 8-7-07
JR DeBruyne JR DeBruyne	1500 8-7-07	KM Singleton	8-7-07 1500
KM Singleton	8-8-07 1500	FED EX	
[illegible]	8-9-07 0930	[illegible]	8-9-07 0930

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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

WCH-EE-011

000000012

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
TONI WELCH-KOELLING	R.T. Coffman	528-6409	KESSNER, JH	4B	7 DAY 3 day

Project Designation	Sampling Location	SAF No.
100-F Remaining Sites Burial Grounds - Soil Full Protocol	1607-F4 Excavation Footprint/Verification 1 OU	RC-032

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
ERC-02-006	EFL-1174-3	R607F42000	FED EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES (LIONVILLE)	A070394	See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250mL SED 8-7-07						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						

Sample No.	Matrix *	Sample Date	Sample Time										
J15F26	SOIL	8-7-07	11:50	X	X	X	X	X					6
J15F27	SOIL	8-7-07	12:00	X	X	X	X	X					7
J15F28	SOIL	8-7-07	10:25	X	X	X	X	X					8
J15F29	SOIL	8-7-07	12:10	X	X	X	X	X					9
J15F30	SOIL	8-7-07	12:20	X	X	X	X	X					10

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TONI WELCH-KOELLING	8-7-07 13:10	JR DeBruigne	8-7-07 1310
JR DeBruigne	8-7-07 1500	BM Singleton	8-7-07 1500
BM Singleton	8-8-07 1500 WCH	FED EX	
FED EX	8-9-07 0930		8-9-07 0930

SPECIAL INSTRUCTIONS

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

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

WCH-EE-011

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
TONI WEREH-KOELING	R.T. Coffman	528-6409	KESSNER, JH	4B	7DAY

Project Designation	Sampling Location	SAF No.
100-F Remaining Sites Burial Grounds - Soil Full Protocol	1607-F4 Excavation Footprint/Verification 1 BCL	RC-032

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
SML-429	EFL-1174-3	R607F42000	FED EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
EBERLINE SERVICES (LIONVILLE)	A070394	See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250 mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J15F31 / SOIL / 8-7-07 / 10:35	X	X	X	X	X						10D
J15F20 / Soil / 8-7-07 / 10:35	X	X	X	X	X						BCL
J15F32 / Soil / 8-7-07 / 09:25	X			X							EB

820001

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TONI WEREH-KOELING	8-7-07 1310	JR DeBruyne JR DeBruyne	8-7-07 1310
JR DeBruyne JR DeBruyne	8-7-07 1500	KM Singleton	8-7-07 1500
KM Singleton	8-8-07 1500	FED EX	
Fed EX	8-9-07 0930	D. Smith	8-9-07 0930

SPECIAL INSTRUCTIONS

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

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

WCH-EE-011

0000000014

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 1607-F4			DATA PACKAGE: K0912		
VALIDATOR: ELR		LAB: LLR		DATE: 9/15/07	
			SDG: K0912		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J15F21 J15F22 J15F23 J15F24 J15F25					
J15F26 J15F27 J15F28 J15F29 J15F30					
J15F31 J15F20					
					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: Surr - pest - F23 - J all PCB - F22 - 1260 F23 - all
MS - no MS or MSD Sur F23R - J all

no PAS

no toxy MS, MSD or LCS - J all

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: No tox MS/MSD – J all

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: all tox over

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments:

Date: 17 September 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol – Waste Site 1607-F4
Subject: Inorganics - Data Package No. K0912-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0912 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	Analyte
J15F21	8/7/07	Soil	C	See note 1
J15F22	8/7/07	Soil	C	See note 1
J15F23	8/7/07	Soil	C	See note 1
J15F24	8/7/07	Soil	C	See note 1
J15F25	8/7/07	Soil	C	See note 1
J15F26	8/7/07	Soil	C	See note 1
J15F27	8/7/07	Soil	C	See note 1
J15F28	8/7/07	Soil	C	See note 1
J15F29	8/7/07	Soil	C	See note 1
J15F30	8/7/07	Soil	C	See note 1
J15F31	8/7/07	Soil	C	See note 1
J15F32	8/7/07	Soil	C	See note 1
J15F20	8/7/07	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. 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 "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

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

Due to method blank contamination, the boron result in samples J15F22, J15F23, J15F24, J15F25, J15F26, J15F28, J15F30, J15F20 and J15F32 were qualified as undetected and flagged "UJ".

Due to method blank contamination, the selenium result in samples J15F22, J15F28 and J15F29 were qualified as estimates and flagged "UJ".

Due to method blank contamination, the calcium, copper, sodium, zinc and magnesium results in sample J15F32 were qualified as estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J15F32) was submitted for analysis. Aluminum, barium, beryllium, cobalt, iron, potassium, manganese and silicon 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 matrix spike recoveries outside QC limits, all zinc (61%), vanadium (45.5%), antimony (64.4%), magnesium (43.3%), potassium (62.2%), copper (69.4%), chromium (63.6%) and calcium (40.7%) 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 (J15F31/J15F20) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All undetected selenium results (except J15F32) exceeded the RQL. Under the WCH statement of work, no qualification is required. All other results met the RQL.

- **Completeness**

Data package No. K0912 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the boron result in samples J15F22, J15F23, J15F24, J15F25, J15F26, J15F28, J15F30, J15F20 and J15F32 were qualified as undetected and flagged "UJ".

- Due to method blank contamination, the selenium result in samples J15F22, J15F28 and J15F29 were qualified as estimates and flagged "UJ".

- Due to method blank contamination, the calcium, copper, sodium, zinc and magnesium results in sample J15F32 were qualified as estimates and flagged "UJ".

- Due to matrix spike recoveries outside QC limits, all zinc (61%), vanadium

(45.5%), antimony (64.4%), magnesium (43.3%), potassium (62.2%), copper (69.4%), chromium (63.6%) and calcium (40.7%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All undetected selenium results (except J15F32) exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

Fluor Hanford Data Validation Contract #29776 (June 2006), *Validation Statement of Work*, through Washington Closure Hanford Work Order #WB6081.

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 WCH 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: K0912	REVIEWER: ELR	Project: 1607-F4	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Boron	UJ	J15F22, J15F23, J15F24, J15F25, J15F26, J15F28, J15F30, J15F20 J15F32	Method blank contamination
Selenium	UJ	J15F22, J15F28 J15F29	Method blank contamination
Calcium Copper Magnesium Sodium Zinc	UJ	J15F32	Method blank contamination
Zinc Vanadium Antimony Magnesium Potassium Copper Chromium Calcium	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

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J15F21	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	7700	MG/KG	4.9	3.0
		Arsenic, Total	2.3	MG/KG	1.2	3.0
		Boron, Total	2.7	MG/KG	1.1	3.0
		Barium, Total	74.7	MG/KG	0.06	3.0
		Beryllium, Total	0.33	MG/KG	0.03	3.0
		Calcium, Total	4350 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	7.2	MG/KG	0.24	3.0
		Chromium, Total	10.5 J	MG/KG	0.30	3.0
		Copper, Total	13.6 J	MG/KG	0.27	3.0
		Iron, Total	20400	MG/KG	7.1	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1280 J	MG/KG	9.5	3.0
		Magnesium, Total	4320 J	MG/KG	2.4	3.0
		Manganese, Total	334	MG/KG	0.21	3.0
		Molybdenum, Total	0.48 u	MG/KG	0.48	3.0
		Sodium, Total	202	MG/KG	2.1	3.0
		Nickel, Total	10.9	MG/KG	0.80	3.0
		Lead, Total	7.7	MG/KG	0.98	3.0
		Antimony, Total	0.65 u J	MG/KG	0.65	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	838	MG/KG	2.6	3.0
		Vanadium, Total	47.9 J	MG/KG	0.24	3.0
		Zinc, Total	41.3 J	MG/KG	0.12	3.0

K 9/14/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J15F22	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	4640	MG/KG	4.9	3.0
		Arsenic, Total	1.3	MG/KG	1.2	3.0
		Boron, Total	1.8 UJ	MG/KG	1.1	3.0
		Barium, Total	69.8	MG/KG	0.06	3.0
		Beryllium, Total	0.19	MG/KG	0.03	3.0
		Calcium, Total	2730 J	MG/KG	2.1	3.0
		Cadmium, Total	0.38	MG/KG	0.15	3.0
		Cobalt, Total	4.4	MG/KG	0.24	3.0
		Chromium, Total	29.6 J	MG/KG	0.30	3.0
		Copper, Total	21.7 J	MG/KG	0.27	3.0
		Iron, Total	12600	MG/KG	7.1	3.0
		Mercury, Total	1.2	MG/KG	0.01	1.0
		Potassium, Total	477 J	MG/KG	9.5	3.0
		Magnesium, Total	3050 J	MG/KG	2.4	3.0
		Manganese, Total	165	MG/KG	0.21	3.0
		Molybdenum, Total	0.58	MG/KG	0.47	3.0
		Sodium, Total	141	MG/KG	2.1	3.0
		Nickel, Total	6.8	MG/KG	0.80	3.0
		Lead, Total	6.8	MG/KG	0.98	3.0
		Antimony, Total	0.78 J	MG/KG	0.65	3.0
		Selenium, Total	2.2 UJ	MG/KG	1.3	3.0
		Silicon, Total	1460	MG/KG	2.5	3.0
		Vanadium, Total	26.3 J	MG/KG	0.24	3.0
		Zinc, Total	93.0 J	MG/KG	0.12	3.0

9/10/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J15F23	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	6280	MG/KG	5.0	3.0
		Arsenic, Total	2.4	MG/KG	1.2	3.0
		Boron, Total	2.3 UJ	MG/KG	1.1	3.0
		Barium, Total	72.5	MG/KG	0.06	3.0
		Beryllium, Total	0.31	MG/KG	0.03	3.0
		Calcium, Total	3610 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	6.8	MG/KG	0.24	3.0
		Chromium, Total	7.8 J	MG/KG	0.30	3.0
		Copper, Total	9.6 J	MG/KG	0.27	3.0
		Iron, Total	19100	MG/KG	7.2	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1230 J	MG/KG	9.6	3.0
		Magnesium, Total	3800 J	MG/KG	2.4	3.0
		Manganese, Total	313	MG/KG	0.21	3.0
		Molybdenum, Total	0.48 u	MG/KG	0.48	3.0
		Sodium, Total	179	MG/KG	2.1	3.0
		Nickel, Total	9.3	MG/KG	0.81	3.0
		Lead, Total	5.3	MG/KG	0.99	3.0
		Antimony, Total	0.70 J	MG/KG	0.66	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	1980	MG/KG	2.6	3.0
		Vanadium, Total	45.9 J	MG/KG	0.24	3.0
		Zinc, Total	39.6 J	MG/KG	0.12	3.0

9/16/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

LIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

AMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
004	J15F24	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Aluminum, Total	4030	MG/KG	4.9	3.0
		Arsenic, Total	1.7	MG/KG	1.2	3.0
		Boron, Total	1.4 UJ	MG/KG	1.1	3.0
		Barium, Total	27.4	MG/KG	0.06	3.0
		Beryllium, Total	0.18	MG/KG	0.03	3.0
		Calcium, Total	2330 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	3.0	MG/KG	0.23	3.0
		Chromium, Total	5.1 J	MG/KG	0.29	3.0
		Copper, Total	6.4 J	MG/KG	0.26	3.0
		Iron, Total	9250	MG/KG	7.0	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	553 J	MG/KG	9.4	3.0
		Magnesium, Total	2590 J	MG/KG	2.4	3.0
		Manganese, Total	243	MG/KG	0.20	3.0
		Molybdenum, Total	0.47 u	MG/KG	0.47	3.0
		Sodium, Total	80.7	MG/KG	2.0	3.0
		Nickel, Total	5.3	MG/KG	0.79	3.0
		Lead, Total	2.1	MG/KG	0.97	3.0
		Antimony, Total	0.64 uJ	MG/KG	0.64	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	1480	MG/KG	2.5	3.0
		Vanadium, Total	18.3 J	MG/KG	0.23	3.0
		Zinc, Total	24.7 J	MG/KG	0.12	3.0

9/10/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J15F25	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Aluminum, Total	5500	MG/KG	4.9	3.0
		Arsenic, Total	1.4	MG/KG	1.2	3.0
		Boron, Total	2.1 UJ	MG/KG	1.1	3.0
		Barium, Total	62.2	MG/KG	0.06	3.0
		Beryllium, Total	0.26	MG/KG	0.03	3.0
		Calcium, Total	3000 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	5.4	MG/KG	0.23	3.0
		Chromium, Total	7.5 J	MG/KG	0.29	3.0
		Copper, Total	9.1 J	MG/KG	0.26	3.0
		Iron, Total	15200	MG/KG	7.0	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1140 J	MG/KG	9.4	3.0
		Magnesium, Total	3090 J	MG/KG	2.4	3.0
		Manganese, Total	233	MG/KG	0.20	3.0
		Molybdenum, Total	0.47 u	MG/KG	0.47	3.0
		Sodium, Total	160	MG/KG	2.0	3.0
		Nickel, Total	7.3	MG/KG	0.79	3.0
		Lead, Total	4.5	MG/KG	0.96	3.0
		Antimony, Total	0.95 J	MG/KG	0.64	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	1640	MG/KG	2.5	3.0
		Vanadium, Total	35.8 J	MG/KG	0.23	3.0
		Zinc, Total	33.3 J	MG/KG	0.12	3.0

9/16/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J15F26	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	5640	MG/KG	4.9	3.0
		Arsenic, Total	2.3	MG/KG	1.2	3.0
		Boron, Total	1.9 UJ	MG/KG	1.1	3.0
		Barium, Total	42.9	MG/KG	0.06	3.0
		Beryllium, Total	0.27	MG/KG	0.03	3.0
		Calcium, Total	3720 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	6.4	MG/KG	0.24	3.0
		Chromium, Total	9.9 J	MG/KG	0.29	3.0
		Copper, Total	15.3 J	MG/KG	0.27	3.0
		Iron, Total	15200	MG/KG	7.0	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	748 J	MG/KG	9.4	3.0
		Magnesium, Total	4190 J	MG/KG	2.4	3.0
		Manganese, Total	270	MG/KG	0.21	3.0
		Molybdenum, Total	0.47 u	MG/KG	0.47	3.0
		Sodium, Total	141	MG/KG	2.1	3.0
		Nickel, Total	11.0	MG/KG	0.80	3.0
		Lead, Total	2.3	MG/KG	0.97	3.0
		Antimony, Total	1.2 J	MG/KG	0.65	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	1110	MG/KG	2.5	3.0
		Vanadium, Total	34.1 J	MG/KG	0.24	3.0
		Zinc, Total	31.9 J	MG/KG	0.12	3.0

9/16/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J15F27	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Aluminum, Total	2760	MG/KG	4.9	3.0
		Arsenic, Total	1.3	MG/KG	1.2	3.0
		Boron, Total	1.1 u	MG/KG	1.1	3.0
		Barium, Total	32.1	MG/KG	0.06	3.0
		Beryllium, Total	0.21	MG/KG	0.03	3.0
		Calcium, Total	1900 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	3.7	MG/KG	0.23	3.0
		Chromium, Total	3.3 J	MG/KG	0.29	3.0
		Copper, Total	9.4 J	MG/KG	0.26	3.0
		Iron, Total	7760	MG/KG	7.0	3.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	322 J	MG/KG	9.4	3.0
		Magnesium, Total	1870 J	MG/KG	2.4	3.0
		Manganese, Total	144	MG/KG	0.20	3.0
		Molybdenum, Total	0.47 u	MG/KG	0.47	3.0
		Sodium, Total	83.6	MG/KG	2.0	3.0
		Nickel, Total	5.7	MG/KG	0.79	3.0
		Lead, Total	1.5	MG/KG	0.97	3.0
		Antimony, Total	0.64 u J	MG/KG	0.64	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	1020	MG/KG	2.5	3.0
		Vanadium, Total	19.9 J	MG/KG	0.23	3.0
		Zinc, Total	19.4 J	MG/KG	0.12	3.0

9/11/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	J15F28	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Aluminum, Total	5450	MG/KG	4.8	3.0
		Arsenic, Total	2.8	MG/KG	1.2	3.0
		Boron, Total	1.2 UJ	MG/KG	1.0	3.0
		Barium, Total	70.8	MG/KG	0.06	3.0
		Beryllium, Total	0.33	MG/KG	0.03	3.0
		Calcium, Total	3240 J	MG/KG	2.1	3.0
		Cadmium, Total	0.14 u	MG/KG	0.14	3.0
		Cobalt, Total	6.4	MG/KG	0.23	3.0
		Chromium, Total	6.5 J	MG/KG	0.29	3.0
		Copper, Total	9.1 J	MG/KG	0.26	3.0
		Iron, Total	16300	MG/KG	6.9	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1120 J	MG/KG	9.3	3.0
		Magnesium, Total	3480 J	MG/KG	2.3	3.0
		Manganese, Total	302	MG/KG	0.20	3.0
		Molybdenum, Total	0.52	MG/KG	0.46	3.0
		Sodium, Total	140	MG/KG	2.0	3.0
		Nickel, Total	8.5	MG/KG	0.78	3.0
		Lead, Total	4.2	MG/KG	0.95	3.0
		Antimony, Total	0.64 uJ	MG/KG	0.64	3.0
		Selenium, Total	1.3 UJ	MG/KG	1.2	3.0
		Silicon, Total	1460	MG/KG	2.5	3.0
		Vanadium, Total	36.9 J	MG/KG	0.23	3.0
		Zinc, Total	35.2 J	MG/KG	0.12	3.0

9/16/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J15F29	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	4270	MG/KG	4.9	3.0
		Arsenic, Total	1.3	MG/KG	1.2	3.0
		Boron, Total	1.1 u	MG/KG	1.1	3.0
		Barium, Total	31.4	MG/KG	0.06	3.0
		Beryllium, Total	0.24	MG/KG	0.03	3.0
		Calcium, Total	2270 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	4.3	MG/KG	0.24	3.0
		Chromium, Total	6.3 J	MG/KG	0.30	3.0
		Copper, Total	11.2 J	MG/KG	0.27	3.0
		Iron, Total	10900	MG/KG	7.1	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	512 J	MG/KG	9.5	3.0
		Magnesium, Total	2920 J	MG/KG	2.4	3.0
		Manganese, Total	192	MG/KG	0.21	3.0
		Molybdenum, Total	0.48 u	MG/KG	0.48	3.0
		Sodium, Total	95.4	MG/KG	2.1	3.0
		Nickel, Total	7.4	MG/KG	0.80	3.0
		Lead, Total	2.3	MG/KG	0.98	3.0
		Antimony, Total	0.65 uJ	MG/KG	0.65	3.0
		Selenium, Total	1.5 UJ	MG/KG	1.3	3.0
		Silicon, Total	798	MG/KG	2.6	3.0
		Vanadium, Total	26.6 J	MG/KG	0.24	3.0
		Zinc, Total	23.1 J	MG/KG	0.12	3.0

9/16/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J15F30	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	7330	MG/KG	4.9	3.0
		Arsenic, Total	2.2	MG/KG	1.2	3.0
		Boron, Total	1.6 UJ	MG/KG	1.1	3.0
		Barium, Total	80.3	MG/KG	0.06	3.0
		Beryllium, Total	0.41	MG/KG	0.03	3.0
		Calcium, Total	3810 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	7.5	MG/KG	0.24	3.0
		Chromium, Total	8.5 J	MG/KG	0.29	3.0
		Copper, Total	12.3 J	MG/KG	0.27	3.0
		Iron, Total	20600	MG/KG	7.0	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1140 J	MG/KG	9.4	3.0
		Magnesium, Total	4400 J	MG/KG	2.4	3.0
		Manganese, Total	340	MG/KG	0.21	3.0
		Molybdenum, Total	0.47 u	MG/KG	0.47	3.0
		Sodium, Total	198	MG/KG	2.1	3.0
		Nickel, Total	11.1	MG/KG	0.80	3.0
		Lead, Total	4.0	MG/KG	0.97	3.0
		Antimony, Total	1.0 J	MG/KG	0.65	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	1270	MG/KG	2.5	3.0
		Vanadium, Total	47.8 J	MG/KG	0.24	3.0
		Zinc, Total	38.7 J	MG/KG	0.12	3.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-012	J15F20	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	6800	MG/KG	4.9	3.0
		Arsenic, Total	1.5	MG/KG	1.2	3.0
		Boron, Total	1.8 UJ	MG/KG	1.1	3.0
		Barium, Total	77.0	MG/KG	0.06	3.0
		Beryllium, Total	0.37	MG/KG	0.03	3.0
		Calcium, Total	3720 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	6.9	MG/KG	0.24	3.0
		Chromium, Total	8.9 J	MG/KG	0.29	3.0
		Copper, Total	12.1 J	MG/KG	0.27	3.0
		Iron, Total	18900	MG/KG	7.0	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1350 J	MG/KG	9.4	3.0
		Magnesium, Total	3940 J	MG/KG	2.4	3.0
		Manganese, Total	323	MG/KG	0.21	3.0
		Molybdenum, Total	0.47 u	MG/KG	0.47	3.0
		Sodium, Total	176	MG/KG	2.1	3.0
		Nickel, Total	9.9	MG/KG	0.80	3.0
		Lead, Total	4.8	MG/KG	0.97	3.0
		Antimony, Total	0.65 uJ	MG/KG	0.65	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	1200	MG/KG	2.5	3.0
		Vanadium, Total	44.0 J	MG/KG	0.24	3.0
		Zinc, Total	41.1 J	MG/KG	0.12	3.0

9/10/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J15F31	Silver, Total	0.26 u	MG/KG	0.26	3.0
		Aluminum, Total	7820	MG/KG	4.9	3.0
		Arsenic, Total	2.1	MG/KG	1.2	3.0
		Boron, Total	1.1 u	MG/KG	1.1	3.0
		Barium, Total	84.8	MG/KG	0.06	3.0
		Beryllium, Total	0.43	MG/KG	0.03	3.0
		Calcium, Total	3850 J	MG/KG	2.1	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	7.8	MG/KG	0.23	3.0
		Chromium, Total	9.7 J	MG/KG	0.29	3.0
		Copper, Total	13.8 J	MG/KG	0.26	3.0
		Iron, Total	20900	MG/KG	7.0	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1220 J	MG/KG	9.4	3.0
		Magnesium, Total	4540 J	MG/KG	2.4	3.0
		Manganese, Total	351	MG/KG	0.20	3.0
		Molybdenum, Total	0.52	MG/KG	0.47	3.0
		Sodium, Total	196	MG/KG	2.0	3.0
		Nickel, Total	12.7	MG/KG	0.79	3.0
		Lead, Total	4.7	MG/KG	0.97	3.0
		Antimony, Total	1.0 J	MG/KG	0.64	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Silicon, Total	1210	MG/KG	2.5	3.0
		Vanadium, Total	47.8 J	MG/KG	0.23	3.0
		Zinc, Total	39.5 J	MG/KG	0.12	3.0

9/16/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	J15F32	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	49.6	MG/KG	1.6	1.0
		Arsenic, Total	0.39 u	MG/KG	0.39	1.0
		Boron, Total	0.65 UJ	MG/KG	0.34	1.0
		Barium, Total	1.3	MG/KG	0.02	1.0
		Beryllium, Total	0.02	MG/KG	0.01	1.0
		Calcium, Total	22.2 UJ	MG/KG	0.68	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.09	MG/KG	0.08	1.0
		Chromium, Total	0.1 uJ	MG/KG	0.1	1.0
		Copper, Total	0.11 UJ	MG/KG	0.09	1.0
		Iron, Total	97.3	MG/KG	2.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	23.0 J	MG/KG	3.0	1.0
		Magnesium, Total	6.5 UJ	MG/KG	0.77	1.0
		Manganese, Total	4.8	MG/KG	0.07	1.0
		Molybdenum, Total	0.15 u	MG/KG	0.15	1.0
		Sodium, Total	10.5 UJ	MG/KG	0.67	1.0
		Nickel, Total	0.26 u	MG/KG	0.26	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.21 uJ	MG/KG	0.21	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0
		Silicon, Total	72.8	MG/KG	0.82	1.0
		Vanadium, Total	0.08 uJ	MG/KG	0.08	1.0
		Zinc, Total	1.7 UJ	MG/KG	0.04	1.0

9/14/07

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032
LVL#: 0708L732
SDG/SAF#: /RC-032

W.O.#: 11343-606-001-9999-00
Date Received: 08-09-07

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analyses of 13 soil samples.

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

   All samples, with the exception of sample J15F32, were reported with 3-fold dilutions for ICP metals due to sample matrix.

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

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

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

6. The preparation/method blanks for 4 analytes were outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB results for Calcium, Magnesium, Sodium, and Zinc were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and only sample J15F32 for Calcium and Magnesium, all samples for Sodium, and all samples except sample J15F22 for Zinc, read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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 41 pages.

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

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Arsenic (79.3%) and Selenium (78.0%). Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased slightly low.

9. The matrix spike (MS) recoveries for 13 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J15F21	Aluminum	66,000	93.1
	Barium	300	94.7
	Calcium	66,000	89.0
	Chromium	300	96.1
	Copper	300	98.4
	Iron	66,000	77.5
	Potassium	6,000	102.6
	Magnesium	66,000	92.6
	Manganese	3,000	97.5
	Antimony	300	96.6
	Silicon	3,300	87.6
	Vanadium	3,000	98.3
	Zinc	300	88.8

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

12. 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.

13. 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.

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/20/07
Date

jjw/m08-732

LVLI
LIONVILLE LABORATORY INC.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-144	Page 1 of 1

Collector: TONI WELCH-KOELLING	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification / BLL	SAF No.: RC-032	
Ice Chest No.: EAC-02-006	Field Logbook No.: EFL-1174-3	COA: R607F42000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES KLONVILLE	Offsite Property No.: A070394	Bill of Lading/Air Bill No.: 8E OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250mL SED 8-7-07						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J15F21 / SOIL / 8-7-07 / 09:35	X	X	X	X	X						1
J15F22 / SOIL / 8-7-07 / 09:45	X	X	X	X	X						2
J15F23 / SOIL / 8-7-07 / 09:55	X	X	X	X	X						3
J15F24 / SOIL / 8-7-07 / 10:05	X	X	X	X	X						4
J15F25 / SOIL / 8-7-07 / 10:15	X	X	X	X	X						5

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: TONI WELCH-KOELLING	Date/Time: 8-7-07 13:10	Received By/Stored In: JR DeBruyne JR DeBruyne
Relinquished By/Removed From: JR DeBruyne JR DeBruyne	Date/Time: 1500 8-7-07	Received By/Stored In: MM Simpkins 8-7-07 1500
Relinquished By/Removed From: MM Simpkins 8-8-07 1500	Date/Time: WCH	Received By/Stored In: FED EX
Relinquished By/Removed From: [illegible] 8-9-07 0930	Date/Time:	Received By/Stored In: [illegible] 8-9-07 0930
Relinquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In / Date/Time

SPECIAL INSTRUCTIONS

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

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

WCH-EE-011

000028

0000038

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-144	Page 2 of 2

Collector: TONI WELCH-KOELLING	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 4B	Data Turnaround: 7 Day		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification / DCL	SAF No.: RC-032	
Ice Chest No.: ERC-02-006	Field Logbook No.: EFL-1174-3	COA: R607F42000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A070394		Bill of Lading/Air Bill No.: See OSAC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J15F26 / SOIL / 8-7-07 / 11:50	X	X	X	X	X						6
J15F27 / SOIL / 8-7-07 / 12:00	X	X	X	X	X						7
J15F28 / SOIL / 8-7-07 / 10:25	X	X	X	X	X						8
J15F29 / SOIL / 8-7-07 / 12:10	X	X	X	X	X						9
J15F30 / SOIL / 8-7-07 / 12:20	X	X	X	X	X						10

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TONI WELCH-KOELLING	8-7-07 1310	JR DeBruine JRD Bruine	8-7-07 1310
JR DeBruine JRD Bruine	8-7-07 1500	KM Singleton	8-7-07 1500
KM Singleton	8-8-07 1500 WCH	FED EX	
FED EX	8-9-07 0930	D. Smith	8-9-07 0930

SPECIAL INSTRUCTIONS

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

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
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

WCH-EE-011

000029

6300009988

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-144	Page 1 of 1

Collector: TONI WEICHT-KOELING	Company Contact: R.T. Coffman — Telephone No.: 528-6409	Project Coordinator: KESSNER, JH	Price Code: 4B — Data Turnaround: 7 Day / 5 Day
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification / BCL	SAF No.: RC-032	
Ice Chest No.: SML-429	Field Logbook No.: EFL-1174-3 — COA: R607F42000	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A070394	Bill of Lading/Air Bill No.: See OSRC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000030

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250 mL SPD 8-7-07						
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J15F31 / SOIL / 8-7-07 / 10:35	X	X	X	X	X						10 D
J15F20 / Soil / 8-7-07 / 10:35	X	X	X	X	X						BCL
J15F32 / Soil / 8-7-07 / 09:25	X			X							EB

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TONI WEICHT-KOELING	8-7-07 1310	Received By/Stored In: JR DeBruyne JR DeBruyne	8-7-07 1310
Relinquished By/Removed From: JR DeBruyne JR DeBruyne	8-7-07 1500	Received By/Stored In: KM Singleton	8-7-07 1500
Relinquished By/Removed From: KM Singleton	8-8-07 1500	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	8-9-07 0930	Received By/Stored In:	8-9-07 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *

S=Soil
SB=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

WCH EF 041

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1607-F4		DATA PACKAGE:	K0912	
VALIDATOR:	FLR	LAB: LLI		DATE: 9/15/07	
			SDG:	K0912	

ANALYSES PERFORMED

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

SAMPLES/MATRIX

J15F21	J15F22	J15F23	J15F24	J15F25
J15F26	J15F27	J15F28	J15F29	J15F30
J15F31	J15F20	J15F32		
				soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: boron - 22, 23, 24, 25, 26, 28, 30, 20, 32 - UJ
calcium - 32 copper - 32 magnesium - 32 sodium - 32 zinc - 32 - UJ
selenium - 22, 28, 29 - UJ
FD - al, ~~boron~~ arsenic, barium, beryllium, cobalt, Fe, potassium, manganese, sodium, silicon, 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: MS - Vanadium (45.5%), antimony (64.4%), magnesium (43.3%)
potassium (62.2%), copper (69.4%), chromium (63.6%), calcium (40.7%)
J all zinc (61%)

no PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

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

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

Comments: _____

8. HOLDING TIMES (all levels)

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: Selenium - all non-detect (except F32)

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	07L0387-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	1.6 u	MG/KG	1.6	1.0
		Arsenic, Total	0.40 u	MG/KG	0.40	1.0
		Boron, Total	0.51	MG/KG	0.35	1.0
		Barium, Total	0.04	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	14.2	MG/KG	0.70	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.08 u	MG/KG	0.08	1.0
		Chromium, Total	0.1 u	MG/KG	0.1	1.0
		Copper, Total	0.14	MG/KG	0.09	1.0
		Iron, Total	5.5	MG/KG	2.3	1.0
		Potassium, Total	3.1 u	MG/KG	3.1	1.0
		Magnesium, Total	3.2	MG/KG	0.79	1.0
		Manganese, Total	0.07 u	MG/KG	0.07	1.0
		Molybdenum, Total	0.16 u	MG/KG	0.16	1.0
		Sodium, Total	13.7	MG/KG	0.69	1.0
		Nickel, Total	0.26 u	MG/KG	0.26	1.0
		Lead, Total	0.32 u	MG/KG	0.32	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.46	MG/KG	0.42	1.0
		Silicon, Total	0.97	MG/KG	0.84	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	2.3	MG/KG	0.04	1.0
BLANK1	07C0146-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J15F21	Silver, Total	4.0	0.27u	4.9	81.6	3.0
		Aluminum, Total	5670	7700	198	-1000. *	3.0
		Arsenic, Total	161	2.3	198	80.0	3.0
		Boron, Total	80.3	2.7	99.0	78.4	3.0
		Barium, Total	218	74.7	198	72.6	3.0
		Beryllium, Total	4.3	0.33	4.9	81.1	3.0
		Calcium, Total	5360	4350	2480	40.7	3.0
		Cadmium, Total	4.2	0.15u	4.9	85.7	3.0
		Cobalt, Total	46.4	7.2	49.5	79.2	3.0
		Chromium, Total	23.1	10.5	19.8	63.6	3.0
		Copper, Total	30.8	13.6	24.8	69.4	3.0
		Iron, Total	13400	20400	99.0	-7100. *	3.0
		Mercury, Total	0.16	0.01u	0.14	108.3	1.0
		Potassium, Total	2820	1280	2480	62.2	3.0
		Magnesium, Total	5390	4320	2480	43.3	3.0
		Manganese, Total	296	334	49.5	-79. *	3.0
		Molybdenum, Total	79.6	0.48u	99.0	80.4	3.0
		Sodium, Total	2140	202	2480	78.2	3.0
		Nickel, Total	50.3	10.9	49.5	79.6	3.0
		Lead, Total	44.8	7.7	49.5	74.9	3.0
		Antimony, Total	31.9	0.65u	49.5	64.4	3.0
		Selenium, Total	159	1.3 u	198	80.4	3.0
		Silicon, Total	2240	838	99.0	1414 *	3.0
		Vanadium, Total	70.4	47.9	49.5	45.5	3.0
		Zinc, Total	71.5	41.3	49.5	61.0	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J15F21	Silver, Total	0.27u	0.27u	NC	3.0
		Aluminum, Total	7700	7620	1.1	3.0
		Arsenic, Total	2.3	2.7	16.0	3.0
		Boron, Total	2.7	2.5	7.7	3.0
		Barium, Total	74.7	71.3	4.7	3.0
		Beryllium, Total	0.33	0.33	0.91	3.0
		Calcium, Total	4350	4160	4.4	3.0
		Cadmium, Total	0.15u	0.15u	NC	3.0
		Cobalt, Total	7.2	7.2	0.00	3.0
		Chromium, Total	10.5	10.5	0.00	3.0
		Copper, Total	13.6	16.2	17.4	3.0
		Iron, Total	20400	20500	0.68	3.0
		Mercury, Total	0.01u	0.02u	NC	1.0
		Potassium, Total	1280	1200	5.8	3.0
		Magnesium, Total	4320	4520	4.4	3.0
		Manganese, Total	334	330	1.2	3.0
		Molybdenum, Total	0.48u	19.2	~~NC~~ zero corrected value MJ 8/14/07	3.0
		Sodium, Total	202	194	3.9	3.0
		Nickel, Total	10.9	11.4	4.5	3.0
		Lead, Total	7.7	5.4	35.1	3.0
		Antimony, Total	0.65u	0.65u	NC	3.0
		Selenium, Total	1.3 u	1.3 u	NC	3.0
		Silicon, Total	838	1010	18.4	3.0
		Vanadium, Total	47.9	47.9	0.00	3.0
		Zinc, Total	41.3	40.0	3.2	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/13/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	07L0387-LC1	Silver, LCS	41.9	49.0	MG/KG	85.5
		Aluminum, LCS	423	490	MG/KG	86.3
		Arsenic, LCS	777	980	MG/KG	79.3
		Boron, LCS	397	490	MG/KG	81.0
		Barium, LCS	421	490	MG/KG	85.9
		Beryllium, LCS	20.8	24.5	MG/KG	84.9
		Calcium, LCS	2140	2450	MG/KG	87.5
		Cadmium, LCS	20.5	24.5	MG/KG	83.7
		Cobalt, LCS	208	245	MG/KG	85.0
		Chromium, LCS	42.0	49.0	MG/KG	85.7
		Copper, LCS	105	122	MG/KG	86.0
		Iron, LCS	416	490	MG/KG	84.9
		Potassium, LCS	2010	2450	MG/KG	82.2
		Magnesium, LCS	2090	2450	MG/KG	85.5
		Manganese, LCS	65.0	73.5	MG/KG	88.4
		Molybdenum, LCS	413	490	MG/KG	84.2
		Sodium, LCS	2080	2450	MG/KG	84.8
		Nickel, LCS	166	196	MG/KG	84.7
		Lead, LCS	209	245	MG/KG	85.2
		Antimony, LCS	247	294	MG/KG	84.1
		Selenium, LCS	765	980	MG/KG	78.0
		Silicon, LCS	409	490	MG/KG	83.5
		Vanadium, LCS	212	245	MG/KG	86.3
		Zinc, LCS	85.2	98.0	MG/KG	86.9
LCS1	07C0146-LC1	Mercury, LCS	2.7	2.8	MG/KG	97.6

Date: 17 September 2007
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol – Waste Site 1607-F4
Subject: Wet Chemistry - Data Package No. K0912-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0912 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	Analyte
J15F21	8/7/07	Soil	C	See note 1
J15F22	8/7/07	Soil	C	See note 1
J15F23	8/7/07	Soil	C	See note 1
J15F24	8/7/07	Soil	C	See note 1
J15F25	8/7/07	Soil	C	See note 1
J15F26	8/7/07	Soil	C	See note 1
J15F27	8/7/07	Soil	C	See note 1
J15F28	8/7/07	Soil	C	See note 1
J15F29	8/7/07	Soil	C	See note 1
J15F30	8/7/07	Soil	C	See note 1
J15F31	8/7/07	Soil	C	See note 1
J15F20	8/7/07	Soil	C	See note 1

1 – Chromium VI by 7196A.

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. 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 30 days for chromium VI. 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 (J15F31/J15F20) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory blanks. 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 met the RQL.

- **Completeness**

Data package K0912 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

Fluor Hanford Data Validation Contract #29776 (June 2006), *Validation Statement of Work*, through Washington Closure Hanford Work Order #WB6081.

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 WCH 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: K0912	REVIEWER: ELR	Project: 1607-F4	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

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/14/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J15F21	% Solids	96.2	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-002	J15F22	% Solids	96.4	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-003	J15F23	% Solids	97.8	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-004	J15F24	% Solids	99.6	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-005	J15F25	% Solids	99.7	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-006	J15F26	% Solids	99.7	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-007	J15F27	% Solids	99.6	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-008	J15F28	% Solids	99.7	%	0.01	1.0
		Chromium VI	0.20	MG/KG	0.20	1.0
-009	J15F29	% Solids	99.8	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-010	J15F30	% Solids	99.7	%	0.01	1.0
		Chromium VI	0.23	MG/KG	0.20	1.0
-011	J15F31	% Solids	99.5	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-012	J15F20	% Solids	99.7	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0

K 9/14/07

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/14/07

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	J15F32	% Solids	99.9	%	0.01	1.0

9/14/07

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032
LVL#: 0708L732

W.O.#: 11343-606-001-9999-00
Date Received: 08-09-07

INORGANIC NARRATIVE

1. This narrative covers the analyses of 13 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. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

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 Chromium VI was within the method criteria.

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

7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/15/07
Date

njp\08-732

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 16 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-032-144	Page 1 of 1

Collector: TONI WELCH-KOELLING	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY 5day 3		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification / DLL	SAF No.: RC-032	
Ice Chest No.: EAC-02-006	Field Logbook No.: EFL-1174-3	COA: R607F42000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES KLONVILLE	Offsite Property No.: A070394	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250mL SED 8-7-07						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J15F21 / SOIL / 8-7-07 / 09:35	X	X	X	X	X						1
J15F22 / SOIL / 8-7-07 / 09:45	X	X	X	X	X						2
J15F23 / SOIL / 8-7-07 / 09:55	X	X	X	X	X						3
J15F24 / SOIL / 8-7-07 / 10:05	X	X	X	X	X						4
J15F25 / SOIL / 8-7-07 / 10:15	X	X	X	X	X						5

000014

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: TONI WELCH-KOELLING	Date/Time: 8-7-07 13:10	Received By/Stored In: JP DeBruijne	Date/Time: 1310 8-7-07
Relinquished By/Removed From: JP DeBruijne	Date/Time: 1500 8-7-07	Received By/Stored In: MM Singleton	Date/Time: 8-7-07 1500
Relinquished By/Removed From: MM Singleton	Date/Time: UCH 8-8-07 1500	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time: 8.9.07 0930	Received By/Stored In: [illegible]	Date/Time: 8.9.07 0930
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

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

WCH-EF-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-144	Page 2 of 2

Collector: TONI WELCH-KOELLING	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification 1 OCC	SAF No.: RC-032	
Ice Chest No.: ERC-02-006	Field Logbook No.: EFL-1174-3	COA: R607F42000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A070394	Bill of Lading/Air Bill No.: See OSAC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250 mL						

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
J15F26	SOIL	8-7-07	11:50	X	X	X	X	X						6
J15F27	SOIL	8-7-07	12:00	X	X	X	X	X						7
J15F28	SOIL	8-7-07	10:25	X	X	X	X	X						8
J15F29	SOIL	8-7-07	12:10	X	X	X	X	X						9
J15F30	SOIL	8-7-07	12:20	X	X	X	X	X						10

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TONI WELCH-KOELLING	8-7-07 13:10	JRDeBruijne JRDeBruijne	1310 8-7-07
JRDeBruijne JRDeBruijne	8-7-07 1500	KMSingleton	8-7-07 1500
KMSingleton	8-8-07 1500	FED EX	
FED EX	8-9-07 0930	D. Smith	8-9-07 0930

SPECIAL INSTRUCTIONS

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

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

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-032-144	Page 1 of 1

Collector: TONI WEIGH-KOELING	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 4B	Data Turnaround: 7 Day (5 day)		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 1607-F4 Excavation Footprint/Verification / BCL	SAF No.: RC-032	
Ice Chest No.: SML-429	Field Logbook No.: EFL-1174-3	COA: R607F42000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A070394	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	P	P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	60mL	120mL	~~125mL~~ 250 mL JPD 8-7-07						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081						
Sample No.	Matrix *	Sample Date	Sample Time								
J15F31	SOIL	8-7-07	10:35	X	X	X	X	X			10D
J15F20	Soil	8-7-07	10:35	X	X	X	X	X			BCL
J15F32	Soil	8-7-07	09:25	X			X				EB

000016

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: TONI WEIGH-KOELING [signature] Date/Time: 8-7-07 1310	Received By/Stored In: JR DeBruyne JR DeBruyne Date/Time: 8-7-07 1310	
Relinquished By/Removed From: JR DeBruyne JR DeBruyne Date/Time: 8-7-07 1500	Received By/Stored In: KM Singleton [signature] Date/Time: 8-7-07 1500	
Relinquished By/Removed From: KM Singleton [signature] Date/Time: 8-8-07 1500	Received By/Stored In: FED EX Date/Time:	
Relinquished By/Removed From: FED EX Date/Time: 8-9-07 0930	Received By/Stored In: [signature] Date/Time: 8-9-07 0930	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	

SPECIAL INSTRUCTIONS

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

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

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1607-F4		DATA PACKAGE:	K0912	
VALIDATOR:	ELR	LAB: LLI		DATE: 9/15/07	
			SDG: K0912		

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					
J15F21	J15F22	J15F23	J15F24	J15F25	J15F26
J15F27	J15F28	J15F29	J15F30	J15F31	J15F26
					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:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/14/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	07LVI063-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 08/14/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-012	J15F20	Soluble Chromium VI	4.0	0.20u	4.0	96.1	1.0
		Insoluble Chromium VI	1100	0.20u	1080	102.3	100
BLANK10	07LVI063-MB1	Soluble Chromium VI	4.0	0.20u	4.0	99.1	1.0
		Insoluble Chromium VI	1200	0.20u	1220	98.9	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 08/14/07

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0708L732

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-012REP	J15F20	% Solids	99.7	99.9	0.12	1.0
		Chromium VI	0.20u	0.32	51.9	1.0