0078701

SAF-RC-075
100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Kathy Wendt H4-21 (2 copies)

COMMENTS:

SDG K1264 SAF-RC-075

Waste Site: 100-D-61

RECEIVED
SEP 0 8 2008
EDMC

Date: 21 August 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-61
Subject: Polyaromatic Hydrocarbon/Diesel Range Organics - Data Package No. K1264-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1264 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
J17262	6/18/08	Soil	C	See note 1
J17263	6/18/08	Soil	C	See note 1 & 2
J17264	6/18/08	Soil	C	See note 1 & 2
J17265	6/18/08	Soil	C	See note 1 & 2
J17266	6/18/08	Soil	C	See note 1 & 2
J17267	6/18/08	Soil	C	See note 1 & 2
J17268	6/18/08	Soil	C	See note 1 & 2
J17269	6/18/08	Soil	C	See note 1 & 2
J17270	6/18/08	Soil	C	See note 1 & 2
J17271	6/18/08	Soil	C	See note 1 & 2
J17272	6/18/08	Soil	C	See note 1 & 2
J17273	6/18/08	Soil	C	See note 1 & 2

1 – Polyaromatic hydrocarbons by 8310.
2 - Diesel range & motor oil range organics by 8015B.

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".

All method blank results were acceptable.

Field Blanks

One field blank (J17262 – PAH only) was submitted for analysis. No 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 the lack of a matrix spike, matrix spike or blank spike analysis, all motor oil 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 the surrogate being diluted out, all PAH results in sample J17264 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

Due to the lack of a matrix spike or matrix spike duplicate analysis, all motor oil range organics results were qualified as estimates and flagged "J".

Field Duplicate Samples

One set of field duplicates (J17267/J17273) were submitted for analysis. Field duplicate samples are compared using the same criteria as for laboratory samples. 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. All naphthalene, acenaphthylene and acenaphthene results exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K1264 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 or blank spike analysis, all motor oil range organics results were qualified as estimates and flagged "J".
- Due to the surrogate being diluted out, all PAH results in sample J17264 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 naphthalene, acenaphthylene and acenaphthene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

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

PAH/DRO DATA QUALIFICATION SUMMARY*

SDG: K1264	REVIEWER: ELR	Project: 100-D-61	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Motor oil range organics	J	All	No MS, MSD or LCS analysis
PAH	All	J17264	Surrogate diluted out

* - 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.

PAH'S by HPLC / Method 8310

Report Date: 07/18/08 11:34

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 1

	Cust ID:	J17262	J17263	J17263	J17263	J17264	J17265
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	5.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Triphenylene		100 %	110 %	105 %	110 %	D %	106 %
		fl	fl	fl	fl	fl	fl
Naphthalene		33.3 U	33.4 U	88 %	90 %	260	11 J
Acenaphthylene		33.3 U	33.4 U	80 %	78 %	167 U	33.4 U
Acenaphthene		33.3 U	33.4 U	76 %	97 %	167 U	33.4 U
Fluorene		3.33 U	3.34 U	93 %	107 %	170	11
Phenathrene		3.33 U	3.34 U	97 %	107 %	1400	27
Anthracene		3.33 U	3.34 U	106 %	107 %	210	3.34 U
Fluoranthrene		3.33 U	3.34 U	104 %	109 %	2400	74
Indeno (1,2,3-cd) pyrene		3.33 U	3.34 U	115 %	108 %	490	56
Pyrene		3.33 U	3.34 U	82 %	97 %	1500	3.34 U
Benzo (a) anthracene		3.33 U	3.34 U	97 %	100 %	860	4.1
Chrysene		3.33 U	3.34 U	80 %	94 %	940	3.34 U
Benzo (b) fluoranthrene		3.33 U	3.34 U	105 %	108 %	1300	26
Benzo (k) fluoranthrene		3.33 U	3.34 U	104 %	103 %	450	4.8
Benzo (a) pyrene		3.33 U	3.34 U	96 %	99 %	880	7.5
Dibenzo (a,h) anthracene		3.33 U	3.34 U	115 %	103 %	160	1.6 J
Benzo (ghi) perylene		3.33 U	3.34 U	114 %	105 %	640	0.88 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

8/18/08

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Lionville Laboratory, Inc.

PAH'S by HPLC / Method 8310

Report Date: 07/18/08 11:34

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 2

	Cust ID:	J17266		J17267		J17268		J17269		J17270		J17271	
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	
Triphenylene		110	%	104	%	110	%	107	%	76	%	99	%
			fl		fl		fl		fl		fl		fl
Naphthalene		33.3	U	33.5	U	33.5	U	33.4	U	33.6	U	33.6	U
Acenaphthylene		33.3	U	33.5	U	33.5	U	33.4	U	33.6	U	33.6	U
Acenaphthene		33.3	U	33.5	U	33.5	U	33.4	U	33.6	U	33.6	U
Fluorene		3.33	U	3.35	U	3.35	U	3.34	U	3.36	U	3.36	U
Phenathrene		1.4	J	2.1	J	8.1		3.34	U	3.36	U	3.36	U
Anthracene		3.33	U	3.35	U	3.35	U	3.34	U	3.36	U	3.36	U
Fluoranthrene		11		12		96		5.1		3.36	U	3.36	U
Indeno (1,2,3-cd) pyrene		3.33	U	3.35	U	3.35	U	3.34	U	3.36	U	3.36	U
Pyrene		3.33	U	3.35	U	43		3.34	U	3.36	U	3.36	U
Benzo (a) anthracene		3.33	U	3.35	U	16		3.34	U	3.36	U	3.36	U
Chrysene		3.33	U	3.35	U	13		3.34	U	3.36	U	9.4	
Benzo (b) fluoranthrene		1.2	J	2.9	J	16		2.0	J	1.9	J	3.36	U
Benzo (k) fluoranthrene		0.92	J	1.0	J	6.9		3.34	U	3.36	U	3.36	U
Benzo (a) pyrene		1.2	J	1.4	J	13		3.34	U	3.36	U	3.36	U
Dibenzo (a,h) anthracene		3.33	U	3.35	U	1.5	J	3.34	U	3.36	U	3.36	U
Benzo (ghi) perylene		3.33	U	3.35	U	8.0		3.34	U	5.3		3.36	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

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Lionville Laboratory, Inc.

PAH'S by HPLC / Method 8310

Report Date: 07/18/08 11:34

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 3

	Cust ID:	J17272	J17273	PBLKSC	PBLKSC BS
Sample Information	RFW#:	011	012	08LE0316-MB1	08LE0316-MB1
	Matrix:	SOIL	SOIL	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/L	ug/L
Triphenylene		98 %	104 %	92 %	105 %
Naphthalene		33.7 U	33.5 U	33.3 U	98 %
Acenaphthylene		33.7 U	33.5 U	33.3 U	97 %
Acenaphthene		33.7 U	33.5 U	33.3 U	97 %
Fluorene		2.6 J	3.35 U	3.33 U	104 %
Phenathrene		4.6	2.0 J	3.33 U	105 %
Anthracene		3.37 U	3.35 U	3.33 U	111 %
Fluoranthrene		17	13	3.33 U	105 %
Indeno (1,2,3-cd) pyrene		3.37 U	3.35 U	3.33 U	102 %
Pyrene		3.37 U	3.35 U	3.33 U	103 %
Benzo (a) anthracene		3.37 U	3.35 U	3.33 U	103 %
Chrysene		27	13	3.33 U	99 %
Benzo (b) fluoranthrene		4.5	4.2	3.33 U	107 %
Benzo (k) fluoranthrene		1.5 J	1.5 J	3.33 U	104 %
Benzo (a) pyrene		1.6 J	2.0 J	3.33 U	102 %
Dibenzo (a,h) anthracene		3.37 U	3.35 U	3.33 U	103 %
Benzo (ghi) perylene		3.37 U	1.3 J	3.33 U	107 %

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

8/18/08

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Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 07/03/08 15:15

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 1

	Cust ID:	J17263	J17263	J17263	J17264	J17265	J17266
Sample Information	RFW#:	002	002 MS	002 MSD	003	004	005
	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
	p-Terphenyl	102 %	96 %	90 %	88 %	99 %	93 %
Diesel Range Organics		3340 U	103 %	97 %	3340 U	3340 U	3330 U
Motor Oil Range Organics		10000 U J	NS	NS	3400 ~~U~~ J	23000 J	6300 ~~U~~ J

	Cust ID:	J17267	J17268	J17269	J17270	J17271	J17272
Sample Information	RFW#:	006	007	008	009	010	011
	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
	p-Terphenyl	100 %	95 %	87 %	98 %	93 %	96 %
Diesel Range Organics		3350 U	3350 U	3340 U	3360 U	3360 U	3370 U
Motor Oil Range Organics		3400 ~~U~~ J	6700 ~~U~~ J	5200 ~~U~~ J	7700 ~~U~~ J	3400 ~~U~~ J	18000 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

8/25/08

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Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 07/03/08 15:15

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 2

	Cust ID:	J17273	BLK	BLK BS
Sample Information	RFW#:	012	08LE0315-MB1	08LE0315-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg
	p-Terphenyl	91 %	73 %	83 %
Diesel Range Organics		3350 U	3330 U	102 %
Motor Oil Range Organics		10000 U J	10000 U	NS

8/25/08

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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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-075
LVL #: 0806L322
SDG/SAF # K1264/RC-075

W.O. #: 11343-606-001-9999-00
Date Received: 06-20-2008

DIESEL RANGE ORGANICS

Eleven (11) soil samples were collected on 06-18-2008.

The samples and their associated QC samples were extracted on 07-01-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 07-02,03-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8015B.

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. All required holding times for extraction and analysis have been met.
2. The method blank was below the reporting limits for all target compounds.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The blank spike recoveries were within acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. All initial calibrations associated with this data set were within acceptance criteria.
7. 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 10 pages.
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LIONVILLE LABORATORY INC.

8. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/16/08
Date

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

RECEIVED
AUG 2008

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1264

DATE RECEIVED: 06/20/08 LVL LOT # :0806L322

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17263	002	S	08LE0315	06/18/08	07/01/08	07/02/08
J17263	002 MS	S	08LE0315	06/18/08	07/01/08	07/02/08
J17263	002 MSD	S	08LE0315	06/18/08	07/01/08	07/02/08
J17264	003	S	08LE0315	06/18/08	07/01/08	07/03/08
J17265	004	S	08LE0315	06/18/08	07/01/08	07/03/08
J17266	005	S	08LE0315	06/18/08	07/01/08	07/03/08
J17267	006	S	08LE0315	06/18/08	07/01/08	07/03/08
J17268	007	S	08LE0315	06/18/08	07/01/08	07/03/08
J17269	008	S	08LE0315	06/18/08	07/01/08	07/03/08
J17270	009	S	08LE0315	06/18/08	07/01/08	07/03/08
J17271	010	S	08LE0315	06/18/08	07/01/08	07/03/08
J17272	011	S	08LE0315	06/18/08	07/01/08	07/03/08
J17273	012	S	08LE0315	06/18/08	07/01/08	07/03/08
LAB QC:						
BLK	MB1	S	08LE0315	N/A	07/01/08	07/02/08
BLK	MB1 BS	S	08LE0315	N/A	07/01/08	07/02/08

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-075
LVL #: 0806L322
SDG/SAF # K1264 / RC-075

W.O. #: 11343-606-001-9999-00
Date Received: 06-20-2008

POLYAROMATIC HYDROCARBONS

Twelve (12) soil samples were collected on 06-18-2008.

The samples and their associated QC samples were extracted on 07-02-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 07-15,16-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8310.

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 required holding times for extraction and analysis have been met.
2. The method blank was below the reporting limits for all target compounds.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. All blank spike recoveries were within acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. Sample J17264 required a 5-fold instrument dilution due to high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.
7. All 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.

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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.

LIONVILLE LABORATORY INC.

9. LvLI is NELAP accredited by the State of Pennsylvania. 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

7/22/08
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 1 of 3

Collector: D.W.Shea/subcontractor SEC D. Rios	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification 1		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: see OPSC A080296		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr6, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	G	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250ml.	60ml.	125ml.	125ml.	60ml.	120ml.				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	Semi-VOA - ~~8270A (TCL)~~ PAH 8310 DWS 6/12/08				
Sample No.	Matrix *	Sample Date	Sample Time							
J17262	SOIL	6/18/08	1236	✓	—	~~DWS 6/18/08~~	✓			
J17263	SOIL		1004	✓	✓	✓	✓	✓	✓	
J17264	SOIL		1252	✓	✓	✓	✓	✓	✓	
J17265	SOIL		1258	✓	✓	✓	✓	✓	✓	
J17266	SOIL		1307	✓	✓	✓	✓	✓	✓	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
~~Relinquished By/Removed From~~		~~Received By/Stored In~~ DRR	~~6-18-08 1413~~ 6-18-08
Relinquished By/Removed From: [signature]	6-18-08 1413	Received By/Stored In: DWSHEA DWSHEA	6/18/08 1413
Relinquished By/Removed From: DWSHEA DWSHEA	6/18/08 1837	Received By/Stored In: Fricke 3A	6/18/08 1837
Relinquished By/Removed From: Fricke 3A 1060	0800 6-19-08	Received By/Stored In: JRD [signature]	0800 6-19-08
Relinquished By/Removed From: JRD [signature]	0800 6-19-08	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	6-20-08 1010	Received By/Stored In: [signature]	6-20-08 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~ Chromium, Cobalt, Copper, ~~Iron~~ Lead, Lithium, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc and Hg via CVAA DWSHEA 6/12/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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

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

WCH-EE-011

000022

000000011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 2 of 2

Collector: D.W.Shea/subcontractor SEE D.R.05	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: see OPSC A080296		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr16, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250ml.	60ml.	125ml.	125ml.	60ml.	120ml.					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL) PAH 8310 DWShea 6/18/08					
Sample No. / Matrix * / Sample Date / Sample Time											
J17267 / SOIL / 6-18-08 / 1027	✓	✓	✓	✓	✓	✓					
J17268 / SOIL /	✓	✓	✓	✓	✓	✓					
J17269 / SOIL / 1328	✓	✓	✓	✓	✓	✓					
J17270 / SOIL / 1052	✓	✓	✓	✓	✓	✓					
J17271 / SOIL / 1340	✓	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
		OSR 6-18-08 / 6-18-08 1422
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
[illegible] 6-18-08 1413	DWShea DWSHEA 6/18/08 1413	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
DWShea DWShea 6/18/08 1837	Fridge 3A 6/18/08 1837	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
~~6-19-08 0830~~ JRDeBuique JRD 6-19-08	JRD 6-19-08	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
3A 1060 / 6-19-08 0800	JRDeBuique JRD 6-19-08 0800	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
JRDeBuique JRD 6-19-08 0800	Fed Ex	

SPECIAL INSTRUCTIONS

(1). ICP Metals - 6010 (Client List) ~~Aluminum~~ Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~ Vanadium, Zinc; and Hg via CVAA DWSha 6/18/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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: [signature]	Title	Date/Time: 6-20-08 1010
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

000023

000000012

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 2 of 2

Collector: D.W.Shea/subcontractor SEC D. Rios	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: see OPSC A080296		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250mL	60mL	125mL	125mL	60mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270 (TCL) PAH 8310 DWSHEA 6/18/08					
Sample No.	Matrix *	Sample Date	Sample Time								
J17272	SOIL	6-18-08	~~1354~~ 1357	6-18-08	✓	✓	✓	✓	✓		
J17273	SOIL		1027	✓	✓	✓	✓	✓	✓		
~~J17274~~	~~SOIL~~			DWSHEA 6/18/08							
~~J17275~~	~~SOIL~~										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In DRR 6-18-08	Date/Time 6-18-08 1413
Relinquished By/Removed From [signature] R Rios	Date/Time 6-18-08 1413	Received By/Stored In DWSHEA DWSHEA	Date/Time 6/18/08 1413
Relinquished By/Removed From DWSHEA DWSHEA	Date/Time 6/18/08 1837	Received By/Stored In Fridge 3A	Date/Time 6/18/08 1837
Relinquished By/Removed From 3A, 1060	Date/Time 0800 6-19-08	Received By/Stored In JRDeBrige JRDB	Date/Time 0800 6-19-08
Relinquished By/Removed From JRDeBrige JRDB	Date/Time 0800 6-19-08	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From FOED	Date/Time 6-20-08 1010	Received By/Stored In [signature]	Date/Time 6/20/08 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, Thallium, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc; and Hg CVAA DWSHEA 6/12/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *
S Soil
SE Sediment
SO Solid
SL Sludge
W Water
GW GW
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

000000013

000024

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-4		DATA PACKAGE:	K1264	
VALIDATOR:	ELR	LAB: LLI		DATE: 8/18/08	
			SDG: K1264		

ANALYSES PERFORMED					
8015B	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX:				
J17262	J17263	J17264	J17265	J17266
J17267	J17268	J17269	J17270	J17271
J17272	J17273			
				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)

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:

GENERAL 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) ..... PAH only → 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:

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 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: 264 - PAH - Surr diluted out - J no PAS

motor oil - no MS/MSD/LCS - J all

GENERAL ORGANIC 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 Yes No N/A

Comments:

~~DRO5 ms = 64-73 <2x - J all~~ 8/25/10

GENERAL ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

Comments: naphthalene, acenaphthylene + acenaphthene - only

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

Comments:

Date: 21 August 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-61
Subject: PCB/Pesticides - Data Package No. K1264-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1264 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
J17263	6/18/08	Soil	C	See note 1
J17264	6/18/08	Soil	C	See note 1
J17265	6/18/08	Soil	C	See note 1
J17266	6/18/08	Soil	C	See note 1
J17267	6/18/08	Soil	C	See note 1
J17268	6/18/08	Soil	C	See note 1
J17269	6/18/08	Soil	C	See note 1
J17270	6/18/08	Soil	C	See note 1
J17271	6/18/08	Soil	C	See note 1
J17272	6/18/08	Soil	C	See note 1
J17272R	6/18/08	Soil	C	See note 1
J17273	6/18/08	Soil	C	See note 1

1 – PCBs by 8082 and pesticides by 8081A.

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".

Due to the holding time being exceeded by less than twice the limit, all PCB and pesticide results in sample J17272R were qualified as estimates and flagged "J".

All other holding times were acceptable.

- **Method Blank**

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

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

Due to the lack of a matrix spike and matrix spike duplicate analysis, all PCB and pesticide results in sample J17272R were qualified as estimates and flagged "J".

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

All other accuracy results were acceptable.

Surrogate Recovery

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

Due to surrogate recoveries outside QC limits (0% & 0%), all PCB results in sample J17272 were rejected and flagged "R".

Due to surrogate recoveries outside QC limits (0% & 2%), all pesticide results in sample J17272 were rejected and flagged "R".

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 PCB and pesticide results in sample J17272R were qualified as estimates and flagged "J".

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

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J17267/J17273) were submitted for analysis. Field duplicate samples are compared using the same criteria as for laboratory samples. 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 results met the RQL.

- **Completeness**

Data Package No. K1264 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 92%.

MAJOR DEFICIENCIES

The following major deficiencies were noted :

- Due to surrogate recoveries outside QC limits (0% & 0%), all PCB results in sample J17272 were rejected and flagged "R".
- Due to surrogate recoveries outside QC limits (0% & 2%), all pesticide results in sample J17272 were rejected and flagged "R".

Rejected data is unusable and should not be reported.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the holding time being exceeded by less than twice the limit, all PCB and pesticide results in sample J17272R were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike and matrix spike duplicate analysis, all PCB and pesticide results in sample J17272R were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

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.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

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: K1264	REVIEWER: ELR	Project: 100-D-61	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	R	J17272	Surrogate recovery
All	J	J12272R	Hold time
All	J	J17272R	No matrix spike or matrix spike duplicate analysis
Toxaphene	J	All	No matrix spike, matrix spike duplicate or LCS analysis

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

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 07/15/08 21:44

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 1

000000007

	Cust ID:	J17263	J17264	J17265	J17265	J17265	J17266
Sample Information	RFW#:	002	003	004	004 MS	004 MSD	005
	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	104 %	108 %	112 %	129 %	124 %	100 %
	Decachlorobiphenyl	104 %	110 %	110 %	131 %	141 %	111 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	13 U	13 U	102 %	108 %	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	112 %	114 %	13 U

000011

	Cust ID:	J17267	J17268	J17269	J17270	J17271	J17272
Sample Information	RFW#:	006	007	008	009	010	011
	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	105 %	107 %	103 %	104 %	111 %	0 * %
	Decachlorobiphenyl	114 %	110 %	112 %	112 %	120 %	0 * %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	13 U	13 U	13 U	13 U	13 U R
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	13 U	13 U	13 U

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

JC 8/18/08

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 07/15/08 21:44

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 2

	Cust ID:	J17272	J17273	PBLKSD	PBLKSD BS	PBLKSJ	PBLKSJ BS
Sample Information	RFW#:	011	012	08LE0317-MB1	08LE0317-MB1	08LE0326-MB1	08LE0326-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 REPREP	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	120 %	112 %	101 %	93 %	192 * %	118 %
	Decachlorobiphenyl	120 %	117 %	98 %	105 %	198 * %	120 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U J	13 U	13 U	78 %	13 U	88 %
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	84 %	13 U	92 %

	Cust ID:	PBLKSJ BSD
Sample Information	RFW#:	08LE0326-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate:	Tetrachloro-m-xylene	96 %
	Decachlorobiphenyl	96 %
		fl
Aroclor-1016		71 %
Aroclor-1221		13 U
Aroclor-1232		13 U
Aroclor-1242		13 U
Aroclor-1248		13 U
Aroclor-1254		13 U
Aroclor-1260		72 %

JL 8/18/08

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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Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 07/16/08 14:26

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 1

000000006

	Cust ID:	J17263	J17264	J17264	J17264	J17265	J17266
Sample Information	RFW#:	002	003	003 MS	003 MSD	004	005
	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	102 %	106 %	95 %	92 %	105 %	102 %
	Decachlorobiphenyl	106 %	104 %	97 %	101 %	105 %	105 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.3 U	1.3 U	102 %	103 %	1.3 U	1.3 U
gamma-BHC (Lindane)		1.3 U	1.3 U	106 %	110 %	1.3 U	1.3 U
Beta-BHC		1.3 U	1.3 U	86 %	88 %	1.3 U	1.3 U
Heptachlor		1.3 U	1.3 U	109 %	115 %	1.3 U	1.3 U
Delta-BHC		1.3 U	1.3 U	82 %	83 %	1.3 U	1.3 U
Aldrin		1.3 U	1.3 U	102 %	108 %	1.3 U	1.3 U
Heptachlor epoxide		1.3 U	1.3 U	105 %	111 %	1.3 U	1.3 U
gamma-Chlordane		1.3 U	1.3 U	101 %	107 %	1.3 U	1.3 U
Endosulfan I		1.3 U	1.3 U	102 %	109 %	1.3 U	1.3 U
alpha-Chlordane		1.3 U	1.3 U	100 %	107 %	1.3 U	1.3 U
4,4'-DDE		1.3 U	1.3 U	101 %	106 %	1.3 J	1.3 U
Dieldrin		1.3 U	1.3 U	102 %	108 %	1.3 U	1.3 U
Endrin		1.3 U	1.3 U	106 %	108 %	1.3 U	1.3 U
4,4'-DDD		1.3 U	1.3 U	98 %	103 %	1.3 U	1.3 U
Endosulfan II		1.3 U	1.3 U	103 %	106 %	1.3 U	1.3 U
4,4'-DDT		1.3 U	1.3 U	103 %	101 %	1.3 U	1.3 U
Endrin aldehyde		1.3 U	4.0 J	95 %	97 %	1.3 U	1.3 U
Endosulfan sulfate		1.3 U	1.3 U	100 %	102 %	1.3 U	1.3 U
Methoxychlor		1.3 U	1.3 U	117 %	113 %	1.3 U	1.3 U
Endrin ketone		1.3 U	1.3 U	104 %	107 %	1.3 U	1.3 U
Toxaphene		13 UJ	13 UJ	13 U	13 U	13 UJ	13 UJ

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

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K 8/18/08

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 07/16/08 14:26

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 2

000000007

	Cust ID:	J17267	J17268	J17269	J17270	J17271	J17272
Sample Information	RFW#:	006	007	008	009	010	011
	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	102 %	108 %	107 %	98 %	106 %	2 * %
	Decachlorobiphenyl	107 %	111 %	111 %	104 %	115 %	0 * %
		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 R
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		1.9 J	1.3 U	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	1.3 U	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

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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JK 8/18/08

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 07/16/08 14:26

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 3

	Cust ID:	J17272	J17273	PBLKSD	PBLKSD BS	PBLKSJ	PBLKSJ BS
Sample Information	RFW#:	011	012	08LE0317-MB1	08LE0317-MB1	08LE0326-MB1	08LE0326-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	4.00	1.00	1.00	1.00	1.00
	Units:	UG/KG REPREP	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	86 %	113 %	88 %	86 %	83 %	86 %
	Decachlorobiphenyl	97 %	119 %	93 %	99 %	98 %	100 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		0.34 U J	1.3 U	0.33 U	103 %	0.33 U	101 %
gamma-BHC (Lindane)		0.34 U	1.3 U	0.33 U	106 %	0.33 U	104 %
Beta-BHC		0.34 U	1.3 U	0.33 U	99 %	0.33 U	123 %
Heptachlor		0.34 U	1.3 U	0.33 U	103 %	0.33 U	119 %
Delta-BHC		0.34 U	1.3 U	0.33 U	87 %	0.33 U	84 %
Aldrin		0.34 U	1.3 U	0.33 U	107 %	0.33 U	106 %
Heptachlor epoxide		0.34 U	1.3 U	0.33 U	102 %	0.33 U	111 %
gamma-Chlordane		0.34 U	1.3 U	0.33 U	114 %	0.33 U	108 %
Endosulfan I		0.34 U	1.3 U	0.33 U	115 %	0.33 U	110 %
alpha-Chlordane		0.34 U	1.3 U	0.33 U	112 %	0.33 U	105 %
4,4'-DDE		0.34 U	1.3 U	0.33 U	117 %	0.33 U	107 %
Dieldrin		0.34 U	1.3 U	0.33 U	116 %	0.33 U	113 %
Endrin		0.34 U	1.3 U	0.33 U	110 %	0.33 U	119 %
4,4'-DDD		0.34 U	1.3 U	0.33 U	115 %	0.33 U	107 %
Endosulfan II		0.34 U	1.3 U	0.33 U	109 %	0.33 U	111 %
4,4'-DDT		0.34 U	1.3 U	0.33 U	117 %	0.33 U	128 %
Endrin aldehyde		0.34 U	1.3 U	0.33 U	98 %	0.33 U	97 %
Endosulfan sulfate		0.34 U	1.3 U	0.33 U	107 %	0.33 U	112 %
Methoxychlor		0.34 U	1.3 U	0.33 U	108 %	0.33 U	132 %
Endrin ketone		0.34 U	1.3 U	0.33 U	108 %	0.33 U	116 %
Toxaphene		3.4 U	13 U J	3.3 U	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

JR 8/18/08

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Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 07/16/08 14:26

RFW Batch Number: 0806L322 Client: TNUHANFORD RC-075 K1264 Work Order: 11343606001 Page: 4

Cust ID: **PBLKSJ BSD**

Sample Information	RFW#:	08LE0326-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG

Surrogate:	Tetrachloro-m-xylene	85	%
	Decachlorobiphenyl	97	%

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

Alpha-BHC	100	%
gamma-BHC (Lindane)	102	%
Beta-BHC	120	%
Heptachlor	116	%
Delta-BHC	82	%
Aldrin	103	%
Heptachlor epoxide	108	%
gamma-Chlordane	106	%
Endosulfan I	106	%
alpha-Chlordane	102	%
4,4'-DDE	104	%
Dieldrin	110	%
Endrin	115	%
4,4'-DDD	103	%
Endosulfan II	108	%
4,4'-DDT	125	%
Endrin aldehyde	94	%
Endosulfan sulfate	107	%
Methoxychlor	129	%
Endrin ketone	112	%
Toxaphene	3.3	U

8/18/08

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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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-075
LVL #: 0806L322
SDG/SAF # K1264 / RC-075

W.O. #: 11343-606-001-9999-00
Date Received: 06-20-2008

CHLORINATED PESTICIDES

Eleven (11) soil samples were collected on 06-18-2008.

The samples and their associated QC samples were extracted on 07-20-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 07-09,10,15-2008. 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. The samples were originally extracted within their required holding time. Due to low surrogate recoveries in sample J17272, the samples were re-extracted outside of hold time. Both the original and the re-extracted results have been reported.

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

3. Two (2) of thirty-eight (38) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08GC085) has been enclosed.

4. All blank spike recoveries were within acceptance criteria.

5. All matrix spike recoveries were within acceptance criteria.

6. All samples required a 4-fold instrument dilution due to the matrix. Reporting limits have been adjusted to reflect the necessary dilutions.

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.

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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 17 pages.

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LvLI
LIONVILLE LABORATORY INC.

9. LvLI is NELAP accredited by the State of Pennsylvania. 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.

Brian Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/22/08
Date

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08GC085

Initiator: CAC
Date: 07/10/08
Client: TNL

Batch: 0806L322
Samples: -011
Method: SW846/MCAWW/CLP/

Parameter: Pest
Matrix: SOIL
Prep Batch: 08LE0317

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)

NO surrogate recoveries

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:
Reextract and report both runs

4. Project Manager Instructions...signature/date: [signature] 7/10/08
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 7/22/08
__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

When Final Action has been recorded, forward original to QA for diposition.

Route
__ Lab Manager: Daniels
__ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
__ MS BNA: Carden / _____
__ Other: _____

QA-139-A-0208

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-075
LVL #: 0806L322
SDG/SAF # K1264 / RC-075

W.O. #: 11343-606-001-9999-00
Date Received: 06-20-2008

PCB

Eleven (11) soil samples were collected on 06-18-2008.

The samples and their associated QC samples was extracted on 07-02-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 07-08,09,14,15-2008. 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. All required holding times for extraction and analysis have been met.
2. The method blanks were below the reporting limits for all target compounds.
3. Four (4) of thirty-eight (38) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Reports (SDR# 08GC083 and SDR# 08GC090) has been enclosed.
4. All blank spike recoveries were within acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. The initial calibrations associated with this data set were within acceptance criteria.

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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 16 pages.

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LIONVILLE LABORATORY INC.

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

8. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/22/08
Date

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08GC090

Initiator: CAC
Date: 07/15/08
Client: TNL

Batch: 0806L322
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: PCB
Matrix: SOIL
Prep Batch: 08LE0326

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)

surrogate recoveries are high in blank

2. Known or Probable Causes(s)

~~double surrogate added~~ JD
Most likely due to incomplete solvent exchange.

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:

All samples are ND in this batch so blank surrogates are not an issue. JD.

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

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

5. Final Action...signature/date: J Kelly 7/22/08 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 for diposition.

Route
__ Lab Manager: Daniels
__ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
__ MS BNA: Carden / _____
__ Other: _____

QA-139-A-0208

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08GC083

Initiator: CAW
Date: 7/09/08
Client: TNW

Batch: 08062L322
Samples: 011
Method: SW846/MCAWW/CLP/

Parameter: PCB
Matrix: SOIL
Prep Batch: 08LE0317

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)

no surrogate recovery
no hits in any of the samples

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:
report 1 Narrative

4. Project Manager Instructions...signature/date: [signature]
✓ 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: CAKelly 7/22/08
__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:
Sample was reextracted and surrogates were good
JD.

When Final Action has been recorded, forward original to QA for diposition.

Route
__ Lab Manager: Daniels
__ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
__ MS BNA: Carden / _____
__ Other: _____

QA-139-A-0208

RECEIVED
AUG 2008

Lionville Laboratory, Inc.
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-075 K1264

DATE RECEIVED: 06/20/08 LVL LOT # :0806L322

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17263	002	S	08LE0317	06/18/08	07/02/08	07/09/08
J17264	003	S	08LE0317	06/18/08	07/02/08	07/09/08
J17264	003 MS	S	08LE0317	06/18/08	07/02/08	07/09/08
J17264	003 MSD	S	08LE0317	06/18/08	07/02/08	07/09/08
J17265	004	S	08LE0317	06/18/08	07/02/08	07/09/08
J17266	005	S	08LE0317	06/18/08	07/02/08	07/10/08
J17267	006	S	08LE0317	06/18/08	07/02/08	07/10/08
J17268	007	S	08LE0317	06/18/08	07/02/08	07/10/08
J17269	008	S	08LE0317	06/18/08	07/02/08	07/10/08
J17270	009	S	08LE0317	06/18/08	07/02/08	07/10/08
J17271	010	S	08LE0317	06/18/08	07/02/08	07/10/08
J17272	011	S	08LE0317	06/18/08	07/02/08	07/10/08
J17272	011 R1	S	08LE0326	06/18/08	07/10/08	07/15/08
J17273	012	S	08LE0317	06/18/08	07/02/08	07/10/08

LAB QC:

PBLKSD	MB1	S	08LE0317	N/A	07/02/08	07/09/08
PBLKSD	MB1 BS	S	08LE0317	N/A	07/02/08	07/09/08
PBLKSJ	MB1	S	08LE0326	N/A	07/10/08	07/15/08
PBLKSJ	MB1 BS	S	08LE0326	N/A	07/10/08	07/15/08
PBLKSJ	MB1 BSD	S	08LE0326	N/A	07/10/08	07/15/08

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 1 of 3

Collector D.W.Shea/subcontractor SEC D. Rios	Company Contact D.W.Shea	Telephone No. 521-6014	Project Coordinator KESSNER, JH	Price Code 8G	Data Turnaround 15 days
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-61, Verification I		SAF No. RC-075		
Ice Chest No. AFS-06-002	Field Logbook No. EL-1607-4	COA R00D612000	Method of Shipment Fed EX		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. see OPSC A080296		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6, Pb

Special Handling and/or Storage

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

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	~~Semi-VOA - 8270A (TCL)~~ PAH 8310 DWS 6/12/08				
J17262	SOIL	6/18/08	1236	✓		~~DWS~~	~~DWS~~	~~6/18/08~~	✓				
J17263	SOIL		1004	✓	✓	✓	✓	✓	✓				
J17264	SOIL		1252	✓	✓	✓	✓	✓	✓				
J17265	SOIL		1258	✓	✓	✓	✓	✓	✓				
J17266	SOIL		1307	✓	✓	✓	✓	✓	✓				

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
		DRR	6/18/08 1413 6/18/08
[signature]	6-18-08 1413	DWSheaDWSHEA	6/18/08 1413
DWSheaDWSHEA	6/18/08 1837	Fricke 3A	6/18/08 1837
Fricke 3A 1060	6-19-08 0800	JR[signature]	6-19-08 0800
JR[signature]	6-19-08 0800	Fed Ex	
Fed Ex	6-20-08 1010	[signature]	6-20-08 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, ~~Thallium~~, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc and Hg via CVAA DWShea 6/12/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *

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

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

WCH-EE-011

000026

000000011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 2 of 3

Collector: D.W.Shea/subcontractor SEE D.R.05	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080296 see OPSC		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250mL	60mL	125mL	125mL	60mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	~~Semi-VOA - 8270A (TCL)~~ PAH 8310 DWShea 6/18/08					
Sample No.	Matrix *	Sample Date	Sample Time								
J17267	SOIL	6-18-08	1027	✓	✓	✓	✓	✓	✓		
J17268	SOIL		1406	✓	✓	✓	✓	✓	✓		
J17269	SOIL		1328	✓	✓	✓	✓	✓	✓		
J17270	SOIL		1052	✓	✓	✓	✓	✓	✓		
J17271	SOIL		1340	✓	✓	✓	✓	✓	✓		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
		DCL 6-18-08 / 6-18-08 1423
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
[illegible] 6/18/08 1413	DWShea DWSHEA 6/18/08 1413	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
DWShea DWShea 6/18/08 1837	Fridge 3A 6/18/08 1837	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
~~6-19-08 0800~~ JRDeBuique JRD 6-19-08	JRD 6-19-08	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
3A 1060 6-19-08 0800	JRDeBuique JRD 6-19-08 0800	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
JRDeBuique JRD 6-19-08 0800	Fed Ex	

SPECIAL INSTRUCTIONS

(1). ICP Metals - 6010 (Client List) ~~Aluminum~~ Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, ~~Thallium~~, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc; and Hg via CVAA DWShea 6/18/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *
S - Soil
SE - Sediment
SD - 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: [signature]	Title	Date/Time: 6-20-08 1010
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

000027

000000012

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 3 of 3

Collector: D.W.Shea/subcontractor SEE D. RIOS	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: see OPSC A080296		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250mL	60mL	125mL	125mL	60mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	~~Semi-VOA - 8270 (TCL)~~ PAH 8310 DWSHEA 6/12/08					
Sample No.	Matrix *	Sample Date	Sample Time								
J17272	SOIL	6-18-08	~~1354~~ 1357 JRD 6-19-08	✓	✓	✓	✓	✓			
J17273	SOIL		1027	✓	✓	✓	✓	✓			
~~J17274~~	~~SOIL~~			DWSHEA 6/18/08							
~~J17275~~	~~SOIL~~										

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From		Received By/Stored In DRP 6-18-08	6-18-08 1413
Relinquished By/Removed From D. RIOS	6-18-08 1413	Received By/Stored In DWSHEA	6/18/08 1413
Relinquished By/Removed From DWSHEA DWSHEA	6/18/08 1837	Received By/Stored In Fridge 3A	6/18/08 1837
Relinquished By/Removed From 3A, 1060	Date/Time 0800 6-19-08	Received By/Stored In JRDeBrigge JRD	Date/Time 0800 6-19-08
Relinquished By/Removed From JRDeBrigge JRD	Date/Time 0800 6-19-08	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 6-20-08 1010	Received By/Stored In	Date/Time 6/20/08 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc; and by CVAA DWSHEA 6/12/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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

000000013

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-61			DATA PACKAGE: K1264		
VALIDATOR: ELR		LAB: LLI		DATE: 8/18/08	
			SDG: K1264		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J17263	J17264	J17265	J17266	J17267	
J17268	J17269	J17270	J17271	J17272	
J17273					
					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 - J17272 - 0% in both surrogates - R - PCB

" 0+2% in surrogate - R pest

J17272R - no MS/MSD - J all

no TOV 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

J17272R - NO 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: J17272R - <2Y HT - J all (post-PCB)

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments:

Date: 21 August 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-61
Subject: Inorganics - Data Package No. K1264-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1264 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
J17262	6/18/08	Soil.	C	See note 1
J17263	6/18/08	Soil	C	See note 1
J17264	6/18/08	Soil	C	See note 1
J17265	6/18/08	Soil	C	See note 1
J17266	6/18/08	Soil	C	See note 1
J17267	6/18/08	Soil	C	See note 1
J17268	6/18/08	Soil	C	See note 1
J17269	6/18/08	Soil	C	See note 1
J17270	6/18/08	Soil	C	See note 1
J17271	6/18/08	Soil	C	See note 1
J17272	6/18/08	Soil	C	See note 1
J17273	6/18/08	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 sample J17263 was qualified as an estimate and flagged "UJ".

Due to method blank contamination, the selenium results in samples J17262 and J17268 were qualified as estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank was submitted for analysis. Barium, copper, manganese, lead, vanadium and zinc were detected in the field blank.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (50.6%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J17267 & J17273) were submitted for analysis. Field duplicate samples are compared using the same criteria as for laboratory samples. The RPD for barium (41.2%) was outside QC limits. Under the WCH statement of work, no qualification is required.

- **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 results met the RQL.

- **Completeness**

Data package No. K1264 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 sample J17263 was qualified as an estimate and flagged "UJ".
- Due to method blank contamination, the selenium results in samples J17262 and J17268 were qualified as estimates and flagged "UJ".
- Due to a matrix spike recovery outside QC limits (50.6%), all antimony results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the 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.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

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: K1264	REVIEWER: ELR	Project: 100-D-61	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Boron	UJ	J17263	Blank contamination
Selenium	UJ	J17262, J17268	Blank contamination
Antimony	J	All	MS recovery

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

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17262	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.41 u	MG/KG	0.41	1.0
		Boron, Total	0.41 u	MG/KG	0.41	1.0
		Barium, Total	1.3	MG/KG	0.08	1.0
		Beryllium, Total	0.04 u	MG/KG	0.04	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.17 u	MG/KG	0.17	1.0
		Chromium, Total	0.17 u	MG/KG	0.17	1.0
		Copper, Total	0.36	MG/KG	0.17	1.0
		Mercury, Total	0.008u	MG/KG	0.008	1.0
		Manganese, Total	6.7	MG/KG	0.03	1.0
		Molybdenum, Total	0.25 u	MG/KG	0.25	1.0
		Nickel, Total	0.17 u	MG/KG	0.17	1.0
		Lead, Total	0.48	MG/KG	0.25	1.0
		Antimony, Total	0.25 uJ	MG/KG	0.25	1.0
		Selenium, Total	0.53 UJ	MG/KG	0.50	1.0
		Vanadium, Total	0.47	MG/KG	0.12	1.0
		Zinc, Total	0.65	MG/KG	0.50	1.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J17263	Silver, Total	0.16 u	MG/KG	0.16	2.0
		Arsenic, Total	2.0	MG/KG	0.79	2.0
		Boron, Total	2.1 UJ	MG/KG	0.79	2.0
		Barium, Total	75.9	MG/KG	0.16	2.0
		Beryllium, Total	0.46	MG/KG	0.08	2.0
		Cadmium, Total	0.08 u	MG/KG	0.08	2.0
		Cobalt, Total	8.5	MG/KG	0.32	2.0
		Chromium, Total	5.0	MG/KG	0.32	2.0
		Copper, Total	20.5	MG/KG	0.32	2.0
		Mercury, Total	0.008u	MG/KG	0.008	1.0
		Manganese, Total	313	MG/KG	0.06	2.0
		Molybdenum, Total	0.47 u	MG/KG	0.47	2.0
		Nickel, Total	8.3	MG/KG	0.32	2.0
		Lead, Total	2.9	MG/KG	0.47	2.0
		Antimony, Total	0.47 uJ	MG/KG	0.47	2.0
		Selenium, Total	0.95 u	MG/KG	0.95	2.0
		Vanadium, Total	67.7	MG/KG	0.22	2.0
		Zinc, Total	47.2	MG/KG	0.95	2.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J17264	Silver, Total	0.16 u	MG/KG	0.16	2.0
		Arsenic, Total	3.3	MG/KG	0.78	2.0
		Boron, Total	4.9	MG/KG	0.78	2.0
		Barium, Total	89.1	MG/KG	0.16	2.0
		Beryllium, Total	0.49	MG/KG	0.08	2.0
		Cadmium, Total	0.08 u	MG/KG	0.08	2.0
		Cobalt, Total	8.7	MG/KG	0.31	2.0
		Chromium, Total	11.2	MG/KG	0.31	2.0
		Copper, Total	20.7	MG/KG	0.31	2.0
		Mercury, Total	0.008u	MG/KG	0.008	1.0
		Manganese, Total	368	MG/KG	0.06	2.0
		Molybdenum, Total	0.47 u	MG/KG	0.47	2.0
		Nickel, Total	13.2	MG/KG	0.31	2.0
		Lead, Total	4.6	MG/KG	0.47	2.0
		Antimony, Total	0.57 J	MG/KG	0.47	2.0
		Selenium, Total	0.94 u	MG/KG	0.94	2.0
		Vanadium, Total	52.6	MG/KG	0.22	2.0
		Zinc, Total	43.4	MG/KG	0.94	2.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264

LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J17265	Silver, Total	0.17 u	MG/KG	0.17	2.0
		Arsenic, Total	3.8	MG/KG	0.85	2.0
		Boron, Total	37.4	MG/KG	0.85	2.0
		Barium, Total	528	MG/KG	0.17	2.0
		Beryllium, Total	0.74	MG/KG	0.08	2.0
		Cadmium, Total	0.08 u	MG/KG	0.08	2.0
		Cobalt, Total	8.9	MG/KG	0.34	2.0
		Chromium, Total	12.7	MG/KG	0.34	2.0
		Copper, Total	27.5	MG/KG	0.34	2.0
		Mercury, Total	0.05	MG/KG	0.009	1.0
		Manganese, Total	384	MG/KG	0.07	2.0
		Molybdenum, Total	0.84	MG/KG	0.51	2.0
		Nickel, Total	22.5	MG/KG	0.34	2.0
		Lead, Total	7.6	MG/KG	0.51	2.0
		Antimony, Total	0.51 uJ	MG/KG	0.51	2.0
		Selenium, Total	1.0 u	MG/KG	1.0	2.0
		Vanadium, Total	58.4	MG/KG	0.24	2.0
		Zinc, Total	61.0	MG/KG	1.0	2.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J17266	Silver, Total	0.17 u	MG/KG	0.17	2.0
		Arsenic, Total	3.5	MG/KG	0.83	2.0
		Boron, Total	8.6	MG/KG	0.83	2.0
		Barium, Total	122	MG/KG	0.17	2.0
		Beryllium, Total	0.48	MG/KG	0.08	2.0
		Cadmium, Total	0.08 u	MG/KG	0.08	2.0
		Cobalt, Total	8.0	MG/KG	0.33	2.0
		Chromium, Total	9.9	MG/KG	0.33	2.0
		Copper, Total	21.7	MG/KG	0.33	2.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	344	MG/KG	0.07	2.0
		Molybdenum, Total	0.54	MG/KG	0.50	2.0
		Nickel, Total	11.5	MG/KG	0.33	2.0
		Lead, Total	4.6	MG/KG	0.50	2.0
		Antimony, Total	0.50 uJ	MG/KG	0.50	2.0
		Selenium, Total	0.99 u	MG/KG	0.99	2.0
		Vanadium, Total	50.2	MG/KG	0.23	2.0
		Zinc, Total	43.3	MG/KG	0.99	2.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264

LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J17267	Silver, Total	0.17 u	MG/KG	0.17	2.0
		Arsenic, Total	3.0	MG/KG	0.83	2.0
		Boron, Total	6.3	MG/KG	0.83	2.0
		Barium, Total	158	MG/KG	0.17	2.0
		Beryllium, Total	0.51	MG/KG	0.08	2.0
		Cadmium, Total	0.04 u	MG/KG	0.08	2.0
		Cobalt, Total	8.5	MG/KG	0.33	2.0
		Chromium, Total	10.8	MG/KG	0.33	2.0
		Copper, Total	17.9	MG/KG	0.33	2.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	348	MG/KG	0.07	2.0
		Molybdenum, Total	0.50 u	MG/KG	0.50	2.0
		Nickel, Total	11.7	MG/KG	0.33	2.0
		Lead, Total	5.0	MG/KG	0.50	2.0
		Antimony, Total	0.50 u J	MG/KG	0.50	2.0
		Selenium, Total	1.0 u	MG/KG	1.0	2.0
		Vanadium, Total	52.5	MG/KG	0.23	2.0
		Zinc, Total	44.2	MG/KG	1.0	2.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J17268	Silver, Total	0.17 u	MG/KG	0.17	2.0
		Arsenic, Total	2.7	MG/KG	0.86	2.0
		Boron, Total	4.7	MG/KG	0.86	2.0
		Barium, Total	94.3	MG/KG	0.17	2.0
		Beryllium, Total	0.42	MG/KG	0.09	2.0
		Cadmium, Total	0.09 u	MG/KG	0.09	2.0
		Cobalt, Total	7.3	MG/KG	0.34	2.0
		Chromium, Total	9.8	MG/KG	0.34	2.0
		Copper, Total	16.7	MG/KG	0.34	2.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	325	MG/KG	0.07	2.0
		Molybdenum, Total	0.52 u	MG/KG	0.52	2.0
		Nickel, Total	11.1	MG/KG	0.34	2.0
		Lead, Total	4.2	MG/KG	0.52	2.0
		Antimony, Total	0.52 u J	MG/KG	0.52	2.0
		Selenium, Total	1.3 UJ	MG/KG	1.0	2.0
		Vanadium, Total	45.3	MG/KG	0.24	2.0
		Zinc, Total	39.9	MG/KG	1.0	2.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	J17269	Silver, Total	0.18	u	MG/KG	0.18	2.0
		Arsenic, Total	2.9		MG/KG	0.88	2.0
		Boron, Total	9.5		MG/KG	0.88	2.0
		Barium, Total	145		MG/KG	0.18	2.0
		Beryllium, Total	0.49		MG/KG	0.09	2.0
		Cadmium, Total	0.09	u	MG/KG	0.09	2.0
		Cobalt, Total	7.8		MG/KG	0.35	2.0
		Chromium, Total	10.3		MG/KG	0.35	2.0
		Copper, Total	15.5		MG/KG	0.35	2.0
		Mercury, Total	0.01	u	MG/KG	0.01	1.0
		Manganese, Total	369		MG/KG	0.07	2.0
		Molybdenum, Total	0.53	u	MG/KG	0.53	2.0
		Nickel, Total	10.7		MG/KG	0.35	2.0
		Lead, Total	4.6		MG/KG	0.53	2.0
		Antimony, Total	0.53	u J	MG/KG	0.53	2.0
		Selenium, Total	1.1	u	MG/KG	1.1	2.0
		Vanadium, Total	51.5		MG/KG	0.25	2.0
		Zinc, Total	43.4		MG/KG	1.1	2.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J17270	Silver, Total	0.17 u	MG/KG	0.17	2.0
		Arsenic, Total	2.9	MG/KG	0.83	2.0
		Boron, Total	16.5	MG/KG	0.83	2.0
		Barium, Total	173	MG/KG	0.17	2.0
		Beryllium, Total	0.55	MG/KG	0.08	2.0
		Cadmium, Total	0.08 u	MG/KG	0.08	2.0
		Cobalt, Total	7.4	MG/KG	0.33	2.0
		Chromium, Total	11.2	MG/KG	0.33	2.0
		Copper, Total	16.4	MG/KG	0.33	2.0
		Mercury, Total	0.008u	MG/KG	0.008	1.0
		Manganese, Total	347	MG/KG	0.07	2.0
		Molybdenum, Total	0.50 u	MG/KG	0.50	2.0
		Nickel, Total	11.3	MG/KG	0.33	2.0
		Lead, Total	4.6	MG/KG	0.50	2.0
		Antimony, Total	0.50 u J	MG/KG	0.50	2.0
		Selenium, Total	1.0 u	MG/KG	1.0	2.0
		Vanadium, Total	48.4	MG/KG	0.23	2.0
		Zinc, Total	44.6	MG/KG	1.0	2.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J17271	Silver, Total	0.16 u	MG/KG	0.16	2.0
		Arsenic, Total	2.9	MG/KG	0.81	2.0
		Boron, Total	3.0	MG/KG	0.81	2.0
		Barium, Total	83.7	MG/KG	0.16	2.0
		Beryllium, Total	0.43	MG/KG	0.08	2.0
		Cadmium, Total	0.08 u	MG/KG	0.08	2.0
		Cobalt, Total	7.3	MG/KG	0.33	2.0
		Chromium, Total	11.2	MG/KG	0.33	2.0
		Copper, Total	14.2	MG/KG	0.33	2.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	352	MG/KG	0.07	2.0
		Molybdenum, Total	0.49 u	MG/KG	0.49	2.0
		Nickel, Total	10.8	MG/KG	0.33	2.0
		Lead, Total	4.6	MG/KG	0.49	2.0
		Antimony, Total	0.49 u J	MG/KG	0.49	2.0
		Selenium, Total	0.98 u	MG/KG	0.98	2.0
		Vanadium, Total	46.4	MG/KG	0.23	2.0
		Zinc, Total	44.2	MG/KG	0.98	2.0

8/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J17272	Silver, Total	0.16 u	MG/KG	0.16	2.0
		Arsenic, Total	3.0	MG/KG	0.82	2.0
		Boron, Total	13.0	MG/KG	0.82	2.0
		Barium, Total	204	MG/KG	0.16	2.0
		Beryllium, Total	0.51	MG/KG	0.08	2.0
		Cadmium, Total	0.08 u	MG/KG	0.08	2.0
		Cobalt, Total	7.5	MG/KG	0.33	2.0
		Chromium, Total	10.3	MG/KG	0.33	2.0
		Copper, Total	15.0	MG/KG	0.33	2.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	344	MG/KG	0.07	2.0
		Molybdenum, Total	0.49 u	MG/KG	0.49	2.0
		Nickel, Total	11.0	MG/KG	0.33	2.0
		Lead, Total	4.9	MG/KG	0.49	2.0
		Antimony, Total	0.49 u J	MG/KG	0.49	2.0
		Selenium, Total	0.98 u	MG/KG	0.98	2.0
		Vanadium, Total	50.6	MG/KG	0.23	2.0
		Zinc, Total	46.5	MG/KG	0.98	2.0

4/18/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-012	J17273	Silver, Total	0.16 u	MG/KG	0.16	2.0
		Arsenic, Total	3.4	MG/KG	0.80	2.0
		Boron, Total	5.5	MG/KG	0.80	2.0
		Barium, Total	104	MG/KG	0.16	2.0
		Beryllium, Total	0.51	MG/KG	0.08	2.0
		Cadmium, Total	0.08 u	MG/KG	0.08	2.0
		Cobalt, Total	9.4	MG/KG	0.32	2.0
		Chromium, Total	11.3	MG/KG	0.32	2.0
		Copper, Total	16.8	MG/KG	0.32	2.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Manganese, Total	380	MG/KG	0.06	2.0
		Molybdenum, Total	0.48 u	MG/KG	0.48	2.0
		Nickel, Total	12.8	MG/KG	0.32	2.0
		Lead, Total	4.6	MG/KG	0.48	2.0
		Antimony, Total	0.48 uJ	MG/KG	0.48	2.0
		Selenium, Total	0.96 u	MG/KG	0.96	2.0
		Vanadium, Total	56.3	MG/KG	0.22	2.0
		Zinc, Total	47.0	MG/KG	0.96	2.0

8/18/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-075
LVL#: 0806L322
SDG/SAF#: K1264/RC-075

W.O.#: 11343-606-001-9999-00
Date Received: 06-20-08

**** Revision****
This narrative has been revised to include extra analytes.

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 12 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 J17262, were reported with 2-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 LOQ).

6. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

8. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 39 pages.

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Inorganics Laboratory Control Standards Report.

9. The matrix spike (MS) recoveries for 2 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 a meaningful concentration level for the following analyte: (A PDS for Manganese was not performed).

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J17263	Antimony	400	99.3

11. All duplicate analyses were within 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 Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

13. LvLI is NELAP accredited by the state of Pennsylvania. 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.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/21/08
Date

jjw/in06-322

LvLI
LIONVILLE LABORATORY INC.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 1 of 1

Collector: D.W.Shea/subcontractor SEC D. Rios	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: see OPSC A080296		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
Type of Container	G/P	G/P	G	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	
Volume	250mL	60mL	125mL	125mL	60mL	120mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	~~Semi-VOA - 8270A (TCL)~~ PAH 8310 DWS 6/12/08	

Sample No.	Matrix *	Sample Date	Sample Time									
J17262	SOIL	6/18/08	1236	✓	~~DWS~~	~~DWS~~	~~6/18/08~~		✓			
J17263	SOIL		1004	✓	✓	✓	✓	✓	✓			
J17264	SOIL		1252	✓	✓	✓	✓	✓	✓			
J17265	SOIL		1258	✓	✓	✓	✓	✓	✓			
J17266	SOIL		1307	✓	✓	✓	✓	✓	✓			

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
~~Relinquished By/Removed From~~	Received By/Stored In: DRR	~~6-18-08 1413~~ 6-18-08
Relinquished By/Removed From: [signature]	Received By/Stored In: DWSheaDWSHEA	6/18/08 1413
Relinquished By/Removed From: DWSheaDWSHEA	Received By/Stored In: Fricke 3A	6/18/08 1837
Relinquished By/Removed From: Fricke 3A 1060	Received By/Stored In: JRDesign JRDesign	0800 6-19-08
Relinquished By/Removed From: JRDesign JRDesign	Received By/Stored In: Fed Ex	0800 6-19-08
Relinquished By/Removed From: Fed Ex	Received By/Stored In: [signature]	6-20-08 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~ Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~ Boron, Cadmium, ~~Calcium~~ Chromium, Cobalt, Copper, ~~Iron~~ Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc and Hg via CVAA DWshea 6/12/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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

000025

000000036

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 2 of 2

Collector: D.W.Shea/subcontractor SEC D.R.05	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prof	Sampling Location: 100-D-61, Verification I		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: see OPSC A080296		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250ml.	60ml.	125ml.	125ml.	60ml.	120ml.					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	~~Semi-VOA - 8270A (TCL)~~ PAH 8310 DWShea 6/18/08					
Sample No.	Matrix *	Sample Date	Sample Time								
J17267	SOIL	6-18-08	1027	✓	✓	✓	✓	✓	✓		
J17268	SOIL		1406	✓	✓	✓	✓	✓	✓		
J17269	SOIL		1328	✓	✓	✓	✓	✓	✓		
J17270	SOIL		1052	✓	✓	✓	✓	✓	✓		
J17271	SOIL		1340	✓	✓	✓	✓	✓	✓		

920000

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In / Date/Time
		DCB 6-18-08 / 6-18-08 1413
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
[illegible] 6/18/08 1413	DWShea DWSHEA 6/18/08 1413	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
DWShea DWShea 6/18/08 1837	Fridge 3A 6/18/08 1837	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
~~JRDeBruiga JRDB 6-19-08~~	JRDB 6-19-08	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
3A 1060 6-19-08 0800	JRDeBruiga JRDB 6-19-08 0800	
Relinquished By/Removed From / Date/Time	Received By/Stored In / Date/Time	
JRDeBruiga JRDB 6-19-08 0800	Fed EX	

SPECIAL INSTRUCTIONS

(1). ICP Metals - 6010 (Client List) ~~Aluminum~~ Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~ Vanadium, Zinc; and Hg via CVAA DWShea 6/18/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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: [signature]	Title	Date/Time: 6-20-08 1010
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

000000037

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 2 of 2

Collector: D.W.Shea/subcontractor SEE D. RIOS	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I	SAF No.: RC-075	
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: see OPSC A080296		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
Cr6, Pb

Special Handling and/or Storage

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

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	~~Semi-VOA - 8270 (TCL)~~ PAH 8310 DWSHEA 6/18/08				
J17272	SOIL	6-18-08	~~1354~~ 1352 JBD 6-19-08		✓	✓	✓	✓	✓				
J17273	SOIL		1027	✓	✓	✓	✓	✓	✓				
~~J17274~~	~~SOIL~~			DWSHEA 6/18/08									
~~J17275~~	~~SOIL~~												

220009

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From	Received By/Stored In: DRF 6-18-08	6-18-08 1413
Relinquished By/Removed From: D. Rios	Received By/Stored In: DWSHEA DWSHEA	6/18/08 1413
Relinquished By/Removed From: DWSHEA DWSHEA	Received By/Stored In: Fedex 3A	6/18/08 1837
Relinquished By/Removed From: 3A, 1060	Received By/Stored In: JRDeBrige JBD	0800 6-19-08
Relinquished By/Removed From: JRDeBrige JBD	Received By/Stored In: Fed Ex	0800 6-19-08
Relinquished By/Removed From: Fed Ex	Received By/Stored In: [illegible]	6-20-08 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium, Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus, Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium, Strontium, Thallium, Tin, Uranium~~, Vanadium, Zinc] and by CVAA DWSHEA 6/12/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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

00000038

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-61			DATA PACKAGE: K1264		
VALIDATOR: ELR		LAB: LLP		DATE: 8/18/08	
			SDG: K1264		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J17262	J17263	J17264	J17265	J17266	
J17267	J17268	J17269	J17270	J17271	
J17272	J17273				
				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 - 63 - UJ Selenium - 62, 68 - UJ

FB - barium, Cu, manganese, lead, vanadium + zinc

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

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

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

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

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

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

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

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

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

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

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

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

Comments: MS - antimony (50.6%) - J all 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: barium ~ 41.2% - FD

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

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

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

Comments:

8. HOLDING TIMES (all levels)

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0257-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Boron, Total	0.52	MG/KG	0.50	1.0
		Barium, Total	0.10 u	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.20 u	MG/KG	0.20	1.0
		Manganese, Total	0.04 u	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Nickel, Total	0.20 u	MG/KG	0.20	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.89	MG/KG	0.60	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	0.60 u	MG/KG	0.60	1.0
BLANK1	08C0115-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J17263	Silver, Total	3.7	0.16u	3.9	94.9	2.0
		Arsenic, Total	147	2.0	155	93.3	2.0
		Boron, Total	75.8	2.1	77.7	94.9	2.0
		Barium, Total	229	75.9	155	98.4	2.0
		Beryllium, Total	4.1	0.46	3.9	93.2	2.0
		Cadmium, Total	3.4	0.08u	3.9	87.2	2.0
		Cobalt, Total	45.2	8.5	38.9	94.3	2.0
		Chromium, Total	19.0	5.0	15.5	90.3	2.0
		Copper, Total	39.9	20.5	19.4	100	2.0
		Manganese, Total	328	313	38.9	38.0*	2.0
		Molybdenum, Total	70.3	0.47u	77.7	90.5	2.0
		Nickel, Total	44.4	8.3	38.9	92.8	2.0
		Lead, Total	39.9	2.9	38.9	95.1	2.0
		Antimony, Total	19.7	0.47u	38.9	50.6	2.0
		Selenium, Total	127	0.95u	155	81.8	2.0
		Vanadium, Total	96.7	67.7	38.9	74.6	2.0
		Zinc, Total	77.1	47.2	38.9	76.9	2.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264

LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	J17264	Mercury, Total	0.14	0.00u	0.14	100.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17263	Silver, Total	0.16u	0.16u	NC	2.0
		Arsenic, Total	2.0	1.7	16.2	2.0
		Boron, Total	2.1	2.1	0.00	2.0
		Barium, Total	75.9	73.3	3.5	2.0
		Beryllium, Total	0.46	0.46	0.22	2.0
		Cadmium, Total	0.08u	0.08u	NC	2.0
		Cobalt, Total	8.5	8.9	4.6	2.0
		Chromium, Total	5.0	5.6	11.3	2.0
		Copper, Total	20.5	18.3	11.3	2.0
		Manganese, Total	313	298	4.9	2.0
		Molybdenum, Total	0.47u	0.49u	NC	2.0
		Nickel, Total	8.3	8.4	1.2	2.0
		Lead, Total	2.9	2.9	0.00	2.0
		Antimony, Total	0.47u	0.49u	NC	2.0
		Selenium, Total	0.95u	0.98u	NC	2.0
		Vanadium, Total	67.7	67.7	0.00	2.0
		Zinc, Total	47.2	45.5	3.7	2.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	J17264	Mercury, Total	0.00u	0.00u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/18/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0257-LC1	Silver, LCS	47.6	50.0	MG/KG	95.2
		Arsenic, LCS	916	1000	MG/KG	91.6
		Boron, LCS	467	500	MG/KG	93.4
		Barium, LCS	474	500	MG/KG	94.7
		Beryllium, LCS	24.1	25.0	MG/KG	96.4
		Cadmium, LCS	24.1	25.0	MG/KG	96.4
		Cobalt, LCS	241	250	MG/KG	96.4
		Chromium, LCS	48.5	50.0	MG/KG	97.0
		Copper, LCS	121	125	MG/KG	96.8
		Manganese, LCS	73.1	75.0	MG/KG	97.5
		Molybdenum, LCS	469	500	MG/KG	93.7
		Nickel, LCS	194	200	MG/KG	96.8
		Lead, LCS	240	250	MG/KG	95.8
		Antimony, LCS	276	300	MG/KG	91.9
		Selenium, LCS	888	1000	MG/KG	88.8
		Vanadium, LCS	239	250	MG/KG	95.6
		Zinc, LCS	96.0	100	MG/KG	96.0
LCS1	08C0115-LC1	Mercury, LCS	4.7	4.7	MG/KG	99.7

Date: 21 August 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-61
Subject: Wet Chemistry - Data Package No. K1264-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1264 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
J17263	6/18/08	Soil	C	See note 1
J17264	6/18/08	Soil	C	See note 1
J17265	6/18/08	Soil	C	See note 1
J17266	6/18/08	Soil	C	See note 1
J17267	6/18/08	Soil	C	See note 1
J17268	6/18/08	Soil	C	See note 1
J17269	6/18/08	Soil	C	See note 1
J17270	6/18/08	Soil	C	See note 1
J17271	6/18/08	Soil	C	See note 1
J17272	6/18/08	Soil	C	See note 1
J17273	6/18/08	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 (J17267/J17273) were submitted for analysis. Field duplicate samples are compared using the same criteria as for laboratory samples. 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 K1264 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

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

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: K1264	REVIEWER: ELR	Project: 100-D-61	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 07/14/08

CLIENT: TNUHANFORD RC-075 K1264
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0806L322

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17262	% Solids	100	%	0.01	1.0
-002	J17263	% Solids	99.8	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-003	J17264	% Solids	99.9	%	0.01	1.0
		Chromium VI	2.1	MG/KG	0.20	1.0
-004	J17265	% Solids	99.8	%	0.01	1.0
		Chromium VI	1.7	MG/KG	0.20	1.0
-005	J17266	% Solids	100	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-006	J17267	% Solids	99.4	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-007	J17268	% Solids	99.4	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-008	J17269	% Solids	99.8	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-009	J17270	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-010	J17271	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-011	J17272	% Solids	99.0	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-012	J17273	% Solids	99.6	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0

8/18/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-075 K1264
LVL#: 0806L322

W.O.#: 11343-606-001-9999-00
Date Received: 06-20-08

INORGANIC NARRATIVE

1. This narrative covers the analyses of 12 soil samples.

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

   LvLI is NELAP accredited by the State of Pennsylvania. 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 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 analyses were within the 20% Relative Percent Difference (RPD) control limit.

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

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/24/08
Date

njp\i06-322

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 15 pages.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 1 of 3

Collector: D.W.Shea/subcontractor SEC D. Rios	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080296 see OPSC		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
Cr+6, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	G	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250ml.	60ml.	125ml.	125ml.	60ml.	120ml.				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	~~Semi-VOA - 8270A (TC1)~~ PAH 8310 DWS 6/12/08				
Sample No.	Matrix *	Sample Date	Sample Time							
J17262	SOIL	6/18/08	1236	✓		~~DWS~~				
J17263	SOIL		1004	✓	✓	✓	✓	✓	✓	
J17264	SOIL		1252	✓	✓	✓	✓	✓	✓	
J17265	SOIL		1258	✓	✓	✓	✓	✓	✓	
J17266	SOIL		1307	✓	✓	✓	✓	✓	✓	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From		Received By/Stored In: DRR	Date/Time: 6-18-08 1413 6-18-08
Relinquished By/Removed From: D. Rios	Date/Time: 6-18-08 1413	Received By/Stored In: DWSHEA DWSHEA	Date/Time: 6/18/08 1413
Relinquished By/Removed From: DWSHEA DWSHEA	Date/Time: 6/18/08 1837	Received By/Stored In: Fricke 3A	Date/Time: 6/18/08 1837
Relinquished By/Removed From: Fricke 3A 1060	Date/Time: 0800 6-19-08	Received By/Stored In: JRDuign	Date/Time: 0800 6-19-08
Relinquished By/Removed From: JRDuign	Date/Time: 0800 6-19-08	Received By/Stored In: Fed Ex	Date/Time
Relinquished By/Removed From: Fed Ex	Date/Time: 6-20-08 1010	Received By/Stored In	Date/Time: 6-20-08 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, ~~Thallium~~, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc and Hg via CVAA DWSHEA 6/12/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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

000013

000000012

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 2 of 3
Collector: D.W.Shea/subcontractor SEE D.R.05	Company Contact: D.W.Shea; Telephone No.: 521-6014	Project Coordinator: KESSNER, JH	Price Code: 8G; Data Turnaround: 15 days
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I	SAF No.: RC-075	
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4; COA: R00D612000	Method of Shipment: Fed EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: see OPSC A080296	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6, Pb

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	G	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250ml.	60ml.	125ml.	125ml.	60ml.	120ml.				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL) PAH 8310 DWShea 6/18/08				
Sample No. / Matrix * / Sample Date / Sample Time										
J17267 / SOIL / 6-18-08 / 1027	✓	✓	✓	✓	✓	✓				
J17268 / SOIL /	✓	✓	✓	✓	✓	✓				
J17269 / SOIL / 1330	✓	✓	✓	✓	✓	✓				
J17270 / SOIL / 1052	✓	✓	✓	✓	✓	✓				
J17271 / SOIL / 1340	✓	✓	✓	✓	✓	✓				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From	Received By/Stored In: OCR 6-18-08	6-18-08 1423
Relinquished By/Removed From: [illegible] 6-18-08	Received By/Stored In: DWShea DWSHEA	6/18/08 1413
Relinquished By/Removed From: DWShea DWShea	Received By/Stored In: Fridge 3A	6/18/08 1837
Relinquished By/Removed From: ~~6-19-08 0930~~ ~~JRDeBuique JRD~~	Received By/Stored In: JRD	~~6-19-08~~
Relinquished By/Removed From: 3A 1060	Received By/Stored In: JRDeBuique JRD	6-19-08 0800
Relinquished By/Removed From: JRDeBuique JRD	Received By/Stored In: Fed Ex	6-19-08 0800

SPECIAL INSTRUCTIONS

(1). ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, ~~Thallium~~, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc) and Hg via CVAA DWShea 6/18/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *: S Soil; SE Sediment; SD 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
	[illegible]		6-20-08 1010
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

000014

31000000

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-075-014	Page 3 of 3

Collector: D.W.Shea/subcontractor SEC D. Rios	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location: 100-D-61, Verification I		SAF No.: RC-075
Ice Chest No.: AFS-06-002	Field Logbook No.: EL-1607-4	COA: R00D612000	Method of Shipment: Fed EX
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A080296 see OPSC		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Cr+6, Ph

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250ml.	60ml.	125ml.	125mL	60ml.	120ml.					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH (Total) - 418.1	Pesticides - 8081	PCBs - 8082	Semi-VOA - ~~8270 (TCL)~~ PAH 8310 DWSHEA 6/18/08					
Sample No.	Matrix *	Sample Date	Sample Time								
J17272	SOIL	6-18-08	~~1354~~ 1352	6-19-08	✓	✓	✓	✓	✓		
J17273	SOIL		1027	✓	✓	✓	✓	✓	✓		
~~J17274~~	~~SOIL~~			DWSHEA 6/18/08							
~~J17275~~	~~SOIL~~										

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From		DRR 6-18-08	6-18-08 1413
Relinquished By/Removed From: DWSHEA	6-18-08 1413	Received By/Stored In: DWSHEA DWSHEA	6/18/08 1413
Relinquished By/Removed From: DWSHEA DWSHEA	6/18/08 1837	Received By/Stored In: Fridge 3A	6/18/08 1837
Relinquished By/Removed From: 3A, 1060	6-19-08 0800	Received By/Stored In: JRDeBrige JRDB	6-19-08 0800
Relinquished By/Removed From: JRDeBrige JRDB	6-19-08 0800	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	6-20-08 1010	Received By/Stored In: [illegible]	6/20/08 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) ~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, ~~Bismuth~~, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~ Lead, ~~Lithium~~, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Phosphorus~~, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, ~~Strontium~~, ~~Thallium~~, ~~Tin~~, ~~Uranium~~, Vanadium, Zinc) and by CVAA DWSHEA 6/12/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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

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

WCH-EE-011

000015

0000000014

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-61			DATA PACKAGE: K1264		
VALIDATOR: ELR		LAB: LLI		DATE: 8/18/08	
			SDG: K1264		

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				
J17263	J17264	J17265	J17266	J17267
J17268	J17269	J17270	J17271	J17272
J17273				
				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 07/14/08

CLIENT: TNUHANFORD RC-075 K1264

LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LVI052-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/14/08

CLIENT: TNUHANFORD RC-075 K1264
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0806L322

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J17263	Soluble Chromium VI	4.1	0.20u	4.0	108.2	1.0
		Insoluble Chromium VI	1220	0.20u	1040	117.8	100
BLANK10	08LVI052-MB1	Soluble Chromium VI	4.2	0.20u	4.0	104.4	1.0
		Insoluble Chromium VI	1450	0.20u	1220	118.9	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/14/08

CLIENT: TNUHANFORD RC-075 K1264 LVL LOT #: 0806L322

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J17263	% Solids	99.8	99.8	0.030	1.0
		Chromium VI	0.20u	0.20u	NC	1.0