0094859

SAF-RC-142
100-IU-2 & 100-IU-6 Remaining Sites
Soil Full Protocol
FINAL VALIDATION DATA PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21 KW 3/8/11
INITIAL/DATE

COMMENTS:

SDG K2681 **SAF-RC-142**

Waste Site: **600-202**

RECEIVED
MAR 15 2011
EDMC

Date: 7 March 2011
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Sites – Soil Full Protocol - Waste Site 600-202
Subject: Diesel Range Organics - Data Package No. K2681-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K2681 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
J1C3W7	11/29/10	Soil	C	See note 1
J1C3W8	11/29/10	Soil	C	See note 1
J1C3W9	11/29/10	Soil	C	See note 1
J1C3X0	11/29/10	Soil	C	See note 1
J1C3X1	11/29/10	Soil	C	See note 1
J1C3X2	11/29/10	Soil	C	See note 1
J1C3X3	11/29/10	Soil	C	See note 1
J1C3X4	11/29/10	Soil	C	See note 1
J1C3X5	11/29/10	Soil	C	See note 1
J1C3X6	11/29/10	Soil	C	See note 1
J1C3X7	11/29/10	Soil	C	See note 1
J1C3X8	11/29/10	Soil	C	See note 1
J1C3X9	11/29/10	Soil	C	See note 1
J1C422	11/29/10	Soil	C	See note 1

1 – Diesel 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 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 Data Requested by Client

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 acceptable.

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

No field blank was submitted for analysis.

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 duplicate and LCS 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".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

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

All other duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1C3W7/J1C3X9) was submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data package No. K2681 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 deficiency was noted:

- Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all motor oil 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 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

DIESEL RANGE ORGANICS DATA QUALIFICATION SUMMARY*

SDG: K2681	REVIEWER: ELR	Project: 600-202	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Motor oil	J	All	No MS, MSD or LCS analysis

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

Appendix 3

Annotated Laboratory Reports

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/22/2010 11:34

J1C3W7
1012008-01 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3590 U	3590	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10800 U J	10800	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*94 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

LIONVILLE LABORATORY
A division of Eburline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/22/2010 11:34

J1C3W8
1012008-02 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3530 U	3530	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10600 U J	10600	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*89 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/22/2010 11:34

J1C3W9
1012008-03 (Soil)

3/5/4

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3560 U	3560	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10700 U J	10700	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*94 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/22/2010 11:34

J1C3X0
1012008-04 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3500 U	3500	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10500 U J	10500	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*100 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/22/2010 11:34

J1C3X1
1012008-05 (Soil)

3/5/11

Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3600 U	3600	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10800 U J	10800	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*101 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/22/2010 11:34

J1C3X2
1012008-06 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3380 U	3380	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10100 U J	10100	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*86 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/22/2010 11:34

J1C3X3
1012008-07 (Soil)

3/5/14

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3590 U	3590	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10800 U J	10800	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*92 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/22/2010 11:34

J1C3X4
1012008-08 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3550 U	3550	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10700 U J	10700	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*87 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/22/2010 11:34

J1C3X5
1012008-09 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3500 U	3500	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10500 U J	10500	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*99 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/22/2010 11:34

J1C3X6
1012008-10 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3600 U	3600	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10800 U J	10800	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*95 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/22/2010 11:34

J1C3X7
1012008-11 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3530 U	3530	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10600 U J	10600	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*78 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	**Reported:** 12/22/2010 11:34

J1C3X8
1012008-12 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3570 U	3570	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Motor Oil	10700 U J	10700	ug/kg dry	1	L012124	12/09/2010	12/18/2010	8015M
Surrogate: p-Terphenyl	*102 %*	*39-129*			*L012124*	*12/09/2010*	*12/18/2010*	*8015M*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/22/2010 11:34

J1C3X9
1012008-13 (Soil)

K 3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3580 U	3580	ug/kg dry	1	L012124	12/09/2010	12/19/2010	8015M
Motor Oil	10800 U J	10800	ug/kg dry	1	L012124	12/09/2010	12/19/2010	8015M
Surrogate: p-Terphenyl	*104 %*	*39-129*			*L012124*	*12/09/2010*	*12/19/2010*	*8015M*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/22/2010 11:34

J1C422
1012008-15 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	3340 U	3340	ug/kg dry	1	L012124	12/09/2010	12/19/2010	8015M
Motor Oil	10000 U J	10000	ug/kg dry	1	L012124	12/09/2010	12/19/2010	8015M
Surrogate: p-Terphenyl	*85 %*	*39-129*			*L012124*	*12/09/2010*	*12/19/2010*	*8015M*

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-142 K2681
LVL #: 1012008

W.O. #: 60049-001-001-0001-00
Date Received: 12-02-2010

DIESEL RANGE ORGANICS

Fourteen (14) soil samples were collected on 11-29-2010.

The samples and associated QC samples were extracted 12-09-2010 and analyzed 12-17,18,19-2010 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8015B for Diesel Range Organics.

Lionville Laboratory (LvL) 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. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

1. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The method blank was below the reporting limits for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. The samples were 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 hardcopy data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

12/22/10
Date

r:\group\data\2010\dro\wc-hanford\1012008jes.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 26 pages.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 1 of 3

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days		
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142
Ice Chest No. WCH - 11 - 014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES/ LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3W7 / SOIL / 11/29/10 / 1120	X	X	X	X	X						
J1C3W8 / SOIL / 1130	X	X	X	X	X						
J1C3W9 / SOIL / 1140	X	X	X	X	X						
J1C3X0 / SOIL / 1200	X	X	X	X	X						
J1C3X1 / SOIL / 11/29/10 / 1215	X	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.C. Berven	11-29-10 1500	C. Martinez/C. Martinez	11/29/10 1500
C. Martinez/C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
Jen Russell/Jen Russell 1060 Battelle 3C	11/30/10 0925	Jen Russell/Jen Russell	11/30/10 0925
Jen Russell/Jen Russell WCH	11/30/10 0940	Fed Ex	0940 JEB 11-30-10
Fed Ex	12-2-10 0945	[illegible]	12-2-10 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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

000027

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 2 of 3

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142		
Ice Chest No. WCH - 11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						

Sample No.	Matrix *	Sample Date	Sample Time										
J1C3X2	SOIL	11/29/10	1250	X	X	X	X	X					
J1C3X3	SOIL		1305	X	X	X	X	X					
J1C3X4	SOIL		1240	X	X	X	X	X					
J1C3X5	SOIL		1350	X	X	X	X	X					
J1C3X6	SOIL	11/29/10	1405	X	X	X	X	X					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Berven	11-29-10 1500	C. Martinez / C. Martinez	11/29/10 1500
C. Martinez / C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
Jen Russell / Jen Russell 1060 Battelle 3C	11/30/10 0925	Jen Russell / Jen Russell	11/30/10 0925
Jen Russell / Jen Russell	WCH 11/30/10 0940	FedEx	
FedEx	12-2-10 / 0945	[illegible]	12-2-10 0945

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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

0000028

7999999923

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 1 of 1

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days		
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142
Ice Chest No. WCH-11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

620029

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						

Sample No.	Matrix *	Sample Date	Sample Time										
J1C3X7	SOIL	11/29/10	1415	X	X	X	X	X					
J1C3X8	SOIL		1435	X	X	X	X	X					
J1C3X9	SOIL		1120	X	X	X	X	X					
J1C424	SOIL	11/29/10	1105	X	n/A	n/A	n/A	n/A					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ric Berven	11-29-10 1500	C. Martinez 3/C. Martinez	11/29/10 1500
C. Martinez/C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
Jen Russell/Jen Russell 1060 Battelle 3C	11/30/10 11/30/10 0925	Jen Russell/Jen Russell	11/30/10 0925
Jen Russell/Jen Russell	11/30/10 0940	Fed Ex	
[illegible]	12-2-10 0945	[illegible]	12-2-10 0945

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JFB DATE 11-30-10

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-024	Page 1 of 1
Collector: T. Welch-Koelling/R. Berven	Company Contact: Joan Kessner; Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K (ovr 11/15/10); Data Turnaround: ~~21 Days~~ 15 (ovr 11/15/10) 11/29/10
Project Designation: 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location: 600-202 (Verification SPA)	SAF No.: RC-142	
Ice Chest No.: WCH-11-014	Field Logbook No.: EL-1643-2; COA: R602022000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A100620	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

000030

Preservation			Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container			G/P	G/P	aG	aG	aG				
No. of Container(s)			1	1	1	1	1				
Volume			250mL	125mL	120mL	250mL	120mL				
SAMPLE ANALYSIS			See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081				
Sample No.	Matrix *	Sample Date	Sample Time								
J1C419	SOIL										
J1C420	SOIL										
J1C421	SOIL										
J1C422	SOIL	11/29/10	1425	X	X	X	X	X			
~~J1C423~~	~~SOIL~~										

SVOH 11/29/10

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: K.C. Berven / Date/Time: 11-29-10 1500	Received By/Stored In: C. Martinez / C. Martinez 11/29/10 Date/Time: 1500
Relinquished By/Removed From: C. Martinez / C. Martinez 11/29/10 Date/Time: 1600	Received By/Stored In: 1060 Battelle 3C 11/29/10 Date/Time: 1600
Relinquished By/Removed From: Jen Russell / Jen Russell 11/30/10 1060 Battelle 3C 11/29/10 Date/Time: 0925	Received By/Stored In: Jen Russell / Jen Russell 11/30/10 Date/Time: 0925
Relinquished By/Removed From: Jen Russell / Jen Russell 12/30/10 Date/Time: 0940	Received By/Stored In: Fed Ex Date/Time:
Relinquished By/Removed From: Fed Ex Date/Time: 12-2-10/0945	Received By/Stored In: D. Smith / D. Smith 12-2-10/0945 Date/Time:
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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

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

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-202		DATA PACKAGE:	K2681	
VALIDATOR:	ELR	LAB: LLI		DATE: 3/3/11	
			SDG:	K2681	

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

SAMPLES/MATRIX:				
J1C3W7	J1C3W8	J1C3W9	J1C3X0	J1C3X1
J1C3X2	J1C3X3	J1C3X4	J1C3X5	J1C3X6
J1C3X7	J1C3X8	J1C3X9	J1C422	
				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) ..... 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/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: no PAS

no no MS/MSD/LCS - Jall

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 No N/A

Comments:

GENERAL ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

Comments: all MO our

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:

Appendix 6

Additional Documentation Requested by Client

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/22/2010 11:34

Extractable Petroleum Hydrocarbons by SW846 8015 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012124 - SW 3540C									
Blank (L012124-BLK1)			Prepared: 12/09/2010 Analyzed: 12/18/2010						
Diesel Range Organics	3330 U	3330	ug/kg wet						
Motor Oil	10000 U	10000	ug/kg wet						
Surrogate: p-Terphenyl	*6150*		*ug/kg wet*	*6666.7*		*92*	*39-129*		
LCS (L012124-BS1)			Prepared: 12/09/2010 Analyzed: 12/18/2010						
Diesel Range Organics	53500	3330	ug/kg wet	66667		80	42-133		
Surrogate: p-Terphenyl	*6030*		*ug/kg wet*	*6666.7*		*90*	*39-129*		
Matrix Spike (L012124-MS1)		Source: 1012008-04	Prepared: 12/09/2010 Analyzed: 12/18/2010						
Diesel Range Organics	47100	3540	ug/kg dry	70906	3500 U	66	42-133		
Surrogate: p-Terphenyl	*5220*		*ug/kg dry*	*7090.6*		*74*	*39-129*		
Matrix Spike Dup (L012124-MSD1)		Source: 1012008-04	Prepared: 12/09/2010 Analyzed: 12/18/2010						
Diesel Range Organics	63800	3560	ug/kg dry	71299	3500 U	90	42-133	30	40
Surrogate: p-Terphenyl	*7240*		*ug/kg dry*	*7129.9*		*102*	*39-129*		

Date: 7 March 2011
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Sites – Soil Full Protocol - Waste Site 600-202
Subject: Inorganic - Data Package No. K2681-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K2681 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
J1C3W7	11/29/10	Soil	C	See note 1
J1C3W8	11/29/10	Soil	C	See note 1
J1C3W9	11/29/10	Soil	C	See note 1
J1C3X0	11/29/10	Soil	C	See note 1
J1C3X1	11/29/10	Soil	C	See note 1
J1C3X2	11/29/10	Soil	C	See note 1
J1C3X3	11/29/10	Soil	C	See note 1
J1C3X4	11/29/10	Soil	C	See note 1
J1C3X5	11/29/10	Soil	C	See note 1
J1C3X6	11/29/10	Soil	C	See note 1
J1C3X7	11/29/10	Soil	C	See note 1
J1C3X8	11/29/10	Soil	C	See note 1
J1C3X9	11/29/10	Soil	C	See note 1
J1C424	11/29/10	Soil	C	See note 1
J1C422	11/29/10	Soil	C	See note 1

1 - ICP metals (6010B).

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 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.

All preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J1C424) was submitted for analysis. Aluminum, arsenic, barium, calcium, chromium, iron, lead, magnesium, manganese, potassium, silicon, vanadium and zinc were detected in the field blank. Under the WCH statement of work, no qualification is required.

Accuracy

Matrix Spike and Laboratory Control Sample

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

Due to a matrix spike recovery outside QC limits, all antimony (49%) and calcium (154%) 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 (J1C3W7/J1C3X9) was submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

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

- **Completeness**

Data package No. K2681 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 was noted:

- Due to a matrix spike recovery outside QC limits, all antimony (49%) and calcium (154%) 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: K2681	REVIEWER: ELR	Project: 600-202	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony Calcium	J	All	MS recovery

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

Appendix 3

Annotated Laboratory Reports

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/20/2010 14:22

J1C3W7
1012008-01 (Soil)

3/5/11

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	6700		4.59	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.366	B J	0.550	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	2.82		0.917	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	64.3		0.459	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.233		0.183	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.14	B	1.83	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0707	B	0.183	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	6880	J	91.7	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	13.2		0.183	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	4.27		1.83	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	8.97		0.917	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	15500		18.3	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	4.11		0.459	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	4940		68.8	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	234		4.59	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.286	B	1.83	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	11.8		3.67	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1510		367	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.275	U	0.275	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	582		1.83	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.183	U	0.183	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	257		45.9	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	34.6		2.29	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	32.3		9.17	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

J1C3W8
1012008-02 (Soil)

3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**5680**		3.50	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Antimony	**0.390**	B J	0.420	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Arsenic	**3.34**		0.700	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Barium	**51.4**		0.350	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Beryllium	**0.212**		0.140	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Boron	**1.27**	B	1.40	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Cadmium	**0.0570**	B	0.140	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Calcium	**6610**	J	70.0	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Chromium	**11.8**		0.140	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Cobalt	**3.75**		1.40	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Copper	**8.56**		0.700	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Iron	**13900**		14.0	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Lead	**4.32**		0.350	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Magnesium	**4320**		52.5	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Manganese	**215**		3.50	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Molybdenum	**0.172**	B	1.40	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Nickel	**10.6**		2.80	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Potassium	**1070**		280	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Selenium	0.210	U	0.210	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Silicon	**498**		1.40	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Silver	0.140	U	0.140	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Sodium	**255**		35.0	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Vanadium	**31.1**		1.75	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Zinc	**28.9**		7.00	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/20/2010 14:22

J1C3W9
1012008-03 (Soil)

3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**6850**		4.24	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Antimony	**0.367**	B J	0.509	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Arsenic	**4.79**		0.848	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Barium	**71.1**		0.424	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Beryllium	**0.294**		0.170	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Boron	**2.67**		1.70	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Cadmium	**0.0675**	B	0.170	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Calcium	**3090**	J	84.8	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Chromium	**13.0**		0.170	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Cobalt	**4.76**		1.70	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Copper	**10.4**		0.848	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Iron	**21100**		17.0	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Lead	**4.86**		0.424	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Magnesium	**4570**		63.6	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Manganese	**306**		4.24	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Molybdenum	**0.238**	B	1.70	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Nickel	**11.5**		3.39	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Potassium	**879**		339	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Selenium	0.254	U	0.254	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Silicon	**505**		1.70	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Silver	0.170	U	0.170	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Sodium	**1210**		42.4	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Vanadium	**58.1**		2.12	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Zinc	**38.4**		8.48	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/20/2010 14:22

J1C3X0
1012008-04 (Soil)

K 3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	6790		4.27	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Antimony	0.451	B J	0.513	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Arsenic	3.70		0.854	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Barium	67.7		0.427	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Beryllium	0.254		0.171	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Boron	0.881	B	1.71	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Cadmium	0.0809	B	0.171	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Calcium	9590	J	85.4	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Chromium	15.6		0.171	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Cobalt	4.40		1.71	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Copper	10.4		0.854	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Iron	16400		17.1	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Lead	4.51		0.427	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Magnesium	5610		64.1	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Manganese	249		4.27	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Molybdenum	0.224	B	1.71	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Nickel	13.4		3.42	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Potassium	1260		342	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Selenium	0.256	U	0.256	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Silicon	671		1.71	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Silver	0.171	U	0.171	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Sodium	369		42.7	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Vanadium	35.5		2.14	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B
Zinc	33.7		8.54	mg/kg dry	1	L012113	12/09/2010	12/10/2010	6010B

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/20/2010 14:22

J1C3X1
1012008-05 (Soil)

3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	7900		3.62	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.298	B J	0.435	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	3.41		0.724	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	90.6		0.362	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.280		0.145	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	0.921	B	1.45	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.104	B	0.145	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	13400	J	72.4	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	15.4		0.145	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	4.82		1.45	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	11.7		0.724	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	15800		14.5	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	4.93		0.362	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	6900		54.3	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	264		3.62	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.194	B	1.45	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	13.8		2.90	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1470		290	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.217	U	0.217	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	511		1.45	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.145	U	0.145	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	313		36.2	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	31.8		1.81	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	36.7		7.24	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc.	Project: RC-142	
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Richland WA, 99354	Project Manager: Joan Kessner	12/20/2010 14:22

J1C3X2
1012008-06 (Soil)

3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	6380		4.00	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.480	U J	0.480	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	3.93		0.801	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	56.3		0.400	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.252		0.160	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.97		1.60	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0603	B	0.160	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	5060	J	80.1	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	13.3		0.160	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	4.41		1.60	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	9.85		0.801	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	17800		16.0	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	4.57		0.400	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	4790		60.0	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	260		4.00	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.200	B	1.60	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	11.9		3.20	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1030		320	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.240	U	0.240	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	537		1.60	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.160	U	0.160	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	396		40.0	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	42.8		2.00	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	34.9		8.01	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

J1C3X3
1012008-07 (Soil)

3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	8990		4.17	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.306	B J	0.501	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	4.66		0.834	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	90.0		0.417	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.346		0.167	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.65	B	1.67	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0784	B	0.167	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	9520	J	83.4	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	17.3		0.167	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	5.57		1.67	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	12.7		0.834	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	20200		16.7	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	5.35		0.417	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	6580		62.6	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	322		4.17	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.233	B	1.67	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	14.5		3.34	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1650		334	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.250	U	0.250	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	643		1.67	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.167	U	0.167	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	313		41.7	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	45.2		2.09	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	40.8		8.34	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/20/2010 14:22

J1C3X4
1012008-08 (Soil)

3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	9260		4.26	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.489	B J	0.511	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	6.95		0.852	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	85.7		0.426	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.349		0.170	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.61	B	1.70	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0891	B	0.170	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	3980	J	85.2	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	20.7		0.170	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	6.04		1.70	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	15.1		0.852	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	20400		17.0	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	5.98		0.426	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	5400		63.9	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	372		4.26	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.234	B	1.70	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	18.8		3.41	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1890		341	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.256	U	0.256	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	705		1.70	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.170	U	0.170	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	353		42.6	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	50.3		2.13	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	43.4		8.52	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

J1C3X5
1012008-09 (Soil)

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Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	6730		4.44	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.344	B J	0.533	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	3.63		0.888	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	66.5		0.444	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.249		0.178	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.27	B	1.78	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0723	B	0.178	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	5220	J	88.8	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	13.0		0.178	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	4.61		1.78	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	10.3		0.888	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	17600		17.8	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	4.93		0.444	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	4570		66.6	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	260		4.44	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.182	B	1.78	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	11.8		3.55	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1220		355	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.266	U	0.266	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	635		1.78	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.178	U	0.178	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	225		44.4	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	41.1		2.22	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	36.0		8.88	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

J1C3X6
1012008-10 (Soil)

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Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	8630		3.52	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.388	B J	0.423	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	4.37		0.705	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	97.2		0.352	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.327		0.141	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	0.633	B	1.41	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0492	B	0.141	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	3700	J	70.5	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	17.5		0.141	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	5.68		1.41	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	16.3		0.705	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	20400		14.1	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	4.87		0.352	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	5060		52.8	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	302		3.52	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.218	B	1.41	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	15.2		2.82	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1190		282	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.211	U	0.211	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	604		1.41	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.141	U	0.141	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	230		35.2	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	49.4		1.76	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	39.4		7.05	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

J1C3X7
1012008-11 (Soil)

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Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	9320		5.11	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.391	B J	0.613	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	5.46		1.02	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	84.7		0.511	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.337		0.204	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.68	B	2.04	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0913	B	0.204	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	4340	J	102	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	21.2		0.204	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	6.21		2.04	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	16.2		1.02	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	18400		20.4	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	5.98		0.511	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	5320		76.7	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	318		5.11	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	2.04	U	2.04	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	20.7		4.09	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1240		409	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.307	U	0.307	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	703		2.04	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.204	U	0.204	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	332		51.1	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	40.6		2.56	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	43.4		10.2	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

J1C3X8
1012008-12 (Soil)

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Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	9010		3.88	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.292	B J	0.466	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	5.84		0.777	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	91.0		0.388	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.340		0.155	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.77		1.55	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0814	B	0.155	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	6030	J	77.7	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	18.8		0.155	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	5.60		1.55	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	13.9		0.777	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	18700		15.5	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	6.27		0.388	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	5620		58.3	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	311		3.88	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.220	B	1.55	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	16.8		3.11	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1130		311	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.233	U	0.233	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	608		1.55	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.155	U	0.155	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	246		38.8	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	42.0		1.94	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	45.4		7.77	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

J1C3X9
1012008-13 (Soil)

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Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	7550		3.77	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.237	B J	0.452	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	2.98		0.754	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	71.9		0.377	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.273		0.151	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.18	B	1.51	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.0764	B	0.151	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	8990	J	75.4	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	14.8		0.151	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	4.63		1.51	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	10.4		0.754	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	16100		15.1	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	4.46		0.377	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	5680		56.5	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	254		3.77	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	0.285	B	1.51	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	13.7		3.02	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	1730		302	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.226	U	0.226	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	592		1.51	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.151	U	0.151	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	317		37.7	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	34.4		1.88	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	34.8		7.54	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/20/2010 14:22

J1C424
1012008-14 (Soil)

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Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**194**		3.91	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	0.469	U J	0.469	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	**0.438**	B	0.781	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	**2.11**		0.391	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	0.156	U	0.156	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	1.56	U	1.56	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	0.156	U	0.156	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	**45.0**	B J	78.1	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	**0.170**		0.156	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	1.56	U	1.56	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	0.781	U	0.781	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	**293**		15.6	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	**0.682**		0.391	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	**39.8**	B	58.6	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	**4.87**		3.91	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	1.56	U	1.56	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	3.13	U	3.13	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	**53.2**	B	313	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.234	U	0.234	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	**188**		1.56	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.156	U	0.156	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	39.1	U	39.1	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	**0.482**	B	1.95	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	**1.22**	B	7.81	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/20/2010 14:22

J1C422
1012008-15 (Soil)

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Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**10100**		4.93	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Antimony	**0.496**	B J	0.592	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Arsenic	**7.03**		0.987	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Barium	**93.9**		0.493	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Beryllium	**0.376**		0.197	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Boron	**4.28**		1.97	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cadmium	**0.0884**	B	0.197	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Calcium	**5250**	J	98.7	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Chromium	**21.9**		0.197	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Cobalt	**6.62**		1.97	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Copper	**16.2**		0.987	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Iron	**21400**		19.7	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Lead	**6.81**		0.493	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Magnesium	**6010**		74.0	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Manganese	**358**		4.93	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Molybdenum	**0.218**	B	1.97	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Nickel	**20.5**		3.95	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Potassium	**1120**		395	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Selenium	0.296	U	0.296	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silicon	**808**		1.97	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Silver	0.197	U	0.197	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Sodium	**996**		49.3	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Vanadium	**50.3**		2.47	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B
Zinc	**47.5**		9.87	mg/kg dry	1	L012113	12/09/2010	12/11/2010	6010B

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-142
LVL#: 1012008
SDG/SAF#: K2681/RC-142

W.O.#: 60049-001-001-0001-00
Date Received: 12-02-10

METALS

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) 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 15 soil samples.

2. The samples were prepared and analyzed in accordance with methods listed on the data report forms.

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

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

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), samples were greater than 20X MB value}.

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

9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer.

10. The matrix spike (MS) recoveries for 7 analytes were outside the 75-125% control limits.

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 30 pages.

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J1C3W7	Aluminum	42,000	79.9
	Antimony	100	100.1
	Calcium	40,800	76.7
	Iron	82,000	78.4
	Magnesium	41,600	68.4
	Manganese	500	81.2
	Silicon	4,100	101.0

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL.

13. For the purposes of this report, the data have 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.

14. LvL 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.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory
alm/12-008

12/22/10
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 1 of 3

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days		
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142
Ice Chest No. WCH-11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3W7 / SOIL / 11/29/10 / 1120	X	X	X	X	X						
J1C3W8 / SOIL / 1130	X	X	X	X	X						
J1C3W9 / SOIL / 1140	X	X	X	X	X						
J1C3X0 / SOIL / 1200	X	X	X	X	X						
J1C3X1 / SOIL / 11/29/10 / 1215	X	X	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From R. Berven — 11-29-10 1500	Received By/Stored In C. Martinez / C. Martinez 11/29/10	Date/Time 1500
Relinquished By/Removed From C. Martinez / C. Martinez 11/29/10	Received By/Stored In 1060 Battelle 3C 11/29/10	Date/Time 1600
Relinquished By/Removed From Jen Russell / Jen Russell 1060 Battelle 3C 11/30/10	Received By/Stored In Jen Russell / Jen Russell 11/30/10	Date/Time 0925
Relinquished By/Removed From WCH Jen Russell / Jen Russell 11/30/10	Received By/Stored In FedEx	Date/Time 0940 JEB 11-30-10
Relinquished By/Removed From FedEx 12-2-10	Received By/Stored In D. Smith 12-2-10	Date/Time 0945
Relinquished By/Removed From	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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
Ws=Wipe
L=Liquid
Ve=Vegetation
X=Other

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

WCH-EE-011

00002828

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 2 of 3

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days		
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142
Ice Chest No. WCH - 11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3X2 / SOIL / 11/29/10 / 1250	X	X	X	X	X						
J1C3X3 / SOIL /	X	X	X	X	X						
J1C3X4 / SOIL / 1240	X	X	X	X	X						
J1C3X5 / SOIL / 1350	X	X	X	X	X						
J1C3X6 / SOIL / 11/29/10 / 1405	X	X	X	X	X						

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ric Berven	11-29-10 1500	C. Martinez/C. Martinez	11/29/10 1500
C. Martinez/C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
Jen Russell/Jen Russell 1060 Battelle 3C	11/30/10 0925	Jen Russell/Jen Russell	11/30/10 0925
Jen Russell/Jen Russell WCH	11/30/10 0940	FedEx	
FedEx	12-2-10/0945	[illegible]	12-2-10 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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

000029

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 3 of 3
Collector: T. Welch-Koelling/R. Berven	Company Contact: Joan Kessner; Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K; Data Turnaround: ~~21~~ 15 Days
Project Designation: 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location: 600-202 (Verification EXL)	SAF No.: RC-142	
Ice Chest No.: WCH-11-014	Field Logbook No.: EL-1643-2; COA: R602022000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A100620	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3X7 / SOIL / 11/29/10 / 1415	X	X	X	X	X						
J1C3X8 / SOIL / " / 1435	X	X	X	X	X						
J1C3X9 / SOIL / " / 1120	X	X	X	X	X						
J1C424 / SOIL / 11/29/10 / 1105	X	n/A	n/A	n/A	n/A						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: R.E. BERVEN	11-29-10 1500	Received By/Stored In: C. Martinez/C. Martinez	1500 11/29/10
Relinquished By/Removed From: C. Martinez/C. Martinez	1600 11/29/10	Received By/Stored In: 1060 Battelle 3C	1600 11/29/10
Relinquished By/Removed From: Jen Russell/Jen Russell, 1060 Battelle 3C	11/30/10 0925	Received By/Stored In: Jen Russell/Jen Russell	11/30/10 0925
Relinquished By/Removed From: Jen Russell/Jen Russell	0940 11/30/10	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: [illegible]	12-2-10 1045	Received By/Stored In: [illegible]	12-2-10 1045
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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
Ts=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

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

WCH-EE-011

000030

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-024	Page 1 of 1
Collector: T. Welch-Koelling/R. Berven	Company Contact: Joan Kessner; Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K; Data Turnaround: 21 Days 15
Project Designation: 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location: 600-202 (Verification SPA)	SAF No.: RC-142	
Ice Chest No.: WCH-11-014	Field Logbook No.: EL-1643-2; COA: R602022000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A100620	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						

Sample No.	Matrix *	Sample Date	Sample Time										
J1C419	SOIL												
J1C420	SOIL												
J1C421	SOIL												
J1C422	SOIL	11/29/10	1425	X	X	X	X	X					
~~J1C423~~	~~SOIL~~												

SVDH 11/29/10

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.C. Berven	11-29-10 1500	C. Martinez / C. Martinez	11/29/10 1500
C. Martinez / C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
1060 Battelle 3C	11/29/10 0925	Jen Russell / Jen Russell	11/30/10 0925
Jen Russell / Jen Russell	11/30/10 0940	Fed Ex	
Fed Ex	12-2-10 / 0945	D. Smith / D. Smith	12-2-10 / 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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

000031

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-202		DATA PACKAGE:	K2681	
VALIDATOR:	ELR	LAB:	LLI	DATE:	3/3/11
			SDG:	K2681	

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

SAMPLES/MATRIX				
JIC3W7	JIC3W8	JIC3W9	JIC3X0	JIC3X1
JIC3X2	JIC3X3	JIC3X4	JIC3X5	JIC3X6
JIC3X7	JIC3X8	JIC3X9	JIC42Y	JIC422
				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:

FB - 13 detect

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 (49%) calcium (154%)

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: _____

XQ/WJ

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

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012113 - SW 3050B										
Blank (L012113-BLK1)				Prepared: 12/09/2010 Analyzed: 12/10/2010						
Aluminum	3.97	U	3.97	mg/kg wet						
Antimony	0.476	U	0.476	mg/kg wet						
Arsenic	0.794	U	0.794	mg/kg wet						
Barium	0.397	U	0.397	mg/kg wet						
Beryllium	0.159	U	0.159	mg/kg wet						
Boron	1.59	U	1.59	mg/kg wet						
Cadmium	0.159	U	0.159	mg/kg wet						
Calcium	7.91	B	79.4	mg/kg wet						
Chromium	0.159	U	0.159	mg/kg wet						
Cobalt	1.59	U	1.59	mg/kg wet						
Copper	0.794	U	0.794	mg/kg wet						
Iron	15.9	U	15.9	mg/kg wet						
Lead	0.397	U	0.397	mg/kg wet						
Magnesium	1.50	B	59.5	mg/kg wet						
Manganese	3.97	U	3.97	mg/kg wet						
Molybdenum	1.59	U	1.59	mg/kg wet						
Nickel	3.17	U	3.17	mg/kg wet						
Potassium	317	U	317	mg/kg wet						
Selenium	0.238	U	0.238	mg/kg wet						
Silicon	1.59	U	1.59	mg/kg wet						
Silver	0.159	U	0.159	mg/kg wet						
Sodium	39.7	U	39.7	mg/kg wet						
Vanadium	1.98	U	1.98	mg/kg wet						
Zinc	7.94	U	7.94	mg/kg wet						
Duplicate (L012113-DUP1)		Source: 1012008-01		Prepared: 12/09/2010 Analyzed: 12/11/2010						
Aluminum	6590		4.66	mg/kg dry		6700			2	20
Antimony	0.560	U	0.560	mg/kg dry		0.366				20
Arsenic	2.94		0.933	mg/kg dry		2.82			4	20
Barium	62.0		0.466	mg/kg dry		64.3			4	20
Beryllium	0.237		0.187	mg/kg dry		0.233			2	20
Boron	1.07	B	1.87	mg/kg dry		1.14			6	20
Cadmium	0.0650	B	0.187	mg/kg dry		0.0707			9	20
Calcium	7220		93.3	mg/kg dry		6880			5	20
Chromium	12.8		0.187	mg/kg dry		13.2			3	20
Cobalt	4.32		1.87	mg/kg dry		4.27			1	20
Copper	9.06		0.933	mg/kg dry		8.97			1	20

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WC-Hanford, Inc. 2620 Fermi Avenue Richlund WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012113 - SW 3050B										
Duplicate (L012113-DUP1)		**Source: 1012008-01**		Prepared: 12/09/2010 Analyzed: 12/11/2010						
Iron	15600		18.7	mg/kg dry		15500			0.6	20
Lead	4.19		0.466	mg/kg dry		4.11			2	20
Magnesium	4900		70.0	mg/kg dry		4940			0.8	20
Manganese	247		4.66	mg/kg dry		234			5	20
Molybdenum	0.258	B	1.87	mg/kg dry		0.286			10	20
Nickel	11.7		3.73	mg/kg dry		11.8			0.8	20
Potassium	1480		373	mg/kg dry		1510			2	20
Selenium	0.280	U	0.280	mg/kg dry		0.275 U				20
Silicon	521		1.87	mg/kg dry		582			11	20
Silver	0.187	U	0.187	mg/kg dry		0.183 U				20
Sodium	250		46.6	mg/kg dry		257			3	20
Vanadium	34.4		2.33	mg/kg dry		34.6			0.6	20
Zinc	31.9		9.33	mg/kg dry		32.3			1	20
Matrix Spike (L012113-MS1)		**Source: 1012008-01**		Prepared: 12/09/2010 Analyzed: 12/11/2010						
Aluminum	8440		4.16	mg/kg dry	166.47	6700	1050*	75-125		
Antimony	20.9		0.499	mg/kg dry	41.618	0.366	49*	75-125		
Arsenic	149		0.832	mg/kg dry	166.47	2.82	88	75-125		
Barium	226		0.416	mg/kg dry	166.47	64.3	97	75-125		
Beryllium	3.95		0.166	mg/kg dry	4.1618	0.233	89	75-125		
Boron	70.0		1.66	mg/kg dry	83.237	1.14	83	75-125		
Cadmium	3.67		0.166	mg/kg dry	4.1618	0.0707	87	75-125		
Calcium	10100		83.2	mg/kg dry	2080.9	6880	154*	75-125		
Chromium	29.5		0.166	mg/kg dry	16.647	13.2	98	75-125		
Cobalt	39.9		1.66	mg/kg dry	41.618	4.27	86	75-125		
Copper	28.4		0.832	mg/kg dry	20.809	8.97	93	75-125		
Iron	17800		16.6	mg/kg dry	83.237	15500	2810*	75-125		
Lead	38.9		0.416	mg/kg dry	41.618	4.11	84	75-125		
Magnesium	7550		62.4	mg/kg dry	2080.9	4940	126*	75-125		
Manganese	322		4.16	mg/kg dry	41.618	234	212*	75-125		
Molybdenum	73.4		1.66	mg/kg dry	83.237	0.286	88	75-125		
Nickel	48.5		3.33	mg/kg dry	41.618	11.8	88	75-125		
Potassium	3660		333	mg/kg dry	2080.9	1510	103	75-125		
Selenium	139		0.250	mg/kg dry	166.47	0.275 U	83	75-125		
Silicon	905		1.66	mg/kg dry	83.237	582	388*	75-125		
Silver	3.37		0.166	mg/kg dry	4.1618	0.183 U	81	75-125		
Sodium	2210		41.6	mg/kg dry	2080.9	257	94	75-125		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/20/2010 14:22

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012113 - SW 3050B									
Matrix Spike (L012113-MS1)		**Source: 1012008-01**	Prepared: 12/09/2010 Analyzed: 12/11/2010						
Vanadium	76.3	2.08	mg/kg dry	41.618	34.6	100	75-125		
Zinc	73.2	8.32	mg/kg dry	41.618	32.3	98	75-125		
Reference (L012113-SRM1)			Prepared: 12/09/2010 Analyzed: 12/10/2010						
Aluminum	5240	10.6	mg/kg wet	6766.6		77	0-225.5		
Antimony	54.7	1.27	mg/kg wet	56.630		97	0-225.6		
Arsenic	102	2.11	mg/kg wet	113.85		90	85-115		
Barium	274	1.06	mg/kg wet	298.35		92	75.7-124.3		
Beryllium	96.4	0.423	mg/kg wet	108.32		89	85.2-114.8		
Boron	77.9	4.23	mg/kg wet	86.580		90	68.5-131.6		
Cadmium	204	0.423	mg/kg wet	224.09		91	84.9-115.1		
Calcium	2920	211	mg/kg wet	3305.9		88	82.8-117.2		
Chromium	67.6	0.423	mg/kg wet	77.590		87	76.8-123.2		
Cobalt	147	4.23	mg/kg wet	163.19		90	79.4-120.6		
Copper	234	2.11	mg/kg wet	265.65		88	82.4-117.6		
Iron	7490	42.3	mg/kg wet	8202.8		91	78.9-121.1		
Lead	169	1.06	mg/kg wet	187.62		90	81.5-118.5		
Magnesium	7540	158	mg/kg wet	8352.3		90	84.2-115.8		
Manganese	866	10.6	mg/kg wet	951.35		91	69-131		
Molybdenum	217	4.23	mg/kg wet	234.78		92	80.1-119.9		
Nickel	197	8.45	mg/kg wet	220.85		89	81.4-118.6		
Potassium	13100	845	mg/kg wet	14177		92	85.7-114.3		
Selenium	169	0.634	mg/kg wet	187.99		90	78.8-121.2		
Silicon	661	4.23	mg/kg wet	939.78		70	0-272.3		
Silver	74.1	0.423	mg/kg wet	83.960		88	81.9-118.1		
Sodium	8680	106	mg/kg wet	9587.1		91	83.5-116.4		
Vanadium	91.3	5.28	mg/kg wet	97.430		94	75.8-124.2		
Zinc	176	21.1	mg/kg wet	196.52		89	78.9-121.1		

Date: 7 March 2011
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Sites – Soil Full Protocol - Waste Site 600-202
Subject: Pesticides - Data Package No. K2681-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K2681 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
J1C3W7	11/29/10	Soil	C	See note 1
J1C3W8	11/29/10	Soil	C	See note 1
J1C3W9	11/29/10	Soil	C	See note 1
J1C3X0	11/29/10	Soil	C	See note 1
J1C3X1	11/29/10	Soil	C	See note 1
J1C3X2	11/29/10	Soil	C	See note 1
J1C3X3	11/29/10	Soil	C	See note 1
J1C3X4	11/29/10	Soil	C	See note 1
J1C3X5	11/29/10	Soil	C	See note 1
J1C3X6	11/29/10	Soil	C	See note 1
J1C3X7	11/29/10	Soil	C	See note 1
J1C3X8	11/29/10	Soil	C	See note 1
J1C3X9	11/29/10	Soil	C	See note 1
J1C422	11/29/10	Soil	C	See note 1

1 – Pesticides by 8081A.

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

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

DATA QUALITY 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: Pesticide 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 acceptable.

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

No field blanks were submitted for analysis.

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 duplicate and LCS analysis, all toxaphene 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 surrogate recoveries outside QC limits, all detected analytes in samples J1C3W8, J1C3W9, J1C3X0, J1C3X1, J1C3X2 and J1C3X5 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 and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1C3W7/J1C3X9) was submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

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

Completeness

Data package No. K2681 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 deficiency was noted:

- Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".
- Due to surrogate recoveries outside QC limits, all detected analytes in samples J1C3W8, J1C3W9, J1C3X0, J1C3X1, J1C3X2 and J1C3X5 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 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

PESTICIDES DATA QUALIFICATION SUMMARY*

SDG: K2681	REVIEWER: ELR	Project: 600-202	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS analysis
All detected analytes	J	J1C3W8, J1C3W9 J1C3X0, J1C3X1 J1C3X2, J1C3X5	Surrogate recovery

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

Appendix 3

Annotated Laboratory Reports

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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Exton, PA 19341
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

J1C3W7
1012008-01 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-BHC	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
beta-BHC	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
delta-BHC	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Aldrin	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor epoxide	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-Chlordane	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
alpha-Chlordane	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan I	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDE	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Dieldrin	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDD	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan II	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDT	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin aldehyde	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan sulfate	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Methoxychlor	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin ketone	1.42 U	1.42	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Toxaphene	14.2 U J	14.2	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*115 %*	*50-150*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*106 %*	*34-174*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/15/2010 19:22

J1C3W8
1012008-02 (Soil)

3/5/16

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-BHC	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
beta-BHC	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
delta-BHC	**1.40 J, D** J	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Aldrin	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor epoxide	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-Chlordane	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
alpha-Chlordane	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan I	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDE	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Dieldrin	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDD	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan II	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDT	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin aldehyde	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan sulfate	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Methoxychlor	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin ketone	1.39 U	1.39	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Toxaphene	13.9 U J	13.9	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*301 % **	*50-150*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*114 %*	*34-174*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

J1C3W9
1012008-03 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-BHC	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
beta-BHC	**3.32 J, D** J	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
delta-BHC	**2.61 J, D** J	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Aldrin	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor epoxide	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-Chlordane	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
alpha-Chlordane	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan I	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDE	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Dieldrin	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDD	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan II	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDT	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin aldehyde	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan sulfate	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Methoxychlor	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin ketone	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Toxaphene	14.0 U J	14.0	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*323 % **	*50-150*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*99.7 %*	*34-174*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

J1C3X0
1012008-04 (Soil)

K 3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-BHC	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
beta-BHC	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
delta-BHC	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Aldrin	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor epoxide	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-Chlordane	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
alpha-Chlordane	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan I	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDE	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Dieldrin	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDD	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan II	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDT	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin aldehyde	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan sulfate	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Methoxychlor	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin ketone	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Toxaphene	14.1 U J	14.1	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*167 % **	*50-150*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*104 %*	*34-174*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/15/2010 19:22

J1C3X1
1012008-05 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-BHC	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
beta-BHC	2.44 J, D J	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
delta-BHC	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor	1.44 U	1.44	ug/kg dry	*4	L012045	12/03/2010	12/08/2010	8081A
Aldrin	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor epoxide	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-Chlordane	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
alpha-Chlordane	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan I	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDE	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Dieldrin	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDD	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan II	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDT	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin aldehyde	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan sulfate	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Methoxychlor	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin ketone	1.44 U	1.44	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Toxaphene	14.4 U J	14.4	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*295 % **	*50-150*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*106 %*	*34-174*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

J1C3X2
1012008-06 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-BHC	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
beta-BHC	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
delta-BHC	**1.97 J, D** J	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Aldrin	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor epoxide	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-Chlordane	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
alpha-Chlordane	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan I	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDE	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Dieldrin	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDD	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan II	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDT	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin aldehyde	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan sulfate	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Methoxychlor	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin ketone	1.37 U	1.37	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Toxaphene	13.7 U J	13.7	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*357 % **	*50-150*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*172 %*	*34-174*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*

LIONVILLE LABORATORY
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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/15/2010 19:22

J1C3X3
1012008-07 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-BHC	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
beta-BHC	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
delta-BHC	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Aldrin	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Heptachlor epoxide	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
gamma-Chlordane	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
alpha-Chlordane	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan I	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDE	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Dieldrin	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDD	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan II	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
4,4'-DDT	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin aldehyde	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endosulfan sulfate	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Methoxychlor	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Endrin ketone	1.43 U	1.43	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Toxaphene	14.3 U J	14.3	ug/kg dry	4	L012045	12/03/2010	12/08/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*115 %*	*50-150*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*111 %*	*34-174*			*L012045*	*12/03/2010*	*12/08/2010*	*8081A*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

J1C3X4
1012008-08 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
gamma-BHC	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
beta-BHC	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
delta-BHC	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Heptachlor	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Aldrin	**2.86** J, D	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Heptachlor epoxide	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
gamma-Chlordane	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
alpha-Chlordane	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan I	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDE	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Dieldrin	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDD	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan II	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDT	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin aldehyde	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan sulfate	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Methoxychlor	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin ketone	1.41 U	1.41	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Toxaphene	14.1 U J	14.1	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*129 %*	*50-150*			*L012045*	*12/03/2010*	*12/09/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*134 %*	*34-174*			*L012045*	*12/03/2010*	*12/09/2010*	*8081A*

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/15/2010 19:22

J1C3X5
1012008-09 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
gamma-BHC	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
beta-BHC	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
delta-BHC	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Heptachlor	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Aldrin	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Heptachlor epoxide	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
gamma-Chlordane	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
alpha-Chlordane	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan I	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDE	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Dieldrin	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDD	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan II	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDT	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin aldehyde	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan sulfate	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Methoxychlor	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin ketone	1.40 U	1.40	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Toxaphene	14.0 U J	14.0	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*152 % **	*50-150*			*L012045*	*12/03/2010*	*12/09/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*120 %*	*34-174*			*L012045*	*12/03/2010*	*12/09/2010*	*8081A*

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Exton, PA 19341
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Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

J1C3X6
1012008-10 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
gamma-BHC	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
beta-BHC	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
delta-BHC	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Heptachlor	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Aldrin	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Heptachlor epoxide	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
gamma-Chlordane	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
alpha-Chlordane	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan I	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDE	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Dieldrin	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDD	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan II	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
4,4'-DDT	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin aldehyde	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endosulfan sulfate	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Methoxychlor	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Endrin ketone	1.45 U	1.45	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Toxaphene	14.5 U J	14.5	ug/kg dry	4	L012045	12/03/2010	12/09/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*120 %*	*50-150*			*L012045*	*12/03/2010*	*12/09/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*135 %*	*34-174*			*L012045*	*12/03/2010*	*12/09/2010*	*8081A*

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/15/2010 19:22

J1C3X7
1012008-11 (Soil)

3/5/15

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
gamma-BHC	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
beta-BHC	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
delta-BHC	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Heptachlor	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Aldrin	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Heptachlor epoxide	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
gamma-Chlordane	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
alpha-Chlordane	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan I	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDE	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Dieldrin	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDD	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan II	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDT	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin aldehyde	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan sulfate	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Methoxychlor	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin ketone	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Toxaphene	14.0 U J	14.0	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*105 %*	*50-150*			*L012111*	*12/08/2010*	*12/10/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*99.0 %*	*34-174*			*L012111*	*12/08/2010*	*12/10/2010*	*8081A*

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

J1C3X8
1012008-12 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
gamma-BHC	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
beta-BHC	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
delta-BHC	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Heptachlor	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Aldrin	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Heptachlor epoxide	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
gamma-Chlordane	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
alpha-Chlordane	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan I	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDE	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Dieldrin	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDD	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan II	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDT	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin aldehyde	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan sulfate	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Methoxychlor	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin ketone	1.41 U	1.41	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Toxaphene	14.1 U J	14.1	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*103 %*	*50-150*			*L012111*	*12/08/2010*	*12/10/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*101 %*	*34-174*			*L012111*	*12/08/2010*	*12/10/2010*	*8081A*

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/15/2010 19:22

J1C3X9
1012008-13 (Soil)

3/5/14

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
gamma-BHC	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
beta-BHC	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
delta-BHC	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Heptachlor	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Aldrin	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Heptachlor epoxide	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
gamma-Chlordane	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
alpha-Chlordane	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan I	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDE	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Dieldrin	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDD	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan II	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDT	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin aldehyde	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan sulfate	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Methoxychlor	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin ketone	1.40 U	1.40	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Toxaphene	14.0 U J	14.0	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*96.0 %*	*50-150*			*L012111*	*12/08/2010*	*12/10/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*96.9 %*	*34-174*			*L012111*	*12/08/2010*	*12/10/2010*	*8081A*

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/15/2010 19:22

J1C422
1012008-15 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Organochlorine Pesticides by SW846 8081A								
alpha-BHC	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
gamma-BHC	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
beta-BHC	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
delta-BHC	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Heptachlor	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Aldrin	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Heptachlor epoxide	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
gamma-Chlordane	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
alpha-Chlordane	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan I	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDE	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Dieldrin	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDD	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan II	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
4,4'-DDT	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin aldehyde	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endosulfan sulfate	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Methoxychlor	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Endrin ketone	1.33 U	1.33	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Toxaphene	13.3 U J	13.3	ug/kg dry	4	L012111	12/08/2010	12/10/2010	8081A
Surrogate: Tetrachloro-meta-xylene	*97.0 %*	*50-150*			*L012111*	*12/08/2010*	*12/10/2010*	*8081A*
Surrogate: Decachlorobiphenyl	*100 %*	*34-174*			*L012111*	*12/08/2010*	*12/10/2010*	*8081A*

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LVL
LIONVILLE LABORATORIES
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-142 K2681
LVL #: 1012008

W.O. #: 60049-001-001-0001-00
Date Received: 12-02-2010

CHLORINATED PESTICIDES

Fourteen (14) soil samples were collected on 11-29-2010.

The samples and associated QC samples were extracted 12-03,08-2010 and analyzed 12-08,09,10-2010 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8081A for client specified target compounds. All samples received Copper-Sulfur cleanup based on SW846 method 3660A.

Lionville Laboratory (LvL) 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. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

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

2. All required holding times for extraction and analysis have been met.

3. The samples required a 4-fold instrument dilution due to the nature of the matrix. Reporting limits have been adjusted to reflect the necessary dilutions.

4. Six (6) of forty-four (44) surrogate recoveries were outside acceptance criteria. Surrogate recovery criteria were not met due to interferences from non-target compounds. All samples are less than the quantitation limit for all analytes.

5. The method blank was below the reporting limit for all target compounds.

6. All blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

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

9. The samples are reported on a dry weight basis.

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 34 pages.

10. All initial calibrations associated with this data set were within acceptance criteria.

11. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

Iain Daniels
LvL Laboratory Manager

12/17/10
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 1 of 3

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142		
Ice Chest No. WCH-11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

000028

Preservation			Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container			G/P	G/P	aG	aG	aG				
No. of Container(s)			1	1	1	1	1				
Volume			250mL	125mL	120mL	250mL	120mL				
SAMPLE ANALYSIS			See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081				
Sample No.	Matrix *	Sample Date	Sample Time								
J1C3W7	SOIL	11/29/10	1120	X	X	X	X	X			
J1C3W8	SOIL		1130	X	X	X	X	X			
J1C3W9	SOIL		1140	X	X	X	X	X			
J1C3X0	SOIL		1200	X	X	X	X	X			
J1C3X1	SOIL	11/29/10	1215	X	X	X	X	X			

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From R.G. BERVEN	Date/Time 11-29-10 1500	Received By/Stored In C. Martinez/C. Martinez	Date/Time 1500 11/29/10
Relinquished By/Removed From C. Martinez/C. Martinez	Date/Time 1600 11/29/10	Received By/Stored In 1060 Battelle 3C	Date/Time 1600 11/29/10
Relinquished By/Removed From Jen Russell 1060 Battelle 3C	Date/Time 0925 11/30/10	Received By/Stored In Jen Russell/Jen Russell	Date/Time 0925 11/30/10
Relinquished By/Removed From WCH Jen Russell/Jen Russell	Date/Time 0940 11/30/10	Received By/Stored In Fed Ex	Date/Time ~~0940~~ JEB 11-30-10
Relinquished By/Removed From Fed Ex	Date/Time 12-2-10 0945	Received By/Stored In D. Smith	Date/Time 12-2-10 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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
Ti=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

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

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 2 of 3

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days		
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142
Ice Chest No. WCH - 11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

620029

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3X2 / SOIL / 11/29/10 / 1250	X	X	X	X	X						
J1C3X3 / SOIL / 1305	X	X	X	X	X						
J1C3X4 / SOIL / 1240	X	X	X	X	X						
J1C3X5 / SOIL / 1350	X	X	X	X	X						
J1C3X6 / SOIL / 11/29/10 / 1405	X	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. BERVEN	11-29-10 1500	C. Martinez/C. Martinez	11/29/10 1500
C. Martinez/C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
Jen Russell/Jen Russell	11/30/10 0925	1060 Battelle 3C / Jen Russell/Jen Russell	11/30/10 0925
Jen Russell/Jen Russell	WCH 11/30/10 0940	FedEx	
FedEx	12-2-10 0945	[illegible]	12-2-10 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 3 of 3
Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K Data Turnaround ~~21~~ 15 Days
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)	SAF No. RC-142	
Ice Chest No. WCH-11-014	Field Logbook No. EL-1643-2 COA R602022000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A100620	Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

000030

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3X7 / SOIL / 11/29/10 / 1415	X	X	X	X	X						
J1C3X8 / SOIL / " / 1435	X	X	X	X	X						
J1C3X9 / SOIL / " / 1120	X	X	X	X	X						
J1C424 / SOIL / 11/29/10 / 1105	X	n/A	n/A	n/A	n/A						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Ric Berven	11-29-10 1500	Received By/Stored In: C. Martinez	1500 11/29/10
Relinquished By/Removed From: C. Martinez	1600 11/29/10	Received By/Stored In: 1060 Battelle 3C	1600 11/29/10
Relinquished By/Removed From: Jen Russell, 1060 Battelle 3C	11/30/10 0925	Received By/Stored In: Jen Russell	11/30/10 0925
Relinquished By/Removed From: Jen Russell	0940 11/30/10	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	12-2-10 1045	Received By/Stored In:	12-2-10 1045
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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
Ve=Vegetation
X=Other

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

WCH-EE-011

1 of 1

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-024	Page 1 of 1
Collector: T. Welch-Koelling/R. Berven	Company Contact: Joan Kessner; Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K; Data Turnaround: ~~21 Days~~ 15
Project Designation: 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location: 600-202 (Verification SPA)	SAF No.: RC-142	
Ice Chest No.: WCH-11-014	Field Logbook No.: EL-1643-2; COA: R602022000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A100620	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

000031

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						

Sample No.	Matrix *	Sample Date	Sample Time										
J1C419	SOIL												
J1C420	SOIL												
J1C421	SOIL												
J1C422	SOIL	11/29/10	1425	X	X	X	X	X					
~~J1C423~~	~~SOIL~~												

SUDH 11/29/10

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: K. Berven	11.29.10 1500	Received By/Stored In: C. Martinez / C. Martinez	1500 11/29/10
Relinquished By/Removed From: C. Martinez / C. Martinez	1600 11/29/10	Received By/Stored In: 1060 Battelle 3C	1600 11/29/10
Relinquished By/Removed From: 1060 Battelle 3C	11/29/10 0925	Received By/Stored In: Jen Russell / Jen Russell	11/30/10 0925
Relinquished By/Removed From: Jen Russell / Jen Russell	11/30/10 0940	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	12.2.10 / 0945	Received By/Stored In: D. Smith / D. Smith	12.2.10 / 0945
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-202		DATA PACKAGE:	K2681	
VALIDATOR:	ELR	LAB: LLI		DATE: 3/3/11	
			SDG:	K2681	

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

SAMPLES/MATRIX				
J1C3W7	J1C3W8	J1C3W9	J1C3X0	J1C3X1
J1C3X2	J1C3X3	J1C3X4	J1C3X5	J1C3X6
J1C3X7	J1C3X8	J1C3X9	J1C422	
				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 - W8, W9, X0, X1, X2, X5, - J all detects

tuxophene - no MS/MSD/LCS - J all no PAS

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: toxaphene - 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:

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:

Appendix 6

Additional Documentation Requested by Client

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/15/2010 19:22

Organochlorine Pesticides by SW846 8081A - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012045 - SW 3540C									
Blank (L012045-BLK1)			Prepared: 12/03/2010 Analyzed: 12/08/2010						
alpha-BHC	0.330 U	0.330	ug/kg wet						
gamma-BHC	0.330 U	0.330	ug/kg wet						
beta-BHC	0.330 U	0.330	ug/kg wet						
delta-BHC	0.330 U	0.330	ug/kg wet						
Heptachlor	0.330 U	0.330	ug/kg wet						
Aldrin	0.330 U	0.330	ug/kg wet						
Heptachlor epoxide	0.330 U	0.330	ug/kg wet						
gamma-Chlordane	0.330 U	0.330	ug/kg wet						
alpha-Chlordane	0.330 U	0.330	ug/kg wet						
Endosulfan I	0.330 U	0.330	ug/kg wet						
4,4'-DDE	0.330 U	0.330	ug/kg wet						
Dieldrin	0.330 U	0.330	ug/kg wet						
Endrin	0.330 U	0.330	ug/kg wet						
4,4'-DDD	0.330 U	0.330	ug/kg wet						
Endosulfan II	0.330 U	0.330	ug/kg wet						
4,4'-DDT	0.330 U	0.330	ug/kg wet						
Endrin aldehyde	0.330 U	0.330	ug/kg wet						
Endosulfan sulfate	0.330 U	0.330	ug/kg wet						
Methoxychlor	0.330 U	0.330	ug/kg wet						
Endrin ketone	0.330 U	0.330	ug/kg wet						
Toxaphene	3.30 U	3.30	ug/kg wet						
Surrogate: Tetrachloro-meta-xylene	*38.9*		*ug/kg wet*	*33.337*		*117*	*50-150*		
Surrogate: Decachlorobiphenyl	*35.0*		*ug/kg wet*	*33.333*		*105*	*34-174*		
LCS (L012045-BS1)			Prepared: 12/03/2010 Analyzed: 12/08/2010						
alpha-BHC	63.0	0.330	ug/kg wet	66.667		94.5	65-145		
gamma-BHC	67.1	0.330	ug/kg wet	66.667		101	70-143		
beta-BHC	65.1	0.330	ug/kg wet	66.667		97.6	75-143		
delta-BHC	69.3	0.330	ug/kg wet	66.667		104	65-143		
Heptachlor	63.1	0.330	ug/kg wet	66.667		94.6	70-139		
Aldrin	69.7	0.330	ug/kg wet	66.667		104	70-143		
Heptachlor epoxide	69.1	0.330	ug/kg wet	66.667		104	71-138		
gamma-Chlordane	70.8	0.330	ug/kg wet	66.667		106	71-137		
alpha-Chlordane	70.3	0.330	ug/kg wet	66.667		105	72-136		
Endosulfan I	76.0	0.330	ug/kg wet	66.667		114	72-139		
4,4'-DDE	79.7	0.330	ug/kg wet	66.667		120	70-154		
Dieldrin	74.7	0.330	ug/kg wet	66.667		112	73-143		

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

Organochlorine Pesticides by SW846 8081A - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012045 - SW 3540C										
LCS (L012045-BS1)				Prepared: 12/03/2010 Analyzed: 12/08/2010						
Endrin	75.4		0.330	ug/kg wet	66.667		113	74-137		
4,4'-DDD	80.1		0.330	ug/kg wet	66.667		120	52-153		
Endosulfan II	72.4		0.330	ug/kg wet	66.667		109	72-139		
4,4'-DDT	73.6		0.330	ug/kg wet	66.667		110	58-148		
Endrin aldehyde	58.0		0.330	ug/kg wet	66.667		87.0	49-129		
Endosulfan sulfate	73.9		0.330	ug/kg wet	66.667		111	66-139		
Methoxychlor	65.2		0.330	ug/kg wet	66.667		97.8	50-144		
Endrin ketone	73.2		0.330	ug/kg wet	66.667		110	70-139		
Surrogate: Tetrachloro-meta-xylene	*41.1*			*ug/kg wet*	*33.337*		*123*	*28-166*		
Surrogate: Decachlorobiphenyl	*34.0*			*ug/kg wet*	*33.333*		*102*	*37-153*		
Matrix Spike (L012045-MS2)		Source: 1012008-01		Prepared: 12/03/2010 Analyzed: 12/08/2010						
alpha-BHC	70.6	D	1.38	ug/kg dry	69.857	1.42 U	101	65-145		
gamma-BHC	78.9	D	1.38	ug/kg dry	69.857	1.42 U	113	70-143		
beta-BHC	83.5	D	1.38	ug/kg dry	69.857	1.42 U	120	75-143		
delta-BHC	73.3	D	1.38	ug/kg dry	69.857	1.42 U	105	65-143		
Heptachlor	77.2	D	1.38	ug/kg dry	69.857	1.42 U	110	70-139		
Aldrin	77.2	D	1.38	ug/kg dry	69.857	1.42 U	110	70-143		
Heptachlor epoxide	77.9	D	1.38	ug/kg dry	69.857	1.42 U	112	71-138		
gamma-Chlordane	77.9	D	1.38	ug/kg dry	69.857	1.42 U	112	71-137		
alpha-Chlordane	79.3	D	1.38	ug/kg dry	69.857	1.42 U	114	72-136		
Endosulfan I	79.6	D	1.38	ug/kg dry	69.857	1.42 U	114	72-139		
4,4'-DDE	82.1	D	1.38	ug/kg dry	69.857	1.42 U	118	70-154		
Dieldrin	78.6	D	1.38	ug/kg dry	69.857	1.42 U	112	73-143		
Endrin	82.4	D	1.38	ug/kg dry	69.857	1.42 U	118	74-137		
4,4'-DDD	87.9	D	1.38	ug/kg dry	69.857	1.42 U	126	52-153		
Endosulfan II	84.5	D	1.38	ug/kg dry	69.857	1.42 U	121	72-139		
4,4'-DDT	72.3	D	1.38	ug/kg dry	69.857	1.42 U	104	58-148		
Endrin aldehyde	62.2	D	1.38	ug/kg dry	69.857	1.42 U	89.0	49-129		
Endosulfan sulfate	75.8	D	1.38	ug/kg dry	69.857	1.42 U	108	66-139		
Methoxychlor	72.0	D	1.38	ug/kg dry	69.857	1.42 U	103	50-144		
Endrin ketone	84.2	D	1.38	ug/kg dry	69.857	1.42 U	120	70-139		
Surrogate: Tetrachloro-meta-xylene	*37.7*			*ug/kg dry*	*34.932*		*108*	*28-166*		
Surrogate: Decachlorobiphenyl	*37.0*			*ug/kg dry*	*34.928*		*106*	*37-153*		

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

Organochlorine Pesticides by SW846 8081A - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012045 - SW 3540C									
Matrix Spike Dup (L012045-MSD2)	**Source: 1012008-01**		Prepared: 12/03/2010 Analyzed: 12/08/2010						
alpha-BHC	68.3 D	1.42	ug/kg dry	71.851	1.42 U	95.0	65-145	6.12	40
gamma-BHC	76.5 D	1.42	ug/kg dry	71.851	1.42 U	106	70-143	5.92	40
beta-BHC	79.0 D	1.42	ug/kg dry	71.851	1.42 U	110	75-143	8.28	40
delta-BHC	69.3 D	1.42	ug/kg dry	71.851	1.42 U	96.5	65-143	8.44	40
Heptachlor	74.7 D	1.42	ug/kg dry	71.851	1.42 U	104	70-139	6.06	40
Aldrin	75.0 D	1.42	ug/kg dry	71.851	1.42 U	104	70-143	5.72	40
Heptachlor epoxide	75.1 D	1.42	ug/kg dry	71.851	1.42 U	104	71-138	6.48	40
gamma-Chlordane	75.1 D	1.42	ug/kg dry	71.851	1.42 U	104	71-137	6.48	40
alpha-Chlordane	76.5 D	1.42	ug/kg dry	71.851	1.42 U	106	72-136	6.36	40
Endosulfan I	76.5 D	1.42	ug/kg dry	71.851	1.42 U	106	72-139	6.80	40
4,4'-DDE	79.8 D	1.42	ug/kg dry	71.851	1.42 U	111	70-154	5.69	40
Dieldrin	75.4 D	1.42	ug/kg dry	71.851	1.42 U	105	73-143	6.90	40
Endrin	79.4 D	1.42	ug/kg dry	71.851	1.42 U	110	74-137	6.56	40
4,4'-DDD	85.5 D	1.42	ug/kg dry	71.851	1.42 U	119	52-153	5.63	40
Endosulfan II	81.9 D	1.42	ug/kg dry	71.851	1.42 U	114	72-139	5.87	40
4,4'-DDT	69.7 D	1.42	ug/kg dry	71.851	1.42 U	97.0	58-148	6.48	40
Endrin aldehyde	58.2 D	1.42	ug/kg dry	71.851	1.42 U	81.0	49-129	9.41	40
Endosulfan sulfate	72.9 D	1.42	ug/kg dry	71.851	1.42 U	102	66-139	6.67	40
Methoxychlor	70.4 D	1.42	ug/kg dry	71.851	1.42 U	98.0	50-144	4.98	40
Endrin ketone	79.8 D	1.42	ug/kg dry	71.851	1.42 U	111	70-139	8.21	40
Surrogate: Tetrachloro-meta-xylene	*35.6*		*ug/kg dry*	*35.929*		*99.0*	*28-166*		
Surrogate: Decachlorobiphenyl	*37.0*		*ug/kg dry*	*35.926*		*103*	*37-153*		
Batch L012111 - SW 3540C									
Blank (L012111-BLK1)			Prepared: 12/08/2010 Analyzed: 12/10/2010						
alpha-BHC	0.330 U	0.330	ug/kg wet						
gamma-BHC	0.330 U	0.330	ug/kg wet						
beta-BHC	0.330 U	0.330	ug/kg wet						
delta-BHC	0.330 U	0.330	ug/kg wet						
Heptachlor	0.330 U	0.330	ug/kg wet						
Aldrin	0.330 U	0.330	ug/kg wet						
Heptachlor epoxide	0.330 U	0.330	ug/kg wet						
gamma-Chlordane	0.330 U	0.330	ug/kg wet						
alpha-Chlordane	0.330 U	0.330	ug/kg wet						
Endosulfan I	0.330 U	0.330	ug/kg wet						
4,4'-DDE	0.330 U	0.330	ug/kg wet						
Dieldrin	0.330 U	0.330	ug/kg wet						

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

Organochlorine Pesticides by SW846 8081A - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012111 - SW 3540C									
Blank (L012111-BLK1)			Prepared: 12/08/2010 Analyzed: 12/10/2010						
Endrin	0.330 U	0.330	ug/kg wet						
4,4'-DDD	0.330 U	0.330	ug/kg wet						
Endosulfan II	0.330 U	0.330	ug/kg wet						
4,4'-DDT	0.330 U	0.330	ug/kg wet						
Endrin aldehyde	0.330 U	0.330	ug/kg wet						
Endosulfan sulfate	0.330 U	0.330	ug/kg wet						
Methoxychlor	0.330 U	0.330	ug/kg wet						
Endrin ketone	0.330 U	0.330	ug/kg wet						
Toxaphene	3.30 U	3.30	ug/kg wet						
Surrogate: Tetrachloro-meta-xylene	*31.7*		*ug/kg wet*	*33.337*		*95.2*	*50-150*		
Surrogate: Decachlorobiphenyl	*28.7*		*ug/kg wet*	*33.333*		*86.0*	*34-174*		
LCS (L012111-BS1)			Prepared: 12/08/2010 Analyzed: 12/10/2010						
alpha-BHC	58.0	0.330	ug/kg wet	66.667		87.0	65-145		
gamma-BHC	62.0	0.330	ug/kg wet	66.667		93.0	70-143		
beta-BHC	59.3	0.330	ug/kg wet	66.667		89.0	75-143		
delta-BHC	56.7	0.330	ug/kg wet	66.667		85.0	65-143		
Heptachlor	56.4	0.330	ug/kg wet	66.667		84.6	70-139		
Aldrin	61.3	0.330	ug/kg wet	66.667		92.0	70-143		
Heptachlor epoxide	58.8	0.330	ug/kg wet	66.667		88.2	71-138		
gamma-Chlordane	59.9	0.330	ug/kg wet	66.667		89.9	71-137		
alpha-Chlordane	59.7	0.330	ug/kg wet	66.667		89.5	72-136		
Endosulfan I	62.7	0.330	ug/kg wet	66.667		94.0	72-139		
4,4'-DDE	64.5	0.330	ug/kg wet	66.667		96.8	70-154		
Dieldrin	61.3	0.330	ug/kg wet	66.667		91.9	73-143		
Endrin	61.0	0.330	ug/kg wet	66.667		91.4	74-137		
4,4'-DDD	62.5	0.330	ug/kg wet	66.667		93.7	52-153		
Endosulfan II	58.9	0.330	ug/kg wet	66.667		88.3	72-139		
4,4'-DDT	57.0	0.330	ug/kg wet	66.667		85.5	58-148		
Endrin aldehyde	46.8	0.330	ug/kg wet	66.667		70.2	49-129		
Endosulfan sulfate	58.7	0.330	ug/kg wet	66.667		88.0	66-139		
Methoxychlor	49.1	0.330	ug/kg wet	66.667		73.6	50-144		
Endrin ketone	58.5	0.330	ug/kg wet	66.667		87.7	70-139		
Surrogate: Tetrachloro-meta-xylene	*29.7*		*ug/kg wet*	*33.337*		*89.0*	*28-166*		
Surrogate: Decachlorobiphenyl	*26.0*		*ug/kg wet*	*33.333*		*78.0*	*37-153*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

Organochlorine Pesticides by SW846 8081A - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012111 - SW 3540C										
Matrix Spike (L012111-MS1)		**Source: 1012008-12**		**Prepared: 12/08/2010 Analyzed: 12/10/2010**						
alpha-BHC	70.5	D	1.40	ug/kg dry	70.494	1.41 U	100	65-145		
gamma-BHC	77.5	D	1.40	ug/kg dry	70.494	1.41 U	110	70-143		
beta-BHC	79.0	D	1.40	ug/kg dry	70.494	1.41 U	112	75-143		
delta-BHC	67.0	D	1.40	ug/kg dry	70.494	1.41 U	95.0	65-143		
Heptachlor	74.4	D	1.40	ug/kg dry	70.494	1.41 U	106	70-139		
Aldrin	74.8	D	1.40	ug/kg dry	70.494	1.41 U	106	70-143		
Heptachlor epoxide	74.0	D	1.40	ug/kg dry	70.494	1.41 U	105	71-138		
gamma-Chlordane	74.0	D	1.40	ug/kg dry	70.494	1.41 U	105	71-137		
alpha-Chlordane	75.1	D	1.40	ug/kg dry	70.494	1.41 U	106	72-136		
Endosulfan I	75.1	D	1.40	ug/kg dry	70.494	1.41 U	106	72-139		
4,4'-DDE	76.1	D	1.40	ug/kg dry	70.494	1.41 U	108	70-154		
Dieldrin	73.7	D	1.40	ug/kg dry	70.494	1.41 U	104	73-143		
Endrin	76.5	D	1.40	ug/kg dry	70.494	1.41 U	108	74-137		
4,4'-DDD	79.9	D	1.40	ug/kg dry	70.494	1.41 U	113	52-153		
Endosulfan II	79.4	D	1.40	ug/kg dry	70.494	1.41 U	113	72-139		
4,4'-DDT	67.7	D	1.40	ug/kg dry	70.494	1.41 U	96.0	58-148		
Endrin aldehyde	64.1	D	1.40	ug/kg dry	70.494	1.41 U	91.0	49-129		
Endosulfan sulfate	68.7	D	1.40	ug/kg dry	70.494	1.41 U	97.5	66-139		
Methoxychlor	65.6	D	1.40	ug/kg dry	70.494	1.41 U	93.0	50-144		
Endrin ketone	78.2	D	1.40	ug/kg dry	70.494	1.41 U	111	70-139		
Surrogate: Tetrachloro-meta-xylene	*26.6*			*ug/kg dry*	*35.251*		*75.5*	*28-166*		
Surrogate: Decachlorobiphenyl	*33.8*			*ug/kg dry*	*35.247*		*96.0*	*37-153*		
Matrix Spike Dup (L012111-MSD1)		**Source: 1012008-12**		**Prepared: 12/08/2010 Analyzed: 12/10/2010**						
alpha-BHC	71.0	D	1.40	ug/kg dry	70.680	1.41 U	100	65-145	0.499	40
gamma-BHC	80.6	D	1.40	ug/kg dry	70.680	1.41 U	114	70-143	3.57	40
beta-BHC	80.9	D	1.40	ug/kg dry	70.680	1.41 U	114	75-143	2.21	40
delta-BHC	70.3	D	1.40	ug/kg dry	70.680	1.41 U	99.5	65-143	4.63	40
Heptachlor	78.5	D	1.40	ug/kg dry	70.680	1.41 U	111	70-139	5.08	40
Aldrin	80.3	D	1.40	ug/kg dry	70.680	1.41 U	114	70-143	6.87	40
Heptachlor epoxide	79.9	D	1.40	ug/kg dry	70.680	1.41 U	113	71-138	7.34	40
gamma-Chlordane	79.2	D	1.40	ug/kg dry	70.680	1.41 U	112	71-137	6.45	40
alpha-Chlordane	80.2	D	1.40	ug/kg dry	70.680	1.41 U	114	72-136	6.36	40
Endosulfan I	80.9	D	1.40	ug/kg dry	70.680	1.41 U	114	72-139	7.24	40
4,4'-DDE	83.4	D	1.40	ug/kg dry	70.680	1.41 U	118	70-154	8.85	40
Dieldrin	79.5	D	1.40	ug/kg dry	70.680	1.41 U	112	73-143	7.37	40
Endrin	83.4	D	1.40	ug/kg dry	70.680	1.41 U	118	74-137	8.39	40

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/15/2010 19:22

Organochlorine Pesticides by SW846 8081A - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012111 - SW 3540C										
Matrix Spike Dup (L012111-MSD1)		**Source: 1012008-12**		**Prepared: 12/08/2010 Analyzed: 12/10/2010**						
4,4'-DDD	88.8	D	1.40	ug/kg dry	70.680	1.41 U	126	52-153	10.3	40
Endosulfan II	86.5	D	1.40	ug/kg dry	70.680	1.41 U	122	72-139	8.25	40
4,4'-DDT	74.9	D	1.40	ug/kg dry	70.680	1.41 U	106	58-148	9.90	40
Endrin aldehyde	69.6	D	1.40	ug/kg dry	70.680	1.41 U	98.5	49-129	7.92	40
Endosulfan sulfate	77.0	D	1.40	ug/kg dry	70.680	1.41 U	109	66-139	11.1	40
Methoxychlor	73.9	D	1.40	ug/kg dry	70.680	1.41 U	104	50-144	11.6	40
Endrin ketone	86.6	D	1.40	ug/kg dry	70.680	1.41 U	122	70-139	9.85	40
Surrogate: Tetrachloro-meta-xylene	*35.0*			*ug/kg dry*	*35.344*		*99.0*	*28-166*		
Surrogate: Decachlorobiphenyl	*39.6*			*ug/kg dry*	*35.340*		*112*	*37-153*		

Date: 7 March 2011
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Sites – Soil Full Protocol - Waste Site 600-202
Subject: Polyaromatic Hydrocarbons - Data Package No. K2681-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K2681 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
J1C3W7	11/29/10	Soil	C	See note 1
J1C3W8	11/29/10	Soil	C	See note 1
J1C3W9	11/29/10	Soil	C	See note 1
J1C3X0	11/29/10	Soil	C	See note 1
J1C3X1	11/29/10	Soil	C	See note 1
J1C3X2	11/29/10	Soil	C	See note 1
J1C3X3	11/29/10	Soil	C	See note 1
J1C3X4	11/29/10	Soil	C	See note 1
J1C3X5	11/29/10	Soil	C	See note 1
J1C3X6	11/29/10	Soil	C	See note 1
J1C3X7	11/29/10	Soil	C	See note 1
J1C3X8	11/29/10	Soil	C	See note 1
J1C3X9	11/29/10	Soil	C	See note 1
J1C422	11/29/10	Soil	C	See note 1

1 – Polyaromatic hydrocarbons by 8310.

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

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

DATA QUALITY 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 acceptable.

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 (equipment) Blanks

No field blanks were submitted for analysis.

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.

All accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

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

All laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1C3W7/J1C3X9) was submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field

duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data package No. K2681 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. 5, *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

POLYAROMATIC HYDROCARBON DATA QUALIFICATION SUMMARY*

SDG: K2681	REVIEWER: ELR	Project: 600-202	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

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/16/2010 18:53

J1C3W7
1012008-01 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	**1.08 J**	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	**4.28**	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*103 %*	*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/16/2010 18:53

J1C3W8
1012008-02 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	**1.74 J**	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	**1.81 J**	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	**0.924 J**	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*110 %*	*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/16/2010 18:53

J1C3W9
1012008-03 (Soil)

✓ 3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	**2.05 J**	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.53 U	3.53	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*106 %*	*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/16/2010 18:53

J1C3X0
1012008-04 (Soil)

3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	**10.9**		3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	**1.23**	**J**	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	**2.39**	**J**	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	**0.879**	**J**	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.51	U	3.51	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*100 %*		*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/16/2010 18:53

J1C3X1
1012008-05 (Soil)

3/5/14

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	**8.37**	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*100 %*	*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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J1C3X2
1012008-06 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.42 U	3.42	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*90 %*	*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/16/2010 18:53

J1C3X3
1012008-07 (Soil)

3/5/4

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*98 %*	*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/16/2010 18:53

J1C3X4
1012008-08 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	**1.07 J**	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.56 U	3.56	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*91 %*	*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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J1C3X5
1012008-09 (Soil)

K 3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthylene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Acenaphthene	**2.05 J**	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluorene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Phenanthrene	**1.11 J**	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Anthracene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Fluoranthene	**2.82 J**	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Indeno[1,2,3-cd]pyrene	**0.970 J**	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Pyrene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benz[a]anthracene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Chrysene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[b] fluoranthene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[k] fluoranthene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[a] pyrene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Dibenz[a,h]anthracene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Benzo[g,h,i] perylene	3.52 U	3.52	ug/kg dry	1	L012103	12/08/2010	12/13/2010	8310
Surrogate: Triphenylene	*105 %*	*68-129*			*L012103*	*12/08/2010*	*12/13/2010*	*8310*

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WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/16/2010 18:53

K 3/5/11

J1C3X6
1012008-10 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthylene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthene	**6.87**	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluorene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Phenanthrene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Anthracene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluoranthene	**3.78**	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Indeno[1,2,3-cd]pyrene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Pyrene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benz[a]anthracene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Chrysene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[b] fluoranthene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[k] fluoranthene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[a] pyrene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Dibenz[a,h]anthracene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[g,h,i] perylene	3.61 U	3.61	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Surrogate: Triphenylene	*108 %*	*68-129*			*L012103*	*12/08/2010*	*12/14/2010*	*8310*

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J1C3X7
1012008-11 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthylene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthene	**1.44 J**	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluorene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Phenanthrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Indeno[1,2,3-cd]pyrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Pyrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benz[a]anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Chrysene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[b] fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[k] fluoranthene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[a] pyrene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Dibenz[a,h]anthracene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[g,h,i] perylene	3.59 U	3.59	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Surrogate: Triphenylene	*89 %*	*68-129*			*L012103*	*12/08/2010*	*12/14/2010*	*8310*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	**Reported:** 12/16/2010 18:53

J1C3X8
1012008-12 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthylene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthene	**11.0**	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluorene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Phenanthrene	**4.07**	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Anthracene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluoranthene	**7.08**	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Indeno[1,2,3-cd]pyrene	**3.05 J**	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Pyrene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benz[a]anthracene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Chrysene	**1.47 J**	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[b] fluoranthene	**1.20 J**	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[k] fluoranthene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[a] pyrene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Dibenz[a,h]anthracene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[g,h,i] perylene	3.54 U	3.54	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Surrogate: Triphenylene	*96 %*	*68-129*			*L012103*	*12/08/2010*	*12/14/2010*	*8310*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/16/2010 18:53

J1C3X9
1012008-13 (Soil)

3/5/11

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310								
Naphthalene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthylene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluorene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Phenanthrene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Anthracene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluoranthene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Indeno[1,2,3-cd]pyrene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Pyrene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benz[a]anthracene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Chrysene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[b] fluoranthene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[k] fluoranthene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[a] pyrene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Dibenz[a,h]anthracene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[g,h,i] perylene	3.48 U	3.48	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Surrogate: Triphenylene	*107 %*	*68-129*			*L012103*	*12/08/2010*	*12/14/2010*	*8310*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/16/2010 18:53

J1C422
1012008-15 (Soil)

3/5/11

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthylene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Acenaphthene	**13.9**		3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluorene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Phenanthrene	**2.17**	J	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Anthracene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Fluoranthene	**3.50**		3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Indeno[1,2,3-cd]pyrene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Pyrene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benz[a]anthracene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Chrysene	**0.867**	J	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[b] fluoranthene	**1.33**	J	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[k] fluoranthene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[a] pyrene	**1.22**	J	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Dibenz[a,h]anthracene	3.33	U	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Benzo[g,h,i] perylene	**1.33**	J	3.33	ug/kg dry	1	L012103	12/08/2010	12/14/2010	8310
Surrogate: Triphenylene	*106 %*		*68-129*			*L012103*	*12/08/2010*	*12/14/2010*	*8310*

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LVL
LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-142 K2681
LVL #: 1012008

W.O. #: 60049-001-001-0001-00
Date Received: 12-02-2010

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

Fourteen (14) soil samples were collected on 11-29-2010.

The samples and associated QC samples were extracted 12-08-2010 and analyzed 12-09,10,13,14,15-2010 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

Lionville Laboratory (LvL) 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. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

1. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The method blank was below the reporting limits for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. The samples were 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 data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

12/22/10
Date

r:\group\data\2010\pah 8310\wc-hanford\1012008jes.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 28 pages.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 1 of 3
Collector: T. Welch-Koelling/R. Berven	Company Contact: Joan Kessner; Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K; Data Turnaround: ~~21~~ 15 Days
Project Designation: 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location: 600-202 (Verification EXL)	SAF No.: RC-142	
Ice Chest No.: WCH-11-014	Field Logbook No.: EL-1643-2; COA: R602022000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A100620	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

000026

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3W7 / SOIL / 11/29/10 / 1120	X	X	X	X	X						
J1C3W8 / SOIL / 1130	X	X	X	X	X						
J1C3W9 / SOIL / 1140	X	X	X	X	X						
J1C3X0 / SOIL / 1200	X	X	X	X	X						
J1C3X1 / SOIL / 11/29/10 / 1215	X	X	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: R. Berven		11-29-10 1500
Received By/Stored In: C. Martinez/C. Martinez		11/29/10 1500
Relinquished By/Removed From: C. Martinez/C. Martinez		11/29/10 1600
Received By/Stored In: 1060 Battelle 3C		11/29/10 1600
Relinquished By/Removed From: Jen Russell		11/30/10 0925
Received By/Stored In: 1060 Battelle 3C		11/30/10 0925
Relinquished By/Removed From: WCH Jen Russell		11/30/10 0940
Received By/Stored In: Fed Ex		11-30-10 0940
Relinquished By/Removed From: Fed Ex		12-2-10 0945
Received By/Stored In: D. Smith		12-2-10 0945
Relinquished By/Removed From		
Received By/Stored In		

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 2 of 3
Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K Data Turnaround ~~21~~ 15 Days
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)	SAF No. RC-142	
Ice Chest No. WCH - 11-014	Field Logbook No. EL-1643-2 COA R602022000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620	Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation			Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container			G/P	G/P	aG	aG	aG				
No. of Container(s)			1	1	1	1	1				
Volume			250mL	125mL	120mL	250mL	120mL				
SAMPLE ANALYSIS			See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081				
Sample No.	Matrix *	Sample Date	Sample Time								
J1C3X2	SOIL	11/29/10	1250	X	X	X	X	X			
J1C3X3	SOIL		1305	X	X	X	X	X			
J1C3X4	SOIL		1240	X	X	X	X	X			
J1C3X5	SOIL		1350	X	X	X	X	X			
J1C3X6	SOIL	11/29/10	1405	X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From R. Berven — Date/Time 11-29-10 1500	Received By/Stored In C. Martinez / C. Martinez — Date/Time 1500 11/29/10	
Relinquished By/Removed From C. Martinez / C. Martinez — Date/Time 1600 11/29/10	Received By/Stored In 1060 Battelle 3C — Date/Time 1600 11/29/10	
Relinquished By/Removed From Jen Russell / Jen Russell 1060 Battelle 3C — Date/Time 0925 11/30/10	Received By/Stored In Jen Russell / Jen Russell — Date/Time 0925 11/30/10	
Relinquished By/Removed From WCH Jen Russell / Jen Russell — Date/Time 0940 11/30/10	Received By/Stored In FedEx — Date/Time	
Relinquished By/Removed From FedEx — Date/Time 12-2-10 / 0945	Received By/Stored In [signature] — Date/Time 0945 12-2-10	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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

000027

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-142-022	Page 3 of 3
Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K Data Turnaround ~~21~~ 15 Days
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142	
Ice Chest No. WCH-11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

0000028

Preservation			Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container			G/P	G/P	aG	aG	aG					
No. of Container(s)			1	1	1	1	1					
Volume			250mL	125mL	120mL	250mL	120mL					
SAMPLE ANALYSIS			See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081					
Sample No.	Matrix *	Sample Date	Sample Time									
J1C3X7	SOIL	11/29/10	1415	X	X	X	X	X				
J1C3X8	SOIL		1435	X	X	X	X	X				
J1C3X9	SOIL		1120	X	X	X	X	X				
J1C424	SOIL	11/29/10	1105	X	n/A	n/A	n/A	n/A				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ric Berven	11-29-10 1500	C. Martinez/C. Martinez	11/29/10 1500
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
C. Martinez/C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Len Russell/Len Russell 1060 Battelle 3C	11/30/10 0925	Len Russell/Len Russell	11/30/10 0925
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Len Russell/Len Russell	11/30/10 0940	Fed EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	12-2-10 1045	[illegible]	12-2-10 1045
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-024	Page 1 of 1
Collector: T. Welch-Koelling/R. Berven	Company Contact: Joan Kessner; Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K (QNF 11/15/10); Data Turnaround: ~~21 Days~~ 15 (QNF 11/15/10) 11/29/10
Project Designation: 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location: 600-202 (Verification SPA)	SAF No.: RC-142	
Ice Chest No.: WCH-11-014	Field Logbook No.: EL-1643-2; COA: R602022000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A100620	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

620000

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						

Sample No.	Matrix *	Sample Date	Sample Time										
J1C419	SOIL												
J1C420	SOIL 11/29/10												
J1C421	SOIL												
J1C422	SOIL	11/29/10	1425	X	X	X	X	X					
~~J1C423~~ SVDH 11/29/10	~~SOIL~~												

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Berven	11-29-10 1500	C. Martinez / C. Martinez	11/29/10 1500
C. Martinez / C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
1060 Battelle 3C	11/29/10 0925	Len Russell / Len Russell	11/30/10 0925
Len Russell / Len Russell	11/30/10 0940	Fed Ex	
Fed Ex	12-2-10 / 0945	D. Smith / D. Smith	12-2-10 / 0945

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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
Ve=Vegetation
X=Other

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

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 600-202			DATA PACKAGE: K2681		
VALIDATOR: ELR		LAB: LLI		DATE: 3/3/11	
			SDG: K2681		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	*
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1C3W7	J1C3W8	J1C3W9	J1C3X0	J1C3X1	
J1C3X2	J1C3X3	J1C3X4	J1C3X5	J1C3X6	
J1C3X7	J1C3X8	J1C3X9	J1C422		
					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) ..... 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/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: no PAS

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 No N/A

Comments:

GENERAL ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, 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: _____

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: _____

Appendix 6

Additional Documentation Requested by Client

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/16/2010 18:53

Polynuclear Aromatic Compounds by SW846 8310 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012103 - SW 3540C									
Blank (L012103-BLK1)			Prepared: 12/08/2010 Analyzed: 12/09/2010						
Naphthalene	3.33 U	3.33	ug/kg wet						
Acenaphthylene	3.33 U	3.33	ug/kg wet						
Acenaphthene	3.33 U	3.33	ug/kg wet						
Fluorene	3.33 U	3.33	ug/kg wet						
Phenanthrene	3.33 U	3.33	ug/kg wet						
Anthracene	3.33 U	3.33	ug/kg wet						
Fluoranthene	3.33 U	3.33	ug/kg wet						
Indeno[1,2,3-cd]pyrene	3.33 U	3.33	ug/kg wet						
Pyrene	3.33 U	3.33	ug/kg wet						
Benz[a]anthracene	3.33 U	3.33	ug/kg wet						
Chrysene	3.33 U	3.33	ug/kg wet						
Benzo[b] fluoranthene	3.33 U	3.33	ug/kg wet						
Benzo[k] fluoranthene	3.33 U	3.33	ug/kg wet						
Benzo[a] pyrene	3.33 U	3.33	ug/kg wet						
Dibenz[a,h]anthracene	3.33 U	3.33	ug/kg wet						
Benzo[g,h,i] perylene	3.33 U	3.33	ug/kg wet						
Surrogate: Triphenylene	*167*		*ug/kg wet*	*166.67*		*100*	*68-129*		
LCS (L012103-BS1)			Prepared: 12/08/2010 Analyzed: 12/10/2010						
Naphthalene	155	3.33	ug/kg wet	166.67		93	0-127		
Acenaphthylene	177	3.33	ug/kg wet	166.67		106	50-140		
Acenaphthene	172	3.33	ug/kg wet	166.67		103	17-139		
Fluorene	173	3.33	ug/kg wet	166.67		104	28-145		
Phenanthrene	178	3.33	ug/kg wet	166.67		107	30-152		
Anthracene	190	3.33	ug/kg wet	166.67		114	19-171		
Fluoranthene	194	3.33	ug/kg wet	166.67		116	34-159		
Indeno[1,2,3-cd]pyrene	174	3.33	ug/kg wet	166.67		105	31-156		
Pyrene	210	3.33	ug/kg wet	166.67		126	33-152		
Benz[a]anthracene	189	3.33	ug/kg wet	166.67		113	32-157		
Chrysene	191	3.33	ug/kg wet	166.67		115	31-159		
Benzo[b] fluoranthene	185	3.33	ug/kg wet	166.67		111	33-164		
Benzo[k] fluoranthene	197	3.33	ug/kg wet	166.67		118	28-161		
Benzo[a] pyrene	177	3.33	ug/kg wet	166.67		106	29-149		
Dibenz[a,h]anthracene	189	3.33	ug/kg wet	166.67		114	27-153		
Benzo[g,h,i] perylene	207	3.33	ug/kg wet	166.67		124	32-157		
Surrogate: Triphenylene	*183*		*ug/kg wet*	*166.67*		*110*	*68-129*		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 12/16/2010 18:53

Polynuclear Aromatic Compounds by SW846 8310 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012103 - SW 3540C									
Matrix Spike (L012103-MS1)		**Source: 1012008-01**		**Prepared: 12/08/2010 Analyzed: 12/15/2010**					
Naphthalene	154	3.57	ug/kg dry	178.74	3.59 U	86	0-127		
Acenaphthylene	179	3.57	ug/kg dry	178.74	3.59 U	100	50-140		
Acenaphthene	163	3.57	ug/kg dry	178.74	1.08	90	17-139		
Fluorene	168	3.57	ug/kg dry	178.74	3.59 U	94	28-145		
Phenanthrene	175	3.57	ug/kg dry	178.74	3.59 U	98	30-152		
Anthracene	184	3.57	ug/kg dry	178.74	3.59 U	103	19-171		
Fluoranthene	177	3.57	ug/kg dry	178.74	3.59 U	99	34-159		
Indeno[1,2,3-cd]pyrene	179	3.57	ug/kg dry	178.74	4.28	98	31-156		
Pyrene	172	3.57	ug/kg dry	178.74	3.59 U	96	33-152		
Benz[a]anthracene	182	3.57	ug/kg dry	178.74	3.59 U	102	32-157		
Chrysene	191	3.57	ug/kg dry	178.74	3.59 U	107	31-159		
Benzo[b] fluoranthene	188	3.57	ug/kg dry	178.74	3.59 U	105	33-164		
Benzo[k] fluoranthene	178	3.57	ug/kg dry	178.74	3.59 U	99	28-161		
Benzo[a] pyrene	181	3.57	ug/kg dry	178.74	3.59 U	101	29-149		
Dibenz[a,h]anthracene	178	3.57	ug/kg dry	178.74	3.59 U	99	27-153		
Benzo[g,h,i] perylene	187	3.57	ug/kg dry	178.74	3.59 U	105	32-157		
Surrogate: Triphenylene	*187*		*ug/kg dry*	*178.74*		*105*	*68-129*		
Matrix Spike Dup (L012103-MSD1)		**Source: 1012008-01**		**Prepared: 12/08/2010 Analyzed: 12/13/2010**					
Naphthalene	152	3.58	ug/kg dry	179.03	3.59 U	85	0-127	1	40
Acenaphthylene	177	3.58	ug/kg dry	179.03	3.59 U	99	50-140	2	40
Acenaphthene	185	3.58	ug/kg dry	179.03	1.08	103	17-139	13	40
Fluorene	172	3.58	ug/kg dry	179.03	3.59 U	96	28-145	2	40
Phenanthrene	181	3.58	ug/kg dry	179.03	3.59 U	101	30-152	3	40
Anthracene	192	3.58	ug/kg dry	179.03	3.59 U	107	19-171	4	40
Fluoranthene	192	3.58	ug/kg dry	179.03	3.59 U	107	34-159	8	40
Indeno[1,2,3-cd]pyrene	179	3.58	ug/kg dry	179.03	4.28	98	31-156	0.06	40
Pyrene	191	3.58	ug/kg dry	179.03	3.59 U	107	33-152	11	40
Benz[a]anthracene	182	3.58	ug/kg dry	179.03	3.59 U	102	32-157	0.1	40
Chrysene	183	3.58	ug/kg dry	179.03	3.59 U	102	31-159	5	40
Benzo[b] fluoranthene	177	3.58	ug/kg dry	179.03	3.59 U	99	33-164	6	40
Benzo[k] fluoranthene	188	3.58	ug/kg dry	179.03	3.59 U	105	28-161	6	40
Benzo[a] pyrene	179	3.58	ug/kg dry	179.03	3.59 U	100	29-149	1	40
Dibenz[a,h]anthracene	179	3.58	ug/kg dry	179.03	3.59 U	100	27-153	0.6	40
Benzo[g,h,i] perylene	190	3.58	ug/kg dry	179.03	3.59 U	106	32-157	1	40
Surrogate: Triphenylene	*191*		*ug/kg dry*	*179.03*		*107*	*68-129*		

Date: 7 March 2011
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-IU-2 & 100-IU-6 Remaining Sites – Soil Full Protocol - Waste Site 600-202
Subject: Wet Chemistry - Data Package No. K2681-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K2681 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
J1C3W7	11/29/10	Soil	C	See note 1
J1C3W8	11/29/10	Soil	C	See note 1
J1C3W9	11/29/10	Soil	C	See note 1
J1C3X0	11/29/10	Soil	C	See note 1
J1C3X1	11/29/10	Soil	C	See note 1
J1C3X2	11/29/10	Soil	C	See note 1
J1C3X3	11/29/10	Soil	C	See note 1
J1C3X4	11/29/10	Soil	C	See note 1
J1C3X5	11/29/10	Soil	C	See note 1
J1C3X6	11/29/10	Soil	C	See note 1
J1C3X7	11/29/10	Soil	C	See note 1
J1C3X8	11/29/10	Soil	C	See note 1
J1C3X9	11/29/10	Soil	C	See note 1
J1C422	11/29/10	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 blank was 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 (J1C3W7/J1C3X9) was submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data package K2681 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*.

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: K2681	REVIEWER: ELR	Project: 600-202	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

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-142 Project Number: K2681 Project Manager: Joan Kessner	Reported: 01/05/2011 12:37

3/5/11

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1C3W7 (1012008-01) Soil									
%Solids	**92.4**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3W8 (1012008-02) Soil									
%Solids	**92.8**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3W9 (1012008-03) Soil									
%Solids	**93.6**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X0 (1012008-04) Soil									
%Solids	**91.4**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X1 (1012008-05) Soil									
%Solids	**90.8**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X2 (1012008-06) Soil									
%Solids	**94.6**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X3 (1012008-07) Soil									
%Solids	**92.2**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	01/05/2011 12:37

Wet Chemistry
Lionville Laboratory

3/5/11

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1C3X4 (1012008-08) Soil									
%Solids	**91.7**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X5 (1012008-09) Soil									
%Solids	**93.9**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X6 (1012008-10) Soil									
%Solids	**91.0**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X7 (1012008-11) Soil									
%Solids	**92.3**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X8 (1012008-12) Soil									
%Solids	**93.3**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.21 U	0.21	0.54	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C3X9 (1012008-13) Soil									
%Solids	**92.1**	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A
J1C424 (1012008-14) Soil									
%Solids	**100**	0.1	0.1	% by Weight	1	L012249	12/17/2010	12/17/2010	SM2540G

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	01/05/2011 12:37

Wet Chemistry
Lionville Laboratory

3/5/11

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1C422 (1012008-15) Soil									
%Solids	93.9	0.1	0.1	% by Weight	1	L012095	12/07/2010	12/07/2010	SM2540G
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L012267	12/21/2010	12/21/2010	SW846 7196A

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-142 K2681
LVL#: 1012008 **Date Received:** 12-02-10

INORGANIC NARRATIVE

1. This narrative covers the analyses of 15 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the data summary report.

   Lionville Lab (LvL) 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. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

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

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

5. The method blank for Hexavalent Chromium (Cr^{6+}) was within the method criteria.

6. The Laboratory Control Samples (LCS) for Cr^{6+} were within the laboratory control limits and method criteria.

7. The matrix spike recoveries for Cr^{6+} were within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

1/5/11
Date

njp\i12-008

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 1 of 3

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ QW 11-15-10 8K	Data Turnaround ~~21~~ QW 11-15-10 Days 15		
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142
Ice Chest No. WCH - 11 - 014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

00015

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No.	Matrix *	Sample Date	Sample Time								
J1C3W7	SOIL	11/29/10	1120	X	X	X	X	X			
J1C3W8	SOIL		1130	X	X	X	X	X			
J1C3W9	SOIL		1140	X	X	X	X	X			
J1C3X0	SOIL		1200	X	X	X	X	X			
J1C3X1	SOIL	11/29/10	1215	X	X	X	X	X			

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: FH Berven	11-29-10 1500	Received By/Stored In: C. Martinez / C. Martinez	11/29/10 1500
Relinquished By/Removed From: C. Martinez / C. Martinez	11/29/10 1600	Received By/Stored In: 1060 Battelle 3C	11/29/10 1600
Relinquished By/Removed From: 1060 Battelle 3C	11/30/10 0925	Received By/Stored In: Len Russell / Len Russell	11/30/10 0925
Relinquished By/Removed From: WCH Len Russell / Len Russell	11/30/10 0940	Received By/Stored In: Fed Ex	11-30-10 JEB 0940
Relinquished By/Removed From: Fed Ex	12-2-10 0945	Received By/Stored In: D. Smith	12-2-10 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; ~~Mercury - 7471 - (CV)~~ 09/23/10

REVIEWED BY JEB DATE 11-30-10

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 2 of 2

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142		
Ice Chest No. WCH - 11 - 014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3X2 / SOIL / 11/29/10 / 1250	X	X	X	X	X						
J1C3X3 / SOIL / (/ 1305	X	X	X	X	X						
J1C3X4 / SOIL / (/ 1240	X	X	X	X	X						
J1C3X5 / SOIL / (/ 1350	X	X	X	X	X						
J1C3X6 / SOIL / 11/29/10 / 1405	X	X	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ric Berven	11-29-10 1500	C. Martinez/C. Martinez	11/29/10 1500
C. Martinez/C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
Len Russell/Len Russell	0925 11/30/10	1060 Battelle 3C / Len Russell/Len Russell	11/30/10 0925
Len Russell/Len Russell	WCH 0940 11/30/10	FedEx	
FedEx	12-2-10/0945	[illegible]	12-2-10 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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
Ve=Vegetation
X=Other

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

WCH-EE-011

000016

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-022	Page 1 of 3

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days		
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification EXL)		SAF No. RC-142
Ice Chest No. WCH-11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C3X7 / SOIL / 11/29/10 / 1415	X	X	X	X	X						
J1C3X8 / SOIL / " / 1435	X	X	X	X	X						
J1C3X9 / SOIL / " / 1120	X	X	X	X	X						
J1C424 / SOIL / 11/29/10 / 1105	X	n/A	n/A	n/A	n/A						

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From Ric Berven 11-29-10 1500	Received By/Stored In C. Martinez C. Martinez 11/29/10	Date/Time 1500
Relinquished By/Removed From C. Martinez C. Martinez 11/29/10	Received By/Stored In 1060 Battelle 3C 11/29/10	Date/Time 1600
Relinquished By/Removed From Len Russell Len Russell 11/30/10 1060 Battelle 3C 11/30	Received By/Stored In Len Russell Len Russell 0925	Date/Time 11/30/10
Relinquished By/Removed From Len Russell Len Russell 0940 11/30/10	Received By/Stored In FedEx	Date/Time
Relinquished By/Removed From FedEx 12-2-10 1040	Received By/Stored In 12-2-10 1045	Date/Time
Relinquished By/Removed From	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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
Vs=Vegetation
X=Other

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

WCH-EE-011

000017

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-142-024	Page

Collector T. Welch-Koelling/R. Berven	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround 21 Days 15		
Project Designation 100-IU-2 & 100-IU-6 Remaining Sites - Soil Full Protocol	Sampling Location 600-202 (Verification SPA)		SAF No. RC-142
Ice Chest No. WCH-11-014	Field Logbook No. EL-1643-2	COA R602022000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100620		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 Deg C

000018

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	120mL	250mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	TPH-Diesel Range - WTPH-D +	PAHs - 8310	Pesticides - 8081						
Sample No. / Matrix * / Sample Date / Sample Time											
J1C419 / SOIL											
J1C420 / SOIL											
J1C421 / SOIL											
J1C422 / SOIL / 11/29/10 / 1425	X	X	X	X	X						
~~J1C423 SUDH 11/29/10 / SOIL~~											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Berven	11-29-10 1500	C. Martinez / C. Martinez	11/29/10 1500
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
C. Martinez / C. Martinez	11/29/10 1600	1060 Battelle 3C	11/29/10 1600
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
1060 Battelle 3C	11/29/10 0925	Len Russell / Len Russell	11/30/10 0925
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Len Russell / Len Russell	11/30/10 0940	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	12-2-10 / 0945	D. Smith	12-2-10 / 0945
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

09/23/10

REVIEWED BY JEB DATE 11-30-10

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

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-202		DATA PACKAGE:	K2681	
VALIDATOR:	EKR	LAB:	LLI	DATE:	3/3/11
			SDG:	K2681	

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				
J1C3W7	J1C3W8	J1C3W9	J1C3X0	J1C3X1
J1C3X2	J1C3X3	J1C3X4	J1C3X5	J1C3X6
J1C3X7	J1C3X8	J1C3X9	J1C422	
				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

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-142	
2620 Fermi Avenue	Project Number: K2681	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	01/05/2011 12:37

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012095 - % Solids											
Duplicate (L012095-DUP3)		**Source: 1012008-01**			Prepared & Analyzed: 12/07/2010						
%Solids	92.5		0.1	0.1	% by Weight		92.4			0.1	20
Batch L012249 - NO PREP											
Duplicate (L012249-DUP1)		**Source: 1012008-14**			Prepared & Analyzed: 12/17/2010						
%Solids	100		0.1	0.1	% by Weight		100			0	20
Batch L012267 - Default Prep GenChem											
Blank (L012267-BLK1)					Prepared & Analyzed: 12/21/2010						
Hexavalent Chromium	0.20	U	0.20	0.50	mg/kg wet						
LCS (L012267-BS1)					Prepared & Analyzed: 12/21/2010						
Hexavalent Chromium	3.92		0.20	0.50	mg/kg wet	4.0000		98	80-120		
LCS (L012267-BS2)					Prepared & Analyzed: 12/21/2010						
Hexavalent Chromium	1040	D	20.0	50.0	mg/kg wet	1139.9		91	80-120		
Duplicate (L012267-DUP1)		**Source: 1012008-01**			Prepared & Analyzed: 12/21/2010						
Hexavalent Chromium	0.24	B	0.22	0.54	mg/kg dry		0.22 U				20
Matrix Spike (L012267-MS1)		**Source: 1012008-01**			Prepared & Analyzed: 12/21/2010						
Hexavalent Chromium	3.27		0.22	0.54	mg/kg dry	4.3283	0.22 U	76	75-125		
Matrix Spike (L012267-MS2)		**Source: 1012008-01**			Prepared & Analyzed: 12/21/2010						
Hexavalent Chromium	941	D	21.6	54.1	mg/kg dry	1128.9	0.22 U	83	75-125		