SAF-RC-225
100K Remaining Waste Sites – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 12/18/12
INITIAL/DATE

COMMENTS:

SDG KP0148 SAF-RC-225

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 100-K-86

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

17 December 2012

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	1211069
SDG #	KP0148
SAF #	RC-225
Date Received	11/16/12
# Samples	1
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	X
PAHs	X
Herbicides	
Metals	X
Inorganics	

The electronic data deliverable (EDD) has been emailed. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation

Orlette S. Johnson
Project Manager

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 46 pages.

R:\GROUP\PM\ORLETTE\Hanford\Data\B_ltrs.DOC

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1211069

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client W.C. Hanford SAF# RC-225 KP0148

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager Charlotte Johnson

QC SW Del SAL TAT 7

Date Rec'd 11-16-12 Date Due 11-23-12

Refrigerator #		A	B		C								
		2	2		2								
#/Type Container	Liquid												
	Solid	1aal	1aal		1								
Volume	Liquid												
	Solid	125	125		125								
Preservatives		—	—		—								
ANALYSES REQUESTED →		ORGANIC					INORG						
		VOA	BNA	Pest/PCB	Herb	TPH-D	PAHs 8310	Cl	Metal + Hg	CN			
		Lionville Laboratory Use Only											
						DRO/MO	8310		METALS				

MATRIX CODES:
W Water
WW Waste Water
GW Groundwater
WST Waste
WI Wipe
SO Solid
S Soil
SL Sludge
SE Sediment
PC Paint Chips
O Oil
NAL Non-Aqueous Liquid
L Leachate
A Air
T Tissue
F Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
01	J1R5M2	✓	✓	S	11-13-12	1220					X	X		X							

Special Instructions:

METALS = HSL + B, Mo, Si (NO TL)

Special Instructions:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11-16-12	1015

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-225-075	Page 1 of 1

Collector Brackett, R	Company Contact Joan Kessner	Telephone No. (509) 375-4688	Project Coordinator KESSNER, JH
Price Code 8B	Data Turnaround 7 Days		
Project Designation 100K Remaining Waste Sites - Soil In-Process	Sampling Location 100-K-86		SAF No. RC-225
Ice Chest No. WCH-11-008	Field Logbook No. EL-1666	COA 010K862600	Method of Shipment FedEx
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A120642		Bill of Lading/Air Bill No. See OSPC

00000004

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C
Type of Container	G/P	aG	aG
No. of Container(s)	1	1	1
Volume	125mL	125mL	125mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	PAHs - 8310
J1R5M2	SOIL	11/13/12	1220	X	X	X
~~J1R5M3~~	SOIL					
~~J1R5M4~~	SOIL					
~~J1R5M5~~	SOIL					
~~J1R5M6~~ — BH 11/13/12	SOIL					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RO3 BRACKETT RBrackett	1315 11-13-12	BHUDSON BHudson	1315 11/13/12
BHUDSON BHudson	11/13/12 1355	1060#1 A. Freier A. Freier	1355 11-13-12
WCH A. Freier A. Freier	1060#1 11-14-12 1042	Fed Ex	
Fed Ex	11-16-12 1015	[illegible]	11-16-12/1015

SPECIAL INSTRUCTIONS

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

REVIEWED BY CMB DATE 11-19-12

KP0148

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

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford **Date:** 11-16-12

Project/SAF/SOW/Release #: RC-225

LvL Batch #: 1211069 **Sample Custodian:** [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7940 7649 2503
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 3.3	°C	Cooler # WCH-11-008
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A
15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted_____ Date _____

SR-002-B-0412.doc

DRO/MO

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

WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2012 13:13

Analytical Report for Extractable Petroleum Hydrocarbons by SW846 8015

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5M2	1211069-01	Soil	11/13/2012 12:20	11/16/2012 10:15

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-225 KP0148
LVL #: 1211069

W.O. #: 60049-001-001-0001-00
Date Received: 11-16-2012

DIESEL RANGE ORGANICS

One (1) soil sample was collected on 11-13-2012.

The sample and associated QC samples were extracted 11-16-2012 and analyzed 11-21,23-2012 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 a sample that met LvL's sample acceptance policy with exceptions noted on the Sample Receipt Checklist.

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. Two (2) of two (2) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12GC195) has been enclosed. The matrix spike recoveries were unobtainable due to high concentration of analytes in sample J1R5M2 requiring a 20-fold dilution.

7. Samples J1R5M2, L211133-MS2, and L211133-MSD2 required 20-fold instrument dilutions due to high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

8. The samples were reported on a dry weight basis.

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

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

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

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

Iain Daniels
LvL Laboratory Manager

12/17/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC195

Initiator: Catherine Carey
Date: 11/23/12
Client: LOC, Hanford

Batch: 1211069
Samples: MS2, MSD2
Method: SW846/MCAWW/CLP/

Parameter: DRO
Matrix: SOIL
Prep Batch: L211133

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Spike recoveries are high in MS2 (1890) + MSD2 (2110)

2. Known or Probable Causes(s)

high concentration of target analytes

3. Discussion and Proposed Action Other Description:

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

Narrate ID

4. Project Manager Instructions...signature/date: 12/17/12

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

5. Final Action...signature/date: 12/17/12 Other Explanation:

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

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

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

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

QA-139-A-0208

GLOSSARY OF DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.
.I	=	Indicates an interference on one analytical column only. Result is reported from remaining analytical column.
P	=	This flag is used for a dual column analysis (i.e. pesticides/PCB/herbicides) when there is greater than 40% difference for detected concentrations between the two GC columns; the lower of the two values is reported on Form 1 and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
NS	=	Not Spiked.
SP	=	Indicates Spiked Compound.
NPM	=	No pattern match for multi-component target analytes.

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

WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2012 13:13

J1R5M2
1211069-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Extractable Petroleum Hydrocarbons by SW846 8015									
Diesel Range Organics	70400	U	70400	ug/kg dry	20	L211133	11/16/2012	11/23/2012	8015M
Motor Oil	**2240000**		211000	ug/kg dry	20	L211133	11/16/2012	11/23/2012	8015M
Surrogate: p-Terphenyl	*76 %*		*39-129*			*L211133*	*11/16/2012*	*11/23/2012*	*8015M*

264 Welsh Pool Road
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Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/23/2012 13:13

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 L211133 - SW 3540C										
Blank (L211133-BLK1)				Prepared: 11/16/2012 Analyzed: 11/21/2012						
Diesel Range Organics	3330	U	3330	ug/kg wet						
Motor Oil	10000	U	10000	ug/kg wet						
Surrogate: p-Terphenyl	*6650*			*ug/kg wet*	*6666.7*		*100*	*39-129*		
LCS (L211133-BS1)				Prepared: 11/16/2012 Analyzed: 11/21/2012						
Diesel Range Organics	50200		3330	ug/kg wet	66667		75	42-133		
Surrogate: p-Terphenyl	*5880*			*ug/kg wet*	*6666.7*		*88*	*39-129*		
Matrix Spike (L211133-MS2)		**Source: 1211069-01**		Prepared: 11/16/2012 Analyzed: 11/23/2012						
Diesel Range Organics	1310000		69200	ug/kg dry	69179	70400 U	1890*	42-133		
Surrogate: p-Terphenyl	*5310*			*ug/kg dry*	*6917.9*		*77*	*39-129*		
Matrix Spike Dup (L211133-MSD2)		**Source: 1211069-01**		Prepared: 11/16/2012 Analyzed: 11/23/2012						
Diesel Range Organics	1490000		70700	ug/kg dry	70724	70400 U	2110*	42-133	11	40
Surrogate: p-Terphenyl	*5670*			*ug/kg dry*	*7072.4*		*80*	*39-129*		

PREPARATION BENCH SHEET

L211133

Lionville Laboratory

Printed: 11/19/2012 9:03:29PM

00000014

Matrix: Solid **Prepared using: Extraction - SW 3540C** **Surrogate used: 1201102**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211067-01	8015M DRO	11/16/2012 15:41	30.02	1				1000	WC-Hanford, Inc.	
1211069-01	8015M DRO	11/16/2012 15:41	30.14	1				1000	WC-Hanford, Inc.	
1211073-01	8015M DRO	11/16/2012 15:41	30	1				1000	WC-Hanford, Inc.	
1211073-02	8015M DRO	11/16/2012 15:41	30.24	1				1000	WC-Hanford, Inc.	
L211133-BLK1	QC	11/16/2012 15:41	30	1				1000		
L211133-BS1	QC	11/16/2012 15:41	30	1	1200846		1000	1000		
L211133-MS1	QC	11/16/2012 15:41	30	1	1200846	1211067-01	1000	1000		
L211133-MS2	QC	11/16/2012 15:41	30.67	1	1200846	1211069-01	1000	1000		
L211133-MS3	QC	11/16/2012 15:41	30.57	1	1200846	1211073-01	1000	1000		
L211133-MSD1	QC	11/16/2012 15:41	30.46	1	1200846	1211067-01	1000	1000		
L211133-MSD2	QC	11/16/2012 15:41	30	1	1200846	1211069-01	1000	1000		
L211133-MSD3	QC	11/16/2012 15:41	30.24	1	1200846	1211073-01	1000	1000		

Extracts Relinquished By — Date 11/19/12 2105

Extracts Received By — Date 11/19/12

PAHs

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

WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/03/2012 13:33

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5M2	1211069-01	Soil	11/13/2012 12:20	11/16/2012 10:15

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-225 KP0148
LVL #: 1211069

W.O. #: 60049-001-001-0001-00
Date Received: 11-16-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

One (1) soil sample was collected on 11-13-2012.

The sample and associated QC samples were extracted 11-16, 28-2012 and analyzed 11-26-2012 and 12-01-2012 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 a sample that met LvL's sample acceptance policy with exceptions noted on the Sample Receipt Checklist.

2. The samples were originally extracted within their holding time. Due to blank contamination, the sample was reextracted outside of hold time. Both the original and the re-extracted results have been reported. A copy of the Sample Discrepancy Report (SDR # 12GC202) has been enclosed.

3. Four (4) of ten (10) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR # 12GC202) has been enclosed.

4. The method blank L211136 contained Acenaphthylene and Fluorene at a level above the reporting limit. Acenaphthylene and Fluorene were detected in the sample processed with this blank at levels at or above the reporting limit. A copy of the Sample Discrepancy Report (SDR # 12GC202) has been enclosed.

5. All blank spike recoveries were within acceptance criteria.

6. Nine (9) of sixty-four (64) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR # 12GC202) has been enclosed.

7. The samples required 20-fold instrument dilutions due to high concentrations of non-target analytes and sample matrix.

8. The sample was reported on a dry weight basis.

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

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

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

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

Iain Daniels
LvL Laboratory Manager

12/17/12
Date

GLOSSARY OF DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
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I	=	Interference.
.I	=	Indicates an interference on one analytical column only. Result is reported from remaining analytical column.
P	=	This flag is used for a dual column analysis (i.e. pesticides/PCB/herbicides) when there is greater than 40% difference for detected concentrations between the two GC columns; the lower of the two values is reported on Form 1 and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
NS	=	Not Spiked.
SP	=	Indicates Spiked Compound.
NPM	=	No pattern match for multi-component target analytes.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC202

Initiator: Catherine Carey
Date: 12/03/12
Client: WC Hanford

Batch: 1211069
Samples: 01, BLK1, MS2/MSD2
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: SOIL
Prep Batch: L211232 + L211136

1. Reason for SDR

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

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

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

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

surrogate recovery high in sample 401 (201%) + L211136-MS2 + L211237-MS2/MSD2

several spike recoveries outside QC limits in L211136 MS2/MSD2 + L211237 MS2/MSD2

L211136 BLK contains Fluorene / Acenaphthylene

2. Known or Probable Causes(s)

Samples are high in non target analytes and appear to be non homogeneous.

3. Discussion and Proposed Action

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

Other Description:

Fluorene was not detected in samples and blank L211136 was less than client required DL.
Data from original run is usable for all analytes but Acenaphthylene
Narrate ID.

12/17/12

4. Project Manager Instructions...signature/date: 12/17/12

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

5. Final Action...signature/date: 12/17/12

Other Explanation:

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

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

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

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

QA-139-A-0208

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

WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/03/2012 13:33

J1R5M2
1211069-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Acenaphthylene	**495**	D	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Acenaphthene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Fluorene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Phenanthrene	**320**	D	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Anthracene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Fluoranthene	**57.8**	J, D	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Indeno[1,2,3-cd]pyrene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Pyrene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Benz[a]anthracene	**346**	D	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Chrysene	**285**	D	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Benzo[b] fluoranthene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Benzo[k] fluoranthene	**74.4**	D	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Benzo[a] pyrene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Dibenz[a,h]anthracene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Benzo[g,h,i] perylene	70.7	U	70.7	ug/kg dry	20	L211136	11/16/2012	11/26/2012	8310
Surrogate: Triphenylene	*201 % **		*68-129*			*L211136*	*11/16/2012*	*11/26/2012*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0148 Project Manager: Joan Kessner	**Reported:** 12/03/2012 13:33

J1R5M2
1211069-01RE1 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Acenaphthylene	**214**	D	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Acenaphthene	**49.0**	J, D	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Fluorene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Phenanthrene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Anthracene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Fluoranthene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Indeno[1,2,3-cd]pyrene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Pyrene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Benz[a]anthracene	**136**	D	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Chrysene	**142**	D	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Benzo[b] fluoranthene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Benzo[k] fluoranthene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Benzo[a] pyrene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Dibenz[a,h]anthracene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Benzo[g,h,i] perylene	70.5	U	70.5	ug/kg dry	20	L211237	11/28/2012	12/01/2012	8310
Surrogate: Triphenylene	*126 %*		*68-129*			*L211237*	*11/28/2012*	*12/01/2012*	*8310*

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WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/03/2012 13:33

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 L211136 - SW 3540C										
Blank (L211136-BLK1)				Prepared: 11/16/2012 Analyzed: 11/26/2012						
Naphthalene	3.33	U	3.33	ug/kg wet						
Acenaphthylene	197		3.33	ug/kg wet						
Acenaphthene	3.33	U	3.33	ug/kg wet						
Fluorene	5.00		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	*146*			*ug/kg wet*	*166.67*		*88*	*68-129*		
LCS (L211136-BS1)				Prepared: 11/16/2012 Analyzed: 11/26/2012						
Naphthalene	152		3.33	ug/kg wet	166.67		91	0-127		
Acenaphthylene	160		3.33	ug/kg wet	166.67		96	50-140		
Acenaphthene	161		3.33	ug/kg wet	166.67		97	17-139		
Fluorene	164		3.33	ug/kg wet	166.67		99	28-145		
Phenanthrene	162		3.33	ug/kg wet	166.67		97	30-152		
Anthracene	160		3.33	ug/kg wet	166.67		96	19-171		
Fluoranthene	166		3.33	ug/kg wet	166.67		100	34-159		
Indeno[1,2,3-cd]pyrene	165		3.33	ug/kg wet	166.67		99	31-156		
Pyrene	168		3.33	ug/kg wet	166.67		101	33-152		
Benz[a]anthracene	173		3.33	ug/kg wet	166.67		104	32-157		
Chrysene	162		3.33	ug/kg wet	166.67		97	31-159		
Benzo[b] fluoranthene	174		3.33	ug/kg wet	166.67		104	33-164		
Benzo[k] fluoranthene	172		3.33	ug/kg wet	166.67		103	28-161		
Benzo[a] pyrene	174		3.33	ug/kg wet	166.67		104	29-149		
Dibenz[a,h]anthracene	176		3.33	ug/kg wet	166.67		106	27-153		
Benzo[g,h,i] perylene	179		3.33	ug/kg wet	166.67		107	32-157		
Surrogate: Triphenylene	*172*			*ug/kg wet*	*166.67*		*103*	*68-129*		

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WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/03/2012 13:33

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 L211136 - SW 3540C										
Matrix Spike (L211136-MS2)		**Source: 1211069-01**		Prepared: 11/16/2012 Analyzed: 11/26/2012						
Naphthalene	167	D	69.3	ug/kg dry	173.34	70.7 U	96	0-127		
Acenaphthylene	369	D	69.3	ug/kg dry	173.34	495	-72*	50-140		
Acenaphthene	130	D	69.3	ug/kg dry	173.34	70.7 U	75	17-139		
Fluorene	205	D	69.3	ug/kg dry	173.34	70.7 U	118	28-145		
Phenanthrene	464	D	69.3	ug/kg dry	173.34	320	83	30-152		
Anthracene	103	D	69.3	ug/kg dry	173.34	70.7 U	59	19-171		
Fluoranthene	333	D	69.3	ug/kg dry	173.34	57.8	159	34-159		
Indeno[1,2,3-cd]pyrene	102	D	69.3	ug/kg dry	173.34	70.7 U	59	31-156		
Pyrene	153	D	69.3	ug/kg dry	173.34	70.7 U	88	33-152		
Benz[a]anthracene	277	D	69.3	ug/kg dry	173.34	346	-40*	32-157		
Chrysene	255	D	69.3	ug/kg dry	173.34	285	-17*	31-159		
Benzo[b] fluoranthene	108	D	69.3	ug/kg dry	173.34	70.7 U	62	33-164		
Benzo[k] fluoranthene	170	D	69.3	ug/kg dry	173.34	74.4	55	28-161		
Benzo[a] pyrene	133	D	69.3	ug/kg dry	173.34	70.7 U	76	29-149		
Dibenz[a,h]anthracene	104	D	69.3	ug/kg dry	173.34	70.7 U	60	27-153		
Benzo[g,h,i] perylene	119	D	69.3	ug/kg dry	173.34	70.7 U	69	32-157		
Surrogate: Triphenylene	*230*			*ug/kg dry*	*173.34*		*133**	*68-129*		
Matrix Spike Dup (L211136-MSD2)		**Source: 1211069-01**		Prepared: 11/16/2012 Analyzed: 11/26/2012						
Naphthalene	208	D	68.8	ug/kg dry	172.22	70.7 U	121	0-127	23	40
Acenaphthylene	370	D	68.8	ug/kg dry	172.22	495	-72*	50-140	-0.05	40
Acenaphthene	68.8	U	68.8	ug/kg dry	172.22	70.7 U	*	17-139		40
Fluorene	184	D	68.8	ug/kg dry	172.22	70.7 U	107	28-145	10	40
Phenanthrene	440	D	68.8	ug/kg dry	172.22	320	70	30-152	17	40
Anthracene	84.4	D	68.8	ug/kg dry	172.22	70.7 U	49	19-171	19	40
Fluoranthene	319	D	68.8	ug/kg dry	172.22	57.8	152	34-159	5	40
Indeno[1,2,3-cd]pyrene	83.3	D	68.8	ug/kg dry	172.22	70.7 U	48	31-156	19	40
Pyrene	133	D	68.8	ug/kg dry	172.22	70.7 U	77	33-152	14	40
Benz[a]anthracene	253	D	68.8	ug/kg dry	172.22	346	-54*	32-157	-30	40
Chrysene	222	D	68.8	ug/kg dry	172.22	285	-37*	31-159	-71	40
Benzo[b] fluoranthene	87.1	D	68.8	ug/kg dry	172.22	70.7 U	51	33-164	20	40
Benzo[k] fluoranthene	138	D	68.8	ug/kg dry	172.22	74.4	37	28-161	39	40
Benzo[a] pyrene	107	D	68.8	ug/kg dry	172.22	70.7 U	62	29-149	21	40
Dibenz[a,h]anthracene	122	D	68.8	ug/kg dry	172.22	70.7 U	71	27-153	16	40
Benzo[g,h,i] perylene	76.5	D	68.8	ug/kg dry	172.22	70.7 U	44	32-157	43*	40
Surrogate: Triphenylene	*207*			*ug/kg dry*	*172.22*		*120*	*68-129*		

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WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/03/2012 13:33

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 L211237 - SW 3540C										
Blank (L211237-BLK1)				Prepared: 11/28/2012 Analyzed: 12/01/2012						
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	*140*			*ug/kg wet*	*166.67*		*84*	*68-129*		
LCS (L211237-BS1)				Prepared: 11/28/2012 Analyzed: 12/01/2012						
Naphthalene	113		3.33	ug/kg wet	166.67		68	0-127		
Acenaphthylene	140		3.33	ug/kg wet	166.67		84	50-140		
Acenaphthene	128		3.33	ug/kg wet	166.67		77	17-139		
Fluorene	142		3.33	ug/kg wet	166.67		85	28-145		
Phenanthrene	137		3.33	ug/kg wet	166.67		82	30-152		
Anthracene	142		3.33	ug/kg wet	166.67		85	19-171		
Fluoranthene	140		3.33	ug/kg wet	166.67		84	34-159		
Indeno[1,2,3-cd]pyrene	147		3.33	ug/kg wet	166.67		88	31-156		
Pyrene	144		3.33	ug/kg wet	166.67		86	33-152		
Benz[a]anthracene	151		3.33	ug/kg wet	166.67		90	32-157		
Chrysene	145		3.33	ug/kg wet	166.67		87	31-159		
Benzo[b] fluoranthene	154		3.33	ug/kg wet	166.67		92	33-164		
Benzo[k] fluoranthene	153		3.33	ug/kg wet	166.67		92	28-161		
Benzo[a] pyrene	157		3.33	ug/kg wet	166.67		94	29-149		
Dibenz[a,h]anthracene	156		3.33	ug/kg wet	166.67		94	27-153		
Benzo[g,h,i] perylene	158		3.33	ug/kg wet	166.67		95	32-157		
Surrogate: Triphenylene	*143*			*ug/kg wet*	*166.67*		*86*	*68-129*		

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WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/03/2012 13:33

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 L211237 - SW 3540C										
Matrix Spike (L211237-MS2)	**Source: 1211069-01RE1** Prepared: 11/28/2012 Analyzed: 12/01/2012									
Naphthalene	138	D	70.6	ug/kg dry	176.69	70.5 U	78	0-127		
Acenaphthylene	399	D	70.6	ug/kg dry	176.69	214	105	50-140		
Acenaphthene	211	D	70.6	ug/kg dry	176.69	49.0	92	17-139		
Fluorene	104	D	70.6	ug/kg dry	176.69	70.5 U	59	28-145		
Phenanthrene	135	D	70.6	ug/kg dry	176.69	70.5 U	76	30-152		
Anthracene	85.2	D	70.6	ug/kg dry	176.69	70.5 U	48	19-171		
Fluoranthene	161	D	70.6	ug/kg dry	176.69	70.5 U	91	34-159		
Indeno[1,2,3-cd]pyrene	69.6	J, D	70.6	ug/kg dry	176.69	70.5 U	39	31-156		
Pyrene	126	D	70.6	ug/kg dry	176.69	70.5 U	71	33-152		
Benz[a]anthracene	350	D	70.6	ug/kg dry	176.69	136	121	32-157		
Chrysene	244	D	70.6	ug/kg dry	176.69	142	58	31-159		
Benzo[b] fluoranthene	110	D	70.6	ug/kg dry	176.69	70.5 U	62	33-164		
Benzo[k] fluoranthene	150	D	70.6	ug/kg dry	176.69	70.5 U	85	28-161		
Benzo[a] pyrene	117	D	70.6	ug/kg dry	176.69	70.5 U	66	29-149		
Dibenz[a,h]anthracene	116	D	70.6	ug/kg dry	176.69	70.5 U	66	27-153		
Benzo[g,h,i] perylene	101	D	70.6	ug/kg dry	176.69	70.5 U	57	32-157		
Surrogate: Triphenylene	*240*			*ug/kg dry*	*176.69*		*136**	*68-129*		
Matrix Spike Dup (L211237-MSD2)	**Source: 1211069-01RE1** Prepared: 11/28/2012 Analyzed: 12/01/2012									
Naphthalene	186	D	68.4	ug/kg dry	171.22	70.5 U	109	0-127	33	40
Acenaphthylene	289	D	68.4	ug/kg dry	171.22	214	44*	50-140	82*	40
Acenaphthene	226	D	68.4	ug/kg dry	171.22	49.0	103	17-139	12	40
Fluorene	111	D	68.4	ug/kg dry	171.22	70.5 U	65	28-145	10	40
Phenanthrene	141	D	68.4	ug/kg dry	171.22	70.5 U	83	30-152	8	40
Anthracene	83.9	D	68.4	ug/kg dry	171.22	70.5 U	49	19-171	2	40
Fluoranthene	188	D	68.4	ug/kg dry	171.22	70.5 U	110	34-159	19	40
Indeno[1,2,3-cd]pyrene	68.4	J, D	68.4	ug/kg dry	171.22	70.5 U	40	31-156	1	40
Pyrene	119	D	68.4	ug/kg dry	171.22	70.5 U	69	33-152	3	40
Benz[a]anthracene	270	D	68.4	ug/kg dry	171.22	136	78	32-157	44*	40
Chrysene	223	D	68.4	ug/kg dry	171.22	142	47	31-159	21	40
Benzo[b] fluoranthene	103	D	68.4	ug/kg dry	171.22	70.5 U	60	33-164	4	40
Benzo[k] fluoranthene	113	D	68.4	ug/kg dry	171.22	70.5 U	66	28-161	25	40
Benzo[a] pyrene	106	D	68.4	ug/kg dry	171.22	70.5 U	62	29-149	7	40
Dibenz[a,h]anthracene	104	D	68.4	ug/kg dry	171.22	70.5 U	61	27-153	8	40
Benzo[g,h,i] perylene	50.8	J, D	68.4	ug/kg dry	171.22	70.5 U	30*	32-157	63*	40
Surrogate: Triphenylene	*225*			*ug/kg dry*	*171.22*		*131**	*68-129*		

PREPARATION BENCH SHEET

L211237

Lionville Laboratory

Printed: 12/3/2012 9:05:16PM

00000027

Matrix: Solid **Prepared using: HPLC - SW 3540C** **Surrogate used: 1200612**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211067-01	8310 PAH	11/28/2012 14:35	15.59	5				50	WC-Hanford, Inc.	
1211069-01RE1	8310 PAH	11/28/2012 14:35	30.08	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
1211073-01RE1	8310 PAH	11/28/2012 14:35	30.47	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
1211073-02RE1	8310 PAH	11/28/2012 14:35	30.13	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
L211237-BLK1	QC	11/28/2012 14:35	30	5				50		
L211237-BS1	QC	11/28/2012 14:35	30	5	1200963		50	50		
L211237-MS1	QC	11/28/2012 14:35	15.03	5	1200963	1211067-01	50	50		
L211237-MS2	QC	11/28/2012 14:35	30.02	5	1200963	211069-01RE	50	50		
L211237-MS3	QC	11/28/2012 14:35	30.76	5	1200963	211073-01RE	50	50		
L211237-MSD1	QC	11/28/2012 14:35	15.3	5	1200963	1211067-01	50	50		
L211237-MSD2	QC	11/28/2012 14:35	30.98	5	1200963	211069-01RE	50	50		
L211237-MSD3	QC	11/28/2012 14:35	30	5	1200963	211073-01RE	50	50		

From L211136 on 11/28/2012 by MLF

Revision for BSD CAC 12/03/12

Extracts Relinquished By Date

Extracts Received By Date

PREPARATION BENCH SHEET

L211237

Lionville Laboratory

Printed: 12/3/2012 10:56:19AM

000000028

Matrix: Solid **Prepared using: HPLC - SW 3540C** **Surrogate used: 1200612**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211067-01	8310 PAH	11/28/2012 14:35	15.59	5				50	WC-Hanford, Inc.	
1211069-01RE1	8310 PAH	11/28/2012 14:35	30.08	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
1211073-01RE1	8310 PAH	11/28/2012 14:35	30.47	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
1211073-02RE1	8310 PAH	11/28/2012 14:35	30.13	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
L211237-BLK1	QC	11/28/2012 14:35	30	5				50		
L211237-BS1	QC	11/28/2012 14:35	30	5	1200963		50	50		
~~L211237-BSD1~~	~~QC~~	~~11/28/2012 14:35~~	~~30~~	~~5~~				~~50~~		
L211237-MS1	QC	11/28/2012 14:35	15.03	5	1200963	1211067-01	50	50		
L211237-MS2	QC	11/28/2012 14:35	30.02	5	1200963	211069-01RE	50	50		
L211237-MS3	QC	11/28/2012 14:35	30.76	5	1200963	211073-01RE	50	50		
L211237-MSD1	QC	11/28/2012 14:35	15.3	5	1200963	1211067-01	50	50		
L211237-MSD2	QC	11/28/2012 14:35	30.98	5	1200963	211069-01RE	50	50		
L211237-MSD3	QC	11/28/2012 14:35	30	5	1200963	211073-01RE	50	50		

From L211136 on 11/28/2012 by MLF

LK 12-3-12

Extracts Relinquished By Date

Revision

Extracts Received By Date

PREPARATION BENCH SHEET

L211237

Lionville Laboratory

Printed: 11/29/2012 2:55:03PM

Matrix: Solid **Prepared using: SVOCGCMS - SW 3540C** **Surrogate used: 1200612**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211067-01RE1	8310 PAH	11/28/2012 14:35	15.59	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
1211069-01RE1	8310 PAH	11/28/2012 14:35	30.08	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
1211073-01RE1	8310 PAH	11/28/2012 14:35	30.47	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
1211073-02RE1	8310 PAH	11/28/2012 14:35	30.13	5				50	WC-Hanford, Inc.	From L211136 by MLF on 11/28/2012
L211237-BLK1	QC	11/28/2012 14:35	30	5				50		
L211237-BS1	QC	11/28/2012 14:35	30	5	1200963		50	50		
L211237-MS1	QC	11/28/2012 14:35	15.03	5	1200963	211067-01RE	50	50		
L211237-MS2	QC	11/28/2012 14:35	30.02	5	1200963	211069-01RE	50	50		
L211237-MS3	QC	11/28/2012 14:35	30.76	5	1200963	211073-01RE	50	50		
L211237-MSD1	QC	11/28/2012 14:35	15.3	5	1200963	211067-01RE	50	50		
L211237-MSD2	QC	11/28/2012 14:35	30.98	5	1200963	211069-01RE	50	50		
L211237-MSD3	QC	11/28/2012 14:35	30	5	1200963	211073-01RE	50	50		

From L211136 on 11/28/2012 by MLF

11/29/12 1525 — Extracts Relinquished By — Date

11/30/12 — Extracts Received By — Date

PREPARATION BENCH SHEET

L211136

Lionville Laboratory

Printed: 11/19/2012 5:22:06PM

Matrix: Solid **Prepared using: Extraction - SW 3540/~~3550~~ C Burn 11/12 TE** **Surrogate used: 1200612**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211067-01	8310 PAH	11/16/2012 16:00	30.35	5				50	WC-Hanford, Inc.	
1211069-01	8310 PAH	11/16/2012 16:00	30	5				50	WC-Hanford, Inc.	
1211073-01	8310 PAH	11/16/2012 16:00	30.24	5				50	WC-Hanford, Inc.	
1211073-02	8310 PAH	11/16/2012 16:00	30.13	5				50	WC-Hanford, Inc.	
L211136-BLK1	QC	11/16/2012 16:00	30	5				50		
L211136-BS1	QC	11/16/2012 16:00	30	5	1200963		50	50		
L211136-MS1	QC	11/16/2012 16:00	30.37	5	1200963	1211067-01	50	50		
L211136-MS2	QC	11/16/2012 16:00	30.6	5	1200963	1211069-01	50	50		
L211136-MS3	QC	11/16/2012 16:00	30.28	5	1200963	1211073-02	50	50		
L211136-MSD1	QC	11/16/2012 16:00	30.58	5	1200963	1211067-01	50	50		
L211136-MSD2	QC	11/16/2012 16:00	30.8	5	1200963	1211069-01	50	50		
L211136-MSD3	QC	11/16/2012 16:00	30.3	5	1200963	1211073-02	50	50		

Extracts Relinquished By — Date 11/19/12 17:22

Extracts Received By — Date 11/19/12

METALS

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
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WC-Hanford, Inc.	Project: RC-225	
2620 Fermi Avenue	Project Number: KP0148	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/03/2012 09:19

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5M2	1211069-01	Soil	11/13/2012 12:20	11/16/2012 10:15

LIONVILLE LABORATORY
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Case Narrative

Client: WC-HANFORD RC-225
LVL#: 1211069
SDG/SAF#: KP0148/RC-225

W.O.#: 60049-001-001-0001-00
Date Received: 11-16-12

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 analysis of 1 soil sample.

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

   All samples were analyzed and reported with 3-fold dilutions for ICP metals due to sample matrix.

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

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

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation, 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.

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 pages.

11. For analytes where the MS is out of control, a post-digestion MS (PDS) is performed. A PDS was prepared at meaningful concentration levels for the following analytes: Aluminum, Iron, Antimony, Magnesium, Manganese, Vanadium, and Silicon.

12. All duplicate analyses were within 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

12/3/12
Date

alm/11-069hg%

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0148 Project Manager: Joan Kessner	**Reported:** 12/03/2012 09:19

Notes and Definitions

U	Analyte included in the analysis, but not detected
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
B	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag)
*	Value outside QC acceptance criteria
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0148 Project Manager: Joan Kessner	**Reported:** 12/03/2012 09:19

J1R5M2
1211069-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**10900**		14.2	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Antimony	1.70	U	1.70	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Arsenic	**2.86**		2.84	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Barium	**78.7**		1.42	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Beryllium	**0.398**	B	0.568	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Boron	**1.86**	B	5.68	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Cadmium	0.568	U	0.568	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Calcium	**3700**		284	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Chromium	**13.6**		0.568	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Cobalt	**7.91**		5.68	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Copper	**15.1**		2.84	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Iron	**24400**		56.8	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Lead	**5.46**		1.42	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Magnesium	**3940**		213	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Manganese	**379**		14.2	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Molybdenum	5.68	U	5.68	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Nickel	**10.9**	B	11.4	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Potassium	**1930**		1140	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Selenium	0.852	U	0.852	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Silicon	**1320**		5.68	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Silver	0.568	U	0.568	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Sodium	**258**		142	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Vanadium	**60.5**		7.10	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Zinc	**49.4**		28.4	mg/kg dry	3	L211166	11/20/2012	11/29/2012	6010B
Mercury	0.0265	U	0.0265	mg/kg dry	1	L211168	11/20/2012	11/21/2012	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0148 Project Manager: Joan Kessner	**Reported:** 12/03/2012 09:19

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 L211166 - SW 3050B										
Blank (L211166-BLK1)				Prepared: 11/20/2012 Analyzed: 11/29/2012						
Aluminum	4.81	U	4.81	mg/kg wet						
Antimony	0.577	U	0.577	mg/kg wet						
Arsenic	0.962	U	0.962	mg/kg wet						
Barium	0.481	U	0.481	mg/kg wet						
Beryllium	0.192	U	0.192	mg/kg wet						
Boron	1.92	U	1.92	mg/kg wet						
Cadmium	0.192	U	0.192	mg/kg wet						
Calcium	96.2	U	96.2	mg/kg wet						
Chromium	0.192	U	0.192	mg/kg wet						
Cobalt	1.92	U	1.92	mg/kg wet						
Copper	0.962	U	0.962	mg/kg wet						
Iron	19.2	U	19.2	mg/kg wet						
Lead	0.481	U	0.481	mg/kg wet						
Magnesium	1.90	B	72.1	mg/kg wet						
Manganese	4.81	U	4.81	mg/kg wet						
Molybdenum	1.92	U	1.92	mg/kg wet						
Nickel	3.85	U	3.85	mg/kg wet						
Potassium	385	U	385	mg/kg wet						
Selenium	0.288	U	0.288	mg/kg wet						
Silicon	1.92	U	1.92	mg/kg wet						
Silver	0.192	U	0.192	mg/kg wet						
Sodium	48.1	U	48.1	mg/kg wet						
Vanadium	2.40	U	2.40	mg/kg wet						
Zinc	9.62	U	9.62	mg/kg wet						
Duplicate (L211166-DUP2)		**Source: 1211069-01**		Prepared: 11/20/2012 Analyzed: 11/29/2012						
Aluminum	11100		13.3	mg/kg dry		10900			2	20
Antimony	1.59	U	1.59	mg/kg dry		1.70 U				20
Arsenic	2.62	B	2.65	mg/kg dry		2.86			9	20
Barium	78.1		1.33	mg/kg dry		78.7			0.7	20
Beryllium	0.406	B	0.530	mg/kg dry		0.398			2	20
Boron	1.97	B	5.30	mg/kg dry		1.86			6	20
Cadmium	0.530	U	0.530	mg/kg dry		0.568 U				20
Calcium	3790		265	mg/kg dry		3700			2	20
Chromium	14.0		0.530	mg/kg dry		13.6			3	20
Cobalt	7.76		5.30	mg/kg dry		7.91			2	20
Copper	15.0		2.65	mg/kg dry		15.1			0.7	20

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0148 Project Manager: Joan Kessner	**Reported:** 12/03/2012 09:19

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 L211166 - SW 3050B										
Duplicate (L211166-DUP2)		**Source: 1211069-01**		Prepared: 11/20/2012 Analyzed: 11/29/2012						
Iron	24100		53.0	mg/kg dry		24400			2	20
Lead	5.36		1.33	mg/kg dry		5.46			2	20
Magnesium	4110		199	mg/kg dry		3940			4	20
Manganese	379		13.3	mg/kg dry		379			0.05	20
Molybdenum	5.30	U	5.30	mg/kg dry		5.68 U				20
Nickel	11.0		10.6	mg/kg dry		10.9			1	20
Potassium	1960		1060	mg/kg dry		1930			2	20
Selenium	0.796	U	0.796	mg/kg dry		0.852 U				20
Silicon	1410		5.30	mg/kg dry		1320			7	20
Silver	0.530	U	0.530	mg/kg dry		0.568 U				20
Sodium	253		133	mg/kg dry		258			2	20
Vanadium	56.3		6.63	mg/kg dry		60.5			7	20
Zinc	50.0		26.5	mg/kg dry		49.4			1	20
Matrix Spike (L211166-MS2)		**Source: 1211069-01**		Prepared: 11/20/2012 Analyzed: 11/29/2012						
Aluminum	11700		13.0	mg/kg dry	173.91	10900	479*	75-125		
Antimony	11.7		1.57	mg/kg dry	43.478	1.70 U	27*	75-125		
Arsenic	157		2.61	mg/kg dry	173.91	2.86	88	75-125		
Barium	233		1.30	mg/kg dry	173.91	78.7	89	75-125		
Beryllium	4.31		0.522	mg/kg dry	4.3478	0.398	90	75-125		
Boron	76.8		5.22	mg/kg dry	86.955	1.86	86	75-125		
Cadmium	3.83		0.522	mg/kg dry	4.3478	0.568 U	88	75-125		
Calcium	5840		261	mg/kg dry	2173.9	3700	98	75-125		
Chromium	28.3		0.522	mg/kg dry	17.391	13.6	84	75-125		
Cobalt	44.9		5.22	mg/kg dry	43.478	7.91	85	75-125		
Copper	32.2		2.61	mg/kg dry	21.739	15.1	78	75-125		
Iron	20700		52.2	mg/kg dry	86.955	24400	-4290*	75-125		
Lead	43.2		1.30	mg/kg dry	43.478	5.46	87	75-125		
Magnesium	5480		196	mg/kg dry	2173.9	3940	71*	75-125		
Manganese	374		13.0	mg/kg dry	43.478	379	-13*	75-125		
Molybdenum	76.1		5.22	mg/kg dry	86.955	5.68 U	87	75-125		
Nickel	47.9		10.4	mg/kg dry	43.478	10.9	85	75-125		
Potassium	4020		1040	mg/kg dry	2173.9	1930	96	75-125		
Selenium	153		0.783	mg/kg dry	173.91	0.852 U	88	75-125		
Silicon	1580		5.22	mg/kg dry	86.955	1320	298*	75-125		
Silver	3.77		0.522	mg/kg dry	4.3478	0.568 U	87	75-125		
Sodium	2410		130	mg/kg dry	2173.9	258	99	75-125		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0148 Project Manager: Joan Kessner	**Reported:** 12/03/2012 09:19

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 L211166 - SW 3050B									
Matrix Spike (L211166-MS2)		**Source: 1211069-01**	Prepared: 11/20/2012 Analyzed: 11/29/2012						
Vanadium	91.6	6.52	mg/kg dry	43.478	60.5	72*	75-125		
Zinc	82.1	26.1	mg/kg dry	43.478	49.4	75	75-125		
Post Spike (L211166-PS2)		**Source: 1211069-01**	Prepared: 11/20/2012 Analyzed: 11/29/2012						
Aluminum	178000		ug/L	66000	115000	95	75-125		
Antimony	304		ug/L	300.00	-0.540	102	75-125		
Iron	367000		ug/L	126000	258000	87	75-125		
Magnesium	100000		ug/L	64800	41600	91	75-125		
Manganese	6750		ug/L	3000.0	4000	92	75-125		
Silicon	17300		ug/L	3300.0	13900	101	75-125		
Vanadium	3490		ug/L	3000.0	638	95	75-125		
Reference (L211166-SRM1)			Prepared: 11/20/2012 Analyzed: 11/29/2012						
Aluminum	12000	14.7	mg/kg wet	6670.0		180	0-200.89		
Antimony	34.3	1.76	mg/kg wet	53.000		65	0-235.8		
Arsenic	117	2.94	mg/kg wet	114.00		103	82.8-117.54		
Barium	331	1.47	mg/kg wet	307.00		108	79.8-120.2		
Beryllium	111	0.588	mg/kg wet	108.00		103	82.8-117.6		
Boron	81.9	5.88	mg/kg wet	85.100		96	67.5-132.8		
Cadmium	231	0.588	mg/kg wet	225.00		102	83.6-116.4		
Calcium	3400	294	mg/kg wet	3360.0		101	83.3-116.9		
Chromium	85.0	0.588	mg/kg wet	77.200		110	73.3-126.4		
Cobalt	168	5.88	mg/kg wet	166.00		101	80.7-118.7		
Copper	273	2.94	mg/kg wet	271.00		101	80.8-119.2		
Iron	8760	58.8	mg/kg wet	8420.0		104	78.6-121.1		
Lead	189	1.47	mg/kg wet	190.00		99	81.6-118.4		
Magnesium	9120	221	mg/kg wet	8570.0		106	83.2-116.7		
Manganese	865	14.7	mg/kg wet	965.00		90	69.3-130.5		
Molybdenum	230	5.88	mg/kg wet	235.00		98	76.2-123.8		
Nickel	223	11.8	mg/kg wet	221.00		101	79.6-120.8		
Potassium	14500	1180	mg/kg wet	14400		101	81.9-118.1		
Selenium	196	0.882	mg/kg wet	187.00		105	75.9-124.6		
Silicon	1500	5.88	mg/kg wet	807.00		185	0-219.3		
Silver	83.6	0.588	mg/kg wet	83.500		100	82.7-117.1		
Sodium	9710	147	mg/kg wet	9730.0		100	82.5-117.2		
Vanadium	111	7.35	mg/kg wet	98.700		112	75.9-123.6		
Zinc	204	29.4	mg/kg wet	199.00		102	78.4-121.6		

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-225 Project Number: KP0148 Project Manager: Joan Kessner	**Reported:** 12/03/2012 09:19

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 L211168 - SW 7471A Prep										
Blank (L211168-BLK1)				Prepared: 11/20/2012 Analyzed: 11/21/2012						
Mercury	0.0281	U	0.0281	mg/kg wet						
Duplicate (L211168-DUP2)		**Source: 1211069-01**		Prepared: 11/20/2012 Analyzed: 11/21/2012						
Mercury	0.0245	U	0.0245	mg/kg dry		0.0265 U				20
Matrix Spike (L211168-MS2)		**Source: 1211069-01**		Prepared: 11/20/2012 Analyzed: 11/21/2012						
Mercury	0.167		0.0289	mg/kg dry	0.16074	0.0265 U	104	75-125		20
Reference (L211168-SRM1)				Prepared: 11/20/2012 Analyzed: 11/21/2012						
Mercury	1.24		0.0281	mg/kg wet	1.2900		95.9	62.6-138		

Lionville Laboratory

Logbook #: 1154

SAMPLE DIGESTION RECORD

Digestion Batch #: L211166
Date/Time Initiated: 11/20/12 1100
Date/Time Completed: 11/21/12 1345
Analyst: MW
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.
NOTE: All temperatures are recorded as corrected temperatures

Digested / Undigested (circle one)
Balance #: B14
Balance Cal Verification: Y NA
Temp: 95
BLOCK 1 2 (circle one)

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1211067-01		0.60	50		TO	coarse	black sludge	liquid / rocks	
L211166-DUP1		0.61	50						
MS1	0.5	0.62	50						
1211069-01		0.56	50			fine	brown powdery soil	rocks / veg.	
L211166-DUP2		0.60	50						
MS2	0.5	0.61	50						
1211073-01		0.64	50			fine	dk brown powdery soil	veg.	
L211166-DUP3		0.59	50						
MS3	0.5	0.57	50						
1211073-02		0.59	50			fine	dk brown soil	rocks / veg	
1211083-01		0.59	50			fine	dk brown soil	rocks / veg.	
L211166-DUP4		0.56	50						
MS4	0.5	0.57	50						
1211083-02		0.58	50			fine	dk brown soil	rocks / veg	
03		0.56	50			fine	dk brown soil	rocks	
L211166-BLK1		0.52	50						
SRM1		0.51	50						

MW 11/20/12

Spiking IDs / Expiration Date:
MS#: 1201377

LCS#: 1201014

Reagent IDs:
HNO_3 0000003390
HCl L13029
H_2O_2 L11A03
1:1 HNO_3 637-076-07
1:1 HCl

File ID#:

Data Review By/Date: 11/26/12

R:\group\QA\SOP\
Signed\SPI\Metals Digestion log.doc

Page #:

PREPARATION BENCH SHEET

L211166

Lionville Laboratory

Printed: 11/30/2012 12:31:26PM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211067-01	6010B ICP Trace	11/20/2012 11:00	0.6	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1211069-01	6010B ICP Trace	11/20/2012 11:00	0.56	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211073-01	6010B ICP Trace	11/20/2012 11:00	0.64	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211073-02	6010B ICP Trace	11/20/2012 11:00	0.59	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211083-01	6010B ICP Trace	11/20/2012 11:00	0.59	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211083-02	6010B ICP Trace	11/20/2012 11:00	0.58	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211083-03	6010B ICP Trace	11/20/2012 11:00	0.56	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
L211166-BLK1	QC	11/20/2012 11:00	0.52	50						
L211166-DUP1	QC	11/20/2012 11:00	0.61	50		1211067-01				
L211166-DUP2	QC	11/20/2012 11:00	0.6	50		1211069-01				
L211166-DUP3	QC	11/20/2012 11:00	0.59	50		1211073-01				
L211166-DUP4	QC	11/20/2012 11:00	0.56	50		1211083-01				
L211166-MS1	QC	11/20/2012 11:00	0.62	50	1201377	1211067-01	500			
L211166-MS2	QC	11/20/2012 11:00	0.61	50	1201377	1211069-01	500			
L211166-MS3	QC	11/20/2012 11:00	0.57	50	1201377	1211073-01	500			
L211166-MS4	QC	11/20/2012 11:00	0.57	50	1201377	1211083-01	500			
L211166-PS1	QC	11/20/2012 11:00	0.6	50	1001493	1211067-01	100			
L211166-PS2	QC	11/20/2012 11:00	0.56	50	1001902	1211069-01	100			
L211166-PS3	QC	11/20/2012 11:00	0.64	50	1001902	1211073-01	100			
L211166-PS4	QC	11/20/2012 11:00	0.59	50	1001493	1211083-01	100			

Revision for time/post spike

Extracts Relinquished By Date Extracts Received By Date

AJM 11/30/12

PREPARATION BENCH SHEET

L211166

Lionville Laboratory

Printed: 11/30/2012 12:31:26PM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L211166-SRM1	QC	11/20/2012 11:00	0.51	50	1201014		510			

revision for time / post spike
AJM 11/30/12

Extracts Relinquished By Date

Extracts Received By Date

PREPARATION BENCH SHEET

L211166

Lionville Laboratory

Printed: 11/21/2012 2:22:11PM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211067-01	6010B ICP Trace	11/20/2012 10:49	0.6	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1211069-01	6010B ICP Trace	11/20/2012 10:49	0.56	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211073-01	6010B ICP Trace	11/20/2012 10:49	0.64	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211073-02	6010B ICP Trace	11/20/2012 10:49	0.59	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211083-01	6010B ICP Trace	11/20/2012 10:49	0.59	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211083-02	6010B ICP Trace	11/20/2012 10:49	0.58	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211083-03	6010B ICP Trace	11/20/2012 10:49	0.56	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
L211166-BLK1	QC	11/20/2012 10:49	0.52	50						
L211166-DUP1	QC	11/20/2012 10:49	0.61	50		1211067-01				
L211166-DUP2	QC	11/20/2012 10:49	0.6	50		1211069-01				
L211166-DUP3	QC	11/20/2012 10:49	0.59	50		1211073-01				
L211166-DUP4	QC	11/20/2012 10:49	0.56	50		1211083-01				
L211166-MS1	QC	11/20/2012 10:49	0.62	50	1201377	1211067-01	500			
L211166-MS2	QC	11/20/2012 10:49	0.61	50	1201377	1211069-01	500			
L211166-MS3	QC	11/20/2012 10:49	0.57	50	1201377	1211073-01	500			
L211166-MS4	QC	11/20/2012 10:49	0.57	50	1201377	1211083-01	500			
L211166-PS1	QC	11/20/2012 10:49	0.5	50						
L211166-SRM1	QC	11/20/2012 10:49	0.51	50	1201014		510			

Extracts Relinquished By — Date: 11/21/12

Extracts Received By — Date: 11/28/12

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 11/20/12
Start Time/Temp: 1755/94°
End Time/Temp: 1830/96°

Instrument ID: HG3.2/HG3.3
Balance # B14 /NA
Pipette Calibration (Daily) (Y)

Logbook # 1153
Prep Batch: L211168
Worksheet: HG112102/HG112103
SOP No. ME-HgCVAA
BLOCK 1 2 (3) (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
Blank				10 ml	50	
0.2 µg/l		0.100		10 ml	50	
1.0 µg/l		0.500		10 ml	50	
2.0 µg/l		1.000		10 ml	50	
5.0 µg/l		2.500		10 ml	50	
10.0 µg/l		5.000		10 ml	50	
ICV		0.125	2.5	10 ml	50	
CCV		0.250	5.0	10 ml	50	
ICB/CCB				10 ml	50	
L211168-BLK1				0.32	50	
SRM1		(A)	(A)	0.32	50	
1211067-01				0.36	50	
L211168-DUP1				0.39	50	
MS1		0.500	1.0	0.37	50	
1211069-01				0.36	50	
L211168-DUP2				0.39	50	
MS2		0.500	1.0	0.33	50	
1211073-01				0.34	50	
L211168-DUP3				0.36	50	
MS3		0.500	1.0	0.38	50	
1211073-02				0.35	50	
1211082-01				0.35	50	RAD (?)
L211168-DUP4				0.36	50	↓
MS4		0.500	1.0	0.34	50	↓
1211083-01				0.34	50	
L211168-DUP5				0.39	50	
MS5		0.500	1.0	0.39	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1201235	11/20/12 1130
ICV/CCV/LCS	(I.V. 1201411)	N/A

Reviewed By/Date: [illegible] 11/26/12

se book # 1153 for std traceability information

Soil LCS True Value = 1.29 mg/Kg (A)
Standard # 1201014

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Water LCS Spiking Concentration: 1.0 µg/ml

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1153

Analyst: [illegible]
Date 11/20/12
Start Time/Temp: See page 074
End Time/Temp:

Instrument ID: HG3.2/HG3.3
Balance # B14 /NA
Pipette Calibration (Daily) (Y) ____

Prep Batch: L211168
Worksheet: HG112102/HG112103
SOP No. ME-HgCVAA
BLOCK 1 2 (circle one) (3)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
1211083-02				0.32	50	
03				0.37	50	

PM 11/20/12

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS		

Reviewed By/Date: [illegible] 11/20/12

se book # 1153 for std traceability information

Soil LCS True Value = See page 074 mg/Kg
Standard # ____

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Soil LCS Spiking Concentration: 1.0 µg/ml

ME-HgCVAA-Prep0910

Page #: