SAF-RC-190
100N Field Remediation – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 3/18/13
INITIAL/DATE

COMMENTS:

SDG KP0186 SAF-RC-190

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 130-N-1 In Process

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

12 March 2013

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 #	1302001
SDG #	KP0186
SAF #	RC-190
Date Received	02/01/13
# Samples	2
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
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 28 pages.

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1302001

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 US Hanford SAF# RC-190 KP0186

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager O. Johnson

QC SW Del SH TAT 3 Day

Date Rec'd 2-1-13 Date Due 2-4-13

Refrigerator #									A		B					
#/Type Container	Liquid								2		2					
	Solid								1		1					
Volume	Liquid															
	Solid								60		60					
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	TCLP MET.	TCLP Hg				
		Lionville Laboratory Use Only														
									METALS		TCLP 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	METALS		TCLP METALS	+
01	J1RDM5			SOIL	1-31-13	1247	X		X	X
02	J1RDM6			SOIL	1-31-13	1250	X		X	X

Special Instructions: MATRIX QC
METALS = HSL + B, Mo, Si (NOTL)

Special Instructions:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	[signature]	2-1-13	0950

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

000000003

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-190-133	Page 1 of 1

Collector Q. Stowe	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8A	Data Turnaround 1-31-13 cmb ~~21 Days~~ 3 day		
Project Designation 100N Field Remediation - Soil In-Process	Sampling Location 130-N-1 In Process		SAF No. RC-190
Ice Chest No. WCH-11-022	Field Logbook No. EL-1652-08	COA R130N12600	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A120733		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	None									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	60mL	120mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time										
J1RDM5	SOIL	1-31-13	1247	X	X								
J1RDM6	SOIL	1-31-13	1250	X	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Quincy Stowe	Date/Time 1256 1/31/13	Received By/Stored In Dennis Newman	Date/Time 1-31-13 1256
Relinquished By/Removed From Dennis Newman	Date/Time 1347 1-31-13	Received By/Stored In Brigham	Date/Time 1-31-13 1347 WCH
Relinquished By/Removed From Brigham WCH	Date/Time 1352 1-31-13	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 2-1-13 0950	Received By/Stored In Victor Hernandez	Date/Time 2-1-13 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 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 - 7471 - (CV) {Mercury}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

KP0186

REVIEWED BY AJ
DATE 1-31-13

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

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

WCH-EE-011

000000004

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford
Project/SAF/SOW/Release #: RC-190

Date: 2-1-13

LvL Batch #: 1302 001

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 794652174240
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 2.7°	°C	Cooler # WCHH022
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, RSK-175, Sulfides, Non-Halogenated VOAs (Alcohol/Glycol) 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_____

METALS

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
JIRDM5	1302001-01	Soil	01/31/2013 12:47	02/01/2013 14:05
JIRDM6	1302001-02	Soil	01/31/2013 12:50	02/01/2013 14:05

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-190
LVL#: 1302001
SDG/SAF#: KP0186/RC-190

W.O.#: 60049-001-001-0001-00
Date Received: 02-01-13

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 2 soil samples and 2 TCLP leachate samples.

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

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

   The TCLP leachate samples were analyzed and reported with 5-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, MB value less than 5% of the RCRA limit, or 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. All laboratory control samples (LCS) were within the 80-120% 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.

10. The soil matrix spike (MS) recoveries for 6 analytes were outside the 75-125% control limits.

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, Antimony, Calcium, Iron, Magnesium, and Manganese.

12. All soil 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. The TCLP leachate 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.

14. The TCLP extract from sample J1RDM5 was selected for the matrix spike (MS) for Mercury, and sample J1RDM6 was selected for the ICP matrix spike for this analytical batch. All MS recoveries were greater than 50% as per method criteria

    The matrix spike (MS) concentration for Mercury was equivalent to the regulatory level (200 ppb) as per SW846 method 1311. The required spike concentration is above the linear range of the instrument, resulting in a 50-fold dilution. The MS recovery was greater than 50% as per method criteria.

15. 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.

16. 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.

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

for

Iain Daniels
Laboratory Manager
Lionville Laboratory

3/5/13
Date

jjw/m02-001tcsoil

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

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

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

JIRDM5

1302001-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**7280**		13.7	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Antimony	1.64	U	1.64	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Arsenic	**3.03**		2.74	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Barium	**42.2**		1.37	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Beryllium	**0.304**	B	0.548	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Boron	5.48	U	5.48	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Cadmium	0.548	U	0.548	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Calcium	**4850**		274	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Chromium	**12.0**		0.548	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Cobalt	**7.65**		5.48	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Copper	**17.6**		2.74	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Iron	**25300**		54.8	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Lead	**3.18**		1.37	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Magnesium	**4900**		206	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Manganese	**331**		13.7	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Molybdenum	5.48	U	5.48	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Nickel	**11.1**		11.0	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Potassium	**1070**	B	1100	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Selenium	0.822	U	0.822	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Silicon	**238**		5.48	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Silver	0.548	U	0.548	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Sodium	**292**		137	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Vanadium	**63.7**		6.85	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Zinc	**44.1**		27.4	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Mercury	0.0271	U	0.0271	mg/kg dry	1	L302013	02/04/2013	02/05/2013	7471A

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

JIRDM5
1302001-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
TCLP Metals by SW846 1311 6000/7000 series									
Arsenic	0.0750	U	0.0750	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Barium	**0.0699**		0.00500	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Cadmium	0.0150	U	0.0150	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Chromium	0.0250	U	0.0250	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Lead	0.0500	U	0.0500	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Selenium	0.100	U	0.100	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Silver	0.0300	U	0.0300	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Mercury	0.000200	U	0.000200	mg/L	1	L302035	02/05/2013	02/06/2013	7470

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

JIRDM6
1302001-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**5950**		12.2	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Antimony	1.47	U	1.47	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Arsenic	**2.28**	B	2.44	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Barium	**46.6**		1.22	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Beryllium	**0.282**	B	0.489	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Boron	4.89	U	4.89	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Cadmium	0.489	U	0.489	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Calcium	**5950**		244	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Chromium	**7.17**		0.489	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Cobalt	**9.80**		4.89	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Copper	**17.0**		2.44	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Iron	**28500**		48.9	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Lead	**3.29**		1.22	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Magnesium	**4910**		183	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Manganese	**359**		12.2	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Molybdenum	4.89	U	4.89	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Nickel	**9.69**	B	9.78	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Potassium	**834**	B	978	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Selenium	0.733	U	0.733	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Silicon	**217**		4.89	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Silver	0.489	U	0.489	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Sodium	**358**		122	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Vanadium	**78.9**		6.11	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Zinc	**51.6**		24.4	mg/kg dry	3	L302011	02/04/2013	02/06/2013	6010B
Mercury	0.0276	U	0.0276	mg/kg dry	1	L302013	02/04/2013	02/05/2013	7471A

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

JIRDM6
1302001-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
TCLP Metals by SW846 1311 6000/7000 series									
Arsenic	0.0750	U	0.0750	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Barium	**0.0766**		0.00500	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Cadmium	0.0150	U	0.0150	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Chromium	0.0250	U	0.0250	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Lead	0.0500	U	0.0500	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Selenium	0.100	U	0.100	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Silver	0.0300	U	0.0300	mg/L	5	L302032	02/05/2013	02/06/2013	6010
Mercury	0.000200	U	0.000200	mg/L	1	L302035	02/05/2013	02/06/2013	7470

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

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 L302011 - SW 3050B										
Blank (L302011-BLK1)				Prepared: 02/04/2013 Analyzed: 02/06/2013						
Aluminum	4.90	U	4.90	mg/kg wet						
Antimony	0.588	U	0.588	mg/kg wet						
Arsenic	0.980	U	0.980	mg/kg wet						
Barium	0.490	U	0.490	mg/kg wet						
Beryllium	0.196	U	0.196	mg/kg wet						
Boron	1.96	U	1.96	mg/kg wet						
Cadmium	0.196	U	0.196	mg/kg wet						
Calcium	8.69	B	98.0	mg/kg wet						
Chromium	0.196	U	0.196	mg/kg wet						
Cobalt	1.96	U	1.96	mg/kg wet						
Copper	0.980	U	0.980	mg/kg wet						
Iron	19.6	U	19.6	mg/kg wet						
Lead	0.490	U	0.490	mg/kg wet						
Magnesium	3.85	B	73.5	mg/kg wet						
Manganese	4.90	U	4.90	mg/kg wet						
Molybdenum	1.96	U	1.96	mg/kg wet						
Nickel	3.92	U	3.92	mg/kg wet						
Potassium	392	U	392	mg/kg wet						
Selenium	0.294	U	0.294	mg/kg wet						
Silicon	1.96	U	1.96	mg/kg wet						
Silver	0.196	U	0.196	mg/kg wet						
Sodium	11.4	B	49.0	mg/kg wet						
Vanadium	2.45	U	2.45	mg/kg wet						
Zinc	9.80	U	9.80	mg/kg wet						
Duplicate (L302011-DUP1)		**Source: 1302001-01**		Prepared: 02/04/2013 Analyzed: 02/06/2013						
Aluminum	6860		13.5	mg/kg dry		7280			5.92	20
Antimony	1.62	U	1.62	mg/kg dry		1.64 U				20
Arsenic	3.01		2.69	mg/kg dry		3.03			0.780	20
Barium	45.9		1.35	mg/kg dry		42.2			8.47	20
Beryllium	0.290	B	0.539	mg/kg dry		0.304			4.70	20
Boron	5.39	U	5.39	mg/kg dry		5.48 U				20
Cadmium	0.539	U	0.539	mg/kg dry		0.548 U				20
Calcium	4810		269	mg/kg dry		4850			0.702	20
Chromium	12.3		0.539	mg/kg dry		12.0			2.12	20
Cobalt	7.56		5.39	mg/kg dry		7.65			1.09	20
Copper	19.0		2.69	mg/kg dry		17.6			7.31	20

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

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 L302011 - SW 3050B										
Duplicate (L302011-DUP1)		**Source: 1302001-01**		Prepared: 02/04/2013 Analyzed: 02/06/2013						
Iron	24100		53.9	mg/kg dry		25300			4.73	20
Lead	2.93		1.35	mg/kg dry		3.18			8.09	20
Magnesium	4460		202	mg/kg dry		4900			9.43	20
Manganese	319		13.5	mg/kg dry		331			3.61	20
Molybdenum	5.39	U	5.39	mg/kg dry		5.48 U				20
Nickel	10.6	B	10.8	mg/kg dry		11.1			4.15	20
Potassium	947	B	1080	mg/kg dry		1070			12.1	20
Selenium	0.808	U	0.808	mg/kg dry		0.822 U				20
Silicon	245		5.39	mg/kg dry		238			2.64	20
Silver	0.539	U	0.539	mg/kg dry		0.548 U				20
Sodium	280		135	mg/kg dry		292			4.52	20
Vanadium	65.3		6.73	mg/kg dry		63.7			2.44	20
Zinc	43.9		26.9	mg/kg dry		44.1			0.413	20
Matrix Spike (L302011-MS1)		**Source: 1302001-01**		Prepared: 02/04/2013 Analyzed: 02/06/2013						
Aluminum	8150		13.5	mg/kg dry	179.52	7280	484*	75-125		
Antimony	15.6		1.62	mg/kg dry	44.881	1.64 U	34.8*	75-125		
Arsenic	165		2.69	mg/kg dry	179.52	3.03	90.1	75-125		
Barium	213		1.35	mg/kg dry	179.52	42.2	95.3	75-125		
Beryllium	4.38		0.539	mg/kg dry	4.4881	0.304	90.9	75-125		
Boron	79.1		5.39	mg/kg dry	89.762	5.48 U	88.1	75-125		
Cadmium	4.18		0.539	mg/kg dry	4.4881	0.548 U	93.1	75-125		
Calcium	8220		269	mg/kg dry	2244.0	4850	150*	75-125		
Chromium	27.4		0.539	mg/kg dry	17.952	12.0	85.5	75-125		
Cobalt	48.0		5.39	mg/kg dry	44.881	7.65	89.8	75-125		
Copper	39.0		2.69	mg/kg dry	22.440	17.6	95.3	75-125		
Iron	24800		53.9	mg/kg dry	89.762	25300	-560*	75-125		
Lead	42.8		1.35	mg/kg dry	44.881	3.18	88.2	75-125		
Magnesium	6550		202	mg/kg dry	2244.0	4900	73.6*	75-125		
Manganese	359		13.5	mg/kg dry	44.881	331	62.1*	75-125		
Molybdenum	80.2		5.39	mg/kg dry	89.762	5.48 U	89.3	75-125		
Nickel	50.3		10.8	mg/kg dry	44.881	11.1	87.4	75-125		
Potassium	3110		1080	mg/kg dry	2244.0	1070	91.1	75-125		
Selenium	158		0.808	mg/kg dry	179.52	0.822 U	88.0	75-125		
Silicon	338		5.39	mg/kg dry	89.762	238	111	75-125		
Silver	3.59		0.539	mg/kg dry	4.4881	0.548 U	79.9	75-125		
Sodium	2610		135	mg/kg dry	2244.0	292	103	75-125		

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

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 L302011 - SW 3050B									
Matrix Spike (L302011-MS1)		**Source: 1302001-01**	Prepared: 02/04/2013 Analyzed: 02/06/2013						
Vanadium	108	6.73	mg/kg dry	44.881	63.7	98.1	75-125		
Zinc	84.2	26.9	mg/kg dry	44.881	44.1	89.4	75-125		
Post Spike (L302011-PS1)		**Source: 1302001-01**	Prepared: 02/04/2013 Analyzed: 02/06/2013						
Aluminum	142000		ug/L	66000	79700	93.7	75-125		
Antimony	320		ug/L	300.00	1.89	106	75-125		
Calcium	109000		ug/L	62400	53100	89.7	75-125		
Iron	382000		ug/L	126000	277000	83.7	75-125		
Magnesium	110000		ug/L	64800	53600	86.9	75-125		
Manganese	6300		ug/L	3000.0	3620	89.2	75-125		
Reference (L302011-SRM1)			Prepared: 02/04/2013 Analyzed: 02/06/2013						
Aluminum	11200	14.4	mg/kg wet	6670.0		168	0-200.89		
Antimony	47.0	1.73	mg/kg wet	53.000		88.8	0-235.8		
Arsenic	123	2.88	mg/kg wet	114.00		108	82.8-117.54		
Barium	311	1.44	mg/kg wet	307.00		101	79.8-120.2		
Beryllium	116	0.577	mg/kg wet	108.00		107	82.8-117.6		
Boron	86.7	5.77	mg/kg wet	85.100		102	67.5-132.8		
Cadmium	244	0.577	mg/kg wet	225.00		109	83.6-116.4		
Calcium	3460	288	mg/kg wet	3360.0		103	83.3-116.9		
Chromium	83.2	0.577	mg/kg wet	77.200		108	73.3-126.4		
Cobalt	175	5.77	mg/kg wet	166.00		106	80.7-118.7		
Copper	281	2.88	mg/kg wet	271.00		104	80.8-119.2		
Iron	9120	57.7	mg/kg wet	8420.0		108	78.6-121.1		
Lead	191	1.44	mg/kg wet	190.00		101	81.6-118.4		
Magnesium	8470	216	mg/kg wet	8570.0		98.8	83.2-116.7		
Manganese	885	14.4	mg/kg wet	965.00		91.7	69.3-130.5		
Molybdenum	254	5.77	mg/kg wet	235.00		108	76.2-123.8		
Nickel	236	11.5	mg/kg wet	221.00		107	79.6-120.8		
Potassium	14700	1150	mg/kg wet	14400		102	81.9-118.1		
Selenium	203	0.865	mg/kg wet	187.00		109	75.9-124.6		
Silicon	739	5.77	mg/kg wet	807.00		91.5	0-219.3		
Silver	88.0	0.577	mg/kg wet	83.500		105	82.7-117.1		
Sodium	9740	144	mg/kg wet	9730.0		100	82.5-117.2		
Vanadium	107	7.21	mg/kg wet	98.700		109	75.9-123.6		
Zinc	211	28.8	mg/kg wet	199.00		106	78.4-121.6		

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

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 L302013 - SW 7471A Prep										
Blank (L302013-BLK1)				Prepared: 02/04/2013 Analyzed: 02/05/2013						
Mercury	0.0290	U	0.0290	mg/kg wet						
Duplicate (L302013-DUP1)		**Source: 1302001-01**		Prepared: 02/04/2013 Analyzed: 02/05/2013						
Mercury	0.0242	U	0.0242	mg/kg dry		0.0271 U				20
Matrix Spike (L302013-MS1)		**Source: 1302001-01**		Prepared: 02/04/2013 Analyzed: 02/05/2013						
Mercury	0.164		0.0271	mg/kg dry	0.15048	0.0271 U	109	75-125		20
Reference (L302013-SRM1)				Prepared: 02/04/2013 Analyzed: 02/05/2013						
Mercury	1.32		0.0265	mg/kg wet	1.2900		102	62.6-138		

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

TCLP Metals by SW846 1311 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 L302032 - SW 3010A										
Blank (L302032-BLK1)				Prepared: 02/05/2013 Analyzed: 02/06/2013						
Arsenic	0.0150	U	0.0150	mg/L						
Barium	0.00100	U	0.00100	mg/L						
Cadmium	0.00300	U	0.00300	mg/L						
Chromium	0.00500	U	0.00500	mg/L						
Lead	0.0100	U	0.0100	mg/L						
Selenium	0.0200	U	0.0200	mg/L						
Silver	0.00600	U	0.00600	mg/L						
Blank (L302032-BLK2)				Prepared: 02/05/2013 Analyzed: 02/06/2013						
Arsenic	0.0750	U	0.0750	mg/L						
Barium	0.00500	U	0.00500	mg/L						
Cadmium	0.0150	U	0.0150	mg/L						
Chromium	0.00305	B	0.0250	mg/L						
Lead	0.0500	U	0.0500	mg/L						
Selenium	0.100	U	0.100	mg/L						
Silver	0.0300	U	0.0300	mg/L						
LCS (L302032-BS1)				Prepared: 02/05/2013 Analyzed: 02/06/2013						
Arsenic	10.6		0.0150	mg/L	10.000		106	80-120		
Barium	5.20		0.00100	mg/L	5.0000		104	80-120		
Cadmium	0.262		0.00300	mg/L	0.25000		105	80-120		
Chromium	0.497		0.00500	mg/L	0.50000		99.3	80-120		
Lead	2.52		0.0100	mg/L	2.5000		101	80-120		
Selenium	10.2		0.0200	mg/L	10.000		102	80-120		
Silver	0.511		0.00600	mg/L	0.50000		102	80-120		
Duplicate (L302032-DUP1)		**Source: 1302001-02**		Prepared: 02/05/2013 Analyzed: 02/06/2013						
Arsenic	0.0750	U	0.0750	mg/L		0.0750 U				20
Barium	0.0758		0.00500	mg/L		0.0766			0.985	20
Cadmium	0.0150	U	0.0150	mg/L		0.0150 U				20
Chromium	0.00267	B	0.0250	mg/L		0.0250 U				20
Lead	0.0500	U	0.0500	mg/L		0.0500 U				20
Selenium	0.100	U	0.100	mg/L		0.100 U				20
Silver	0.0300	U	0.0300	mg/L		0.0300 U				20

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

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0186	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/07/2013 13:56

TCLP Metals by SW846 1311 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 L302032 - SW 3010A										
Matrix Spike (L302032-MS1)		**Source: 1302001-02**		Prepared: 02/05/2013 Analyzed: 02/06/2013						
Arsenic	5.39		0.0750	mg/L	5.0000	0.0750 U	108	50-1000		
Barium	98.0		0.00500	mg/L	100.00	0.0766	97.9	50-1000		
Cadmium	1.07		0.0150	mg/L	1.0000	0.0150 U	107	50-1000		
Chromium	4.94		0.0250	mg/L	5.0000	0.0250 U	98.8	50-1000		
Lead	4.97		0.0500	mg/L	5.0000	0.0500 U	99.4	50-1000		
Selenium	1.02		0.100	mg/L	1.0000	0.100 U	102	50-1000		
Silver	3.98		0.0300	mg/L	5.0000	0.0300 U	79.5	50-1000		
Batch L302035 - SW 7470A Prep										
Blank (L302035-BLK1)				Prepared: 02/05/2013 Analyzed: 02/06/2013						
Mercury	0.000200	U	0.000200	mg/L						
Blank (L302035-BLK2)				Prepared: 02/05/2013 Analyzed: 02/06/2013						
Mercury	0.000200	U	0.000200	mg/L						
LCS (L302035-BS1)				Prepared: 02/05/2013 Analyzed: 02/06/2013						
Mercury	0.00539		0.000200	mg/L	0.0050000		108	80-120		
Duplicate (L302035-DUP1)		**Source: 1302001-01**		Prepared: 02/05/2013 Analyzed: 02/06/2013						
Mercury	0.000200	U	0.000200	mg/L		0.000200 U				20
Matrix Spike (L302035-MS1)		**Source: 1302001-01**		Prepared: 02/05/2013 Analyzed: 02/06/2013						
Mercury	0.201		0.0100	mg/L	0.20000	0.000200 U	100	50-1000		

Lionville Laboratory

TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK # 1252

Start Date: 2-4-13 Start Time: 13:00 Analyst: RH SOP: SPI-1311.1	End Date: 2-5-13 End Time: 7:00 Analyst: RH Method: B11.1	Tumbler Speed: 31 RPM Leachate Batch #: L302026 Leachate Page: 1 of 1 Room Temp. (°C): Start 21 /Finish 21 **Room Temp. Acceptance Criteria:** **23°C ± 2°**

LvL #: 1302001-01 Client ID#: JIRDM5 pH After 5 Min: 5.57 pH After Acid/Heat: 2.26 Extraction Fluid/pH: #1 4.92 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 4.92	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL #: 1302001-02 Client ID#: JIRDM6 pH After 5 Min: 6.34 pH After Acid/Heat: 2.67 Extraction Fluid/pH: #1 4.92 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 4.94	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL # L302026 Client ID#: NA pH After 5 Min: NA pH After Acid/Heat: NA Extraction Fluid/pH: NA Sample Wt.(g): NA Extract Fluid Vol.(mL): NA pH After Extraction: NA	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: Blank
LvL #: Client ID#: pH After 5 Min: pH After Acid/Heat: Extraction Fluid/pH: Sample Wt.(g): Extract Fluid Vol.(mL): pH After Extraction:	Initial Filtration Data and Comments: Solids: _____% / NA 2-5-12 RH Initial Filtrate Added:

Standard	ID	Prep Date	Expir Date	pH Acceptance Criteria
Fluid #1	1300077	1/28/13	7/28/13	4.93 ± 0.05
Fluid # 2				2.88 ± 0.05

SPI-1311.1-A-0310 Reviewed By/Date RH 2/8/13 Page #

Lionville Laboratory Logbook #: 1194

SAMPLE DIGESTION RECORD

Digestion Batch #: L302011
Date/Time Initiated: 2/4/13 1825
Date/Time Completed: 2/5/13 1900
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)
3

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1302001-01		0.56	50		TO	fine	light brown soil	rocks	
L302011-DUP1		0.57	50						
MS1	0.5	0.57	50						
1302001-02		0.64	50			coarse	light brown soil	rocks	
1302007-01		0.64	50			coarse	off white insulation, mist red solid	nail	RAD
L302011-DUP2		0.69	50						
MS2	0.5	0.69	50						
1302012-01		0.60	50			coarse	brown, gritty	rocks vegetation	
L302011-DUP3		0.57	50						
MS3	0.5	0.61	50						
1302012-02		0.61	50			fine	brown soil	rocks	
03		0.61	50			fine	brown soil	rocks	
04		0.52	50			not fine	dark brown soil	rocks	
05		0.60	50			not fine	brown soil	rocks	
06		0.68	50			coarse	brown, muddy	rocks	
07		0.58	50			not fine	brown, muddy	rocks, H_2O	
L302011-BLK1		0.51	50			coarse	boiling chips		
SRM1	☆	0.52	50			fine	pink, sandy		

MW 2/4/13

Spiking IDs / Expiration Date:
MS#: 1300144

LCS#: 1201014 ☆

Reagent IDs:
HNO_3 0000003390
HCl 0000018301
H_2O_2 L11A03
1:1 HNO_3 637-076-07
1:1 HCl

File ID#:

Data Review By/Date:
Rec 2/8/13

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

Page #:

000000022

PREPARATION BENCH SHEET

L302011

Lionville Laboratory

Printed: 2/5/2013 8:30:17PM

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
1302001-01	6010B HSL Metals	02/04/2013 18:25	0.56	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1302001-01	6010B RCRA ICP METALS	02/04/2013 18:25	0.56	50					WC-Hanford, Inc.	Added for BatchQC in: L302011
1302001-02	6010B HSL Metals	02/04/2013 18:25	0.64	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1302007-01	6010B HSL Metals	02/04/2013 18:25	0.64	50					Solutient Technologies, LLC	Added for BatchQC in: L302011
1302007-01	6010B RCRA ICP METALS	02/04/2013 18:25	0.64	50					Solutient Technologies, LLC	
1302012-01	6010B HSL Metals	02/04/2013 18:25	0.6	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1302012-01	6010B RCRA ICP METALS	02/04/2013 18:25	0.6	50					WC-Hanford, Inc.	Added for BatchQC in: L302011
1302012-02	6010B HSL Metals	02/04/2013 18:25	0.61	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1302012-03	6010B HSL Metals	02/04/2013 18:25	0.61	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1302012-04	6010B HSL Metals	02/04/2013 18:25	0.52	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1302012-05	6010B HSL Metals	02/04/2013 18:25	0.6	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1302012-06	6010B HSL Metals	02/04/2013 18:25	0.68	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1302012-07	6010B HSL Metals	02/04/2013 18:25	0.58	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
L302011-BLK1	QC	02/04/2013 18:25	0.51	50						
L302011-DUP1	QC	02/04/2013 18:25	0.57	50		1302001-01				
L302011-DUP2	QC	02/04/2013 18:25	0.69	50		1302007-01				
L302011-DUP3	QC	02/04/2013 18:25	0.57	50		1302012-01				
L302011-MS1	QC	02/04/2013 18:25	0.57	50	1300144	1302001-01	500			
L302011-MS2	QC	02/04/2013 18:25	0.69	50	1300144	1302007-01	500			
L302011-MS3	QC	02/04/2013 18:25	0.61	50	1300144	1302012-01	500			

Extracts Relinquished By — Date: 2/5/13

Extracts Received By — Date: 02/06/13

PREPARATION BENCH SHEET

L302011

Lionville Laboratory

Printed: 2/5/2013 8:30:17PM

00000024

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
L302011-PS1	QC	02/04/2013 18:25	0.56	50	1201582	1302001-01	100			
L302011-PS2	QC	02/04/2013 18:25	0.64	50	1201582	1302007-01	100			
L302011-PS3	QC	02/04/2013 18:25	0.6	50	1201582	1302012-01	100			
L302011-SRM1	QC	02/04/2013 18:25	0.52	50	1201014		520			

Extracts Relinquished By — Date 2/5/11

Extracts Received By — Date 02/06/13

Lionville Laboratory

Logbook #: 1194

SAMPLE DIGESTION RECORD

Digestion Batch #: L302032
Date/Time Initiated: 2/5/13 1110
Date/Time Completed: 2/5/13 2000
Analyst: MW
Matrix (circle): Soil / Water Other TCLP solid
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.

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

NOTE: All temperatures are recorded as corrected temperatures

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1302001-01		50	50	<	TC		clear, colorless		
02		50	50	<			clear, colorless		
L302032-DUP1		50	50	<					
MS1	0.5	50	50						
BLK1		50	50				clear, colorless		
BS1	0.5	50	50						
*BLK2		50	50	<					

MW 2/5/13

Spiking IDs / Expiration Date:
MS#: 1201195
1200388
LCS#: 1201583

Reagent IDs:
HNO_3 0000003390
HCl
H_2O_2
1:1 HNO_3
1:1 HCl 637-069-01

File ID#:

Data Review By/Date:
PW 2/8/13

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

* L302026-BLK1

Page #:

PREPARATION BENCH SHEET

L302032

Lionville Laboratory

Printed: 2/5/2013 8:41:43PM

00000026

Matrix: Solid **Prepared using: METALS - SW 3010A** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1302001-01	1311/6010B TCLP RCRA ICP MET	02/05/2013 11:10	50	50					WC-Hanford, Inc.	
1302001-02	1311/6010B TCLP RCRA ICP MET	02/05/2013 11:10	50	50					WC-Hanford, Inc.	
L302032-BLK1	QC	02/05/2013 11:10	50	50						
L302032-BLK2	QC	02/05/2013 11:10	50	50						
L302032-BS1	QC	02/05/2013 11:10	50	50	1201583		500			
L302032-DUP1	QC	02/05/2013 11:10	50	50		1302001-02				
L302032-MS1	QC	02/05/2013 11:10	50	50	1201195	1302001-02	500			

Extracts Relinquished By — Date: 2/5/13

Extracts Received By — Date: 02/06/13

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 2/4/13
Start Time/Temp: 2110/94°
End Time/Temp: 2145/95°

Instrument ID: HG3, 1
Balance # B14 /NA
Pipette Calibration (Daily) (Y) ____

Logbook # 1198
Prep Batch: L302013
Worksheet: HG020501
SOP No. ME-HgCVAA
BLOCK (1) 2 (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 ug/L		0.100		10 ml	50	
1.0 ug/L		0.500		10 ml	50	
2.0 ug/L		1.000		10 ml	50	
5.0 ug/L		2.500		10 ml	50	
10.0 ug/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	
L302013-BLK1				0.31	50	
SRM1		(#)	(#)	0.34	50	
1302001-01				0.34	50	
L302013-DUP1				0.38	50	
MS1		0.500	1.0	0.34	50	
1302001-02				0.34	50	
1302007-01				0.38	50	BAD
L302013-DUP2				0.35	50	
MS2		0.500	1.0	0.39	50	
1302012-01				0.36	50	
L302013-DUP3				0.35	50	
MS3		0.500	1.0	0.38	50	
1302012-02				0.33	50	
03				0.39	50	
04				0.35	50	
05				0.36	50	
06				0.38	50	
07				0.36	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RT 1201235	2/4/13 1915
ICV/CCV/LCS	(I.V. 1201411)	N/A

Reviewed By/Date: RMP, 02/07/13

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

se book # 1198 for std traceability information
Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Water LCS Spiking Concentration: 1.0 µg/ml

ME-HgCVAA-Prep0910

Page #:

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 2/5/13
Start Time/Temp: 1820/94°
End Time/Temp: 2030/97°

Instrument ID: HG3.1
Balance # (NA)
Pipette Calibration (Daily) (Y) ____

Logbook # 1198
Prep Batch: L302038
Worksheet: HG-020601
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				35	35	
0.2 µg/L		0.070		35	35	
1.0 µg/L		0.350		35	35	
2.0 µg/L		0.700		35	35	
5.0 µg/L		1.750		35	35	
10.0 µg/L		3.500		35	35	
ICV		0.0875	2.5	35	35	
CCV		0.175	5.0	35	35	
ICB/CCB				35	35	
L302035-BLK1				35	35	
BS1		0.175	5.0	35	35	
BLK2	<			35	35	
1302001-01	<			35	35	
L302035-DUP1	<			35	35	
MS1		0.700	200 *	35	35	
1302001-02	<			35	35	

WW 2/5/13

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1201235	2/5/13 1210
ICV/CCV/LCS	(I.V. 1201411)	N/A

Reviewed By/Date: ____

se book # 1198 for std traceability information

Soil LCS True Value = N/A mg/Kg
Standard # ____

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

* mod 1201234 (10 µg/ml)

ME-HgCVAA-Prep0910

Page #: