SAF-RC-148
300 Area D4 Waste Sites – Soil Full Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 1/24/13
INITIAL/DATE

COMMENTS:

SDG KP0173 SAF-RC-148

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location/Waste Site: 300-274 Verification – Phase 4 Test Pit Excavation

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

22 January 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 #	1301013
SDG #	KP0173
SAF #	RC-148
Date Received	01/04/13
# Samples	3
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	X
Glycols	
DRO/KRO/GRO	X
PAHs	
Herbicides	
Metals	
Inorganics	X

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 36 pages.

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

CHAIN OF CUSTODY

Lionville Laboratory Use Only
1301 013

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: WC Hanford SAF# RC-148
Est. Final Proj. Sampling Date: KP0173
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: 7 Days
QC: SW Del: Std TAT: 7

Date Rec'd: 1-4-13 Date Due: 1/11/13

		A			B				C	D				
Refrigerator #		2			2				2	2				
#/Type Container	Liquid													
	Solid	1AG			1AG				1	1				
Volume	Liquid													
	Solid	120			120				60	60				
Preservatives		—			—				—	—				
ANALYSES REQUESTED →		ORGANIC					INORG							
		VOA	BNA	Pest/PCB	Herb		WTPH-D		Metal	CN	CR+6	PH		
Lionville Laboratory Use Only														
				8082			DE8015				Cr6	pH		

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	J1R7T4			soil	12-31-12	1549			X			X				X	X					
02	J1R7T5			soil	12-31-12	1550			X			X				X	X					
03	J1R7T6			soil	12-31-12	1547			X													

Special Instructions:

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	1/4/13	1025

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-148-115	Page 1 of 1
Collector: MG Oswald	Company Contact: Joan Kessner; Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH	Price Code: 8L; Data Turnaround: 7 ~~21~~ Days WCB 12/31/12
Project Designation: 300 Area D4 Waste Sites - Soil Full Protocol	Sampling Location: 300-274 Verification - Phase 4 Test Pit Excavation	SAF No.: RC-148	
Ice Chest No.: WCH-12-021	Field Logbook No.: EL-1663-; COA: R302742000	Method of Shipment: Fed Ex	
Shipped To: ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No.: ~~A120628~~ A120687 AJ 1-2-13	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	None	Cool 4C	Cool 4C							
Type of Container	G/P	G/P	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	120mL	120mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	pH (Soil) - 9045	TPH-Diesel Range - WTPH-D +	PCBs - 8082							
Sample No. / Matrix * / Sample Date / Sample Time											
J1R7T4 / SOIL / 12/31/2012 / 1549	✓	✓	✓	✓							
J1R7T5 / SOIL / 12/31/2012 / 1550	✓	✓	✓	✓							
J1R7T6 / SOIL / 12/31/2012 / 1547		AJ 1-2-13		✓							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Mikey Oswald	12-31-12 1600	DAVID BECKER	12/31/12 1600
DAVID BECKER	12/31/12 1650	1060 BATTELLE 2A	12/31/12 1650
1060 Battelle 2A	1-2-13 0757	A. Freier	1-2-13 0757
A. Freier	1-2-13 1210	Fed Ex	
Fed Ex	1-4-13 1005	VICTOR HERNANDEZ	1-4-13 1005

SPECIAL INSTRUCTIONS

* Custodian unavailable to remove samples from controlled storage. Shipper removed samples, taking custody for shipment to lab.

REVIEWED BY CMB DATE 1-2-13

KP0173

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

0000000004

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford
Project/~~SAF~~/SOW/Release #: RC-148

Date: 1/4/13

LvL Batch #: 1301013

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7914 2753 5476
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** 2.3°	°C	Cooler # WCH-12-021
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 _____

SR-002-B-1112.doc

PCBs

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

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 19:27

Analytical Report for Polychlorinated Biphenyls by SW846 8082

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R7T4	1301013-01	Soil	12/31/2012 15:49	01/04/2013 10:25
J1R7T5	1301013-02	Soil	12/31/2012 15:50	01/04/2013 10:25
J1R7T6	1301013-03	Soil	12/31/2012 15:47	01/04/2013 10:25

LIONVILLE LABORATORY
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Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-148 KP0173
LVL #: 1301013

W.O. #: 60049-001-001-0001-00
Received: 01-04-2013

PCBs

Three (3) soil samples were collected on 12-31-2012.

The samples and associated QC samples were extracted 01-04-2013 and analyzed 01-07,08,09-2013 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 8082. All samples received Copper-Sulfur and Sulfuric Acid cleanups based on SW846 methods 3660A and 3665A.

Lionville Laboratory (LvL) is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

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

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

3. Eight (8) of fourteen (14) obtainable surrogate recoveries were outside QC acceptance criteria. Surrogate recoveries were unobtainable in samples J1R7T4, J1R7T5, L301025-MS2, and L301025-MSD2 due to dilutions required for analysis.

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

5. All blank spike recoveries were within QC acceptance criteria.

6. Four (4) of four (4) obtainable matrix spike recoveries were outside QC acceptance criteria. Matrix spike recoveries were unobtainable due to dilution required for analysis due to the high concentration of target analytes in the sample.

7. The following samples required instrument dilutions due high concentration of target analytes: J1R7T4 (10000-fold), J1R7T5, L301025-MS2, and L310025-MSD2 (5000-fold). Reporting limits have been adjusted to reflect the necessary dilutions.

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

9. All 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. Per SW846 Method 8000B, the attached table lists compounds where the %difference or drift was greater than 15%, and the mean across all compounds was used for evaluation of the continuing calibration. Results associated with these compounds are considered to have greater uncertainty.

11. Patterns for Aroclors 1254 and 1260 were identified in these samples. The reported Aroclors were chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both Aroclors to give the best overall total PCB concentration.

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

Iain Daniels
LvL Laboratory Manager

1/15/13
Date

8082/A PCBs

Analytes with %Difference or %Drift >15%, Where Mean is Used for Continuing Calibration

Analyte	CCV1 01.07.13 10:54:24 AM		CCV2 01.07.13 4:41:10 PM		CCV3 01.08.13 12:45:38 AM		CCV4 01.08.13 7:29:30 AM		CCV5		CCV6		CCV7		CCV8	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
Tetrachloro-meta-xylene (surrogate)		23.1	17.1	22.8	17.3	20.5	23.1	26.2								
Decachlorobiphenyl (surrogate)																
Aroclor 1016-1								15.6								
Aroclor 1016-2																
Aroclor 1016-3							16.3									
Aroclor 1016-4							16.1									
Aroclor 1016-5																
Aroclor 1260-1																
Aroclor 1260-2																
Aroclor 1260-3																
Aroclor 1260-4																
Aroclor 1260-5																
Mean %D or %Drift	0.9	9.7	6.6	9.2	5.5	4.0	13.4	10.8								

Sample results reported from affected CCV:

CCV1: L301018-BIKI,BSI, L301025-BIKI,BSI, 1301004-04, 10

CCV2: L301030-BIKI, BSI, (1301009-01, 1301013-01,02,03, 1301014-01,02,03,04) 10x

CCV3: 1301014-05,06,07,08,09,10, 11,12 -10x

CCV4:

CCV5:

CCV6:

CCV7:

CCV8:

8082 A PCBs

Analytes with %Difference or %Drift >15%, Where Mean is Used for Continuing Calibration

Analyte	CCV1 01.08.13 9:02:26 AM		CCV2 01.08.13 05:06:29 PM		CCV3 01.09.13 12:30:38 AM		CCV4 01.09.13 4:33:02 AM		CCV5		CCV6		CCV7		CCV8	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
Tetrachloro-meta-xylene (surrogate)	16.8	20.8	22.0	20.3	18.4	15.4										
Decachlorobiphenyl (surrogate)							-15.8	-22.3								
Aroclor 1016-1																
Aroclor 1016-2			18.5		15.9											
Aroclor 1016-3			19.1		15.1											
Aroclor 1016-4			16.3													
Aroclor 1016-5			15.1													
Aroclor 1260-1																
Aroclor 1260-2																
Aroclor 1260-3																
Aroclor 1260-4								-17.6								
Aroclor 1260-5								-19.4								
Mean %D or %Drift																

Sample results reported from affected CCV:

CCV1: 1301014-01, 02, 03, 04, 05, 06, 07, 08, 09

CCV2: 13.01014-10, 11, 12, L301030-MS1, MSD1; 1301009-01, L301025-MS1, MSD1; 1310013-03 S2 01.09.13

CCV3: 1301013-01, 02, L301025-MS2, MSD2

CCV4:

CCV5:

CCV6:

CCV7:

CCV8:

8082A PCBs

Analytes with %Difference or %Drift >15%, Where Mean is Used for Continuing Calibration

Analyte	CCV1 01.09.13 12:18:25 PM		CCV2 01.09.13 9:59:43 PM		CCV3 01.10.13 4:43:29 AM		CCV4		CCV5		CCV6		CCV7		CCV8	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
Tetrachloro-meta-xylene (surrogate)	18.0	17.2			20.2	18.8										
Decachlorobiphenyl (surrogate)																
Aroclor 1016-1																
Aroclor 1016-2					16.0											
Aroclor 1016-3					16.2											
Aroclor 1016-4																
Aroclor 1016-5																
Aroclor 1260-1																
Aroclor 1260-2																
Aroclor 1260-3																
Aroclor 1260-4																
Aroclor 1260-5																
Mean %D or %Drift	6.8	1.1	1.8	-3.7	11.7	3.0										

Sample results reported from affected CCV:

CCV1: 1301013-01, 02, L301025-MS2, MSD2, L301047-BIK1, BS1, BSD1; L301048-BIK1, BS1

CCV2: 1301002-12, 13, 14, 15, 16, 17, 18, 19 (10X)

CCV3:

CCV4:

CCV5:

CCV6:

CCV7:

CCV8:

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-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 19:27

J1R7T4
1301013-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	139000	U	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1221	139000	U	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1232	139000	U	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1242	139000	U	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1248	139000	U	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1254	**387000**	D	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1260	**1160000**	D	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1262	139000	U	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1268	139000	U	139000	ug/kg dry	10000	L301025	01/04/2013	01/09/2013	8082
Surrogate: Decachlorobiphenyl	*% **	*U*	*43-144*			*L301025*	*01/04/2013*	*01/09/2013*	*8082*
Surrogate: Tetrachloro-meta-xylene	*% **	*U*	*52-141*			*L301025*	*01/04/2013*	*01/09/2013*	*8082*

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WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 19:27

J1R7T5

1301013-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	68800	U	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1221	68800	U	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1232	68800	U	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1242	68800	U	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1248	68800	U	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1254	**238000**	D	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1260	**710000**	D	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1262	68800	U	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Aroclor 1268	68800	U	68800	ug/kg dry	5000	L301025	01/04/2013	01/09/2013	8082
Surrogate: Decachlorobiphenyl	*% **	*U*	*43-144*			*L301025*	*01/04/2013*	*01/09/2013*	*8082*
Surrogate: Tetrachloro-meta-xylene	*% **	*U*	*52-141*			*L301025*	*01/04/2013*	*01/09/2013*	*8082*

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WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 19:27

J1R7T6
1301013-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Aroclor 1221	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Aroclor 1232	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Aroclor 1242	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Aroclor 1248	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Aroclor 1254	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Aroclor 1260	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Aroclor 1262	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Aroclor 1268	13.2	U	13.2	ug/kg dry	1	L301025	01/04/2013	01/08/2013	8082
Surrogate: Decachlorobiphenyl	*103 %*		*43-144*			*L301025*	*01/04/2013*	*01/08/2013*	*8082*
Surrogate: Tetrachloro-meta-xylene	*117 %*		*52-141*			*L301025*	*01/04/2013*	*01/08/2013*	*8082*

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WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 19:27

Polychlorinated Biphenyls by SW846 8082 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L301025 - SW 3540C										
Blank (L301025-BLK1)				Prepared: 01/04/2013 Analyzed: 01/07/2013						
Aroclor 1016	13.3	U	13.3	ug/kg wet						
Aroclor 1221	13.3	U	13.3	ug/kg wet						
Aroclor 1232	13.3	U	13.3	ug/kg wet						
Aroclor 1242	13.3	U	13.3	ug/kg wet						
Aroclor 1248	13.3	U	13.3	ug/kg wet						
Aroclor 1254	13.3	U	13.3	ug/kg wet						
Aroclor 1260	13.3	U	13.3	ug/kg wet						
Aroclor 1262	13.3	U	13.3	ug/kg wet						
Aroclor 1268	13.3	U	13.3	ug/kg wet						
Surrogate: Decachlorobiphenyl	*31.8*			*ug/kg wet*	*33.333*		*96*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*36.0*			*ug/kg wet*	*33.337*		*108*	*52-141*		
LCS (L301025-BS1)				Prepared: 01/04/2013 Analyzed: 01/07/2013						
Aroclor 1016	128		13.3	ug/kg wet	166.67		77	50-138		
Aroclor 1260	149		13.3	ug/kg wet	166.67		89	50-148		
Surrogate: Decachlorobiphenyl	*31.6*			*ug/kg wet*	*33.333*		*95*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*35.4*			*ug/kg wet*	*33.337*		*106*	*52-141*		
Matrix Spike (L301025-MS2)		**Source: 1301013-02**		Prepared: 01/04/2013 Analyzed: 01/09/2013						
Aroclor 1016	69000	U	69000	ug/kg dry	172.86	68800 U	*	50-138		
Aroclor 1260	846000	D	69000	ug/kg dry	172.86	710000	79200*	50-148		
Surrogate: Decachlorobiphenyl	*0.00*	*U*		*ug/kg dry*	*34.572*		*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*0.00*	*U*		*ug/kg dry*	*34.575*		*	*52-141*		
Matrix Spike Dup (L301025-MSD2)		**Source: 1301013-02**		Prepared: 01/04/2013 Analyzed: 01/09/2013						
Aroclor 1016	69500	U	69500	ug/kg dry	174.22	68800 U	*	50-138		40
Aroclor 1260	944000	D	69500	ug/kg dry	174.22	710000	134000*	50-148	52*	40
Surrogate: Decachlorobiphenyl	*0.00*	*U*		*ug/kg dry*	*34.845*		*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*0.00*	*U*		*ug/kg dry*	*34.848*		*	*52-141*		

PREPARATION BENCH SHEET

L301025

Lionville Laboratory

Printed: 1/5/2013 11:49:42AM

Matrix: Solid **Prepared using: Extraction - SW 3540C** **Surrogate used: 120139**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1301009-01	8082 PCBs	01/04/2013 13:46	30.17	10				250	WC-Hanford, Inc.	
1301013-01	8082 PCBs	01/04/2013 13:46	30.64	10				250	WC-Hanford, Inc.	
1301013-02	8082 PCBs	01/04/2013 13:46	30.68	10				250	WC-Hanford, Inc.	
1301013-03	8082 PCBs	01/04/2013 13:46	30.18	10				250	WC-Hanford, Inc.	
L301025-BLK1	QC	01/04/2013 13:46	30	10				250		
L301025-BS1	QC	01/04/2013 13:46	30	10	1200902		250	250		
L301025-MS1	QC	01/04/2013 13:46	30.02	10	1200902	1301009-01	250	250		
L301025-MS2	QC	01/04/2013 13:46	30.6	10	1200902	1301013-02	250	250		
L301025-MSD1	QC	01/04/2013 13:46	30.03	10	1200902	1301009-01	250	250		
L301025-MSD2	QC	01/04/2013 13:46	30.36	10	1200902	1301013-02	250	250		

S cleaned 01.07.13 SZ
Cu lot # B10X036

Extracts Relinquished By 1/5/13 1200 Date

Extracts Received By 01.07.13 8:45 Date

DRO/MO

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

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 14:33

Analytical Report for Extractable Petroleum Hydrocarbons by SW846 8015

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R7T4	1301013-01	Soil	12/31/2012 15:49	01/04/2013 10:25
J1R7T5	1301013-02	Soil	12/31/2012 15:50	01/04/2013 10:25

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-148 KP0173
LVL #: 1301013

W.O. #: 60049-001-001-0001-00
Date Received: 01-04-2013

DIESEL RANGE ORGANICS

Two (2) soil samples were collected on 12-31-2012.

The samples and associated QC samples were extracted 01-04-2013 and analyzed 01-06,08-2012 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 samples that met LvL's sample acceptance policy.

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

3. Four (4) of six surrogate recoveries were ouside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 13GC004) has been enclosed.

   The matrix spike recovery was unobtainable due to high concentration of non-target analytes. Sample J1R7T4 was analyzed with a 10-fold dilution.

4. Sample J1R7T4, L301026-MS3, L301026-MSD3, and J1R7T5 required 10-fold instrument dilutions due to high concentrations of non-target analytes

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

6. All blank spike recoveries were within acceptance criteria.

7. One (1) of two matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 13GC004) has been enclosed.

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

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

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

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

1/22/13
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 13GC004

Initiator: Catherine Carey
Date: 01/09/13
Client: WC Hanford

Batch: 1301013
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: DRO
Matrix: SOIL
Prep Batch: L301026

1. Reason for SDR

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

b. General Discrepancy

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

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

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

surrogates are out high in all samples and MS3 MSD3
spike recoveries high in MS3 / MSD3

2. Known or Probable Causes(s)

interference

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:

The pattern of the peaks in the samples suggests PCB interference

Narrate IS.

4. Project Manager Instructions...signature/date: 1/22/13

__ 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: 1/22/13

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-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 14:33

J1R7T4
1301013-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Extractable Petroleum Hydrocarbons by SW846 8015									
Diesel Range Organics	**556000**		35400	ug/kg dry	10	L301026	01/04/2013	01/08/2013	8015M
Motor Oil	106000	U	106000	ug/kg dry	10	L301026	01/04/2013	01/08/2013	8015M
Surrogate: p-Terphenyl	*348 % **		*39-129*			*L301026*	*01/04/2013*	*01/08/2013*	*8015M*

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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 14:33

J1R7T5
1301013-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Extractable Petroleum Hydrocarbons by SW846 8015									
Diesel Range Organics	**605000**		35000	ug/kg dry	10	L301026	01/04/2013	01/08/2013	8015M
Motor Oil	105000	U	105000	ug/kg dry	10	L301026	01/04/2013	01/08/2013	8015M
Surrogate: p-Terphenyl	*378 % **		*39-129*			*L301026*	*01/04/2013*	*01/08/2013*	*8015M*

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

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/10/2013 14:33

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 L301026 - SW 3540C										
Blank (L301026-BLK1)				Prepared: 01/04/2013 Analyzed: 01/06/2013						
Diesel Range Organics	3330	U	3330	ug/kg wet						
Motor Oil	10000	U	10000	ug/kg wet						
Surrogate: p-Terphenyl	*6610*			*ug/kg wet*	*6666.7*		*99*	*39-129*		
LCS (L301026-BS1)				Prepared: 01/04/2013 Analyzed: 01/06/2013						
Diesel Range Organics	58600		3330	ug/kg wet	66667		88	42-133		
Surrogate: p-Terphenyl	*6620*			*ug/kg wet*	*6666.7*		*99*	*39-129*		
Matrix Spike (L301026-MS3)		**Source: 1301013-01**		Prepared: 01/04/2013 Analyzed: 01/08/2013						
Diesel Range Organics	661000		35300	ug/kg dry	70591	556000	149*	42-133		
Surrogate: p-Terphenyl	*25600*			*ug/kg dry*	*7059.1*		*363**	*39-129*		
Matrix Spike Dup (L301026-MSD3)		**Source: 1301013-01**		Prepared: 01/04/2013 Analyzed: 01/08/2013						
Diesel Range Organics	636000		35200	ug/kg dry	70334	556000	114	42-133	26	40
Surrogate: p-Terphenyl	*30200*			*ug/kg dry*	*7033.4*		*430**	*39-129*		

PREPARATION BENCH SHEET

L301026

Lionville Laboratory

Printed: 1/11/2013 11:51:27AM

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1201463**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1301011-01	8015M DRO	01/04/2013 13:46	30.21	1				1000	WC-Hanford, Inc.	
1301012-01	8015M DRO	01/04/2013 13:46	30.04	1				1000	WC-Hanford, Inc.	
1301012-02	8015M DRO	01/04/2013 13:46	31.16	1				1000	WC-Hanford, Inc.	
1301013-01	8015M DRO	01/04/2013 13:46	30.08	1				1000	WC-Hanford, Inc.	
1301013-02	8015M DRO	01/04/2013 13:46	30.18	1				1000	WC-Hanford, Inc.	
L301026-BLK1	QC	01/04/2013 13:46	30	1				1000		
L301026-BS1	QC	01/04/2013 13:46	30	1	1201538		1000	1000		
L301026-MS1	QC	01/04/2013 13:46	30.01	1	1201538	1301011-01	1000	1000		
L301026-MS2	QC	01/04/2013 13:46	30.65	1	1201538	1301012-01	1000	1000		
L301026-MS3	QC	01/04/2013 13:46	30.18	1	1201538	1301013-01	1000	1000		
L301026-MSD1	QC	01/04/2013 13:46	30.34	1	1201538	1301011-01	1000	1000		
L301026-MSD2	QC	01/04/2013 13:46	30.11	1	1201538	1301012-01	1000	1000		
L301026-MSD3	QC	01/04/2013 13:46	30.29	1	1201538	1301013-01	1000	1000		

revision for prep time aem 1/11/13

Extracts Relinquished By Date

Extracts Received By Date

PREPARATION BENCH SHEET

L301026

Lionville Laboratory

Printed: 1/5/2013 11:44:25AM

Matrix: Solid **Prepared using: Extraction - SW 3540C** **Surrogate used: 1201463**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1301011-01	8015M DRO	01/04/2013 14:34	30.21	1				1000	WC-Hanford, Inc.	
1301012-01	8015M DRO	01/04/2013 16:15	30.04	1				1000	WC-Hanford, Inc.	
1301012-02	8015M DRO	01/04/2013 16:15	31.16	1				1000	WC-Hanford, Inc.	
1301013-01	8015M DRO	01/04/2013 16:15	30.08	1				1000	WC-Hanford, Inc.	
1301013-02	8015M DRO	01/04/2013 16:15	30.18	1				1000	WC-Hanford, Inc.	
L301026-BLK1	QC	01/04/2013 14:34	30	1				1000		
L301026-BS1	QC	01/04/2013 14:34	30	1	1201538		1000	1000		
L301026-MS1	QC	01/04/2013 14:34	30.01	1	1201538	1301011-01	1000	1000		
L301026-MS2	QC	01/04/2013 14:34	30.65	1	1201538	1301012-01	1000	1000		
L301026-MS3	QC	01/04/2013 14:34	30.18	1	1201538	1301013-01	1000	1000		
L301026-MSD1	QC	01/04/2013 14:34	30.34	1	1201538	1301011-01	1000	1000		
L301026-MSD2	QC	01/04/2013 14:34	30.11	1	1201538	1301012-01	1000	1000		
L301026-MSD3	QC	01/04/2013 14:34	30.29	1	1201538	1301013-01	1000	1000		

1/5/13 1145

Extracts Relinquished By Date

Extracts Received By Date

WET CHEMISTRY

Lionville Laboratory, PADEP Lab ID# 15-00009
264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/11/2013 17:45

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R7T4	1301013-01	Soil	12/31/2012 15:49	01/04/2013 10:25
J1R7T5	1301013-02	Soil	12/31/2012 15:50	01/04/2013 10:25
J1R7T6	1301013-03	Soil	12/31/2012 15:47	01/04/2013 10:25

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

Case Narrative

Client: WC-HANFORD RC-148 KP0173
LVL#: 1301013 **Date Received:** 01-04-13

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the data summary report. Results for soil or solid pH are measured in water at 25°C unless otherwise specified.

   Lionville Lab (LvL) is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

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

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

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

6. The Laboratory Control Samples (LCS) were within the laboratory control limits and method criteria.

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

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

1/22/13
Date

njp\i01-013

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 9 pages.

Lionville Laboratory, PADEP Lab ID# 15-00009
264 Welsh Pool Road
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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/11/2013 17:45

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
*	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
LOD	Limit of Detection (LOD): the minimum estimated concentration of a target analyte that can be detected reliably. Concentrations at the LOD or between the LOD and LOQ are flagged estimated with either a 'J' qualifier or client-specific qualifier.
LOQ	Limit of Quantitation (LOQ): the minimum concentration of a target analyte that can be quantified reliably

Lionville Laboratory, PADEP Lab ID# 15-00009
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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/11/2013 17:45

Wet Chemistry

Lionville Laboratory

Analyte	Result and Qualifier		LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R7T4 (1301013-01) Soil										
%Solids	**93.9**			0.1	% by Weight	1	L301038	01/07/2013 20:05	01/07/2013 20:05	SM2540G
Hexavalent Chromium	0.21	U	0.21	0.53	mg/kg dry	1	L301040	01/07/2013 15:40	01/08/2013 18:20	SW846 7196A
pH	**8.58**		0.10	0.10	pH Units	1	L301072	01/10/2013 13:00	01/10/2013 18:11	SW846 9045D
J1R7T5 (1301013-02) Soil										
%Solids	**94.5**			0.1	% by Weight	1	L301038	01/07/2013 20:05	01/07/2013 20:05	SM2540G
Hexavalent Chromium	0.21	U	0.21	0.53	mg/kg dry	1	L301040	01/07/2013 15:40	01/08/2013 18:20	SW846 7196A
pH	**8.61**		0.10	0.10	pH Units	1	L301072	01/10/2013 13:00	01/10/2013 18:13	SW846 9045D
J1R7T6 (1301013-03) Soil										
%Solids	**99.9**			0.1	% by Weight	1	L301038	01/07/2013 20:05	01/07/2013 20:05	SM2540G

Lionville Laboratory, PADEP Lab ID# 15-00009
264 Welsh Pool Road
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Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/11/2013 17:45

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L301038 - % Solids										
Duplicate (L301038-DUP6)	**Source: 1301013-01**			Prepared & Analyzed: 01/07/2013 20:05						
%Solids	94.0		0.1	% by Weight		93.9			0.1	20
Batch L301040 - Default Prep GenChem										
Blank (L301040-BLK1)				Prepared: 01/07/2013 15:40 Analyzed: 01/08/2013 18:20						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L301040-BS1)				Prepared: 01/07/2013 15:40 Analyzed: 01/08/2013 18:20						
Hexavalent Chromium	3.98	0.20	0.50	mg/kg wet	4.0000		99	80-120		
LCS (L301040-BS2)				Prepared: 01/07/2013 15:40 Analyzed: 01/08/2013 18:20						
Hexavalent Chromium	1090 D	20.0	50.0	mg/kg wet	1062.6		102	80-120		
Duplicate (L301040-DUP1)	**Source: 1301013-01**			Prepared: 01/07/2013 15:40 Analyzed: 01/08/2013 18:20						
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry		0.21 U				20
Matrix Spike (L301040-MS1)	**Source: 1301013-01**			Prepared: 01/07/2013 15:40 Analyzed: 01/08/2013 18:20						
Hexavalent Chromium	3.81	0.21	0.53	mg/kg dry	4.2609	0.21 U	89	75-125		
Matrix Spike (L301040-MS2)	**Source: 1301013-01**			Prepared: 01/07/2013 15:40 Analyzed: 01/08/2013 18:20						
Hexavalent Chromium	1060 D	21.3	53.3	mg/kg dry	1131.9	0.21 U	94	75-125		
Batch L301072 - Default Prep GenChem										
Duplicate (L301072-DUP1)	**Source: 1301013-02**			Prepared: 01/10/2013 13:00 Analyzed: 01/10/2013 18:15						
pH	8.61	0.10	0.10	pH Units		8.61			0.00	20

Lionville Laboratory, PADEP Lab ID# 15-00009
264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-148	
2620 Fermi Avenue	Project Number: KP0173	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/11/2013 17:45

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L301072 - Default Prep GenChem										
Reference (L301072-SRM1)				Prepared: 01/10/2013 13:00 Analyzed: 01/10/2013 18:17						
pH	10.0	0.10	0.10	pH Units	10.000		100	99-101		