SAF-RC-189
100N Field Remediation – Soil Full Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 11/26/12
INITIAL/DATE

COMMENTS:

SDG KP0143 SAF-RC-189

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 128-N-1 Verification

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

19 November 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 #	1211011
SDG #	KP0143
SAF #	RC-189
Date Received	11/02/12
# Samples	3
Matrix	SOIL
Volatiles	
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	X
Herbicides	
Metals	
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 35 pages.

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

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1211011

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-189

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager O. JOHNSON

QC SW Del SAL TAT 7 Day

Date Rec'd 11/2/12 Date Due 11/9/12

Refrigerator #		A				B										
			2			2										
#/Type Container	Liquid															
	Solid		1AG			1AG										
Volume	Liquid															
	Solid		250			250										
Preservatives			—			—										
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	PAHs			Metal	CN						
Lionville Laboratory Use Only			8270			8310										

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	J1R505			Soil	10-31-12	0948					X											
02	506					0955		X														
03	507			⊥	⊥	0945					X											

Special Instructions:

Special Instructions:

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

Relinquished by	Received by	Date	Time
Fed E	[illegible]	11/2/12	1940

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-141	Page 1 of 1
Collector: Q. Stowe	Company Contact: Joan Kessner; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8B 10/31/12; Data Turnaround: ~~21~~ 7 Days 10/31/12
Project Designation: 100N Field Remediation - Soil Full Protocol	Sampling Location: 128-N-1 Verification	SAF No.: RC-189	
Ice Chest No.: RCC-07-013	Field Logbook No.: El-1652-07; COA: R128N12000	Method of Shipment: Fed Ex	
Shipped To: ~~EBERLINE SERVICES~~ / LIONVILLE 10/31/12	Offsite Property No.: ~~NA~~ AJ 10-31-12 A120636	Bill of Lading/Air Bill No.: See OSPC	

000000004

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C									
Type of Container	aG	aG									
No. of Container(s)	1	~~0~~ 1 AJ 10-31-12									
Volume	250mL	250mL									
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	PAHs - 8310									

Sample No.	Matrix *	Sample Date	Sample Time										
J1R505	SOIL	10-31-12	0948		X								
J1R506	SOIL	10-31-12	0955	X									
J1R507	SOIL	10-31-12	0945		X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1045	Received By/Stored In	Date/Time 1045
Quincy Stowe	10/31/12	Dennis Newman	10/31/12
Relinquished By/Removed From	Date/Time 1422	Received By/Stored In	Date/Time 1060#1
Dennis Newman	10/31/12	Bingham	10-31-12 1422
Relinquished By/Removed From	Date/Time 1060#1	Received By/Stored In	Date/Time
BICH	11-1-12 1110	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	11-2-12 0940	VICTOR HERNANDEZ	11-2-12 0940
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

KP0143

REVIEWED BY AJ
DATE ~~10~~ 11-1-12
AJ 11-1-12

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wl=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 RC-148 **Date:** 11/2/12

Project/SAP/SOW/Release #:

LvL Batch #: 1211011 **Sample Custodian:** [signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7939 8128 7366
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 2.1°	°C	Cooler # RCC-07-013
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

SEMIVOLATILES

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: KP0143	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/07/2012 14:28

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R506	1211011-02	Soil	10/31/2012 09:55	11/02/2012 09:40

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-189 KP0143
LVL #: 1211011

W.O. #: 60049-001-001-0001-00
Date Received: 11-02-2012

SEMIVOLATILE

One (1) soil sample was collected on 10-31-2012.

The sample and associated QC samples were extracted 11-02-2012 and analyzed 11-03,04-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8270C for client specified target compounds.

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 sample was extracted and analyzed within holding time.

3. Non-target compounds were detected in these samples.

4. All obtainable surrogate recoveries were within acceptance criteria.

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

6. Two (2) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12MS190) has been enclosed.

7. All matrix spike recoveries were within acceptance criteria

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

9. All initial calibrations associated with this data set were within acceptance criteria. Per method 8000B/8270C, the attached Table 1 shows the target compounds where the RSD exceeded 15%, and the mean RSD was used for evaluation of the initial calibration. Results associated with these compounds are considered to have greater uncertainty. Refer to the Analysis Batch Sequence Summary Forms to associate the calibration with client samples.

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

11. Internal standard area and retention time criteria were met.

12. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

13. 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 package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

for

Iain Daniels
LvL Laboratory Manager

11/13/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS190

Initiator: Sharon Saylor
Date: 11-7-12
Client: WCHanford

Batch: 1211011
Samples: L211021-BS1
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: Soil
Prep Batch: L211021

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)

① Spike recoveries outside QC acceptance limits in L211021-BS1 but L211021-MS2 and L211021-MSD2 are ok

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

Other Description: namte

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

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

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

5. Final Action...signature/date: _____ 11/13/12 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

TABLE 1

TCL - 8000B/8270C COMPOUNDS WHERE THE MEAN %RSD IS USED TO MEET CRITERIA FOR INITIAL CALIBRATION OF AN INDIVIDUAL COMPOUND

m 11/7/12

MEAN RSD USED FOR EVALUATION: 7.37 CALIBRATION: ~~121100P~~ N1026

>15% RSD	Compound	>15% RSD	Compound	>15% RSD	Compound
	1,2,4-Trichlorobenzene		Di-n-butyl Phthalate		**Surrogates:**
	1,2-Dichlorobenzene	✓	Di-n-octyl Phthalate		2-Fluorophenol
	1,3-Dichlorobenzene		Fluoranthene		Phenol-d5
	1,4-Dichlorobenzene		Fluorene		Nitrobenzene-d5
	2,4,5-Trichlorophenol		Hexachlorobenzene		2-Fluorobiphenyl
	2,4,6-Trichlorophenol		Hexachlorobutadiene		2,4,6-Tribromophenol
	2,4-Dichlorophenol	✓	Hexachlorocyclopentadiene		p-Terphenyl-d14
	2,4-Dimethylphenol		Hexachloroethane		
✓	2,4-Dinitrophenol		Indeno[1,2,3-cd]pyrene		
	2,4-Dinitrotoluene		Isophorone		
	2,6-Dinitrotoluene		Naphthalene		
	2-Chloronaphthalene		Nitrobenzene		
	2-Chlorophenol		N-Nitrosodi-n-propylamine		
	2-Methylnaphthalene		N-Nitrosodiphenylamine		
	2-Methylphenol		Pentachlorophenol		
✓	2-Nitroaniline		Phenanthrene		
	2-Nitrophenol		Phenol		
	3- and/or 4-Methylphenol		Pyrene		
	3,3'-Dichlorobenzidine				
	3-Nitroaniline				
✓	4,6-Dinitro-2-methylphenol		**OLM04.2 TCL addons:**		
	4-Bromophenyl Phenyl Ether		1,1-Biphenyl		
	4-Chloro-3-methylphenol		Atrazine		
	4-Chloroaniline		Benzaldehyde		
	4-Chlorophenyl Phenyl Ether		Caprolactam		
	4-Nitroaniline				
	4-Nitrophenol		**NonTCL addons:**		
	Acenaphthene		1,2-Diphenylhydrazine		
	Acenaphthylene		1,4-Dioxane		
	Anthracene		1-Methylnapthalene		
	Benz[a]anthracene		2,3,4,6-Tetrachlorophenol		
	Benzo[a] pyrene		Acetophenone		
	Benzo[b] fluoranthene		Aniline		
	Benzo[g,h,i] perylene		Benzidine		
	Benzo[k] fluoranthene		Benzoic Acid		
	Benzyl alcohol		N-Nitrosodimethylamine		
	Bis(2-chloroethoxy) methane		Pyridine		
	Bis(2-chloroethyl) ether		Tributylphosphate		
	Bis(2-chloroisopropyl) ether				
✓	Bis(2-ethylhexyl) phthalate				
	Butyl Benzyl Phthalate				
	Carbazole				
	Chrysene				
	Dibenz[a,h]anthracene				
	Dibenzofuran				
	Diethyl Phthalate				
	Dimethyl Phthalate				

GLOSSARY

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit, which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection 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. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike 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	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP - Missed Peak: Manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene, which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

J1R506
1211011-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
1,2-Dichlorobenzene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
1,3-Dichlorobenzene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
1,4-Dichlorobenzene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2,4,5-Trichlorophenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2,4,6-Trichlorophenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2,4-Dichlorophenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2,4-Dimethylphenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2,4-Dinitrophenol	1860	U	1860	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2,4-Dinitrotoluene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2,6-Dinitrotoluene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2-Chloronaphthalene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2-Chlorophenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2-Methylnaphthalene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2-Methylphenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2-Nitroaniline	1860	U	1860	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
2-Nitrophenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
3,3'-Dichlorobenzidine	743	U	743	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
3-Nitroaniline	1860	U	1860	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
4,6-Dinitro-2-methylphenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
4-Bromophenyl Phenyl Ether	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
4-Chloro-3-methylphenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
4-Chloroaniline	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
4-Chlorophenyl Phenyl Ether	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
3- and/or 4-Methylphenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
4-Nitroaniline	1860	U	1860	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
4-Nitrophenol	1860	U	1860	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Acenaphthene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Acenaphthylene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Anthracene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Benz[a]anthracene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Benzo[a] pyrene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Benzo[b] fluoranthene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Benzo[g,h,i] perylene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Benzo[k] fluoranthene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Bis(2-chloroethoxy) methane	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

J1R506
1211011-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Bis(2-chloroisopropyl) ether	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Bis(2-ethylhexyl) phthalate	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Butyl Benzyl Phthalate	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Carbazole	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Chrysene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Dibenz[a,h]anthracene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Dibenzofuran	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Diethyl Phthalate	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Dimethyl Phthalate	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Di-n-butyl Phthalate	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Di-n-octyl Phthalate	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Fluoranthene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Fluorene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Hexachlorobenzene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Hexachlorobutadiene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Hexachlorocyclopentadiene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Hexachloroethane	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Indeno[1,2,3-cd]pyrene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Isophorone	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Naphthalene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Nitrobenzene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
N-Nitrosodi-n-propylamine	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
N-Nitrosodiphenylamine	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Pentachlorophenol	1860	U	1860	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Phenanthrene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Phenol	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Pyrene	371	U	371	ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
TIC:Aldol Condensate 1	**175**	A, J		ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
TIC:Aldol Condensate 2	**1090**	A, B, J		ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
TIC:Aldol Condensate 3	**36800**	A, B, J		ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
TIC:Aldol Condensate 4	**413**	A, B, J		ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
TIC:Unknown 1	**320**	J		ug/kg dry	1	L211021	11/02/2012	11/03/2012	8270C
Surrogate: 2-Fluorophenol	*51 %*		*25-121*			*L211021*	*11/02/2012*	*11/03/2012*	*8270C*
Surrogate: Phenol-d5	*52 %*		*24-113*			*L211021*	*11/02/2012*	*11/03/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*56 %*		*23-120*			*L211021*	*11/02/2012*	*11/03/2012*	*8270C*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

J1R506
1211011-02 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*56 %*	*30-115*			*L211021*	*11/02/2012*	*11/03/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*19 %*	*19-122*			*L211021*	*11/02/2012*	*11/03/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*59 %*	*18-137*			*L211021*	*11/02/2012*	*11/03/2012*	*8270C*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211021 - SW 3540C										
Blank (L211021-BLK1)				Prepared: 11/02/2012 Analyzed: 11/03/2012						
1,2,4-Trichlorobenzene	330	U	330	ug/kg wet						
1,2-Dichlorobenzene	330	U	330	ug/kg wet						
1,3-Dichlorobenzene	330	U	330	ug/kg wet						
1,4-Dichlorobenzene	330	U	330	ug/kg wet						
2,4,5-Trichlorophenol	330	U	330	ug/kg wet						
2,4,6-Trichlorophenol	330	U	330	ug/kg wet						
2,4-Dichlorophenol	330	U	330	ug/kg wet						
2,4-Dimethylphenol	330	U	330	ug/kg wet						
2,4-Dinitrophenol	1650	U	1650	ug/kg wet						
2,4-Dinitrotoluene	330	U	330	ug/kg wet						
2,6-Dinitrotoluene	330	U	330	ug/kg wet						
2-Chloronaphthalene	330	U	330	ug/kg wet						
2-Chlorophenol	330	U	330	ug/kg wet						
2-Methylnaphthalene	330	U	330	ug/kg wet						
2-Methylphenol	330	U	330	ug/kg wet						
2-Nitroaniline	1650	U	1650	ug/kg wet						
2-Nitrophenol	330	U	330	ug/kg wet						
3,3'-Dichlorobenzidine	660	U	660	ug/kg wet						
3-Nitroaniline	1650	U	1650	ug/kg wet						
4,6-Dinitro-2-methylphenol	330	U	330	ug/kg wet						
4-Bromophenyl Phenyl Ether	330	U	330	ug/kg wet						
4-Chloro-3-methylphenol	330	U	330	ug/kg wet						
4-Chloroaniline	330	U	330	ug/kg wet						
4-Chlorophenyl Phenyl Ether	330	U	330	ug/kg wet						
3- and/or 4-Methylphenol	330	U	330	ug/kg wet						
4-Nitroaniline	1650	U	1650	ug/kg wet						
4-Nitrophenol	1650	U	1650	ug/kg wet						
Acenaphthene	330	U	330	ug/kg wet						
Acenaphthylene	330	U	330	ug/kg wet						
Anthracene	330	U	330	ug/kg wet						
Benz[a]anthracene	330	U	330	ug/kg wet						
Benzo[a] pyrene	330	U	330	ug/kg wet						
Benzo[b] fluoranthene	330	U	330	ug/kg wet						
Benzo[g,h,i] perylene	330	U	330	ug/kg wet						
Benzo[k] fluoranthene	330	U	330	ug/kg wet						
Bis(2-chloroethoxy) methane	330	U	330	ug/kg wet						

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211021 - SW 3540C										
Blank (L211021-BLK1)				Prepared: 11/02/2012 Analyzed: 11/03/2012						
Bis(2-chloroethyl) ether	330	U	330	ug/kg wet						
Bis(2-chloroisopropyl) ether	330	U	330	ug/kg wet						
Bis(2-ethylhexyl) phthalate	330	U	330	ug/kg wet						
Butyl Benzyl Phthalate	330	U	330	ug/kg wet						
Carbazole	330	U	330	ug/kg wet						
Chrysene	330	U	330	ug/kg wet						
Dibenz[a,h]anthracene	330	U	330	ug/kg wet						
Dibenzofuran	330	U	330	ug/kg wet						
Diethyl Phthalate	330	U	330	ug/kg wet						
Dimethyl Phthalate	330	U	330	ug/kg wet						
Di-n-butyl Phthalate	330	U	330	ug/kg wet						
Di-n-octyl Phthalate	330	U	330	ug/kg wet						
Fluoranthene	330	U	330	ug/kg wet						
Fluorene	330	U	330	ug/kg wet						
Hexachlorobenzene	330	U	330	ug/kg wet						
Hexachlorobutadiene	330	U	330	ug/kg wet						
Hexachlorocyclopentadiene	330	U	330	ug/kg wet						
Hexachloroethane	330	U	330	ug/kg wet						
Indeno[1,2,3-cd]pyrene	330	U	330	ug/kg wet						
Isophorone	330	U	330	ug/kg wet						
Naphthalene	330	U	330	ug/kg wet						
Nitrobenzene	330	U	330	ug/kg wet						
N-Nitrosodi-n-propylamine	330	U	330	ug/kg wet						
N-Nitrosodiphenylamine	330	U	330	ug/kg wet						
Pentachlorophenol	1650	U	1650	ug/kg wet						
Phenanthrene	330	U	330	ug/kg wet						
Phenol	330	U	330	ug/kg wet						
Pyrene	330	U	330	ug/kg wet						
Unknown 1	192	J		ug/kg wet						
Aldol Condensate 4	333	A, J		ug/kg wet						
Aldol Condensate 3	535	A, J		ug/kg wet						
Aldol Condensate 2	35100	A, J		ug/kg wet						
Aldol Condensate 1	1130	A, J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1400*			*ug/kg wet*	*2500.0*		*56*	*25-121*		
Surrogate: Phenol-d5	*1430*			*ug/kg wet*	*2500.0*		*57*	*24-113*		
Surrogate: Nitrobenzene-d5	*1000*			*ug/kg wet*	*1666.7*		*60*	*23-120*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211021 - SW 3540C									
Blank (L211021-BLK1)			Prepared: 11/02/2012 Analyzed: 11/03/2012						
Surrogate: 2-Fluorobiphenyl	*1010*		*ug/kg wet*	*1666.7*		*61*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*970*		*ug/kg wet*	*2500.0*		*39*	*19-122*		
Surrogate: p-Terphenyl-d14	*1030*		*ug/kg wet*	*1666.7*		*62*	*18-137*		
LCS (L211021-BS1)			Prepared: 11/02/2012 Analyzed: 11/03/2012						
1,2,4-Trichlorobenzene	1200		ug/kg wet	2000.0		60	45-110		
1,2-Dichlorobenzene	1240		ug/kg wet	2000.0		62	45-105		
1,3-Dichlorobenzene	1190		ug/kg wet	2000.0		60	40-100		
1,4-Dichlorobenzene	1220		ug/kg wet	2000.0		61	35-105		
2,4,5-Trichlorophenol	1260		ug/kg wet	2000.0		63	30-140		
2,4,6-Trichlorophenol	1070		ug/kg wet	2000.0		53	20-110		
2,4-Dichlorophenol	1210		ug/kg wet	2000.0		61	40-110		
2,4-Dimethylphenol	1200		ug/kg wet	2000.0		60	30-105		
2,4-Dinitrophenol	97.9		ug/kg wet	2000.0		5*	25-130		
2,4-Dinitrotoluene	1290		ug/kg wet	2000.0		64	50-115		
2,6-Dinitrotoluene	1290		ug/kg wet	2000.0		65	40-120		
2-Chloronaphthalene	1220		ug/kg wet	2000.0		61	45-115		
2-Chlorophenol	1260		ug/kg wet	2000.0		63	45-105		
2-Methylnaphthalene	1200		ug/kg wet	2000.0		60	45-110		
2-Methylphenol	1280		ug/kg wet	2000.0		64	40-120		
2-Nitroaniline	1450		ug/kg wet	2000.0		72	45-120		
2-Nitrophenol	1300		ug/kg wet	2000.0		65	40-110		
3,3'-Dichlorobenzidine	1440		ug/kg wet	2000.0		72	15-130		
3-Nitroaniline	1280		ug/kg wet	2000.0		64	40-130		
4,6-Dinitro-2-methylphenol	261		ug/kg wet	2000.0		13*	20-140		
4-Bromophenyl Phenyl Ether	1220		ug/kg wet	2000.0		61	45-115		
4-Chloro-3-methylphenol	1240		ug/kg wet	2000.0		62	35-115		
4-Chloroaniline	1190		ug/kg wet	2000.0		60	10-100		
4-Chlorophenyl Phenyl Ether	1200		ug/kg wet	2000.0		60	45-110		
3- and/or 4-Methylphenol	1260		ug/kg wet	2000.0		63	40-120		
4-Nitroaniline	1260		ug/kg wet	2000.0		63	40-130		
4-Nitrophenol	1110		ug/kg wet	2000.0		56	15-140		
Acenaphthene	1230		ug/kg wet	2000.0		61	45-110		
Acenaphthylene	1300		ug/kg wet	2000.0		65	45-115		
Anthracene	1220		ug/kg wet	2000.0		61	45-130		
Benz[a]anthracene	1240		ug/kg wet	2000.0		62	45-130		
Benzo[a] pyrene	1180		ug/kg wet	2000.0		59	45-130		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211021 - SW 3540C									
LCS (L211021-BS1)			Prepared: 11/02/2012 Analyzed: 11/03/2012						
Benzo[b] fluoranthene	1240		ug/kg wet	2000.0		62	40-130		
Benzo[g,h,i] perylene	1210		ug/kg wet	2000.0		61	45-125		
Benzo[k] fluoranthene	1220		ug/kg wet	2000.0		61	45-125		
Bis(2-chloroethoxy) methane	1210		ug/kg wet	2000.0		60	45-110		
Bis(2-chloroethyl) ether	1180		ug/kg wet	2000.0		59	40-110		
Bis(2-chloroisopropyl) ether	1190		ug/kg wet	2000.0		60	30-115		
Bis(2-ethylhexyl) phthalate	1350		ug/kg wet	2000.0		68	40-145		
Butyl Benzyl Phthalate	1290		ug/kg wet	2000.0		65	50-125		
Carbazole	1210		ug/kg wet	2000.0		60	40-140		
Chrysene	1300		ug/kg wet	2000.0		65	45-130		
Dibenz[a,h]anthracene	1200		ug/kg wet	2000.0		60	45-125		
Dibenzofuran	1250		ug/kg wet	2000.0		63	45-120		
Diethyl Phthalate	1180		ug/kg wet	2000.0		59	50-125		
Dimethyl Phthalate	1210		ug/kg wet	2000.0		60	45-130		
Di-n-butyl Phthalate	1140		ug/kg wet	2000.0		57	50-130		
Di-n-octyl Phthalate	1260		ug/kg wet	2000.0		63	40-150		
Fluoranthene	1180		ug/kg wet	2000.0		59	45-130		
Fluorene	1210		ug/kg wet	2000.0		60	45-120		
Hexachlorobenzene	1300		ug/kg wet	2000.0		65	45-130		
Hexachlorobutadiene	1300		ug/kg wet	2000.0		65	45-105		
Hexachlorocyclopentadiene	1260		ug/kg wet	2000.0		63	10-100		
Hexachloroethane	1150		ug/kg wet	2000.0		57	35-110		
Indeno[1,2,3-cd]pyrene	1210		ug/kg wet	2000.0		61	45-130		
Isophorone	1190		ug/kg wet	2000.0		60	40-110		
Naphthalene	1330		ug/kg wet	2000.0		67	40-110		
Nitrobenzene	1180		ug/kg wet	2000.0		59	40-105		
N-Nitrosodi-n-propylamine	1450		ug/kg wet	2000.0		72	30-130		
N-Nitrosodiphenylamine	1250		ug/kg wet	2000.0		63	50-120		
Pentachlorophenol	559		ug/kg wet	2000.0		28	25-120		
Phenanthrene	1230		ug/kg wet	2000.0		62	50-120		
Phenol	1250		ug/kg wet	2000.0		62	40-115		
Pyrene	1260		ug/kg wet	2000.0		63	45-125		
Surrogate: 2-Fluorophenol	*1620*		*ug/kg wet*	*2500.0*		*65*	*25-121*		
Surrogate: Phenol-d5	*1650*		*ug/kg wet*	*2500.0*		*66*	*24-113*		
Surrogate: Nitrobenzene-d5	*1130*		*ug/kg wet*	*1666.7*		*68*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1150*		*ug/kg wet*	*1666.7*		*69*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1220*		*ug/kg wet*	*2500.0*		*49*	*19-122*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211021 - SW 3540C									
LCS (L211021-BS1)			Prepared: 11/02/2012 Analyzed: 11/03/2012						
Surrogate: p-Terphenyl-d14	*1030*		*ug/kg wet*	*1666.7*		*62*	*18-137*		
Matrix Spike (L211021-MS2)		**Source: 1211011-02**	Prepared: 11/02/2012 Analyzed: 11/04/2012						
1,2,4-Trichlorobenzene	1330		ug/kg dry	2229.7	371 U	60	45-110		
1,2-Dichlorobenzene	1330		ug/kg dry	2229.7	371 U	59	45-105		
1,3-Dichlorobenzene	1270		ug/kg dry	2229.7	371 U	57	40-100		
1,4-Dichlorobenzene	1280		ug/kg dry	2229.7	371 U	58	35-105		
2,4,5-Trichlorophenol	882		ug/kg dry	2229.7	371 U	40	30-140		
2,4,6-Trichlorophenol	729		ug/kg dry	2229.7	371 U	33	20-110		
2,4-Dichlorophenol	1270		ug/kg dry	2229.7	371 U	57	40-110		
2,4-Dimethylphenol	1390		ug/kg dry	2229.7	371 U	62	30-105		
2,4-Dinitrophenol	1770		ug/kg dry	2229.7	1860 U	80	25-130		
2,4-Dinitrotoluene	1740		ug/kg dry	2229.7	371 U	78	50-115		
2,6-Dinitrotoluene	1700		ug/kg dry	2229.7	371 U	76	40-120		
2-Chloronaphthalene	1490		ug/kg dry	2229.7	371 U	67	45-115		
2-Chlorophenol	1430		ug/kg dry	2229.7	371 U	64	45-105		
2-Methylnaphthalene	1350		ug/kg dry	2229.7	371 U	61	45-110		
2-Methylphenol	1480		ug/kg dry	2229.7	371 U	66	40-120		
2-Nitroaniline	1890		ug/kg dry	2229.7	1860 U	85	45-120		
2-Nitrophenol	1450		ug/kg dry	2229.7	371 U	65	40-110		
3,3'-Dichlorobenzidine	1300		ug/kg dry	2229.7	743 U	58	15-130		
3-Nitroaniline	1400		ug/kg dry	2229.7	1860 U	63	40-130		
4,6-Dinitro-2-methylphenol	1850		ug/kg dry	2229.7	371 U	83	20-140		
4-Bromophenyl Phenyl Ether	1540		ug/kg dry	2229.7	371 U	69	45-115		
4-Chloro-3-methylphenol	1360		ug/kg dry	2229.7	371 U	61	35-115		
4-Chloroaniline	817		ug/kg dry	2229.7	371 U	37	10-100		
4-Chlorophenyl Phenyl Ether	1540		ug/kg dry	2229.7	371 U	69	45-110		
3- and/or 4-Methylphenol	1470		ug/kg dry	2229.7	371 U	66	40-120		
4-Nitroaniline	1580		ug/kg dry	2229.7	1860 U	71	40-130		
4-Nitrophenol	622		ug/kg dry	2229.7	1860 U	28	15-140		
Acenaphthene	1530		ug/kg dry	2229.7	371 U	69	45-110		
Acenaphthylene	1630		ug/kg dry	2229.7	371 U	73	45-115		
Anthracene	1550		ug/kg dry	2229.7	371 U	69	45-130		
Benz[a]anthracene	1600		ug/kg dry	2229.7	371 U	72	45-130		
Benzo[a] pyrene	1470		ug/kg dry	2229.7	371 U	66	45-130		
Benzo[b] fluoranthene	1520		ug/kg dry	2229.7	371 U	68	40-130		
Benzo[g,h,i] perylene	1470		ug/kg dry	2229.7	371 U	66	45-125		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/07/2012 14:28

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211021 - SW 3540C									
Matrix Spike (L211021-MS2)	**Source: 1211011-02**		Prepared: 11/02/2012 Analyzed: 11/04/2012						
Benzo[k] fluoranthene	1480		ug/kg dry	2229.7	371 U	66	45-125		
Bis(2-chloroethoxy) methane	1370		ug/kg dry	2229.7	371 U	61	45-110		
Bis(2-chloroethyl) ether	1330		ug/kg dry	2229.7	371 U	60	40-110		
Bis(2-chloroisopropyl) ether	1310		ug/kg dry	2229.7	371 U	59	30-115		
Bis(2-ethylhexyl) phthalate	1840		ug/kg dry	2229.7	371 U	82	40-145		
Butyl Benzyl Phthalate	1670		ug/kg dry	2229.7	371 U	75	50-125		
Carbazole	1590		ug/kg dry	2229.7	371 U	71	40-140		
Chrysene	1630		ug/kg dry	2229.7	371 U	73	45-130		
Dibenz[a,h]anthracene	1470		ug/kg dry	2229.7	371 U	66	45-125		
Dibenzofuran	1570		ug/kg dry	2229.7	371 U	70	45-120		
Diethyl Phthalate	1560		ug/kg dry	2229.7	371 U	70	50-125		
Dimethyl Phthalate	1560		ug/kg dry	2229.7	371 U	70	45-130		
Di-n-butyl Phthalate	1510		ug/kg dry	2229.7	371 U	68	50-130		
Di-n-octyl Phthalate	1710		ug/kg dry	2229.7	371 U	77	40-150		
Fluoranthene	1530		ug/kg dry	2229.7	371 U	69	45-130		
Fluorene	1530		ug/kg dry	2229.7	371 U	69	45-120		
Hexachlorobenzene	1640		ug/kg dry	2229.7	371 U	73	45-130		
Hexachlorobutadiene	1390		ug/kg dry	2229.7	371 U	62	45-105		
Hexachlorocyclopentadiene	1220		ug/kg dry	2229.7	371 U	55	10-100		
Hexachloroethane	1180		ug/kg dry	2229.7	371 U	53	35-110		
Indeno[1,2,3-cd]pyrene	1470		ug/kg dry	2229.7	371 U	66	45-130		
Isophorone	1370		ug/kg dry	2229.7	371 U	61	40-110		
Naphthalene	1490		ug/kg dry	2229.7	371 U	67	40-110		
Nitrobenzene	1300		ug/kg dry	2229.7	371 U	58	40-105		
N-Nitrosodi-n-propylamine	1740		ug/kg dry	2229.7	371 U	78	30-130		
N-Nitrosodiphenylamine	1590		ug/kg dry	2229.7	371 U	71	50-120		
Pentachlorophenol	1170		ug/kg dry	2229.7	1860 U	53	25-120		
Phenanthrene	1560		ug/kg dry	2229.7	371 U	70	50-120		
Phenol	1420		ug/kg dry	2229.7	371 U	64	40-115		
Pyrene	1580		ug/kg dry	2229.7	371 U	71	45-125		
Surrogate: 2-Fluorophenol	*1770*		*ug/kg dry*	*2787.2*		*63*	*25-121*		
Surrogate: Phenol-d5	*1880*		*ug/kg dry*	*2787.2*		*68*	*24-113*		
Surrogate: Nitrobenzene-d5	*1280*		*ug/kg dry*	*1858.1*		*69*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1350*		*ug/kg dry*	*1858.1*		*72*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1030*		*ug/kg dry*	*2787.2*		*37*	*19-122*		
Surrogate: p-Terphenyl-d14	*1260*		*ug/kg dry*	*1858.1*		*68*	*18-137*		

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WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: KP0143	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	11/07/2012 14:28

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211021 - SW 3540C									
Matrix Spike Dup (L211021-MSD2)		**Source: 1211011-02**	Prepared: 11/02/2012 Analyzed: 11/04/2012						
1,2,4-Trichlorobenzene	1320		ug/kg dry	2269.7	371 U	58	45-110	2	40
1,2-Dichlorobenzene	1370		ug/kg dry	2269.7	371 U	60	45-105	1	40
1,3-Dichlorobenzene	1290		ug/kg dry	2269.7	371 U	57	40-100	0.03	40
1,4-Dichlorobenzene	1320		ug/kg dry	2269.7	371 U	58	35-105	1	40
2,4,5-Trichlorophenol	911		ug/kg dry	2269.7	371 U	40	30-140	2	40
2,4,6-Trichlorophenol	708		ug/kg dry	2269.7	371 U	31	20-110	5	40
2,4-Dichlorophenol	1310		ug/kg dry	2269.7	371 U	58	40-110	1	40
2,4-Dimethylphenol	1450		ug/kg dry	2269.7	371 U	64	30-105	3	40
2,4-Dinitrophenol	1370		ug/kg dry	2269.7	1860 U	60	25-130	28	40
2,4-Dinitrotoluene	1720		ug/kg dry	2269.7	371 U	76	50-115	3	40
2,6-Dinitrotoluene	1680		ug/kg dry	2269.7	371 U	74	40-120	2	40
2-Chloronaphthalene	1470		ug/kg dry	2269.7	371 U	65	45-115	3	40
2-Chlorophenol	1450		ug/kg dry	2269.7	371 U	64	45-105	0.6	40
2-Methylnaphthalene	1370		ug/kg dry	2269.7	371 U	61	45-110	0.1	40
2-Methylphenol	1530		ug/kg dry	2269.7	371 U	67	40-120	1	40
2-Nitroaniline	1900		ug/kg dry	2269.7	1860 U	84	45-120	1	40
2-Nitrophenol	1470		ug/kg dry	2269.7	371 U	65	40-110	0.1	40
3,3'-Dichlorobenzidine	1550		ug/kg dry	2269.7	743 U	68	15-130	15	40
3-Nitroaniline	1460		ug/kg dry	2269.7	1860 U	64	40-130	3	40
4,6-Dinitro-2-methylphenol	1610		ug/kg dry	2269.7	371 U	71	20-140	16	40
4-Bromophenyl Phenyl Ether	1550		ug/kg dry	2269.7	371 U	68	45-115	2	40
4-Chloro-3-methylphenol	1450		ug/kg dry	2269.7	371 U	64	35-115	5	40
4-Chloroaniline	1050		ug/kg dry	2269.7	371 U	46	10-100	23	40
4-Chlorophenyl Phenyl Ether	1530		ug/kg dry	2269.7	371 U	68	45-110	2	40
3- and/or 4-Methylphenol	1530		ug/kg dry	2269.7	371 U	67	40-120	2	40
4-Nitroaniline	1610		ug/kg dry	2269.7	1860 U	71	40-130	0.03	40
4-Nitrophenol	697		ug/kg dry	2269.7	1860 U	31	15-140	10	40
Acenaphthene	1510		ug/kg dry	2269.7	371 U	66	45-110	3	40
Acenaphthylene	1630		ug/kg dry	2269.7	371 U	72	45-115	2	40
Anthracene	1540		ug/kg dry	2269.7	371 U	68	45-130	2	40
Benz[a]anthracene	1620		ug/kg dry	2269.7	371 U	71	45-130	0.4	40
Benzo[a] pyrene	1470		ug/kg dry	2269.7	371 U	65	45-130	2	40
Benzo[b] fluoranthene	1550		ug/kg dry	2269.7	371 U	68	40-130	0.4	40
Benzo[g,h,i] perylene	1490		ug/kg dry	2269.7	371 U	66	45-125	0.5	40
Benzo[k] fluoranthene	1460		ug/kg dry	2269.7	371 U	65	45-125	3	40
Bis(2-chloroethoxy) methane	1390		ug/kg dry	2269.7	371 U	61	45-110	0.06	40

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WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: KP0143	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/07/2012 14:28

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211021 - SW 3540C									
Matrix Spike Dup (L211021-MSD2)	**Source: 1211011-02**		Prepared: 11/02/2012 Analyzed: 11/04/2012						
Bis(2-chloroethyl) ether	1370		ug/kg dry	2269.7	371 U	60	40-110	1	40
Bis(2-chloroisopropyl) ether	1350		ug/kg dry	2269.7	371 U	60	30-115	1	40
Bis(2-ethylhexyl) phthalate	1910		ug/kg dry	2269.7	371 U	84	40-145	2	40
Butyl Benzyl Phthalate	1710		ug/kg dry	2269.7	371 U	75	50-125	0.6	40
Carbazole	1580		ug/kg dry	2269.7	371 U	70	40-140	2	40
Chrysene	1680		ug/kg dry	2269.7	371 U	74	45-130	1	40
Dibenz[a,h]anthracene	1710		ug/kg dry	2269.7	371 U	75	45-125	13	40
Dibenzofuran	1570		ug/kg dry	2269.7	371 U	69	45-120	2	40
Diethyl Phthalate	1570		ug/kg dry	2269.7	371 U	69	50-125	1	40
Dimethyl Phthalate	1550		ug/kg dry	2269.7	371 U	68	45-130	2	40
Di-n-butyl Phthalate	1530		ug/kg dry	2269.7	371 U	68	50-130	0.2	40
Di-n-octyl Phthalate	1770		ug/kg dry	2269.7	371 U	78	40-150	1	40
Fluoranthene	1510		ug/kg dry	2269.7	371 U	67	45-130	3	40
Fluorene	1530		ug/kg dry	2269.7	371 U	67	45-120	2	40
Hexachlorobenzene	1630		ug/kg dry	2269.7	371 U	72	45-130	2	40
Hexachlorobutadiene	1400		ug/kg dry	2269.7	371 U	62	45-105	0.8	40
Hexachlorocyclopentadiene	1150		ug/kg dry	2269.7	371 U	51	10-100	8	40
Hexachloroethane	1200		ug/kg dry	2269.7	371 U	53	35-110	0.4	40
Indeno[1,2,3-cd]pyrene	1550		ug/kg dry	2269.7	371 U	68	45-130	4	40
Isophorone	1400		ug/kg dry	2269.7	371 U	62	40-110	0.6	40
Naphthalene	1490		ug/kg dry	2269.7	371 U	66	40-110	2	40
Nitrobenzene	1320		ug/kg dry	2269.7	371 U	58	40-105	0.2	40
N-Nitrosodi-n-propylamine	1770		ug/kg dry	2269.7	371 U	78	30-130	0.3	40
N-Nitrosodiphenylamine	1610		ug/kg dry	2269.7	371 U	71	50-120	0.01	40
Pentachlorophenol	949		ug/kg dry	2269.7	1860 U	42	25-120	23	40
Phenanthrene	1570		ug/kg dry	2269.7	371 U	69	50-120	1	40
Phenol	1510		ug/kg dry	2269.7	371 U	66	40-115	4	40
Pyrene	1600		ug/kg dry	2269.7	371 U	70	45-125	0.6	40
Surrogate: 2-Fluorophenol	*1710*		*ug/kg dry*	*2837.2*		*60*	*25-121*		
Surrogate: Phenol-d5	*1820*		*ug/kg dry*	*2837.2*		*64*	*24-113*		
Surrogate: Nitrobenzene-d5	*1190*		*ug/kg dry*	*1891.5*		*63*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1260*		*ug/kg dry*	*1891.5*		*67*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*896*		*ug/kg dry*	*2837.2*		*32*	*19-122*		
Surrogate: p-Terphenyl-d14	*1200*		*ug/kg dry*	*1891.5*		*64*	*18-137*		

PREPARATION BENCH SHEET

L211021

Lionville Laboratory

Printed: 11/3/2012 12:33:18PM

000000026

Matrix: Solid **Prepared using: Extraction - SW 3540/3550** **Surrogate used: 1201164**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1210080-01	8270C TCL SVOC	11/02/2012 14:36	30.45	1				500	WC-Hanford, Inc.	see Versions
1210080-02	8270C TCL SVOC	11/02/2012 14:36	30.15	1				500	WC-Hanford, Inc.	see Versions
1210080-03	8270C TCL SVOC	11/02/2012 14:36	31.18	1				500	WC-Hanford, Inc.	see Versions
1210080-04	8270C TCL SVOC	11/02/2012 14:36	30.12	1				500	WC-Hanford, Inc.	see Versions
1211011-02	8270C TCL SVOC	11/02/2012 14:36	30.35	1				500	WC-Hanford, Inc.	
1211014-01	8270C TCL SVOC	11/02/2012 14:36	30.02	1				500	WC-Hanford, Inc.	
1211014-02	8270C TCL SVOC	11/02/2012 14:36	30.35	1				500	WC-Hanford, Inc.	
1211014-03	8270C TCL SVOC	11/02/2012 14:36	30.21	1				500	WC-Hanford, Inc.	
L211021-BLK1	QC	11/02/2012 14:36	30	1				500		
L211021-BS1	QC	11/02/2012 14:36	30	1	1201082		600	500		
L211021-MS1	QC	11/02/2012 14:36	30.21	1	1201082	1210080-01	600	500		
L211021-MS2	QC	11/02/2012 14:36	30.64	1	1201082	1211011-02	600	500		
L211021-MS3	QC	11/02/2012 14:36	30.03	1	1201082	1211014-02	600	500		
L211021-MSD1	QC	11/02/2012 14:36	30.22	1	1201082	1210080-01	600	500		
L211021-MSD2	QC	11/02/2012 14:36	30.1	1	1201082	1211011-02	600	500		
L211021-MSD3	QC	11/02/2012 14:36	30.45	1	1201082	1211014-02	600	500		

Extracts Relinquished By — Date 11/3/12

Extracts Received By — Date 11/3/12 1700

PAHs

264 Welsh Pool Road
Exton, PA 19341
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0143 Project Manager: Joan Kessner	**Reported:** 11/12/2012 11:14

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R505	1211011-01	Soil	10/31/2012 09:48	11/02/2012 09:40
J1R507	1211011-03	Soil	10/31/2012 09:45	11/02/2012 09:40

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
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Case Narrative

Client: WC-HANFORD RC-189 KP0143
LVL #: 1211011

W.O. #: 60049-001-001-0001-00
Date Received: 11-02-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

One (1) soil sample was collected on 10-31-2012.

The sample and associated QC samples were extracted 11-02-2012 and analyzed 11-04-2012 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. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The method blank was below the reporting limits for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. The sample was reported on a dry weight basis.
8. The 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. 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

11/13/12
Date

r:\group\data\2012\pah 8310\wc hanford\1211011.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

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.

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WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: KP0143	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/12/2012 11:14

J1R505

1211011-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**6.11**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Acenaphthylene	3.57	U	3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Acenaphthene	3.57	U	3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Fluorene	3.57	U	3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Phenanthrene	**14.6**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Anthracene	**1.11**	J	3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Fluoranthene	**28.4**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Indeno[1,2,3-cd]pyrene	**21.5**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Pyrene	**21.4**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benz[a]anthracene	**18.6**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Chrysene	**17.2**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benzo[b] fluoranthene	**14.4**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benzo[k] fluoranthene	**8.79**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benzo[a] pyrene	**30.9**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Dibenz[a,h]anthracene	**2.32**	J	3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benzo[g,h,i] perylene	**21.6**		3.57	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Surrogate: Triphenylene	*99 %*		*68-129*			*L211024*	*11/02/2012*	*11/04/2012*	*8310*

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WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: KP0143	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/12/2012 11:14

J1R507
1211011-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Acenaphthylene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Acenaphthene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Fluorene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Phenanthrene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Anthracene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Fluoranthene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Indeno[1,2,3-cd]pyrene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Pyrene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benz[a]anthracene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Chrysene	**1.51**	J	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benzo[b] fluoranthene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benzo[k] fluoranthene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benzo[a] pyrene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Dibenz[a,h]anthracene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Benzo[g,h,i] perylene	3.48	U	3.48	ug/kg dry	1	L211024	11/02/2012	11/04/2012	8310
Surrogate: Triphenylene	*106 %*		*68-129*			*L211024*	*11/02/2012*	*11/04/2012*	*8310*

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: KP0143	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	11/12/2012 11:14

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 L211024 - SW 3540C										
Blank (L211024-BLK1)				Prepared: 11/02/2012 Analyzed: 11/04/2012						
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	*171*			*ug/kg wet*	*166.67*		*102*	*68-129*		
LCS (L211024-BS1)				Prepared: 11/02/2012 Analyzed: 11/04/2012						
Naphthalene	133		3.33	ug/kg wet	166.67		80	0-127		
Acenaphthylene	136		3.33	ug/kg wet	166.67		82	50-140		
Acenaphthene	142		3.33	ug/kg wet	166.67		85	17-139		
Fluorene	142		3.33	ug/kg wet	166.67		85	28-145		
Phenanthrene	144		3.33	ug/kg wet	166.67		86	30-152		
Anthracene	144		3.33	ug/kg wet	166.67		86	19-171		
Fluoranthene	149		3.33	ug/kg wet	166.67		89	34-159		
Indeno[1,2,3-cd]pyrene	153		3.33	ug/kg wet	166.67		92	31-156		
Pyrene	146		3.33	ug/kg wet	166.67		88	33-152		
Benz[a]anthracene	154		3.33	ug/kg wet	166.67		93	32-157		
Chrysene	150		3.33	ug/kg wet	166.67		90	31-159		
Benzo[b] fluoranthene	159		3.33	ug/kg wet	166.67		96	33-164		
Benzo[k] fluoranthene	158		3.33	ug/kg wet	166.67		95	28-161		
Benzo[a] pyrene	145		3.33	ug/kg wet	166.67		87	29-149		
Dibenz[a,h]anthracene	160		3.33	ug/kg wet	166.67		96	27-153		
Benzo[g,h,i] perylene	158		3.33	ug/kg wet	166.67		95	32-157		
Surrogate: Triphenylene	*169*			*ug/kg wet*	*166.67*		*101*	*68-129*		

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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 L211024 - SW 3540C									
Matrix Spike (L211024-MS2)		**Source: 1211011-03**	Prepared: 11/02/2012 Analyzed: 11/04/2012						
Naphthalene	139	3.45	ug/kg dry	172.70	3.48 U	80	0-127		
Acenaphthylene	150	3.45	ug/kg dry	172.70	3.48 U	87	50-140		
Acenaphthene	149	3.45	ug/kg dry	172.70	3.48 U	86	17-139		
Fluorene	148	3.45	ug/kg dry	172.70	3.48 U	86	28-145		
Phenanthrene	149	3.45	ug/kg dry	172.70	3.48 U	86	30-152		
Anthracene	150	3.45	ug/kg dry	172.70	3.48 U	87	19-171		
Fluoranthene	152	3.45	ug/kg dry	172.70	3.48 U	88	34-159		
Indeno[1,2,3-cd]pyrene	154	3.45	ug/kg dry	172.70	3.48 U	89	31-156		
Pyrene	149	3.45	ug/kg dry	172.70	3.48 U	86	33-152		
Benz[a]anthracene	158	3.45	ug/kg dry	172.70	3.48 U	91	32-157		
Chrysene	147	3.45	ug/kg dry	172.70	1.51	84	31-159		
Benzo[b] fluoranthene	159	3.45	ug/kg dry	172.70	3.48 U	92	33-164		
Benzo[k] fluoranthene	158	3.45	ug/kg dry	172.70	3.48 U	91	28-161		
Benzo[a] pyrene	149	3.45	ug/kg dry	172.70	3.48 U	86	29-149		
Dibenz[a,h]anthracene	160	3.45	ug/kg dry	172.70	3.48 U	93	27-153		
Benzo[g,h,i] perylene	158	3.45	ug/kg dry	172.70	3.48 U	92	32-157		
Surrogate: Triphenylene	*168*		*ug/kg dry*	*172.70*		*97*	*68-129*		
Matrix Spike Dup (L211024-MSD2)		**Source: 1211011-03**	Prepared: 11/02/2012 Analyzed: 11/04/2012						
Naphthalene	147	3.55	ug/kg dry	177.52	3.48 U	83	0-127	3	40
Acenaphthylene	140	3.55	ug/kg dry	177.52	3.48 U	79	50-140	10	40
Acenaphthene	147	3.55	ug/kg dry	177.52	3.48 U	83	17-139	4	40
Fluorene	151	3.55	ug/kg dry	177.52	3.48 U	85	28-145	0.9	40
Phenanthrene	152	3.55	ug/kg dry	177.52	3.48 U	86	30-152	1	40
Anthracene	150	3.55	ug/kg dry	177.52	3.48 U	84	19-171	3	40
Fluoranthene	160	3.55	ug/kg dry	177.52	3.48 U	90	34-159	2	40
Indeno[1,2,3-cd]pyrene	158	3.55	ug/kg dry	177.52	3.48 U	89	31-156	0.1	40
Pyrene	153	3.55	ug/kg dry	177.52	3.48 U	86	33-152	0.3	40
Benz[a]anthracene	170	3.55	ug/kg dry	177.52	3.48 U	96	32-157	5	40
Chrysene	152	3.55	ug/kg dry	177.52	1.51	85	31-159	0.5	40
Benzo[b] fluoranthene	166	3.55	ug/kg dry	177.52	3.48 U	94	33-164	2	40
Benzo[k] fluoranthene	162	3.55	ug/kg dry	177.52	3.48 U	91	28-161	0.2	40
Benzo[a] pyrene	149	3.55	ug/kg dry	177.52	3.48 U	84	29-149	3	40
Dibenz[a,h]anthracene	163	3.55	ug/kg dry	177.52	3.48 U	92	27-153	0.9	40
Benzo[g,h,i] perylene	161	3.55	ug/kg dry	177.52	3.48 U	91	32-157	0.7	40
Surrogate: Triphenylene	*180*		*ug/kg dry*	*177.52*		*101*	*68-129*		

PREPARATION BENCH SHEET

L211024

Lionville Laboratory

Printed: 11/4/2012 7:06:44AM

Matrix: Solid **Prepared using: Extraction - SW 3540/~~3550~~** 11/4/2012 **Surrogate used: 1200612**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1210080-01	8310 PAH	11/02/2012 19:10	30.1	5				50	WC-Hanford, Inc.	
1210080-02	8310 PAH	11/02/2012 19:10	30.92	5				50	WC-Hanford, Inc.	
1210080-03	8310 PAH	11/02/2012 19:10	30.52	5				50	WC-Hanford, Inc.	
1210080-04	8310 PAH	11/02/2012 19:10	30.39	5				50	WC-Hanford, Inc.	
1211011-01	8310 PAH	11/02/2012 19:10	30	5				50	WC-Hanford, Inc.	
1211011-03	8310 PAH	11/02/2012 19:10	30.68	5				50	WC-Hanford, Inc.	
1211014-01	8310 PAH	11/02/2012 19:10	30.05	5				50	WC-Hanford, Inc.	
1211014-02	8310 PAH	11/02/2012 19:10	30.09	5				50	WC-Hanford, Inc.	
1211014-03	8310 PAH	11/02/2012 19:10	30.26	5				50	WC-Hanford, Inc.	
L211024-BLK1	QC	11/02/2012 19:10	30	5				50		
L211024-BS1	QC	11/02/2012 19:10	30	5	1200963		50	50		
L211024-MS1	QC	11/02/2012 19:10	30.45	5	1200963	1210080-03	50	50		
L211024-MS2	QC	11/02/2012 19:10	30.91	5	1200963	1211011-03	50	50		
L211024-MS3	QC	11/02/2012 19:10	30.38	5	1200963	1211014-03	50	50		
L211024-MSD1	QC	11/02/2012 19:10	30.03	5	1200963	1210080-03	50	50		
L211024-MSD2	QC	11/02/2012 19:10	30.07	5	1200963	1211011-03	50	50		
L211024-MSD3	QC	11/02/2012 19:10	30.08	5	1200963	1211014-03	50	50		

Extracts Relinquished By — Date 11/4/12 0706

Extracts Received By — Date LK 11-4-12