SAF-RC-155
618-10 & 618-11 Field Remediation – Other
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 7/31/12
INITIAL/DATE

COMMENTS:

SDG K3941 SAF-RC-155

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location/Waste Site: Bottle on ERDF dump ramp

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

2 July 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 #	1206078
SDG #	K3941
SAF #	RC-155
Date Received	06/27/12
# Samples	1
Matrix	OTHER LIQUID
Volatiles	X
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
Herbicides	
Metals	X
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 65 pages.

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

7/25/12

00000001

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1206078

Custody Transfer Record/Lab Work Request

Page 1 of 1

Lionville Laboratory
A Division of Eberline Analytical Corporation

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Limited Volume

Client: WC Hanford SAF# RC-155

Est. Final Proj. Sampling Date:

Project#:

Project Contact/Phone#:

Lionville Laboratory Project Manager: Charlotte Johnson

QC: SW Del: STD TAT: 21 days

Date Rec'd: 6-27-12 Date Due: 7-18-12

Refrigerator #		2															
#/Type Container	Liquid	1 qt															
	Solid																
Volume	Liquid	1L (100+/-mls)															
	Solid																
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal + Hg	CN	pH	IC Anions	Flashpt				
		Lionville Laboratory Use Only															
		8260	8270						Metals		pH	Anions	cancelled				
													vic 6-27-12				

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	8260	8270						Metals		pH	Anions	Flashpt			
01	JIPTF7	✓	✓	NAL	6-21-12	1440	X	X						X		X	X	X			

Special Instructions:

Metals = HSL+B, Mo, Si, U, Zr (NO-TL)

Special Instructions:

1. per client/Burn Sample analysis in this priority with
2. available material pH, ~~flashpoint~~ 05/6/27/12, ICP Metals, Semi-VOA, VOA
3.
4. Limited Volume. - flash point cancelled due to ISV 05
5.
6. Matrix = Other.

Relinquished by	Received by	Date	Time
[signature]	[signature]	6-27-12	1000

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-155-029	Page 1 of 1

Collector: Doug Bowers	Company Contact: Joan Kessner	Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH
Price Code: 9L	Data Turnaround: 21 Days		
Project Designation: 618-10 & 618-11 Field Remediation - Other @ ERDF	Sampling Location: Bottle on ERDF dump ramp		SAF No.: RC-155
Ice Chest No.: WCH-11-089	Field Logbook No.: EL-1664	COA: R618102F20	Method of Shipment: fed EX
Shipped To: EBERLINE SERVICES / LIONVILLE (ACF) 6-26-12	Offsite Property No.: A110464		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
~~Potentially~~ Radioactive < Dot limits
6-26-12 cmB

Special Handling and/or Storage
NONE

Preservation	Cool 4C	None	Cool 4C	Cool 4C	None						
Type of Container	~~P~~ aG	~~P~~ aG	~~P~~ aG	~~P~~ aG	~~P~~ aG						
No. of Container(s)	1	1	1	1	1						
Volume	~~500mL~~ 1000ml	~~500mL~~	~~500mL~~	~~500mL~~	~~500mL~~ 1000ml						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	pH (Soil) - 9045; IC Anions - 300.0	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	RCF GEA Shipping Screen 6-26-12 cmB						
Sample No.	Matrix *	Sample Date	Sample Time								RCF
* J1PTF7	OTHER	6-21-12	1440	X	X	X 33749	X 104g liquid	X			33749

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers	6-25-12 1350	A. Freier	6-25-12 1350
Doug Bowers	6-21-12/1200	1060 bldg Ref 2A	6-21-12/1200
Ref 2A 1060 bldg	6-25-12/1350	A Freier	6-25-12 1350
A. Freier	6-25-12 1435	D. Miller (RCF)	6-25-12 1435
D. Miller (RCF)	6-25-12 1100	[illegible]	6-26-12 1100
[illegible]	6-26-12 1420	fed EX	

SPECIAL INSTRUCTIONS
This sample will be fowarded on to Lionville from RCF. Run sample analysis in this priorty with avaliable material pH, flash point, ICP metals, semi-VOA, VOA.

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

* Cooling not preserved
6-26-12 cmB

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

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

LABORATORY SECTION	Received By: 6-27-12/1000	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By / Date/Time

REVIEWED BY AJ DATE 6-26-12

WCH-EE-011

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC. Hanford
Project/SAF/SOW/Release #: RC-155

Date: 6-27-12

LvL Batch #: 1206078

Sample Custodian:

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7937 2582 5494
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 22.0 °C		Cooler # WCH-11-089
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 05 6/27/12	☑ No NO2, NO3, 0.002 rec'd outside of hold time	
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 05 6/27/12	☑ No	
16. Project Manager contacted concerning any discrepancies?	☑ Yes	☐ No	☑ N/A
Person Contacted D. Johnson		Date 6/27/12 05 6/27/12	

SR-002-B.doc

VOLATILES

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/05/2012 09:58

Analytical Report for Volatile Organic Compounds by SW846 8260B

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF7	1206078-01	Other Liquid	06/21/2012 14:40	06/27/2012 10:00

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-155 K3941
LVL #: 1206078

W.O. #: 60049-001-001-0001-00
Date Received: 06-27-2012

GC/MS VOLATILE

One (1) other liquid sample was collected on 06-21-2012.

The sample and associated QC samples were prepared and analyzed 06-29-2012 according to criteria set forth in Lionville Laboratory SOPs. The preparation procedure was based on SW846 Method 5030B and the analysis procedure was based on SW846 Method 8260B for TCL Volatile 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. Discrepancies from the sample acceptance policy have been recorded on the Sample Receipt Checklist.

2. The sample vial contained headspace, which could have contributed to the elevated concentrations of Methylene Chloride and Acetone. The sample was also processed in the extraction lab prior to VOA analysis, which possibly contributed to the elevated levels of these compounds. A copy of the Sample Discrepancy Report (SDR#12VT011) has been enclosed.

3. Samples were analyzed within hold time.

4. Non-target compounds were not detected in these samples.

5. All obtainable surrogate recoveries were within acceptance criteria.

6. Three (3) of seventy (70) matrix spike recoveries were outside acceptance criteria. The out of range recoveries for 2-Butanone and Acetone are due to the high concentration found in the non-spiked sample.

7. All blank spike recoveries were within acceptance criteria.

8. The method blank was below the reporting limit for all target analytes.

9. All initial calibrations associated with this data set were within acceptance criteria using the mean RSD described in method 8000B. Per method 8000B/8260B, the attached Table 1 provides the mean RSD and indicates the target compounds where the RSD exceeded 15%; results for the indicated target compounds are considered to have greater uncertainty.

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

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

11. All internal standard area and retention time criteria were met.

12. Manual integrations are performed according to SOP QA-125 to produce quality data with 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 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

7/24/12
Date

TABLE 1

FULL LIST - 8000B/8260B COMPOUNDS WHERE THE MEAN %RSD IS USED TO MEET

CRITERIA FOR INITIAL CALIBRATION OF AN INDIVIDUAL COMPOUND

MEAN RSD USED FOR EVALUATION: 7.002 INSTRUMENT ID/DATE: 5973 G 6/13/12

>15% RSD	Compound	>15% RSD	Compound	>15% RSD	Compound
	1,1,1,2-Tetrachloroethane		Carbon Disulfide		trans-1,4-Dichloro-2-butene
	1,1,1-Trichloroethane		Carbon Tetrachloride		Trichloroethene
	1,1,2,2-Tetrachloroethane		Chlorobenzene		Trichlorofluoromethane
	1,1,2-Trichloroethane	16.226	Chloroethane		Vinyl acetate
	1,1-Dichloroethane		Chloroform		Vinyl chloride
	1,1-Dichloroethene		Chloromethane		Xylenes, total
	1,1-Dichloropropene		cis-1,2-Dichloroethene		
	1,2,3-Trichlorobenzene		cis-1,3-Dichloropropene		
	1,2,3-Trichloropropane		Cyclohexane		
	1,2,3-Trimethylbenzene		Cyclohexanone		
	1,2,4-Trichlorobenzene		Dibromochloromethane		
	1,2,4-Trimethylbenzene		Dibromofluoromethane		
	1,2-Dibromo-3-chloropropane		Dibromomethane		
	1,2-Dibromoethane		Dichlorodifluoromethane		
	1,2-Dichlorobenzene		Diethyl Ether		
	1,2-Dichloroethane		Ethyl Acetate		
	1,2-Dichloroethene (total)		Ethyl Methacrylate		
	1,2-Dichloropropane		Ethylbenzene		**Surrogates:**
	1,2-Xylene		Ethylene oxide		1,2-Dichloroethane-d4
	1,3- and 1,4-Xylenes		Freon-113		Toluene-d8
	1,3,5-Trimethylbenzene		Freon-114		4-Bromofluorobenzene
	1,3-Dichlorobenzene		Hexachlorobutadiene		
	1,3-Dichloropropane		Hexane		
	1,3-Dichloropropene (total)		Iodomethane		
	1,4-Dichlorobenzene		Isobutyl alcohol		
	1,4-Dioxane		Isopropylbenzene		
	2,2-Dichloropropane		Methacrylonitrile		
	2-Butanone		Methyl Acetate		
	2-Chloro-1,3-butadiene		Methyl Methacrylate		
	2-Chloroethyl Vinyl Ether		Methylcyclohexane		
	2-Chlorotoluene		Methylene Chloride		
17.269	2-Hexanone		Methyl-tert-Butyl Ether		
	2-Nitropropane		Naphthalene		
	3-Chloropropene		n-Butyl Alcohol		
	4-Chlorotoluene		n-Butylbenzene		
	4-Isopropyltoluene		n-Propylbenzene		
	4-Methyl-2-pentanone		Pentachloroethane		
	Acetone		Propionitrile		
	Acetonitrile		sec-Butylbenzene		
	Acrolein		Styrene		
	Acrylonitrile		tert-Butyl alcohol		
	Benzene		tert-Butylbenzene		
	Bromobenzene		Tetrachloroethene		
	Bromochloromethane		Tetrahydrofuran		
	Bromodichloromethane		Toluene		
	Bromoform		trans-1,2-Dichloroethene		
16.460	Bromomethane		trans-1,3-Dichloropropene		

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12VT011

Initiator: John Glacken
Date: 7/2/12
Client: WC Hanford

Batch: 1206078
Samples: -01
Method: SW846/MCAWW/CLP/

Parameter: Non-aqueous liquid
Matrix: 1
Prep Batch: L207009

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)

sample was in one approximately 1 liter jar, but there was much headspace, and by the time the VOA aliquot was taken, the jar was about only 1/8 filled. pH of sample was 7, if it was mostly water. DCM/acetone were found at levels about 50ug/L due to contamination from the extraction lab, who worked with this sample before the VOA group did. VOA was

2. Known or Probable Causes(s)

unknown

Lawest Prioritl per client

3. Discussion and Proposed Action Other Description:

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

7.5.12

4. Project Manager Instructions...signature/date: for OJ 7.5.12

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

5. Final Action...signature/date: 7/5/12 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X 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

000000010

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.

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/05/2012 09:58

J1PTF7
1206078-01 (Other Liquid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Volatile Organic Compounds by SW846 8260B									
1,1,1-Trichloroethane	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
1,1,2,2-Tetrachloroethane	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
1,1,2-Trichloroethane	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
1,1-Dichloroethane	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
1,1-Dichloroethene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
1,2-Dichloroethane	6.00	U	6.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
1,2-Dichloroethene (total)	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
1,2-Dichloropropane	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
2-Butanone	**59.7**		12.0	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
2-Hexanone	**5.82**	J	12.0	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
4-Methyl-2-pentanone	12.0	U	12.0	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Acetone	**58.9**		12.0	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Benzene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Bromodichloromethane	6.00	U	6.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Bromoform	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Bromomethane	10.0	U	10.0	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Carbon Disulfide	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Carbon Tetrachloride	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Chlorobenzene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Chloroethane	10.0	U	10.0	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Chloroform	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Chloromethane	10.0	U	10.0	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
cis-1,2-Dichloroethene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
cis-1,3-Dichloropropene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Dibromochloromethane	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Ethylbenzene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Methylene Chloride	**54.1**		6.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Styrene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Tetrachloroethene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
trans-1,2-Dichloroethene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Toluene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
trans-1,3-Dichloropropene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Trichloroethene	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Vinyl chloride	10.0	U	10.0	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Xylenes, total	5.00	U	5.00	ug/L	1	L207009	06/29/2012	06/29/2012	8260B
Surrogate: 1,2-Dichloroethane-d4	*113 %*		*63-151*			*L207009*	*06/29/2012*	*06/29/2012*	*8260B*

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/05/2012 09:58

J1PTF7
1206078-01 (Other Liquid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Volatile Organic Compounds by SW846 8260B								
Surrogate: Toluene-d8	*96 %*	*68-140*			*L207009*	*06/29/2012*	*06/29/2012*	*8260B*
Surrogate: 4-Bromofluorobenzene	*102 %*	*66-122*			*L207009*	*06/29/2012*	*06/29/2012*	*8260B*

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 09:58

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207009 - SW 5030B										
Blank (L207009-BLK1)				Prepared & Analyzed: 06/29/2012						
1,1,1-Trichloroethane	5.00	U	5.00	ug/L						
1,1,2,2-Tetrachloroethane	5.00	U	5.00	ug/L						
1,1,2-Trichloroethane	5.00	U	5.00	ug/L						
1,1-Dichloroethane	5.00	U	5.00	ug/L						
1,1-Dichloroethene	5.00	U	5.00	ug/L						
1,2-Dichloroethane	6.00	U	6.00	ug/L						
1,2-Dichloroethene (total)	5.00	U	5.00	ug/L						
1,2-Dichloropropane	5.00	U	5.00	ug/L						
2-Butanone	12.0	U	12.0	ug/L						
2-Hexanone	12.0	U	12.0	ug/L						
4-Methyl-2-pentanone	12.0	U	12.0	ug/L						
Acetone	12.0	U	12.0	ug/L						
Benzene	5.00	U	5.00	ug/L						
Bromodichloromethane	6.00	U	6.00	ug/L						
Bromoform	5.00	U	5.00	ug/L						
Bromomethane	10.0	U	10.0	ug/L						
Carbon Disulfide	5.00	U	5.00	ug/L						
Carbon Tetrachloride	5.00	U	5.00	ug/L						
Chlorobenzene	5.00	U	5.00	ug/L						
Chloroethane	10.0	U	10.0	ug/L						
Chloroform	5.00	U	5.00	ug/L						
Chloromethane	10.0	U	10.0	ug/L						
cis-1,2-Dichloroethene	5.00	U	5.00	ug/L						
cis-1,3-Dichloropropene	5.00	U	5.00	ug/L						
Dibromochloromethane	5.00	U	5.00	ug/L						
Ethylbenzene	5.00	U	5.00	ug/L						
Methylene Chloride	6.00	U	6.00	ug/L						
Styrene	5.00	U	5.00	ug/L						
Tetrachloroethene	5.00	U	5.00	ug/L						
trans-1,2-Dichloroethene	5.00	U	5.00	ug/L						
Toluene	5.00	U	5.00	ug/L						
trans-1,3-Dichloropropene	5.00	U	5.00	ug/L						
Trichloroethene	5.00	U	5.00	ug/L						
Vinyl chloride	10.0	U	10.0	ug/L						
Xylenes, total	5.00	U	5.00	ug/L						
Surrogate: 1,2-Dichloroethane-d4	*61.1*			*ug/L*	*50.000*		*122*	*63-151*		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/05/2012 09:58

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207009 - SW 5030B									
Blank (L207009-BLK1)			Prepared & Analyzed: 06/29/2012						
Surrogate: Toluene-d8	*47.1*		*ug/L*	*50.000*		*94*	*68-140*		
Surrogate: 4-Bromofluorobenzene	*49.6*		*ug/L*	*50.000*		*99*	*66-122*		
LCS (L207009-BS1)			Prepared & Analyzed: 06/29/2012						
1,1,1-Trichloroethane	54.0	5.00	ug/L	50.000		108	65-130		
1,1,2,2-Tetrachloroethane	51.0	5.00	ug/L	50.000		102	50-130		
1,1,2-Trichloroethane	47.5	5.00	ug/L	50.000		95	60-125		
1,1-Dichloroethane	51.5	5.00	ug/L	50.000		103	70-130		
1,1-Dichloroethene	45.4	5.00	ug/L	50.000		91	60-130		
1,2-Dichloroethane	58.1	6.00	ug/L	50.000		116	60-130		
1,2-Dichloroethene (total)	90.5	5.00	ug/L	100.00		91	75-125		
1,2-Dichloropropane	51.5	5.00	ug/L	50.000		103	70-130		
2-Butanone	77.4	12.0	ug/L	50.000		155	20-200		
2-Hexanone	76.0	12.0	ug/L	50.000		152	20-200		
4-Methyl-2-pentanone	64.2	12.0	ug/L	50.000		128	40-150		
Acetone	87.9	12.0	ug/L	50.000		176	15-240		
Benzene	48.0	5.00	ug/L	50.000		96	75-125		
Bromodichloromethane	50.6	6.00	ug/L	50.000		101	65-135		
Bromoform	48.5	5.00	ug/L	50.000		97	60-130		
Bromomethane	49.6	10.0	ug/L	50.000		99	40-150		
Carbon Disulfide	45.0	5.00	ug/L	50.000		90	55-140		
Carbon Tetrachloride	53.5	5.00	ug/L	50.000		107	60-135		
Chlorobenzene	47.1	5.00	ug/L	50.000		94	70-125		
Chloroethane	50.7	10.0	ug/L	50.000		101	50-150		
Chloroform	52.4	5.00	ug/L	50.000		105	70-130		
Chloromethane	60.1	10.0	ug/L	50.000		120	40-130		
cis-1,2-Dichloroethene	45.9	5.00	ug/L	50.000		92	70-125		
cis-1,3-Dichloropropene	46.8	5.00	ug/L	50.000		94	70-125		
Dibromochloromethane	47.2	5.00	ug/L	50.000		94	65-125		
Ethylbenzene	48.1	5.00	ug/L	50.000		96	70-125		
Methylene Chloride	43.4	6.00	ug/L	50.000		87	45-140		
Styrene	47.0	5.00	ug/L	50.000		94	70-125		
Tetrachloroethene	45.9	5.00	ug/L	50.000		92	60-130		
trans-1,2-Dichloroethene	44.6	5.00	ug/L	50.000		89	65-130		
Toluene	47.0	5.00	ug/L	50.000		94	70-125		
trans-1,3-Dichloropropene	53.9	5.00	ug/L	50.000		108	65-125		
Trichloroethene	47.5	5.00	ug/L	50.000		95	70-130		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	Reported: 07/05/2012 09:58

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207009 - SW 5030B									
LCS (L207009-BS1)			Prepared & Analyzed: 06/29/2012						
Vinyl chloride	48.5	10.0	ug/L	50.000		97	50-150		
Xylenes, total	145	5.00	ug/L	150.00		96	70-125		
Surrogate: 1,2-Dichloroethane-d4	*58.6*		*ug/L*	*50.000*		*117*	*63-151*		
Surrogate: Toluene-d8	*49.3*		*ug/L*	*50.000*		*99*	*68-140*		
Surrogate: 4-Bromofluorobenzene	*52.6*		*ug/L*	*50.000*		*105*	*66-122*		
Matrix Spike (L207009-MS1)		**Source: 1206078-01**	Prepared & Analyzed: 06/29/2012						
1,1,1-Trichloroethane	55.4	5.00	ug/L	50.000	5.00 U	111	65-130		
1,1,2,2-Tetrachloroethane	49.6	5.00	ug/L	50.000	5.00 U	99	50-130		
1,1,2-Trichloroethane	46.2	5.00	ug/L	50.000	5.00 U	92	60-125		
1,1-Dichloroethane	52.6	5.00	ug/L	50.000	5.00 U	105	70-130		
1,1-Dichloroethene	46.2	5.00	ug/L	50.000	5.00 U	92	60-130		
1,2-Dichloroethane	57.6	6.00	ug/L	50.000	6.00 U	115	60-130		
1,2-Dichloroethene (total)	94.1	5.00	ug/L	100.00	5.00 U	94	75-125		
1,2-Dichloropropane	50.5	5.00	ug/L	50.000	5.00 U	101	70-130		
2-Butanone	166	12.0	ug/L	50.000	59.7	212*	20-200		
2-Hexanone	81.5	12.0	ug/L	50.000	5.82	151	20-200		
4-Methyl-2-pentanone	56.6	12.0	ug/L	50.000	12.0 U	113	40-150		
Acetone	175	12.0	ug/L	50.000	58.9	233	15-240		
Benzene	48.1	5.00	ug/L	50.000	5.00 U	96	75-125		
Bromodichloromethane	51.2	6.00	ug/L	50.000	6.00 U	102	65-135		
Bromoform	46.8	5.00	ug/L	50.000	5.00 U	94	60-130		
Bromomethane	46.9	10.0	ug/L	50.000	10.0 U	94	40-150		
Carbon Disulfide	45.3	5.00	ug/L	50.000	5.00 U	91	55-140		
Carbon Tetrachloride	55.4	5.00	ug/L	50.000	5.00 U	111	60-135		
Chlorobenzene	46.9	5.00	ug/L	50.000	5.00 U	94	70-125		
Chloroethane	47.9	10.0	ug/L	50.000	10.0 U	96	50-150		
Chloroform	53.4	5.00	ug/L	50.000	5.00 U	107	70-130		
Chloromethane	55.3	10.0	ug/L	50.000	10.0 U	111	40-130		
cis-1,2-Dichloroethene	46.6	5.00	ug/L	50.000	5.00 U	93	70-125		
cis-1,3-Dichloropropene	46.4	5.00	ug/L	50.000	5.00 U	93	70-125		
Dibromochloromethane	47.4	5.00	ug/L	50.000	5.00 U	95	65-125		
Ethylbenzene	47.3	5.00	ug/L	50.000	5.00 U	95	70-125		
Methylene Chloride	88.6	6.00	ug/L	50.000	54.1	69	45-140		
Styrene	47.1	5.00	ug/L	50.000	5.00 U	94	70-125		
Tetrachloroethene	43.5	5.00	ug/L	50.000	5.00 U	87	60-130		
trans-1,2-Dichloroethene	47.5	5.00	ug/L	50.000	5.00 U	95	65-130		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/05/2012 09:58

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207009 - SW 5030B									
Matrix Spike (L207009-MS1)		**Source: 1206078-01**	Prepared & Analyzed: 06/29/2012						
Toluene	46.9	5.00	ug/L	50.000	5.00 U	94	70-125		
trans-1,3-Dichloropropene	53.1	5.00	ug/L	50.000	5.00 U	106	65-125		
Trichloroethene	47.5	5.00	ug/L	50.000	5.00 U	95	70-130		
Vinyl chloride	46.0	10.0	ug/L	50.000	10.0 U	92	50-150		
Xylenes, total	147	5.00	ug/L	150.00	5.00 U	98	70-125		
Surrogate: 1,2-Dichloroethane-d4	*59.4*		*ug/L*	*50.000*		*119*	*63-151*		
Surrogate: Toluene-d8	*48.0*		*ug/L*	*50.000*		*96*	*68-140*		
Surrogate: 4-Bromofluorobenzene	*49.5*		*ug/L*	*50.000*		*99*	*66-122*		
Matrix Spike Dup (L207009-MSD1)		**Source: 1206078-01**	Prepared & Analyzed: 06/29/2012						
1,1,1-Trichloroethane	54.1	5.00	ug/L	50.000	5.00 U	108	65-130	2	20
1,1,2,2-Tetrachloroethane	53.1	5.00	ug/L	50.000	5.00 U	106	50-130	7	20
1,1,2-Trichloroethane	48.5	5.00	ug/L	50.000	5.00 U	97	60-125	5	20
1,1-Dichloroethane	50.6	5.00	ug/L	50.000	5.00 U	101	70-130	4	20
1,1-Dichloroethene	44.9	5.00	ug/L	50.000	5.00 U	90	60-130	3	20
1,2-Dichloroethane	57.2	6.00	ug/L	50.000	6.00 U	114	60-130	0.6	20
1,2-Dichloroethene (total)	91.3	5.00	ug/L	100.00	5.00 U	91	75-125	3	20
1,2-Dichloropropane	49.3	5.00	ug/L	50.000	5.00 U	99	70-130	2	20
2-Butanone	185	12.0	ug/L	50.000	59.7	252*	20-200	17	20
2-Hexanone	93.6	12.0	ug/L	50.000	5.82	175	20-200	15	20
4-Methyl-2-pentanone	65.2	12.0	ug/L	50.000	12.0 U	130	40-150	14	20
Acetone	198	12.0	ug/L	50.000	58.9	278*	15-240	18	20
Benzene	46.3	5.00	ug/L	50.000	5.00 U	93	75-125	4	20
Bromodichloromethane	50.1	6.00	ug/L	50.000	6.00 U	100	65-135	2	20
Bromoform	48.1	5.00	ug/L	50.000	5.00 U	96	60-130	3	20
Bromomethane	48.4	10.0	ug/L	50.000	10.0 U	97	40-150	3	20
Carbon Disulfide	43.4	5.00	ug/L	50.000	5.00 U	87	55-140	4	20
Carbon Tetrachloride	52.6	5.00	ug/L	50.000	5.00 U	105	60-135	5	20
Chlorobenzene	44.9	5.00	ug/L	50.000	5.00 U	90	70-125	4	20
Chloroethane	50.2	10.0	ug/L	50.000	10.0 U	100	50-150	5	20
Chloroform	51.7	5.00	ug/L	50.000	5.00 U	103	70-130	3	20
Chloromethane	56.9	10.0	ug/L	50.000	10.0 U	114	40-130	3	20
cis-1,2-Dichloroethene	45.3	5.00	ug/L	50.000	5.00 U	91	70-125	3	20
cis-1,3-Dichloropropene	45.3	5.00	ug/L	50.000	5.00 U	91	70-125	2	20
Dibromochloromethane	47.2	5.00	ug/L	50.000	5.00 U	94	65-125	0.5	20
Ethylbenzene	46.6	5.00	ug/L	50.000	5.00 U	93	70-125	1	20
Methylene Chloride	87.7	6.00	ug/L	50.000	54.1	67	45-140	3	20

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/05/2012 09:58

Volatile Organic Compounds by SW846 8260B - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207009 - SW 5030B									
Matrix Spike Dup (L207009-MSD1)	**Source: 1206078-01**		Prepared & Analyzed: 06/29/2012						
Styrene	46.2	5.00	ug/L	50.000	5.00 U	92	70-125	2	20
Tetrachloroethene	43.2	5.00	ug/L	50.000	5.00 U	86	60-130	0.7	20
trans-1,2-Dichloroethene	46.0	5.00	ug/L	50.000	5.00 U	92	65-130	3	20
Toluene	44.3	5.00	ug/L	50.000	5.00 U	89	70-125	6	20
trans-1,3-Dichloropropene	52.1	5.00	ug/L	50.000	5.00 U	104	65-125	2	20
Trichloroethene	46.6	5.00	ug/L	50.000	5.00 U	93	70-130	2	20
Vinyl chloride	47.8	10.0	ug/L	50.000	10.0 U	96	50-150	4	20
Xylenes, total	141	5.00	ug/L	150.00	5.00 U	94	70-125	4	20
Surrogate: 1,2-Dichloroethane-d4	*59.6*		*ug/L*	*50.000*		*119*	*63-151*		
Surrogate: Toluene-d8	*47.1*		*ug/L*	*50.000*		*94*	*68-140*		
Surrogate: 4-Bromofluorobenzene	*50.9*		*ug/L*	*50.000*		*102*	*66-122*		

PREPARATION BENCH SHEET

L207009

Lionville Laboratory

Printed: 7/2/2012 11:42:48AM

Matrix: Non Aqueous Liquic

Prepared using: VOAGCMS - SW 5030B

Surrogate used: 0902344

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206078-01	8260B TCL VOC	06/29/2012 13:28	5	5				5	WC-Hanford, Inc.	
L207009-BLK1	QC	06/29/2012 12:30	5	5				5		
L207009-BS1	QC	06/29/2012 11:56	5	5	1200748		5	5		
L207009-MS1	QC	06/29/2012 14:02	5	5	1200748	1206078-01	5	5		
L207009-MSD1	QC	06/29/2012 14:36	5	5	1200748	1206078-01	5	5		

00000021

7/2/12

Extracts Relinquished By Date

NA 7/5/12

Extracts Received By Date

SEMIVOLATILES

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF7	1206078-01	Other Liquid	06/21/2012 14:40	06/27/2012 10:00

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-155 K3941
LVL #: 1206078

W.O. #: 60049-001-001
Date Received: 06-27-2012

SEMIVOLATILE

One (1) other liquid sample was collected on 06-21-2012.

The samples and associated QC samples were extracted 07-02-2012 and analyzed 07-06,07-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3520C and the analysis procedure was based on SW846 Method 8270C for TCL Semivolatile 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. Discrepancies from the sample acceptance policy have been recorded 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. Due to the sample matrix and limited sample volume, the sample was extracted with a reduced initial volume of 5 mls. Reporting limits have been adjusted to reflect this change.

5. Three (3) of thirty (30) surrogate recoveries were outside acceptance criteria. The surrogate recovery criteria were not met for sample L207006-MSD2; the recoveries were biased high. The MS2 and non-spiked sample were within criteria.

6. The method blank as below the reporting limit for all target compounds.

7. One (1) of sixty-four (64) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS132) has been enclosed.

8. Twenty-one (21) of one hundred and twenty-eight (128) obtainable matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS132) has been enclosed.

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.

9. All initial calibrations associated with this data set were within acceptance criteria using the mean RSD described in method 8000B. Per method 8000B/8270C, the attached Table 1 provides the mean RSD and indicates the target compounds where the RSD exceeded 15%; results for the indicated target compounds are considered to have greater uncertainty. Refer to the Analysis Batch Sequence Summary Form(s) to associate the calibration with samples.

10. Internal standard area and retention time criteria were.

11. 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").

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

Iain Daniels
LvL Laboratory Manager

7/13/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12-MS132

Initiator: Sharon Taylor
Date: 7-10-12
Client: WCHanford K3941 RC-155

Batch: 120607P
Samples: L207006-MS3, msd2
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: Aqueous
Prep Batch: L207006

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) low recovery of hexachloroethane in L207006-MS3 but L207006-ms2 and L207006-msd2 are ok (23% (25-100%))

(2) Spike recoveries outside QC acceptance limits in L207006-msd2 (high biased) but L207006-ms2 is ok

2. Known or Probable Causes(s) (1) Associated samples all non detect for target compounds

BW 7/10/12

3. Discussion and Proposed Action Other Description: narrate

__ 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: 7/13/12

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

5. Final Action...signature/date: 7/11/12 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

MEAN RSD USED FOR EVALUATION: 10.4 CALIBRATION: 1207006

>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				

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	K3941
Client:	WC-Hanford, Inc.	Project:	RC-155
Sequence:	2070030	Instrument:	HP5972N
Matrix:	Water	Calibration:	1207006

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2070030-TUN1	N070601.D	07/06/12 15:25
Calibration Check	2070030-CCV1	N070602.D	07/06/12 15:48
LCS	L207006-BS3	N070603.D	07/06/12 16:40
Blank	L207006-BLK3	N070604.D	07/06/12 17:30
J1PTF7	1206078-01	N070610.D	07/06/12 22:32
J1PTF7	L207006-MS2	N070611.D	07/06/12 23:23
J1PTF7	L207006-MSD2	N070612.D	07/07/12 00:14

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.

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

J1PTF7
1206078-01 (Other Liquid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
1,2-Dichlorobenzene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
1,3-Dichlorobenzene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
1,4-Dichlorobenzene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2,4,5-Trichlorophenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2,4,6-Trichlorophenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2,4-Dichlorophenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2,4-Dimethylphenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2,4-Dinitrophenol	10000	U	10000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2,4-Dinitrotoluene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2,6-Dinitrotoluene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2-Chloronaphthalene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2-Chlorophenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2-Methylnaphthalene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2-Methylphenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2-Nitroaniline	5000	U	5000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
2-Nitrophenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
3,3'-Dichlorobenzidine	10000	U	10000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
3-Nitroaniline	5000	U	5000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
4,6-Dinitro-2-methylphenol	5000	U	5000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
4-Bromophenyl Phenyl Ether	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
4-Chloro-3-methylphenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
4-Chloroaniline	5000	U	5000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
4-Chlorophenyl Phenyl Ether	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
3- and/or 4-Methylphenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
4-Nitroaniline	5000	U	5000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
4-Nitrophenol	5000	U	5000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Acenaphthene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Acenaphthylene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Anthracene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Benz[a]anthracene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Benzo[a] pyrene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Benzo[b] fluoranthene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Benzo[g,h,i] perylene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Benzo[k] fluoranthene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Bis(2-chloroethoxy) methane	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

J1PTF7
1206078-01 (Other Liquid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Bis(2-chloroisopropyl) ether	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Bis(2-ethylhexyl) phthalate	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Butyl Benzyl Phthalate	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Carbazole	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Chrysene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Dibenz[a,h]anthracene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Dibenzofuran	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Diethyl Phthalate	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Dimethyl Phthalate	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Di-n-butyl Phthalate	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Di-n-octyl Phthalate	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Fluoranthene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Fluorene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Hexachlorobenzene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Hexachlorobutadiene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Hexachlorocyclopentadiene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Hexachloroethane	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Indeno[1,2,3-cd]pyrene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Isophorone	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Naphthalene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Nitrobenzene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
N-Nitrosodi-n-propylamine	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
N-Nitrosodiphenylamine	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Pentachlorophenol	5000	U	5000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Phenanthrene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Phenol	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Pyrene	2000	U	2000	ug/L	1	L207006	07/02/2012	07/06/2012	8270C
TIC:Unknown 1	**50600**	J		ug/L	1	L207006	07/02/2012	07/06/2012	8270C
TIC:Unknown 2	**2690**	J		ug/L	1	L207006	07/02/2012	07/06/2012	8270C
TIC:Unknown 3	**490**	J		ug/L	1	L207006	07/02/2012	07/06/2012	8270C
TIC:Unknown 4	**2580**	J		ug/L	1	L207006	07/02/2012	07/06/2012	8270C
Surrogate: 2-Fluorophenol	*57 %*		*21-100*			*L207006*	*07/02/2012*	*07/06/2012*	*8270C*
Surrogate: Phenol-d5	*56 %*		*10-94*			*L207006*	*07/02/2012*	*07/06/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*61 %*		*35-114*			*L207006*	*07/02/2012*	*07/06/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*59 %*		*43-116*			*L207006*	*07/02/2012*	*07/06/2012*	*8270C*

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/10/2012 10:09

J1PTF7
1206078-01 (Other Liquid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2,4,6-Tribromophenol	*75 %*	*10-123*			*L207006*	*07/02/2012*	*07/06/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*100 %*	*33-141*			*L207006*	*07/02/2012*	*07/06/2012*	*8270C*

LIONVILLE LABORATORY
A division of Fineline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

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 L207006 - SW 3520C										
Blank (L207006-BLK3)				Prepared: 07/02/2012 Analyzed: 07/06/2012						
1,2,4-Trichlorobenzene	10.0	U	10.0	ug/L						
1,2-Dichlorobenzene	10.0	U	10.0	ug/L						
1,3-Dichlorobenzene	10.0	U	10.0	ug/L						
1,4-Dichlorobenzene	10.0	U	10.0	ug/L						
2,4,5-Trichlorophenol	10.0	U	10.0	ug/L						
2,4,6-Trichlorophenol	10.0	U	10.0	ug/L						
2,4-Dichlorophenol	10.0	U	10.0	ug/L						
2,4-Dimethylphenol	10.0	U	10.0	ug/L						
2,4-Dinitrophenol	50.0	U	50.0	ug/L						
2,4-Dinitrotoluene	10.0	U	10.0	ug/L						
2,6-Dinitrotoluene	10.0	U	10.0	ug/L						
2-Chloronaphthalene	10.0	U	10.0	ug/L						
2-Chlorophenol	10.0	U	10.0	ug/L						
2-Methylnaphthalene	10.0	U	10.0	ug/L						
2-Methylphenol	10.0	U	10.0	ug/L						
2-Nitroaniline	25.0	U	25.0	ug/L						
2-Nitrophenol	10.0	U	10.0	ug/L						
3,3'-Dichlorobenzidine	50.0	U	50.0	ug/L						
3-Nitroaniline	25.0	U	25.0	ug/L						
4,6-Dinitro-2-methylphenol	25.0	U	25.0	ug/L						
4-Bromophenyl Phenyl Ether	10.0	U	10.0	ug/L						
4-Chloro-3-methylphenol	10.0	U	10.0	ug/L						
4-Chloroaniline	25.0	U	25.0	ug/L						
4-Chlorophenyl Phenyl Ether	10.0	U	10.0	ug/L						
3- and/or 4-Methylphenol	10.0	U	10.0	ug/L						
4-Nitroaniline	25.0	U	25.0	ug/L						
4-Nitrophenol	25.0	U	25.0	ug/L						
Acenaphthene	10.0	U	10.0	ug/L						
Acenaphthylene	10.0	U	10.0	ug/L						
Anthracene	10.0	U	10.0	ug/L						
Benz[a]anthracene	10.0	U	10.0	ug/L						
Benzo[a] pyrene	10.0	U	10.0	ug/L						
Benzo[b] fluoranthene	10.0	U	10.0	ug/L						
Benzo[g,h,i] perylene	10.0	U	10.0	ug/L						
Benzo[k] fluoranthene	10.0	U	10.0	ug/L						
Bis(2-chloroethoxy) methane	10.0	U	10.0	ug/L						

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

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 L207006 - SW 3520C										
Blank (L207006-BLK3)				Prepared: 07/02/2012 Analyzed: 07/06/2012						
Bis(2-chloroethyl) ether	10.0	U	10.0	ug/L						
Bis(2-chloroisopropyl) ether	10.0	U	10.0	ug/L						
Bis(2-ethylhexyl) phthalate	10.0	U	10.0	ug/L						
Butyl Benzyl Phthalate	10.0	U	10.0	ug/L						
Carbazole	10.0	U	10.0	ug/L						
Chrysene	10.0	U	10.0	ug/L						
Dibenz[a,h]anthracene	10.0	U	10.0	ug/L						
Dibenzofuran	10.0	U	10.0	ug/L						
Diethyl Phthalate	10.0	U	10.0	ug/L						
Dimethyl Phthalate	10.0	U	10.0	ug/L						
Di-n-butyl Phthalate	10.0	U	10.0	ug/L						
Di-n-octyl Phthalate	10.0	U	10.0	ug/L						
Fluoranthene	10.0	U	10.0	ug/L						
Fluorene	10.0	U	10.0	ug/L						
Hexachlorobenzene	10.0	U	10.0	ug/L						
Hexachlorobutadiene	10.0	U	10.0	ug/L						
Hexachlorocyclopentadiene	10.0	U	10.0	ug/L						
Hexachloroethane	10.0	U	10.0	ug/L						
Indeno[1,2,3-cd]pyrene	10.0	U	10.0	ug/L						
Isophorone	10.0	U	10.0	ug/L						
Naphthalene	10.0	U	10.0	ug/L						
Nitrobenzene	10.0	U	10.0	ug/L						
N-Nitrosodi-n-propylamine	10.0	U	10.0	ug/L						
N-Nitrosodiphenylamine	10.0	U	10.0	ug/L						
Pentachlorophenol	25.0	U	25.0	ug/L						
Phenanthrene	10.0	U	10.0	ug/L						
Phenol	10.0	U	10.0	ug/L						
Pyrene	10.0	U	10.0	ug/L						
Unknown 1 TICS	8.30	J		ug/L						
Aldol Condensate 1	4.90	A, J		ug/L						
Surrogate: 2-Fluorophenol	*62.4*			*ug/L*	*75.000*		*83*	*21-100*		
Surrogate: Phenol-d5	*63.9*			*ug/L*	*75.000*		*85*	*10-94*		
Surrogate: Nitrobenzene-d5	*43.6*			*ug/L*	*50.000*		*87*	*35-114*		
Surrogate: 2-Fluorobiphenyl	*39.5*			*ug/L*	*50.000*		*79*	*43-116*		
Surrogate: 2,4,6-Tribromophenol	*80.2*			*ug/L*	*75.000*		*107*	*10-123*		
Surrogate: p-Terphenyl-d14	*62.2*			*ug/L*	*50.000*		*124*	*33-141*		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

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 L207006 - SW 3520C									
LCS (L207006-BS3)			Prepared: 07/02/2012 Analyzed: 07/06/2012						
1,2,4-Trichlorobenzene	28.8		ug/L	60.000		48	35-105		
1,2-Dichlorobenzene	21.8		ug/L	60.000		36	35-100		
1,3-Dichlorobenzene	17.8		ug/L	60.000		30	30-100		
1,4-Dichlorobenzene	19.3		ug/L	60.000		32	30-100		
2,4,5-Trichlorophenol	62.1		ug/L	60.000		104	45-125		
2,4,6-Trichlorophenol	56.2		ug/L	60.000		94	40-125		
2,4-Dichlorophenol	51.3		ug/L	60.000		85	40-120		
2,4-Dimethylphenol	46.7		ug/L	60.000		78	30-110		
2,4-Dinitrophenol	29.4		ug/L	60.000		49	15-140		
2,4-Dinitrotoluene	56.6		ug/L	60.000		94	50-120		
2,6-Dinitrotoluene	58.1		ug/L	60.000		97	50-115		
2-Chloronaphthalene	48.6		ug/L	60.000		81	40-110		
2-Chlorophenol	46.5		ug/L	60.000		77	35-115		
2-Methylnaphthalene	41.0		ug/L	60.000		68	35-105		
2-Methylphenol	47.9		ug/L	60.000		80	40-110		
2-Nitroaniline	54.3		ug/L	60.000		90	35-110		
2-Nitrophenol	46.8		ug/L	60.000		78	30-115		
3,3'-Dichlorobenzidine	64.2		ug/L	60.000		107	20-150		
3-Nitroaniline	70.6		ug/L	60.000		118	5-120		
4,6-Dinitro-2-methylphenol	67.3		ug/L	60.000		112	40-130		
4-Bromophenyl Phenyl Ether	60.1		ug/L	60.000		100	50-110		
4-Chloro-3-methylphenol	53.6		ug/L	60.000		89	40-110		
4-Chloroaniline	57.6		ug/L	60.000		96	10-120		
4-Chlorophenyl Phenyl Ether	57.1		ug/L	60.000		95	40-120		
3- and/or 4-Methylphenol	49.1		ug/L	60.000		82	30-110		
4-Nitroaniline	50.0		ug/L	60.000		83	5-110		
4-Nitrophenol	57.0		ug/L	60.000		95	5-150		
Acenaphthene	50.7		ug/L	60.000		85	35-110		
Acenaphthylene	45.0		ug/L	60.000		75	30-110		
Anthracene	56.9		ug/L	60.000		95	40-120		
Benz[a]anthracene	60.1		ug/L	60.000		100	40-120		
Benzo[a] pyrene	60.0		ug/L	60.000		100	40-140		
Benzo[b] fluoranthene	60.6		ug/L	60.000		101	40-140		
Benzo[g,h,i] perylene	65.0		ug/L	60.000		108	40-140		
Benzo[k] fluoranthene	62.8		ug/L	60.000		105	40-140		
Bis(2-chloroethoxy) methane	46.6		ug/L	60.000		78	30-115		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

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 L207006 - SW 3520C									
LCS (L207006-BS3)			Prepared: 07/02/2012 Analyzed: 07/06/2012						
Bis(2-chloroethyl) ether	44.0		ug/L	60.000		73	35-110		
Bis(2-chloroisopropyl) ether	41.1		ug/L	60.000		69	30-125		
Bis(2-ethylhexyl) phthalate	56.6		ug/L	60.000		94	40-150		
Butyl Benzyl Phthalate	56.9		ug/L	60.000		95	40-140		
Carbazole	57.2		ug/L	60.000		95	20-120		
Chrysene	61.4		ug/L	60.000		102	45-130		
Dibenz[a,h]anthracene	54.7		ug/L	60.000		91	35-150		
Dibenzofuran	55.0		ug/L	60.000		92	50-115		
Diethyl Phthalate	54.2		ug/L	60.000		90	40-130		
Dimethyl Phthalate	54.5		ug/L	60.000		91	40-130		
Di-n-butyl Phthalate	51.8		ug/L	60.000		86	40-130		
Di-n-octyl Phthalate	57.1		ug/L	60.000		95	35-155		
Fluoranthene	56.7		ug/L	60.000		94	45-130		
Fluorene	55.4		ug/L	60.000		92	50-120		
Hexachlorobenzene	63.1		ug/L	60.000		105	50-110		
Hexachlorobutadiene	22.9		ug/L	60.000		38	30-100		
Hexachlorocyclopentadiene	23.7		ug/L	60.000		39	10-100		
Hexachloroethane	13.7		ug/L	60.000		23*	25-100		
Indeno[1,2,3-cd]pyrene	62.5		ug/L	60.000		104	50-140		
Isophorone	45.2		ug/L	60.000		75	40-110		
Naphthalene	38.8		ug/L	60.000		65	35-100		
Nitrobenzene	44.3		ug/L	60.000		74	40-110		
N-Nitrosodi-n-propylamine	40.4		ug/L	60.000		67	30-120		
N-Nitrosodiphenylamine	54.4		ug/L	60.000		91	25-110		
Pentachlorophenol	67.3		ug/L	60.000		112	20-130		
Phenanthrene	57.6		ug/L	60.000		96	50-120		
Phenol	46.4		ug/L	60.000		77	30-110		
Pyrene	56.3		ug/L	60.000		94	50-130		
Surrogate: 2-Fluorophenol	*65.8*		*ug/L*	*75.000*		*88*	*21-100*		
Surrogate: Phenol-d5	*67.2*		*ug/L*	*75.000*		*90*	*10-94*		
Surrogate: Nitrobenzene-d5	*44.5*		*ug/L*	*50.000*		*89*	*35-114*		
Surrogate: 2-Fluorobiphenyl	*44.1*		*ug/L*	*50.000*		*88*	*43-116*		
Surrogate: 2,4,6-Tribromophenol	*86.8*		*ug/L*	*75.000*		*116*	*10-123*		
Surrogate: p-Terphenyl-d14	*51.8*		*ug/L*	*50.000*		*104*	*33-141*		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

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 L207006 - SW 3520C									
Matrix Spike (L207006-MS2)	**Source: 1206078-01**		Prepared: 07/02/2012 Analyzed: 07/06/2012						
1,2,4-Trichlorobenzene	6510		ug/L	12000	2000 U	54	35-105		
1,2-Dichlorobenzene	5090		ug/L	12000	2000 U	42	35-100		
1,3-Dichlorobenzene	4270		ug/L	12000	2000 U	36	30-100		
1,4-Dichlorobenzene	4510		ug/L	12000	2000 U	38	30-100		
2,4,5-Trichlorophenol	11700		ug/L	12000	2000 U	97	45-125		
2,4,6-Trichlorophenol	10500		ug/L	12000	2000 U	87	40-125		
2,4-Dichlorophenol	10200		ug/L	12000	2000 U	85	40-120		
2,4-Dimethylphenol	8910		ug/L	12000	2000 U	74	30-110		
2,4-Dinitrophenol	4420		ug/L	12000	10000 U	37	15-140		
2,4-Dinitrotoluene	11300		ug/L	12000	2000 U	94	50-120		
2,6-Dinitrotoluene	11200		ug/L	12000	2000 U	93	50-115		
2-Chloronaphthalene	9470		ug/L	12000	2000 U	79	40-110		
2-Chlorophenol	9420		ug/L	12000	2000 U	78	35-115		
2-Methylnaphthalene	8600		ug/L	12000	2000 U	72	35-105		
2-Methylphenol	9580		ug/L	12000	2000 U	80	40-110		
2-Nitroaniline	10200		ug/L	12000	5000 U	85	35-110		
2-Nitrophenol	9430		ug/L	12000	2000 U	79	30-115		
3,3'-Dichlorobenzidine	12900		ug/L	12000	10000 U	107	20-150		
3-Nitroaniline	13200		ug/L	12000	5000 U	110	5-120		
4,6-Dinitro-2-methylphenol	12200		ug/L	12000	5000 U	101	40-130		
4-Bromophenyl Phenyl Ether	11600		ug/L	12000	2000 U	97	50-110		
4-Chloro-3-methylphenol	10400		ug/L	12000	2000 U	87	40-110		
4-Chloroaniline	11100		ug/L	12000	5000 U	92	10-120		
4-Chlorophenyl Phenyl Ether	11100		ug/L	12000	2000 U	93	40-120		
3- and/or 4-Methylphenol	9480		ug/L	12000	2000 U	79	30-110		
4-Nitroaniline	9580		ug/L	12000	5000 U	80	5-110		
4-Nitrophenol	11700		ug/L	12000	5000 U	98	5-150		
Acenaphthene	9930		ug/L	12000	2000 U	83	35-110		
Acenaphthylene	8690		ug/L	12000	2000 U	72	30-110		
Anthracene	11200		ug/L	12000	2000 U	93	40-120		
Benz[a]anthracene	11900		ug/L	12000	2000 U	100	40-120		
Benzo[a] pyrene	12200		ug/L	12000	2000 U	101	40-140		
Benzo[b] fluoranthene	12100		ug/L	12000	2000 U	101	40-140		
Benzo[g,h,i] perylene	13500		ug/L	12000	2000 U	113	40-140		
Benzo[k] fluoranthene	12600		ug/L	12000	2000 U	105	40-140		
Bis(2-chloroethoxy) methane	9210		ug/L	12000	2000 U	77	30-115		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

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 L207006 - SW 3520C									
Matrix Spike (L207006-MS2)	**Source: 1206078-01**		Prepared: 07/02/2012 Analyzed: 07/06/2012						
Bis(2-chloroethyl) ether	8730		ug/L	12000	2000 U	73	35-110		
Bis(2-chloroisopropyl) ether	8290		ug/L	12000	2000 U	69	30-125		
Bis(2-ethylhexyl) phthalate	11300		ug/L	12000	2000 U	94	40-150		
Butyl Benzyl Phthalate	10800		ug/L	12000	2000 U	90	40-140		
Carbazole	11300		ug/L	12000	2000 U	94	20-120		
Chrysene	12300		ug/L	12000	2000 U	102	45-130		
Dibenz[a,h]anthracene	11100		ug/L	12000	2000 U	92	35-150		
Dibenzofuran	10800		ug/L	12000	2000 U	90	50-115		
Diethyl Phthalate	10700		ug/L	12000	2000 U	89	40-130		
Dimethyl Phthalate	10400		ug/L	12000	2000 U	87	40-130		
Di-n-butyl Phthalate	10500		ug/L	12000	2000 U	88	40-130		
Di-n-octyl Phthalate	11400		ug/L	12000	2000 U	95	35-155		
Fluoranthene	11800		ug/L	12000	2000 U	98	45-130		
Fluorene	11000		ug/L	12000	2000 U	92	50-120		
Hexachlorobenzene	12100		ug/L	12000	2000 U	101	50-110		
Hexachlorobutadiene	5700		ug/L	12000	2000 U	47	30-100		
Hexachlorocyclopentadiene	4040		ug/L	12000	2000 U	34	10-100		
Hexachloroethane	3510		ug/L	12000	2000 U	29	25-100		
Indeno[1,2,3-cd]pyrene	12900		ug/L	12000	2000 U	108	50-140		
Isophorone	8810		ug/L	12000	2000 U	73	40-110		
Naphthalene	8220		ug/L	12000	2000 U	68	35-100		
Nitrobenzene	8790		ug/L	12000	2000 U	73	40-110		
N-Nitrosodi-n-propylamine	8310		ug/L	12000	2000 U	69	30-120		
N-Nitrosodiphenylamine	10200		ug/L	12000	2000 U	85	25-110		
Pentachlorophenol	11400		ug/L	12000	5000 U	95	20-130		
Phenanthrene	11300		ug/L	12000	2000 U	95	50-120		
Phenol	9280		ug/L	12000	2000 U	77	30-110		
Pyrene	10400		ug/L	12000	2000 U	87	50-130		
Surrogate: 2-Fluorophenol	*12500*		*ug/L*	*15000*		*84*	*21-100*		
Surrogate: Phenol-d5	*12800*		*ug/L*	*15000*		*85*	*10-94*		
Surrogate: Nitrobenzene-d5	*8400*		*ug/L*	*10000*		*84*	*35-114*		
Surrogate: 2-Fluorobiphenyl	*8540*		*ug/L*	*10000*		*85*	*43-116*		
Surrogate: 2,4,6-Tribromophenol	*16500*		*ug/L*	*15000*		*110*	*10-123*		
Surrogate: p-Terphenyl-d14	*8170*		*ug/L*	*10000*		*82*	*33-141*		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	Reported: 07/10/2012 10:09

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 L207006 - SW 3520C									
Matrix Spike Dup (L207006-MSD2)	**Source: 1206078-01**		Prepared: 07/02/2012 Analyzed: 07/07/2012						
1,2,4-Trichlorobenzene	5370		ug/L	12000	2000 U	45	35-105	19	20
1,2-Dichlorobenzene	5870		ug/L	12000	2000 U	49	35-100	14	20
1,3-Dichlorobenzene	5190		ug/L	12000	2000 U	43	30-100	19	20
1,4-Dichlorobenzene	5390		ug/L	12000	2000 U	45	30-100	18	20
2,4,5-Trichlorophenol	15500		ug/L	12000	2000 U	129*	45-125	28*	20
2,4,6-Trichlorophenol	14000		ug/L	12000	2000 U	117	40-125	29*	20
2,4-Dichlorophenol	13600		ug/L	12000	2000 U	114	40-120	29*	20
2,4-Dimethylphenol	11900		ug/L	12000	2000 U	99	30-110	29*	20
2,4-Dinitrophenol	8810		ug/L	12000	10000 U	73	15-140	66*	20
2,4-Dinitrotoluene	15900		ug/L	12000	2000 U	133*	50-120	34*	20
2,6-Dinitrotoluene	15600		ug/L	12000	2000 U	130*	50-115	33*	20
2-Chloronaphthalene	10300		ug/L	12000	2000 U	86	40-110	9	20
2-Chlorophenol	13000		ug/L	12000	2000 U	108	35-115	32*	20
2-Methylnaphthalene	8150		ug/L	12000	2000 U	68	35-105	5	20
2-Methylphenol	13500		ug/L	12000	2000 U	112*	40-110	34*	20
2-Nitroaniline	14500		ug/L	12000	5000 U	121*	35-110	34*	20
2-Nitrophenol	12500		ug/L	12000	2000 U	104	30-115	28*	20
3,3'-Dichlorobenzidine	17300		ug/L	12000	10000 U	144	20-150	29*	20
3-Nitroaniline	19300		ug/L	12000	5000 U	161*	5-120	38*	20
4,6-Dinitro-2-methylphenol	17800		ug/L	12000	5000 U	148*	40-130	37*	20
4-Bromophenyl Phenyl Ether	14900		ug/L	12000	2000 U	125*	50-110	25*	20
4-Chloro-3-methylphenol	14300		ug/L	12000	2000 U	119*	40-110	32*	20
4-Chloroaniline	15500		ug/L	12000	5000 U	129*	10-120	33*	20
4-Chlorophenyl Phenyl Ether	14400		ug/L	12000	2000 U	120	40-120	25*	20
3- and/or 4-Methylphenol	13500		ug/L	12000	2000 U	112*	30-110	35*	20
4-Nitroaniline	14100		ug/L	12000	5000 U	118*	5-110	38*	20
4-Nitrophenol	16600		ug/L	12000	5000 U	138	5-150	35*	20
Acenaphthene	12300		ug/L	12000	2000 U	102	35-110	21*	20
Acenaphthylene	10700		ug/L	12000	2000 U	89	30-110	21*	20
Anthracene	14800		ug/L	12000	2000 U	123*	40-120	28*	20
Benz[a]anthracene	15800		ug/L	12000	2000 U	131*	40-120	28*	20
Benzo[a] pyrene	15900		ug/L	12000	2000 U	133	40-140	27*	20
Benzo[b] fluoranthene	16100		ug/L	12000	2000 U	134	40-140	28*	20
Benzo[g,h,i] perylene	16900		ug/L	12000	2000 U	141*	40-140	22*	20
Benzo[k] fluoranthene	16400		ug/L	12000	2000 U	136	40-140	26*	20
Bis(2-chloroethoxy) methane	12900		ug/L	12000	2000 U	107	30-115	33*	20

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/10/2012 10:09

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 L207006 - SW 3520C									
Matrix Spike Dup (L207006-MSD2)	**Source: 1206078-01**		Prepared: 07/02/2012 Analyzed: 07/07/2012						
Bis(2-chloroethyl) ether	12300		ug/L	12000	2000 U	102	35-110	34*	20
Bis(2-chloroisopropyl) ether	10900		ug/L	12000	2000 U	91	30-125	27*	20
Bis(2-ethylhexyl) phthalate	14700		ug/L	12000	2000 U	122	40-150	26*	20
Butyl Benzyl Phthalate	15000		ug/L	12000	2000 U	125	40-140	32*	20
Carbazole	15300		ug/L	12000	2000 U	128*	20-120	31*	20
Chrysene	16000		ug/L	12000	2000 U	134*	45-130	26*	20
Dibenz[a,h]anthracene	13800		ug/L	12000	2000 U	115	35-150	22*	20
Dibenzofuran	13600		ug/L	12000	2000 U	114	50-115	23*	20
Diethyl Phthalate	14700		ug/L	12000	2000 U	123	40-130	32*	20
Dimethyl Phthalate	14400		ug/L	12000	2000 U	120	40-130	32*	20
Di-n-butyl Phthalate	13600		ug/L	12000	2000 U	114	40-130	26*	20
Di-n-octyl Phthalate	15100		ug/L	12000	2000 U	126	35-155	28*	20
Fluoranthene	15000		ug/L	12000	2000 U	125	45-130	24*	20
Fluorene	14300		ug/L	12000	2000 U	119	50-120	26*	20
Hexachlorobenzene	15600		ug/L	12000	2000 U	130*	50-110	25*	20
Hexachlorobutadiene	4630		ug/L	12000	2000 U	39	30-100	21*	20
Hexachlorocyclopentadiene	2400		ug/L	12000	2000 U	20	10-100	51*	20
Hexachloroethane	4270		ug/L	12000	2000 U	36	25-100	20	20
Indeno[1,2,3-cd]pyrene	16200		ug/L	12000	2000 U	135	50-140	22*	20
Isophorone	12100		ug/L	12000	2000 U	100	40-110	31*	20
Naphthalene	8010		ug/L	12000	2000 U	67	35-100	3	20
Nitrobenzene	11900		ug/L	12000	2000 U	99	40-110	30*	20
N-Nitrosodi-n-propylamine	11000		ug/L	12000	2000 U	92	30-120	28*	20
N-Nitrosodiphenylamine	13700		ug/L	12000	2000 U	114*	25-110	29*	20
Pentachlorophenol	17300		ug/L	12000	5000 U	145*	20-130	41*	20
Phenanthrene	14900		ug/L	12000	2000 U	125*	50-120	27*	20
Phenol	13000		ug/L	12000	2000 U	108	30-110	33*	20
Pyrene	14900		ug/L	12000	2000 U	124	50-130	35*	20
Surrogate: 2-Fluorophenol	*16600*		*ug/L*	*15000*		*111**	*21-100*		
Surrogate: Phenol-d5	*17200*		*ug/L*	*15000*		*115**	*10-94*		
Surrogate: Nitrobenzene-d5	*11100*		*ug/L*	*10000*		*111*	*35-114*		
Surrogate: 2-Fluorobiphenyl	*11100*		*ug/L*	*10000*		*111*	*43-116*		
Surrogate: 2,4,6-Tribromophenol	*20700*		*ug/L*	*15000*		*138**	*10-123*		
Surrogate: p-Terphenyl-d14	*13500*		*ug/L*	*10000*		*135*	*33-141*		

PREPARATION BENCH SHEET

L207006

Lionville Laboratory

Printed: 7/10/2012 9:54:55AM

Matrix: Water **Prepared using: SVOCGCMS - SW 3520C** **Surrogate used: 1200845**

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206068-01	1311/8270C TCLP SVOC	07/02/2012 10:26	200	1				500	WC-Hanford, Inc.	TCLP
1206068-01RE1	8270C TCL SVOC	07/02/2012 10:26	1000	1				500	WC-Hanford, Inc.	Added for BatchQC in: L207006
1206068-02	1311/8270C TCLP SVOC	07/02/2012 10:26	200	1				500	WC-Hanford, Inc.	TCLP
1206078-01	1311/8270C TCLP SVOC	07/02/2012 10:26	5	1				500	WC-Hanford, Inc.	Added for BatchQC in: L207006
1206078-01	8270C TCL SVOC	07/02/2012 10:26	5	1				500	WC-Hanford, Inc.	
L207006-BLK1	QC	07/02/2012 10:26	200	1				500		TCLP
L207006-BLK2	QC	07/02/2012 10:26	200	1				500		leach blank L206190
L207006-BLK3	QC	07/02/2012 10:26	1000	1				500		
L207006-BS1	QC	07/02/2012 10:26	200	1	1200337		600	500		TCLP
L207006-BS2	QC	07/02/2012 10:26	1000	1	1200337		600	500		
L207006-BS3	QC	07/02/2012 10:26	1000	1	1200337		600	500		
L207006-MS1	QC	07/02/2012 10:26	200	1	1200337	1206068-01	600	500		TCLP
L207006-MS2	QC	07/02/2012 10:26	5	1	1200337	1206078-01	600	500		
L207006-MSD1	QC	07/02/2012 10:26	200	1	1200337	1206068-01	600	500		TCLP
L207006-MSD2	QC	07/02/2012 10:26	5	1	1200337	1206078-01	600	500		

add BS 3

Extracts Relinquished By Date

M 955 7-10-12

Extracts Received By Date

PREPARATION BENCH SHEET

L207006

Lionville Laboratory

Printed: 7/6/2012 1:39:38PM

00000044

Matrix: Water **Prepared using: SVOCGCMS - SW 3520C** **Surrogate used: 1200845**

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206068-01	1311/8270C TCLP SVOC	07/02/2012 10:26	200	1				500	WC-Hanford, Inc.	TCLP
~~1206068-01RE1~~	~~8270C TCL SVOC~~	~~07/02/2012 10:26~~	~~1000~~	~~1~~				~~500~~	~~WC-Hanford, Inc.~~	Added for BatchQC in: L207006
1206068-02	1311/8270C TCLP SVOC	07/02/2012 10:26	200	1				500	WC-Hanford, Inc.	TCLP
~~1206078-01~~	~~1311/8270C TCLP SVOC~~	~~07/02/2012 10:26~~	~~5~~	~~1~~				~~500~~	~~WC-Hanford, Inc.~~	Added for BatchQC in: L207006
1206078-01	8270C TCL SVOC	07/02/2012 10:26	5	1				500	WC-Hanford, Inc.	
L207006-BLK1	QC	07/02/2012 10:26	200	1				500		TCLP
L207006-BLK2	QC	07/02/2012 10:26	200	1				500		leach blank L206190
L207006-BLK3	QC	07/02/2012 10:26	1000	1				500		
L207006-BS1	QC	07/02/2012 10:26	200	1	1200337		600	500		TCLP
L207006-BS2	QC	07/02/2012 10:26	1000	1	1200337		600	500		
L207006-MS1	QC	07/02/2012 10:26	200	1	1200337	1206068-01	600	500		TCLP
L207006-MS2	QC	07/02/2012 10:26	5	1	1200337	1206078-01	600	500		
L207006-MSD1	QC	07/02/2012 10:26	200	1	1200337	1206068-01	600	500		TCLP
L207006-MSD2	QC	07/02/2012 10:26	5	1	1200337	1206078-01	600	500		

Extracts Relinquished By — 7/6/12 1339 Date

Extracts Received By — 7/6/12 1345 Date

METALS

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 13:03

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF7	1206078-01	Other Liquid	06/21/2012 14:40	06/27/2012 10:00

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-155
LVL#: 1206078
SDG/SAF#: K3941/RC-155

W.O.#: 60049-001-001-0001-00
Date Received: 06-27-12

METALS

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analysis of 1 other liquid sample.

2. The sample was prepared and analyzed in accordance with methods listed on the data report forms. The sample was reported on a wet weight, 'as-received' basis.

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

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

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

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

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

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

9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer with the exception of Silicon 42.8% recovery. The sample result for Silicon may be slightly biased low.

10. All matrix spike (MS) recoveries were within the 75-125% control limits.

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

11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. The ± 20% RPD control limit applies to sample results greater than ten times the MDL. The sample results for Antimony, Calcium, and Zinc were less than ten times the MDL.

12. For the purposes of this report, the data have been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

13. 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.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

7/6/12
Date

alm/06-078

LIONVILLE LABORATORY
A division of Ebeline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 13:03

Notes and Definitions

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

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 13:03

J1PTF7
1206078-01 (Other Liquid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	10.0	U	10.0	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Antimony	**0.232**	B	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Arsenic	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Barium	0.250	U	0.250	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Beryllium	0.100	U	0.100	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Boron	1.00	U	1.00	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Cadmium	0.125	U	0.125	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Calcium	**11.0**		10.0	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Chromium	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Cobalt	1.50	U	1.50	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Copper	1.00	U	1.00	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Iron	**2.08**	B	10.0	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Lead	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Magnesium	2.50	U	2.50	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Manganese	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Molybdenum	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Nickel	1.25	U	1.25	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Potassium	50.0	U	50.0	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Selenium	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Silicon	**2.88**	B	3.00	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Silver	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Sodium	**6.03**	B	25.0	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Thallium	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Uranium	5.00	U	5.00	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Vanadium	0.500	U	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Zinc	**3.10**		1.50	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Zirconium	**0.139**	B	0.500	mg/kg	1	L206229	06/28/2012	07/02/2012	6010B
Mercury	20.0	U	20.0	ug/L	1	L207004	07/02/2012	07/03/2012	7471A

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 13:03

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206229 - SW 3050B										
Blank (L206229-BLK1)				Prepared: 06/28/2012 Analyzed: 07/02/2012						
Aluminum	10.0	U	10.0	mg/kg						
Antimony	0.500	U	0.500	mg/kg						
Arsenic	0.500	U	0.500	mg/kg						
Barium	0.250	U	0.250	mg/kg						
Beryllium	0.100	U	0.100	mg/kg						
Boron	0.271	B	1.00	mg/kg						
Cadmium	0.125	U	0.125	mg/kg						
Calcium	4.75	B	10.0	mg/kg						
Chromium	0.500	U	0.500	mg/kg						
Cobalt	1.50	U	1.50	mg/kg						
Copper	1.00	U	1.00	mg/kg						
Iron	10.0	U	10.0	mg/kg						
Lead	0.500	U	0.500	mg/kg						
Magnesium	2.50	U	2.50	mg/kg						
Manganese	0.500	U	0.500	mg/kg						
Molybdenum	0.103	B	0.500	mg/kg						
Nickel	1.25	U	1.25	mg/kg						
Potassium	50.0	U	50.0	mg/kg						
Selenium	0.155	B	0.500	mg/kg						
Silicon	1.19	B	3.00	mg/kg						
Silver	0.500	U	0.500	mg/kg						
Sodium	25.0	U	25.0	mg/kg						
Thallium	0.500	U	0.500	mg/kg						
Uranium	5.00	U	5.00	mg/kg						
Vanadium	0.500	U	0.500	mg/kg						
Zinc	1.50	U	1.50	mg/kg						
Zirconium	0.244	B	0.500	mg/kg						

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 13:03

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206229 - SW 3050B									
LCS (L206229-BS1)			Prepared: 06/28/2012 Analyzed: 07/02/2012						
Aluminum	480	10.0	mg/kg	500.00		96	80-120		
Antimony	288	0.500	mg/kg	300.00		96	80-120		
Arsenic	948	0.500	mg/kg	1000.0		95	80-120		
Barium	499	0.250	mg/kg	500.00		100	80-120		
Beryllium	24.4	0.100	mg/kg	25.000		97	80-120		
Boron	462	1.00	mg/kg	500.00		92	80-120		
Cadmium	22.9	0.125	mg/kg	25.000		91	80-120		
Calcium	2400	10.0	mg/kg	2500.0		96	80-120		
Chromium	47.8	0.500	mg/kg	50.000		96	80-120		
Cobalt	236	1.50	mg/kg	250.00		94	80-120		
Copper	122	1.00	mg/kg	125.00		98	80-120		
Iron	487	10.0	mg/kg	500.00		97	80-120		
Lead	230	0.500	mg/kg	250.00		92	80-120		
Magnesium	2340	2.50	mg/kg	2500.0		93	80-120		
Manganese	72.8	0.500	mg/kg	75.000		97	80-120		
Molybdenum	499	0.500	mg/kg	500.00		100	80-120		
Nickel	186	1.25	mg/kg	200.00		93	80-120		
Potassium	2400	50.0	mg/kg	2500.0		96	80-120		
Selenium	900	0.500	mg/kg	1000.0		90	80-120		
Silicon	214	3.00	mg/kg	500.00		43*	80-120		
Silver	48.5	0.500	mg/kg	50.000		97	80-120		
Sodium	2470	25.0	mg/kg	2500.0		99	80-120		
Thallium	923	0.500	mg/kg	1000.0		92	80-120		
Uranium	496	5.00	mg/kg	500.00		99	80-120		
Vanadium	246	0.500	mg/kg	250.00		99	80-120		
Zinc	94.4	1.50	mg/kg	100.00		94	80-120		
Zirconium	480	0.500	mg/kg	500.00		96	80-120		

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 13:03

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206229 - SW 3050B										
Duplicate (L206229-DUP1)		**Source: 1206078-01**		Prepared: 06/28/2012 Analyzed: 07/02/2012						
Aluminum	10.0	U	10.0	mg/kg		10.0 U				20
Antimony	0.166	B	0.500	mg/kg		0.232			33*	20
Arsenic	0.500	U	0.500	mg/kg		0.500 U				20
Barium	0.250	U	0.250	mg/kg		0.250 U				20
Beryllium	0.100	U	0.100	mg/kg		0.100 U				20
Boron	1.00	U	1.00	mg/kg		1.00 U				20
Cadmium	0.125	U	0.125	mg/kg		0.125 U				20
Calcium	8.58	B	10.0	mg/kg		11.0			25*	20
Chromium	0.500	U	0.500	mg/kg		0.500 U				20
Cobalt	1.50	U	1.50	mg/kg		1.50 U				20
Copper	1.00	U	1.00	mg/kg		1.00 U				20
Iron	10.0	U	10.0	mg/kg		2.08				20
Lead	0.500	U	0.500	mg/kg		0.500 U				20
Magnesium	2.50	U	2.50	mg/kg		2.50 U				20
Manganese	0.500	U	0.500	mg/kg		0.500 U				20
Molybdenum	0.500	U	0.500	mg/kg		0.500 U				20
Nickel	1.25	U	1.25	mg/kg		1.25 U				20
Potassium	50.0	U	50.0	mg/kg		50.0 U				20
Selenium	0.500	U	0.500	mg/kg		0.500 U				20
Silicon	2.82	B	3.00	mg/kg		2.88			2	20
Silver	0.500	U	0.500	mg/kg		0.500 U				20
Sodium	25.0	U	25.0	mg/kg		6.03				20
Thallium	0.500	U	0.500	mg/kg		0.500 U				20
Uranium	5.00	U	5.00	mg/kg		5.00 U				20
Vanadium	0.500	U	0.500	mg/kg		0.500 U				20
Zinc	0.626	B	1.50	mg/kg		3.10			133*	20
Zirconium	0.122	B	0.500	mg/kg		0.139			13	20

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 13:03

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206229 - SW 3050B									
Matrix Spike (L206229-MS1)		**Source: 1206078-01**	Prepared: 06/28/2012 Analyzed: 07/02/2012						
Aluminum	200	10.0	mg/kg	200.00	10.0 U	100	75-125		
Antimony	50.1	0.500	mg/kg	50.000	0.232	100	75-125		
Arsenic	196	0.500	mg/kg	200.00	0.500 U	98	75-125		
Barium	203	0.250	mg/kg	200.00	0.250 U	102	75-125		
Beryllium	5.01	0.100	mg/kg	5.0000	0.100 U	100	75-125		
Boron	93.0	1.00	mg/kg	100.00	1.00 U	93	75-125		
Cadmium	4.95	0.125	mg/kg	5.0000	0.125 U	99	75-125		
Calcium	2420	10.0	mg/kg	2500.0	11.0	96	75-125		
Chromium	19.9	0.500	mg/kg	20.000	0.500 U	100	75-125		
Cobalt	49.6	1.50	mg/kg	50.000	1.50 U	99	75-125		
Copper	25.9	1.00	mg/kg	25.000	1.00 U	103	75-125		
Iron	102	10.0	mg/kg	100.00	2.08	100	75-125		
Lead	48.1	0.500	mg/kg	50.000	0.500 U	96	75-125		
Magnesium	2380	2.50	mg/kg	2500.0	2.50 U	95	75-125		
Manganese	49.8	0.500	mg/kg	50.000	0.500 U	100	75-125		
Molybdenum	104	0.500	mg/kg	100.00	0.500 U	104	75-125		
Nickel	49.2	1.25	mg/kg	50.000	1.25 U	98	75-125		
Potassium	2440	50.0	mg/kg	2500.0	50.0 U	98	75-125		
Selenium	185	0.500	mg/kg	200.00	0.500 U	93	75-125		
Silicon	93.7	3.00	mg/kg	100.00	2.88	91	75-125		
Silver	4.69	0.500	mg/kg	5.0000	0.500 U	94	75-125		
Sodium	2440	25.0	mg/kg	2500.0	6.03	97	75-125		
Thallium	191	0.500	mg/kg	200.00	0.500 U	95	75-125		
Uranium	515	5.00	mg/kg	500.00	5.00 U	103	75-125		
Vanadium	51.9	0.500	mg/kg	50.000	0.500 U	104	75-125		
Zinc	50.2	1.50	mg/kg	50.000	3.10	94	75-125		
Zirconium	496	0.500	mg/kg	500.00	0.139	99	75-125		

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 13:03

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207004 - SW 7471A Prep										
Blank (L207004-BLK1)				Prepared: 07/02/2012 Analyzed: 07/03/2012						
Mercury	20.0	U	20.0	ug/L						
LCS (L207004-BS1)				Prepared: 07/02/2012 Analyzed: 07/03/2012						
Mercury	514		20.0	ug/L	500.00		103	80-120		
Duplicate (L207004-DUP1)		**Source: 1206078-01**		Prepared: 07/02/2012 Analyzed: 07/03/2012						
Mercury	20.0	U	20.0	ug/L		20.0 U				20
Matrix Spike (L207004-MS1)		**Source: 1206078-01**		Prepared: 07/02/2012 Analyzed: 07/03/2012						
Mercury	104		20.0	ug/L	100.00	20.0 U	104	75-125		

Lionville Laboratory

Logbook #: 1128

SAMPLE DIGESTION RECORD

Digestion Batch #: L206229
Date/Time Initiated: 6/28/12 1015
Date/Time Completed: 6/28/12 1630
Analyst: JS
Matrix (circle): Soil Water (Other)
Method (circle one): 3005A 3010A (3050) 200.7 (1994)
pH/Turbidity: N/A for Solids.

(Digested) / Undigested (circle one)
Balance #: N/A
Balance Cal Verification: Y (NA)
Temp: 97
BLOCK 1 2 (3) (circle one)

NOTE: All temperatures are recorded as corrected temperatures

C/C=clear/colorless

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1206078-01		0.5	50		TO	oily	C/C	N/A	N/A
L206229 -Rpl		0.5	50						
*-MSI	0.5	0.5	50						
-BLA		0.5	50				C/C		
*-BSI	0.5	0.5	50				C/C		

JS 6/28/12

Spiking IDs / Expiration Date:
MS#: 1200457
LCS#: 1200458

Reagent IDs:
HNO_3 L08023
HCl L01031
H_2O_2 K09A03
1:1 HNO_3 637-66-02
1:1 HCl

File ID#:

Data Review By/Date: aym 7/2/12

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

*: 1200380 250mL
1200386

Page #:

PREPARATION BENCH SHEET

L206229

Lionville Laboratory

Printed: 7/2/2012 3:45:13PM

00000057

Matrix: Non Aqueous Liquic

Prepared using: METALS - SW 3050B

(No Surrogate)

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206078-01	6010B HSL Metals	06/28/2012 10:09	0.5	50					WC-Hanford, Inc.	HSL + B, Li, Mo, Si, U, Zr (No TL)
L206229-BLK1	QC	06/28/2012 10:09	0.5	50						
L206229-BS1	QC	06/28/2012 10:09	0.5	50	1200458		500			
L206229-DUP1	QC	06/28/2012 10:09	0.5	50		1206078-01				
L206229-MS1	QC	06/28/2012 10:09	0.5	50	1200457	1206078-01	500			

JJS 7/2/10
Extracts Relinquished By Date

Brettel 07/02/12
Extracts Received By Date

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 7/2/12
Start Time/Temp: 1520/95°
End Time/Temp: 1535/97°

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

Logbook # 1143
Prep Batch: L207004
Worksheet: HG070301
SOP No. ME-HgCVAA
BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or (mL))	Final Sample Vol (mL)	Comments, % Solids, etc.
blank				10	50	
0.2 ug/l		0.100		10	50	
1.0 ug/l		0.500		10	50	
2.0 ug/l		1.000		10	50	
5.0 ug/l		2.500		10	50	
10.0 ug/l		5.000		10	50	
ICV		0.125	2.50	10	50	
CCV		0.250	5.0	10	50	
ICB/CCB				10	50	
L207004-BLK1				0.5	50	
BS1		0.250	5.0	0.5	50	
1206078-01				0.5	50	
L207004-DP1				0.5	50	
MS1		0.500	1.0	0.5	50	

MW 7/2/12

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1200588	7/2/12 1210
ICV/CCV/LCS	(I.V. 1200532)	N/A

Reviewed By/Date: [illegible] 7/5/12

MW 7/2/12 1143 MS1
W.E. 7/2/12 1143 MS1
Use book # 9268 for std traceability information

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

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

ME-HgCVAA-Prep0910

Page #:

000000058

INORGANICS

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:10

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF7	1206078-01	Other Liquid	06/21/2012 14:40	06/27/2012 10:00

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-155 K3941
LVL#: 1206078 **Date Received:** 06-27-12

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 liquid sample. Due to the coating nature of the sample towards the pH probe, 4 aliquots of sample were measured however the method allowed variations between readings of 0.1 pH units could not be met. The first of the 4 readings was reported at 7.69 pH units and the subsequent values were as follows: 7.53, 7.74 and 7.89 pH units.

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

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

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrite, Nitate, Orthophosphate and pH that were received past hold.

4. The results presented in this report are derived from samples that met LvL's sample acceptance policy with exceptions noted on the Sample Receipt Checklist.

5. The method blanks were within the method criteria.

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

7. The matrix spike recoveries were within the 80-120% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit. Insufficient sample available for replicate pH analysis.

9. 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

7/11/12
Date

njp\i06-078

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.

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:10

Notes and Definitions

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

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:10

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PTF7 (1206078-01) Other Liquid									
Bromide	0.10 U	0.10	0.50	mg/L	1	L207022	06/29/2012	06/29/2012	EPA 300.0 (1993)
Chloride	**0.44** B	0.10	0.50	mg/L	1	L207022	06/29/2012	06/29/2012	EPA 300.0 (1993)
Fluoride	0.10 U	0.10	0.50	mg/L	1	L207022	06/29/2012	06/29/2012	EPA 300.0 (1993)
Nitrate	**0.50**	0.10	0.50	mg/L	1	L207022	06/29/2012	06/29/2012	EPA 300.0 (1993)
Nitrite	0.10 U	0.10	0.50	mg/L	1	L207022	06/29/2012	06/29/2012	EPA 300.0 (1993)
Orthophosphate	0.20 U	0.20	1.00	mg/L	1	L207022	06/29/2012	06/29/2012	EPA 300.0 (1993)
Sulfate	**4.45**	0.10	0.50	mg/L	1	L207022	06/29/2012	06/29/2012	EPA 300.0 (1993)
pH	**7.69**	0.10	0.10	pH Units	1	L207011	07/02/2012	07/05/2012	SW846 9045D

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-155 Project Number: K3941 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:10

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207011 - Default Prep GenChem										
Reference (L207011-SRM1)				Prepared: 07/02/2012 Analyzed: 07/05/2012						
pH	6.97	0.10	0.10	pH Units	7.0000		99.6	99-101		
Batch L207022 - Default Prep GenChem										
Blank (L207022-BLK1)				Prepared & Analyzed: 06/29/2012						
Fluoride	0.10 U	0.10	0.50	mg/L						
Chloride	0.10 U	0.10	0.50	mg/L						
Nitrite	0.10 U	0.10	0.50	mg/L						
Bromide	0.10 U	0.10	0.50	mg/L						
Nitrate	0.16 B	0.10	0.50	mg/L						
Orthophosphate	0.20 U	0.20	1.00	mg/L						
Sulfate	0.10 U	0.10	0.50	mg/L						
LCS (L207022-BS1)				Prepared & Analyzed: 06/29/2012						
Fluoride	5.07	0.10	0.50	mg/L	5.0000		101	90-110		
Chloride	4.79	0.10	0.50	mg/L	5.0000		95.8	90-110		
Nitrite	4.84	0.10	0.50	mg/L	5.0000		96.8	90-110		
Bromide	4.95	0.10	0.50	mg/L	5.0000		99.0	90-110		
Nitrate	4.99	0.10	0.50	mg/L	5.0000		99.8	90-110		
Orthophosphate	4.67	0.20	1.00	mg/L	5.0000		93.4	90-110		
Sulfate	4.96	0.10	0.50	mg/L	5.0000		99.2	90-110		
Duplicate (L207022-DUP1)		**Source: 1206078-01**		Prepared & Analyzed: 06/29/2012						
Fluoride	0.10 U	0.10	0.50	mg/L		0.10 U				20
Chloride	0.41 B	0.10	0.50	mg/L		0.44			7.06	20
Nitrite	0.10 U	0.10	0.50	mg/L		0.10 U				20
Bromide	0.10 U	0.10	0.50	mg/L		0.10 U				20
Nitrate	0.45 B	0.10	0.50	mg/L		0.50			10.5	20
Orthophosphate	0.20 U	0.20	1.00	mg/L		0.20 U				20
Sulfate	4.45	0.10	0.50	mg/L		4.45			0.00	20

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

WC-Hanford, Inc.	Project: RC-155	
2620 Fermi Avenue	Project Number: K3941	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/06/2012 14:10

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207022 - Default Prep GenChem										
Matrix Spike (L207022-MS1)		**Source: 1206078-01**		Prepared & Analyzed: 06/29/2012						
Fluoride	4.99	0.10	0.50	mg/L	5.0000	0.10 U	99.8	80-120		
Chloride	5.20	0.10	0.50	mg/L	5.0000	0.44	95.2	80-120		
Nitrite	4.85	0.10	0.50	mg/L	5.0000	0.10 U	97.0	80-120		
Bromide	4.89	0.10	0.50	mg/L	5.0000	0.10 U	97.8	80-120		
Nitrate	5.39	0.10	0.50	mg/L	5.0000	0.50	97.8	80-120		
Orthophosphate	4.48	0.20	1.00	mg/L	5.0000	0.20 U	89.6	80-120		
Sulfate	9.47	0.10	0.50	mg/L	5.0000	4.45	100	80-120		