SAF-RC-008
ERDF Groundwater Well Samples
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

No Distribution Required

COMMENTS:

SDG K3986 SAF-RC-008

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

ERDF Groundwater Well Samples – September 2012

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

27 October 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 #	1209026
SDG #	K3986
SAF #	RC-008
Date Received	09/11/12
# Samples	4
Matrix	WATER
Volatiles	X
Semivolatiles	
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 49 pages.

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

CHAIN OF CUSTODY

Lionville Laboratory Use Only: 1209026

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client: WC Hanford/CHPRC SAF# RC-008 Q
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O. Johnson
QC: SW Del: Std TAT: 30 days
Date Rec'd: 9/11/12 Date Due: 10/11/12

		A-C	D	E	F	G	H	I	J
Refrigerator #		16A	1	1	1	1	1	1	1
#/Type Container	Liquid	3AG	1P	1P	1AG	1P	1P	1P	1P
	Solid								
Volume	Liquid	40	500	250	L	500	500	500	500
	Solid								
Preservatives		HCl H2SO4	HNO3	—	H2SO4	—	H2SO4	—	HNO3
ANALYSES REQUESTED		ORGANIC: VOA, BNA, Pest/PCB, Herb	INORG: Metal, CN	ALK	TOX	TDS	NO2 NO3	IC Anions	Metals
Lionville Laboratory Use Only		8260 TCL	METALS SOLUBLE	ALKALINITY	TOX	TDS	NO2/NO3	ANIONS	METALS TOTAL

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 TCL	METALS SOLUBLE		ALKALINITY	TOX	TDS	NO2/NO3	ANIONS	METALS TOTAL
01	B21X94			W	9-10-12	1115		X	PH<2				PH<2		
02	96						X			X	PH<2 X	X	X	X	X PH<2
03	95							X	PH<2						
04	97						X			X	PH<2 X	X	X PH<2	X	X PH<2

Special Instructions:

01 05j 9/12/12
Special Instructions:
~~#02~~ 03 D 1. Met. Filtered
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	9/11/12	1439

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # RC-008Q-014
		Page 1 of 1

Collector	MA White CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	RC-008Q	Sampling Origin	Hanford Site	Purchase Order/Charge Code	302326ES20
Project Title	ERDF, September 2012	Logbook No.	HNF-N-506 361/12	Ice Chest No.	N/A GWS-054
Shipped To (Lab)	Lionville Laboratory Incorporated	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A 7989-3049-6459
Protocol	GPP	Priority:	45 Days	Offsite Property No.	N/A 4017

POSSIBLE SAMPLE HAZARDS/REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

**Submit invoices and deliverables to JH Kessner, BHI
**FAX copies of Eberline/Lionville log-in to JH Kessner (1-425-969-4823) and Scot Fitzgerald (509-373-7495).
**Sample Management will send all results to Mike Peloquin.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2LX94	Y	W	SEP 10 2012	1115	1x500-mL G/P	6010_METALS_ICP_TR: List-3 (8)	6 Months	HNO3 to pH <2
B2LX96	N	W			1x1-L aGs*	TOX - 9020	28 Days	H2SO4 to pH <2/Cool~4C
B2LX96	N	W			1x500-mL G/P	TDS - 160.1	7 Days	Cool~4C
B2LX96	N	W			1x20-mL P	Activity Scan	6 Months	None
B2LX96	N	W			1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	14 Days	Cool~4C
B2LX96	N	W			1x500-mL G/P	NO2/NO3 - 353.2	28 Days	H2SO4 to pH <2/Cool~4C
B2LX96	N	W			1x500-mL P	IC Anions - 300.0	48 Hours	Cool~4C
B2LX96	N	W			1x500-mL G/P	6010_METALS_ICP_TR: List-3 (8)	6 Months	HNO3 to pH <2
B2LX96	N	W			3x40-mL aGs*	VOA - 8260A (TCL)	14 Days	HCl or H2SO4 to pH <2/Cool~4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
MA White CHPRC	SEP 10 2012 1250	CFulton	9-10-12 1250
CFulton	9-10-12 1400	FEDEX	
FedEx 9-11-12	9-11-12 1439	VICTOR HERNANDEZ 9-11-12	1439

Matrix *

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED ON 8/2/2012

A-6004-842 (REV 2)

000000004

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # RC-008Q-015
		Page 1 of 1

Collector	MA White CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	RC-008Q	Sampling Origin	Hanford Site	Purchase Order/Charge Code	302326ES20
Project Title	ERDF, September 2012	Logbook No.	HNF-N-506 36 / 12	Ice Chest No.	N/A GWS-054
Shipped To (Lab)	Lionville Laboratory Incorporated	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A 7999-3049-6459
Protocol	GPP	Priority:	45 Days	Offsite Property No.	N/A 4017

POSSIBLE SAMPLE HAZARDS/REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

**Submit invoices and deliverables to JH Kessner, BHI
**FAX copies of Eberline/Lionville log-in to JH Kessner (1-425-969-4823) and Scot Fitzgerald (509-373-7495).
**Sample Management will send all results to Mike Peloquin.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2LX95	Y	W	SEP 10 2012	1115	1x500-mL G/P	6010_METALS_ICP_TR: List-3 (8)	6 Months	HNO3 to pH <2
B2LX97	N	W			1x1-L aGs*	TOX - 9020	28 Days	H2SO4 to pH <2/Cool~4C
B2LX97	N	W			1x500-mL G/P	TDS - 160.1	7 Days	Cool~4C
B2LX97	N	W			1x20-mL P	Activity Scan	6 Months	None
B2LX97	N	W			1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	14 Days	Cool~4C
B2LX97	N	W			1x500-mL G/P	NO2/NO3 - 353.2	28 Days	H2SO4 to pH <2/Cool~4C
B2LX97	N	W			1x500-mL P	IC Anions - 300.0	48 Hours	Cool~4C
B2LX97	N	W			1x500-mL G/P	6010_METALS_ICP_TR: List-3 (8)	6 Months	HNO3 to pH <2
B2LX97	N	W			3x40-mL aGs*	VOA - 8260A (TCL)	14 Days	HCl or H2SO4 to pH <2/Cool~4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
MA White CHPRC	MA White		SEP 10 2012 1250	CFulton	CFulton		9-10-12 1250
CFulton	CFulton		9-10-12 1400	FEDEX			
FedEx			9-11-12 1439	VICTOR HERNANDEZ			9-11-12 1439

Matrix *

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED ON 8/2/2012

A-6004-842 (REV 2)

000000005

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford

Project/SAF/SOW/Release #: RC-008Q

Date: 9/11/12

LvL Batch #: 1209026

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 798930496459
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 OS 9/12/12	☑ No	Comments: Hole on Bottom leaking Water
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 2.8°	°C	Cooler # GWS-054
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☑ Yes	☐ No	☐ N/A
13. VOA, TOC, TOX free of headspace? Alkalinity	☑ Yes OS 9/12/12	☑ No	☐ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☐ Yes	☑ No	
16. Project Manager contacted concerning any discrepancies?	☑ Yes	☐ No	☐ N/A

Person Contacted D Johnson

Date 9/12/12

SR-002-B.doc

Lionville Laboratory Use Only: 1209026

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client: WC Hanford/CHPRCSAF# RC-008 Q
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O. Johnson
QC: SW Del: Std TAT: 30 days
Date Rec'd: 9/11/12 Date Due: 10/11/12

		A-C							D		E	F	G	H	I	J
Refrigerator #		16A							1		1	1	1	1	1	1
#/Type Container	Liquid	3AG							1P		1P	1AG	1P	1P	1P	1P
	Solid															
Volume	Liquid	40							500		250	L	500	500	500	500
	Solid															
Preservatives		HCl #2504							HNO3		—	H2SO4	—	H2SO4	—	HNO3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	ALK	TOX	TDS	NO2 NO3	IC Anions	Metals

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only: 8260 TCL							METALS Soluble		Alkalinity	TOX	TDS	NO2/NO3	ANIONS	METALS TOTAL
01	B21X94			W	9-10-12	1115								X	PH22						
02	96						X									X	PH22 X	X	PH22 X	X	X PH22
03	95													X	PH22						
04	97						X									X	PH22 X	X	X PH22	X	X PH22

Special Instructions:

01 OSJ 9/12/12
Special Instructions:
~~#22~~ 03 D 1. Met. Filtered
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	9/11/12	1439

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # RC-008Q-014
		Page 1 of 1

Collector	MA White CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	RC-008Q	Sampling Origin	Hanford Site	Purchase Order/Charge Code	302326ES20
Project Title	ERDF, September 2012	Logbook No.	HNF-N-506 36/12	Ice Chest No.	N/A GW5-054
Shipped To (Lab)	Lionville Laboratory Incorporated	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A 7989-3049-6459
Protocol	GPP	Priority:	45 Days	Offsite Property No.	N/A 4017

POSSIBLE SAMPLE HAZARDS/REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

**Submit invoices and deliverables to JH Kessner, BHI
**FAX copies of Eberline/Lionville log-in to JH Kessner (1-425-969-4823) and Scot Fitzgerald (509-373-7495).
**Sample Management will send all results to Mike Peloquin.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2LX94	Y	W	SEP 10 2012	1115	1x500-mL G/P	6010_METALS_ICP_TR: List-3 (8)	6 Months	HNO3 to pH <2
B2LX96	N	W			1x1-L aGs*	TOX - 9020	28 Days	H2SO4 to pH <2/Cool~4C
B2LX96	N	W			1x500-mL G/P	TDS - 160.1	7 Days	Cool~4C
B2LX96	N	W			1x20-mL P	Activity Scan	6 Months	None
B2LX96	N	W			1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	14 Days	Cool~4C
B2LX96	N	W			1x500-mL G/P	NO2/NO3 - 353.2	28 Days	H2SO4 to pH <2/Cool~4C
B2LX96	N	W			1x500-mL P	IC Anions - 300.0	48 Hours	Cool~4C
B2LX96	N	W			1x500-mL G/P	6010_METALS_ICP_TR: List-3 (8)	6 Months	HNO3 to pH <2
B2LX96	N	W			3x40-mL aGs*	VOA - 8260A (TCL)	14 Days	HCl or H2SO4 to pH <2/Cool~4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
MA White CHPRC	SEP 10 2012 1250	CFulton	9-10-12 1250
CFulton	9-10-12 1400	FEDEX	
FedEx	9-11-12 1439	VICTOR HERNANDEZ	9-11-12 1439

Matrix *

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED ON 8/2/2012

A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # RC-008Q-015
		Page 1 of 1

Collector	MA White CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	RC-008Q	Sampling Origin	Hanford Site	Purchase Order/Charge Code	302326ES20
Project Title	ERDF, September 2012	Logbook No.	HNF-N-506 36 / 12	Ice Chest No.	N/A GWS-054
Shipped To (Lab)	Lionville Laboratory Incorporated	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A 7999-3049-6459
Protocol	GPP	Priority:	45 Days	Offsite Property No.	N/A 4017

POSSIBLE SAMPLE HAZARDS/REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

**Submit invoices and deliverables to JH Kessner, BHI
**FAX copies of Eberline/Lionville log-in to JH Kessner (1-425-969-4823) and Scot Fitzgerald (509-373-7495).
**Sample Management will send all results to Mike Peloquin.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2LX95	Y	W	SEP 10 2012	1115	1x500-mL G/P	6010_METALS_ICP_TR: List-3 (8)	6 Months	HNO3 to pH <2
B2LX97	N	W			1x1-L aGs*	TOX - 9020	28 Days	H2SO4 to pH <2/Cool~4C
B2LX97	N	W			1x500-mL G/P	TDS - 160.1	7 Days	Cool~4C
B2LX97	N	W			1x20-mL P	Activity Scan	6 Months	None
B2LX97	N	W			1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	14 Days	Cool~4C
B2LX97	N	W			1x500-mL G/P	NO2/NO3 - 353.2	28 Days	H2SO4 to pH <2/Cool~4C
B2LX97	N	W			1x500-mL P	IC Anions - 300.0	48 Hours	Cool~4C
B2LX97	N	W			1x500-mL G/P	6010_METALS_ICP_TR: List-3 (8)	6 Months	HNO3 to pH <2
B2LX97	N	W			3x40-mL aGs*	VOA - 8260A (TCL)	14 Days	HCl or H2SO4 to pH <2/Cool~4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
MA White CHPRC	MA White		SEP 10 2012 1250	CFulton	CFulton		9-10-12 1250
CFulton	CFulton		9-10-12 1400	FEDEX			
FedEx			9-11-12 1439	Victor Hernandez			9-11-12 1439
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED ON 8/2/2012

A-6004-842 (REV 2)

000000009

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford

Project/SAF/SOW/Release #: RC-008Q

Date: 9/11/12

LvL Batch #: 1209 026

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 798930496459
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 OSJ 9/12/12	☑ No	Comments: Hole on Bottom leaking Water
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 2.3°	°C	Cooler # GWS-054
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☑ Yes	☐ No	☐ N/A
13. VOA, TOC, TOX free of headspace? Alkalinity	☑ Yes OSJ 9/12/12	☑ No	☐ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☐ Yes	☑ No	
16. Project Manager contacted concerning any discrepancies?	☑ Yes	☐ No	☐ N/A

Person Contacted D Johnson

Date 9/12/12

SR-002-B.doc

VOLATILES

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

Analytical Report for Volatile Organic Compounds by SW846 8260B

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B2LX96	1209026-02	Water	09/10/2012 11:15	09/11/2012 14:39
B2LX97	1209026-04	Water	09/10/2012 11:15	09/11/2012 14:39

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-008 K3986
LVL #: 1209025

W.O. #: 60049-001-001-0001-00
Date Received: 09-11-2012

GC/MS VOLATILE

Two (2) water samples were collected on 09-12-2012.

The samples and associated QC samples were prepared and analyzed 09-12-2012 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. Samples were analyzed within holding time.

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

4. All obtainable surrogate recoveries were within QC acceptance criteria.

5. All obtainable matrix spike recoveries were within QC acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

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

8. 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.

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

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

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. 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").

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 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

9/27/12
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: 9.142 INSTRUMENT ID/DATE: 5973G 7/3/12

>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		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		
✓	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		
	Bromomethane		trans-1,3-Dichloropropene		

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.

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

B2LX96
1209026-02 (Water)

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	L209089	09/12/2012	09/12/2012	8260B
1,1,2,2-Tetrachloroethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,1,2-Trichloroethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,1-Dichloroethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,1-Dichloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,2-Dichloroethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,2-Dichloroethene (total)	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,2-Dichloropropane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
2-Butanone	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
2-Hexanone	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
4-Methyl-2-pentanone	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Acetone	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Benzene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Bromodichloromethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Bromoform	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Bromomethane	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Carbon Disulfide	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Carbon Tetrachloride	**4.51**	J	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Chlorobenzene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Chloroethane	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Chloroform	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Chloromethane	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
cis-1,2-Dichloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
cis-1,3-Dichloropropene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Dibromochloromethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Ethylbenzene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Methylene Chloride	6.00	U	6.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Styrene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Tetrachloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
trans-1,2-Dichloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Toluene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
trans-1,3-Dichloropropene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Trichloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Vinyl chloride	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Xylenes, total	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Surrogate: 1,2-Dichloroethane-d4	*112 %*		*60-140*			*L209089*	*09/12/2012*	*09/12/2012*	*8260B*

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

B2LX96
1209026-02 (Water)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Volatile Organic Compounds by SW846 8260B								
Surrogate: Toluene-d8	*96 %*	*65-120*			*L209089*	*09/12/2012*	*09/12/2012*	*8260B*
Surrogate: 4-Bromofluorobenzene	*94 %*	*75-130*			*L209089*	*09/12/2012*	*09/12/2012*	*8260B*

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

B2LX97
1209026-04 (Water)

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	L209089	09/12/2012	09/12/2012	8260B
1,1,2,2-Tetrachloroethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,1,2-Trichloroethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,1-Dichloroethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,1-Dichloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,2-Dichloroethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,2-Dichloroethene (total)	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
1,2-Dichloropropane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
2-Butanone	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
2-Hexanone	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
4-Methyl-2-pentanone	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Acetone	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Benzene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Bromodichloromethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Bromoform	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Bromomethane	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Carbon Disulfide	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Carbon Tetrachloride	**4.34**	**J**	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Chlorobenzene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Chloroethane	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Chloroform	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Chloromethane	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
cis-1,2-Dichloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
cis-1,3-Dichloropropene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Dibromochloromethane	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Ethylbenzene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Methylene Chloride	6.00	U	6.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Styrene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Tetrachloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
trans-1,2-Dichloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Toluene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
trans-1,3-Dichloropropene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Trichloroethene	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Vinyl chloride	10.0	U	10.0	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Xylenes, total	5.00	U	5.00	ug/L	1	L209089	09/12/2012	09/12/2012	8260B
Surrogate: 1,2-Dichloroethane-d4	*118 %*		*60-140*			*L209089*	*09/12/2012*	*09/12/2012*	*8260B*

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

B2LX97
1209026-04 (Water)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Volatile Organic Compounds by SW846 8260B								
Surrogate: Toluene-d8	*101 %*	*65-120*			*L209089*	*09/12/2012*	*09/12/2012*	*8260B*
Surrogate: 4-Bromofluorobenzene	*98 %*	*75-130*			*L209089*	*09/12/2012*	*09/12/2012*	*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-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

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 L209089 - SW 5030B										
Blank (L209089-BLK1)				Prepared & Analyzed: 09/12/2012						
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	5.00	U	5.00	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	10.0	U	10.0	ug/L						
2-Hexanone	10.0	U	10.0	ug/L						
4-Methyl-2-pentanone	10.0	U	10.0	ug/L						
Acetone	10.0	U	10.0	ug/L						
Benzene	5.00	U	5.00	ug/L						
Bromodichloromethane	5.00	U	5.00	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	*53.5*			*ug/L*	*50.000*		*107*	*60-140*		

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-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

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 L209089 - SW 5030B									
Blank (L209089-BLK1)			Prepared & Analyzed: 09/12/2012						
Surrogate: Toluene-d8	*48.9*		*ug/L*	*50.000*		*98*	*65-120*		
Surrogate: 4-Bromofluorobenzene	*49.4*		*ug/L*	*50.000*		*99*	*75-130*		
LCS (L209089-BS1)			Prepared & Analyzed: 09/12/2012						
1,1,1-Trichloroethane	53.7	5.00	ug/L	50.000		107	70-130		
1,1,2,2-Tetrachloroethane	44.2	5.00	ug/L	50.000		88	65-130		
1,1,2-Trichloroethane	44.9	5.00	ug/L	50.000		90	70-125		
1,1-Dichloroethane	50.2	5.00	ug/L	50.000		100	70-130		
1,1-Dichloroethene	47.1	5.00	ug/L	50.000		94	65-140		
1,2-Dichloroethane	52.2	5.00	ug/L	50.000		104	60-140		
1,2-Dichloroethene (total)	97.1	5.00	ug/L	100.00		97	70-130		
1,2-Dichloropropane	48.1	5.00	ug/L	50.000		96	75-125		
2-Butanone	48.1	10.0	ug/L	50.000		96	20-200		
2-Hexanone	49.0	10.0	ug/L	50.000		98	20-200		
4-Methyl-2-pentanone	41.4	10.0	ug/L	50.000		83	45-150		
Acetone	73.0	10.0	ug/L	50.000		146	20-220		
Benzene	48.4	5.00	ug/L	50.000		97	75-125		
Bromodichloromethane	51.7	5.00	ug/L	50.000		103	65-130		
Bromoform	48.6	5.00	ug/L	50.000		97	70-120		
Bromomethane	47.2	10.0	ug/L	50.000		94	50-150		
Carbon Disulfide	47.5	5.00	ug/L	50.000		95	50-150		
Carbon Tetrachloride	55.8	5.00	ug/L	50.000		112	65-130		
Chlorobenzene	47.6	5.00	ug/L	50.000		95	75-125		
Chloroethane	48.7	10.0	ug/L	50.000		97	65-140		
Chloroform	53.2	5.00	ug/L	50.000		106	75-125		
Chloromethane	51.1	10.0	ug/L	50.000		102	50-135		
cis-1,2-Dichloroethene	48.1	5.00	ug/L	50.000		96	70-125		
cis-1,3-Dichloropropene	43.6	5.00	ug/L	50.000		87	70-125		
Dibromochloromethane	48.8	5.00	ug/L	50.000		98	70-130		
Ethylbenzene	50.4	5.00	ug/L	50.000		101	75-125		
Methylene Chloride	47.4	6.00	ug/L	50.000		95	55-150		
Styrene	49.3	5.00	ug/L	50.000		99	75-130		
Tetrachloroethene	48.3	5.00	ug/L	50.000		97	70-130		
trans-1,2-Dichloroethene	49.0	5.00	ug/L	50.000		98	70-130		
Toluene	47.3	5.00	ug/L	50.000		95	70-130		
trans-1,3-Dichloropropene	48.9	5.00	ug/L	50.000		98	70-130		
Trichloroethene	48.9	5.00	ug/L	50.000		98	75-125		

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

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 L209089 - SW 5030B									
LCS (L209089-BS1)			Prepared & Analyzed: 09/12/2012						
Vinyl chloride	51.8	10.0	ug/L	50.000		104	55-135		
Xylenes, total	149	5.00	ug/L	150.00		99	70-130		
Surrogate: 1,2-Dichloroethane-d4	*51.6*		*ug/L*	*50.000*		*103*	*60-140*		
Surrogate: Toluene-d8	*48.0*		*ug/L*	*50.000*		*96*	*65-120*		
Surrogate: 4-Bromofluorobenzene	*48.7*		*ug/L*	*50.000*		*97*	*75-130*		
Matrix Spike (L209089-MS2)		**Source: 1209026-04**	Prepared & Analyzed: 09/12/2012						
1,1,1-Trichloroethane	50.7	5.00	ug/L	50.000	5.00 U	101	70-130		
1,1,2,2-Tetrachloroethane	38.7	5.00	ug/L	50.000	5.00 U	77	65-130		
1,1,2-Trichloroethane	42.5	5.00	ug/L	50.000	5.00 U	85	70-125		
1,1-Dichloroethane	48.2	5.00	ug/L	50.000	5.00 U	96	70-130		
1,1-Dichloroethene	43.8	5.00	ug/L	50.000	5.00 U	88	65-140		
1,2-Dichloroethane	49.4	5.00	ug/L	50.000	5.00 U	99	60-140		
1,2-Dichloroethene (total)	91.6	5.00	ug/L	100.00	5.00 U	92	70-130		
1,2-Dichloropropane	47.1	5.00	ug/L	50.000	5.00 U	94	75-125		
2-Butanone	34.4	10.0	ug/L	50.000	10.0 U	69	20-200		
2-Hexanone	31.3	10.0	ug/L	50.000	10.0 U	63	20-200		
4-Methyl-2-pentanone	32.7	10.0	ug/L	50.000	10.0 U	65	45-150		
Acetone	32.8	10.0	ug/L	50.000	10.0 U	66	20-220		
Benzene	46.9	5.00	ug/L	50.000	5.00 U	94	75-125		
Bromodichloromethane	50.0	5.00	ug/L	50.000	5.00 U	100	65-130		
Bromoform	43.1	5.00	ug/L	50.000	5.00 U	86	70-120		
Bromomethane	44.4	10.0	ug/L	50.000	10.0 U	89	50-150		
Carbon Disulfide	45.6	5.00	ug/L	50.000	5.00 U	91	50-150		
Carbon Tetrachloride	57.2	5.00	ug/L	50.000	4.34	106	65-130		
Chlorobenzene	46.0	5.00	ug/L	50.000	5.00 U	92	75-125		
Chloroethane	47.7	10.0	ug/L	50.000	10.0 U	95	65-140		
Chloroform	51.3	5.00	ug/L	50.000	5.00 U	103	75-125		
Chloromethane	44.3	10.0	ug/L	50.000	10.0 U	89	50-135		
cis-1,2-Dichloroethene	45.6	5.00	ug/L	50.000	5.00 U	91	70-125		
cis-1,3-Dichloropropene	40.5	5.00	ug/L	50.000	5.00 U	81	70-125		
Dibromochloromethane	44.5	5.00	ug/L	50.000	5.00 U	89	70-130		
Ethylbenzene	48.6	5.00	ug/L	50.000	5.00 U	97	75-125		
Methylene Chloride	45.0	6.00	ug/L	50.000	6.00 U	90	55-150		
Styrene	47.4	5.00	ug/L	50.000	5.00 U	95	75-130		
Tetrachloroethene	47.4	5.00	ug/L	50.000	5.00 U	95	70-130		
trans-1,2-Dichloroethene	46.0	5.00	ug/L	50.000	5.00 U	92	70-130		

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

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 L209089 - SW 5030B									
Matrix Spike (L209089-MS2)		**Source: 1209026-04**	Prepared & Analyzed: 09/12/2012						
Toluene	45.5	5.00	ug/L	50.000	5.00 U	91	70-130		
trans-1,3-Dichloropropene	45.1	5.00	ug/L	50.000	5.00 U	90	70-130		
Trichloroethene	46.9	5.00	ug/L	50.000	5.00 U	94	75-125		
Vinyl chloride	43.7	10.0	ug/L	50.000	10.0 U	87	55-135		
Xylenes, total	143	5.00	ug/L	150.00	5.00 U	95	70-130		
Surrogate: 1,2-Dichloroethane-d4	*51.6*		*ug/L*	*50.000*		*103*	*60-140*		
Surrogate: Toluene-d8	*49.1*		*ug/L*	*50.000*		*98*	*65-120*		
Surrogate: 4-Bromofluorobenzene	*50.2*		*ug/L*	*50.000*		*100*	*75-130*		
Matrix Spike Dup (L209089-MSD2)		**Source: 1209026-04**	Prepared & Analyzed: 09/12/2012						
1,1,1-Trichloroethane	51.7	5.00	ug/L	50.000	5.00 U	103	70-130	2	20
1,1,2,2-Tetrachloroethane	40.0	5.00	ug/L	50.000	5.00 U	80	65-130	3	20
1,1,2-Trichloroethane	45.0	5.00	ug/L	50.000	5.00 U	90	70-125	6	20
1,1-Dichloroethane	49.1	5.00	ug/L	50.000	5.00 U	98	70-130	2	20
1,1-Dichloroethene	45.9	5.00	ug/L	50.000	5.00 U	92	65-140	5	20
1,2-Dichloroethane	52.2	5.00	ug/L	50.000	5.00 U	104	60-140	5	20
1,2-Dichloroethene (total)	93.3	5.00	ug/L	100.00	5.00 U	93	70-130	2	20
1,2-Dichloropropane	48.7	5.00	ug/L	50.000	5.00 U	97	75-125	3	20
2-Butanone	36.4	10.0	ug/L	50.000	10.0 U	73	20-200	6	20
2-Hexanone	36.9	10.0	ug/L	50.000	10.0 U	74	20-200	16	20
4-Methyl-2-pentanone	36.8	10.0	ug/L	50.000	10.0 U	74	45-150	12	20
Acetone	36.2	10.0	ug/L	50.000	10.0 U	72	20-220	10	20
Benzene	48.4	5.00	ug/L	50.000	5.00 U	97	75-125	3	20
Bromodichloromethane	50.6	5.00	ug/L	50.000	5.00 U	101	65-130	1	20
Bromoform	46.1	5.00	ug/L	50.000	5.00 U	92	70-120	7	20
Bromomethane	47.6	10.0	ug/L	50.000	10.0 U	95	50-150	7	20
Carbon Disulfide	45.8	5.00	ug/L	50.000	5.00 U	92	50-150	0.5	20
Carbon Tetrachloride	60.5	5.00	ug/L	50.000	4.34	112	65-130	6	20
Chlorobenzene	48.5	5.00	ug/L	50.000	5.00 U	97	75-125	5	20
Chloroethane	49.5	10.0	ug/L	50.000	10.0 U	99	65-140	4	20
Chloroform	53.2	5.00	ug/L	50.000	5.00 U	106	75-125	4	20
Chloromethane	46.9	10.0	ug/L	50.000	10.0 U	94	50-135	6	20
cis-1,2-Dichloroethene	46.5	5.00	ug/L	50.000	5.00 U	93	70-125	2	20
cis-1,3-Dichloropropene	42.0	5.00	ug/L	50.000	5.00 U	84	70-125	4	20
Dibromochloromethane	50.1	5.00	ug/L	50.000	5.00 U	100	70-130	12	20
Ethylbenzene	51.1	5.00	ug/L	50.000	5.00 U	102	75-125	5	20
Methylene Chloride	47.6	6.00	ug/L	50.000	6.00 U	95	55-150	5	20

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/17/2012 12:57

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 L209089 - SW 5030B									
Matrix Spike Dup (L209089-MSD2)		**Source: 1209026-04**	Prepared & Analyzed: 09/12/2012						
Styrene	49.9	5.00	ug/L	50.000	5.00 U	100	75-130	5	20
Tetrachloroethene	49.3	5.00	ug/L	50.000	5.00 U	99	70-130	4	20
trans-1,2-Dichloroethene	46.9	5.00	ug/L	50.000	5.00 U	94	70-130	2	20
Toluene	46.9	5.00	ug/L	50.000	5.00 U	94	70-130	3	20
trans-1,3-Dichloropropene	48.8	5.00	ug/L	50.000	5.00 U	98	70-130	8	20
Trichloroethene	49.7	5.00	ug/L	50.000	5.00 U	99	75-125	6	20
Vinyl chloride	44.7	10.0	ug/L	50.000	10.0 U	89	55-135	2	20
Xylenes, total	151	5.00	ug/L	150.00	5.00 U	101	70-130	6	20
Surrogate: 1,2-Dichloroethane-d4	*51.3*		*ug/L*	*50.000*		*103*	*60-140*		
Surrogate: Toluene-d8	*49.0*		*ug/L*	*50.000*		*98*	*65-120*		
Surrogate: 4-Bromofluorobenzene	*48.6*		*ug/L*	*50.000*		*97*	*75-130*		

PREPARATION BENCH SHEET

L209089

Lionville Laboratory

Printed: 9/15/2012 11:21:57AM

00000028

Matrix: Water **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
1209025-01	8260B TCL VOC	09/12/2012 12:47	5	5				5	CHPRC Hanford	
1209026-02	8260B TCL VOC	09/12/2012 14:30	5	5				5	WC-Hanford, Inc.	
1209026-04	8260B TCL VOC	09/12/2012 15:03	5	5				5	WC-Hanford, Inc.	
1209033-01	8260B TCL VOC	09/12/2012 17:16	5	5				5	CHPRC Hanford	
L209089-BLK1	QC	09/12/2012 11:06	5	5				5		
L209089-BS1	QC	09/12/2012 10:33	5	5	1201029		5	5		
L209089-MS1	QC	09/12/2012 13:23	5	5	1201029	1209025-01	5	5		
L209089-MS2	QC	09/12/2012 15:36	5	5	1201029	1209026-04	5	5		
L209089-MS3	QC	09/12/2012 17:49	5	5	1201029	1209033-01	5	5		
L209089-MSD1	QC	09/12/2012 13:57	5	5	1201029	1209025-01	5	5		
L209089-MSD2	QC	09/12/2012 16:09	5	5	1201029	1209026-04	5	5		
L209089-MSD3	QC	09/12/2012 18:22	5	5	1201029	1209033-01	5	5		

R 9/17/12

Extracts Relinquished By Date NAR 09/17/12 Extracts Received By Date

METALS

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-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/18/2012 12:58

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B2LX94	1209026-01	Water	09/10/2012 11:15	09/11/2012 14:39
B2LX96	1209026-02	Water	09/10/2012 11:15	09/11/2012 14:39
B2LX95	1209026-03	Water	09/10/2012 11:15	09/11/2012 14:39
B2LX97	1209026-04	Water	09/10/2012 11:15	09/11/2012 14:39

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-008
LVL#: 1209026
SDG/SAF#: K3986/RC-008

W.O.#: 60049-001-001-0001-00
Date Received: 09-11-12

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.

1. This narrative covers the analyses of 4 water samples.

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

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.

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 greater than 20X MB value}.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits.

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

11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL. The sample result for Selenium was less than ten times the MDL.

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.

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

9/26/12
Date

alm/09-026

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-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/18/2012 12:58

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

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-008 Project Number: K3986 Project Manager: Joan Kessner	**Reported:** 09/18/2012 12:58

B2LX94
1209026-01 (Water)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**27.9**	B	50.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Antimony	6.00	U	6.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Arsenic	**2.91**	B	4.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Barium	**44.6**		5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Cadmium	2.00	U	2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Calcium	**41300**		1000	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Chromium	**4.25**		2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Cobalt	20.0	U	20.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Copper	10.0	U	10.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Iron	**22.8**	B	50.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Lead	5.00	U	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Magnesium	**13100**		750	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Manganese	**1.20**	B	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Nickel	**1.70**	B	40.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Potassium	**4610**		4000	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Selenium	**4.16**	B	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Silver	2.00	U	2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Sodium	**16500**		500	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Tin	1.00	U	1.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Vanadium	**39.4**		25.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Zinc	10.0	U	10.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B

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-008 Project Number: K3986 Project Manager: Joan Kessner	**Reported:** 09/18/2012 12:58

B2LX96
1209026-02 (Water)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**27.0**	B	50.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Antimony	6.00	U	6.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Arsenic	**3.31**	B	4.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Barium	**45.6**		5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Cadmium	2.00	U	2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Calcium	**41600**		1000	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Chromium	**24.2**		2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Cobalt	20.0	U	20.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Copper	10.0	U	10.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Iron	**103**		50.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Lead	5.00	U	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Magnesium	**13200**		750	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Manganese	**3.14**	B	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Nickel	**10.5**	B	40.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Potassium	**4670**		4000	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Selenium	**4.03**	B	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Silver	2.00	U	2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Sodium	**16800**		500	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Tin	1.00	U	1.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Vanadium	**40.0**		25.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Zinc	10.0	U	10.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B

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-008 Project Number: K3986 Project Manager: Joan Kessner	**Reported:** 09/18/2012 12:58

B2LX95
1209026-03 (Water)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**15.2**	B	50.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Antimony	6.00	U	6.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Arsenic	**3.28**	B	4.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Barium	**45.0**		5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Cadmium	2.00	U	2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Calcium	**41400**		1000	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Chromium	**3.99**		2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Cobalt	20.0	U	20.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Copper	10.0	U	10.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Iron	**18.8**	B	50.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Lead	5.00	U	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Magnesium	**13100**		750	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Manganese	**1.22**	B	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Nickel	**1.58**	B	40.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Potassium	**4630**		4000	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Selenium	**4.16**	B	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Silver	2.00	U	2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Sodium	**16500**		500	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Tin	1.00	U	1.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Vanadium	**38.8**		25.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Zinc	10.0	U	10.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B

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-008 Project Number: K3986 Project Manager: Joan Kessner	**Reported:** 09/18/2012 12:58

B2LX97
1209026-04 (Water)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**22.7**	B	50.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Antimony	6.00	U	6.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Arsenic	**3.58**	B	4.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Barium	**44.3**		5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Cadmium	2.00	U	2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Calcium	**40900**		1000	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Chromium	**25.1**		2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Cobalt	20.0	U	20.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Copper	10.0	U	10.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Iron	**104**		50.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Lead	5.00	U	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Magnesium	**12900**		750	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Manganese	**2.81**	B	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Nickel	**10.9**	B	40.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Potassium	**4580**		4000	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Selenium	**4.01**	B	5.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Silver	2.00	U	2.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Sodium	**16200**		500	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Tin	1.00	U	1.00	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Vanadium	**38.4**		25.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B
Zinc	**27.1**		10.0	ug/L	1	L209076	09/12/2012	09/17/2012	6010B

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-008 Project Number: K3986 Project Manager: Joan Kessner	Reported: 09/18/2012 12:58

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 L209076 - SW 3005A										
Blank (L209076-BLK1)				Prepared: 09/12/2012 Analyzed: 09/17/2012						
Aluminum	26.4	B	50.0	ug/L						
Antimony	6.00	U	6.00	ug/L						
Arsenic	4.00	U	4.00	ug/L						
Barium	5.00	U	5.00	ug/L						
Cadmium	2.00	U	2.00	ug/L						
Calcium	1000	U	1000	ug/L						
Chromium	2.00	U	2.00	ug/L						
Cobalt	20.0	U	20.0	ug/L						
Copper	10.0	U	10.0	ug/L						
Iron	50.0	U	50.0	ug/L						
Lead	5.00	U	5.00	ug/L						
Magnesium	27.2	B	750	ug/L						
Manganese	0.632	B	5.00	ug/L						
Nickel	40.0	U	40.0	ug/L						
Potassium	4000	U	4000	ug/L						
Selenium	5.00	U	5.00	ug/L						
Silver	2.00	U	2.00	ug/L						
Sodium	500	U	500	ug/L						
Tin	1.00	U	1.00	ug/L						
Vanadium	25.0	U	25.0	ug/L						
Zinc	10.0	U	10.0	ug/L						
LCS (L209076-BS1)				Prepared: 09/12/2012 Analyzed: 09/17/2012						
Aluminum	4980		50.0	ug/L	5000.0		100	80-120		
Antimony	3150		6.00	ug/L	3000.0		105	80-120		
Arsenic	10600		4.00	ug/L	10000		106	80-120		
Barium	5190		5.00	ug/L	5000.0		104	80-120		
Cadmium	225		2.00	ug/L	250.00		90	80-120		
Calcium	25800		1000	ug/L	25000		103	80-120		
Chromium	512		2.00	ug/L	500.00		102	80-120		
Cobalt	2560		20.0	ug/L	2500.0		102	80-120		
Copper	1310		10.0	ug/L	1250.0		105	80-120		
Iron	5260		50.0	ug/L	5000.0		105	80-120		
Lead	2520		5.00	ug/L	2500.0		101	80-120		
Magnesium	25700		750	ug/L	25000		103	80-120		
Manganese	784		5.00	ug/L	750.00		105	80-120		
Nickel	2040		40.0	ug/L	2000.0		102	80-120		

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-008 Project Number: K3986 Project Manager: Joan Kessner	**Reported:** 09/18/2012 12:58

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 L209076 - SW 3005A										
LCS (L209076-BS1)				Prepared: 09/12/2012 Analyzed: 09/17/2012						
Potassium	25400		4000	ug/L	25000		102	80-120		
Selenium	10500		5.00	ug/L	10000		105	80-120		
Silver	526		2.00	ug/L	500.00		105	80-120		
Sodium	25900		500	ug/L	25000		104	80-120		
Tin	5270		1.00	ug/L	5000.0		105	80-120		
Vanadium	2600		25.0	ug/L	2500.0		104	80-120		
Zinc	1050		10.0	ug/L	1000.0		105	80-120		
Duplicate (L209076-DUP1)		**Source: 1209026-01**		Prepared: 09/12/2012 Analyzed: 09/17/2012						
Aluminum	30.2	B	50.0	ug/L		27.9			8	20
Antimony	6.00	U	6.00	ug/L		6.00 U				20
Arsenic	3.55	B	4.00	ug/L		2.91			20	20
Barium	43.7		5.00	ug/L		44.6			2	20
Cadmium	2.00	U	2.00	ug/L		2.00 U				20
Calcium	40700		1000	ug/L		41300			2	20
Chromium	4.02		2.00	ug/L		4.25			6	20
Cobalt	20.0	U	20.0	ug/L		20.0 U				20
Copper	10.0	U	10.0	ug/L		10.0 U				20
Iron	24.0	B	50.0	ug/L		22.8			5	20
Lead	5.00	U	5.00	ug/L		5.00 U				20
Magnesium	12900		750	ug/L		13100			2	20
Manganese	1.06	B	5.00	ug/L		1.20			13	20
Nickel	1.64	B	40.0	ug/L		1.70			4	20
Potassium	4560		4000	ug/L		4610			1	20
Selenium	3.31	B	5.00	ug/L		4.16			23*	20
Silver	2.00	U	2.00	ug/L		2.00 U				20
Sodium	16100		500	ug/L		16500			3	20
Tin	1.00	U	1.00	ug/L		1.00 U				20
Vanadium	38.6		25.0	ug/L		39.4			2	20
Zinc	10.0	U	10.0	ug/L		10.0 U				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-008 Project Number: K3986 Project Manager: Joan Kessner	**Reported:** 09/18/2012 12:58

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 L209076 - SW 3005A									
Matrix Spike (L209076-MS1)		**Source: 1209026-01**	Prepared: 09/12/2012 Analyzed: 09/17/2012						
Aluminum	2080	50.0	ug/L	2000.0	27.9	103	75-125		
Antimony	539	6.00	ug/L	500.00	6.00 U	108	75-125		
Arsenic	2130	4.00	ug/L	2000.0	2.91	106	75-125		
Barium	2160	5.00	ug/L	2000.0	44.6	106	75-125		
Cadmium	47.5	2.00	ug/L	50.000	2.00 U	95	75-125		
Calcium	66500	1000	ug/L	25000	41300	101	75-125		
Chromium	209	2.00	ug/L	200.00	4.25	102	75-125		
Cobalt	513	20.0	ug/L	500.00	20.0 U	103	75-125		
Copper	267	10.0	ug/L	250.00	10.0 U	107	75-125		
Iron	1100	50.0	ug/L	1000.0	22.8	108	75-125		
Lead	497	5.00	ug/L	500.00	5.00 U	99	75-125		
Magnesium	38300	750	ug/L	25000	13100	101	75-125		
Manganese	525	5.00	ug/L	500.00	1.20	105	75-125		
Nickel	514	40.0	ug/L	500.00	1.70	102	75-125		
Potassium	30100	4000	ug/L	25000	4610	102	75-125		
Selenium	2090	5.00	ug/L	2000.0	4.16	104	75-125		
Silver	54.0	2.00	ug/L	50.000	2.00 U	108	75-125		
Sodium	41800	500	ug/L	25000	16500	101	75-125		
Tin	1020	1.00	ug/L	1000.0	1.00 U	102	75-125		
Vanadium	574	25.0	ug/L	500.00	39.4	107	75-125		
Zinc	544	10.0	ug/L	500.00	10.0 U	109	75-125		

Lionville Laboratory

Logbook #: 1154

SAMPLE DIGESTION RECORD

Digestion Batch #: L209076
Date/Time Initiated: 9/12/12 1730
Date/Time Completed: 9/13/12 1300
Analyst: [illegible]
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.
NOTE: All temperatures are recorded as corrected temperatures

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

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1209026-01		50	50	<	SOL	NA	Clear Colorless	NA	NA
L209076-DUP1		50	50	<	SOL		Clear Colorless		
MS1	0.5	50	50	<	SOL		Clear Colorless		
1209026-02		50	50	<	TOT		Clear Colorless		
03		50	50	<	SOL		Clear Colorless		
04		50	50	<	TOT		Clear Colorless		
L209076-BLK		50	50				Clear Colorless		
BS	0.5	50	50				Clear Colorless		

[illegible] 9/13/12

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

Reagent IDs:
HNO_3 L08023
HCl L13029
H_2O_2
1:1 HNO_3
1:1 HCl

File ID#:

Data Review By/Date: [illegible] 9/17/12

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

Page #:

WET CHEMISTRY

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/26/2012 22:48

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B2LX96	1209026-02	Water	09/10/2012 11:15	09/11/2012 14:39
B2LX97	1209026-04	Water	09/10/2012 11:15	09/11/2012 14:39

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-008 K3986
LVL#: 1209026 **Date Received:** 09-11-12

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 water samples.

2. The samples were 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 exceptions of Nitrate, Nitrite and Orthophosphate.

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

5. The method blanks were within the method criteria.

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

7. The matrix spike recoveries were within the applicable control limits as noted in the Analytical Report with the exception of Nitrate Nitrite that was above the 90-110% control limits at 114%.

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

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

10/26/12
Date

njp\i09-026

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 11 pages.

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/26/2012 22:48

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
N	Spike and/or spike duplicate sample recovery is outside control limits.
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

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/26/2012 22:48

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier		LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
B2LX96 (1209026-02) Water										
Total Alkalinity	**129**		0.2	0.5	mg/L	1	L209097	09/14/2012 11:00	09/14/2012 13:15	SM 2320B
Total Dissolved Solids	**295**		5.0	20.0	mg/L	1	L209077	09/12/2012 15:40	09/12/2012 15:40	SM 2540C
Bromide	0.10	U	0.10	0.50	mg/L	1	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Chloride	**13.6**	D	0.50	2.50	mg/L	5	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Fluoride	**0.35**	B	0.10	0.50	mg/L	1	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Nitrate	**30.9**	D	0.50	2.50	mg/L	5	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Nitrite	0.10	U	0.10	0.50	mg/L	1	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Orthophosphate	0.20	U	0.20	1.00	mg/L	1	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Sulfate	**27.2**	D	0.50	2.50	mg/L	5	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Nitrate/Nitrite as N	**6.74**	N, D	0.100	0.500	mg/L	10	L209174	09/21/2012 10:00	09/21/2012 11:46	EPA 353.2
Total Organic Halides	20.0	U	20.0	100	ug/L	1	L210065	10/03/2012 06:20	10/03/2012 19:30	9020B
B2LX97 (1209026-04) Water										
Total Alkalinity	**127**		0.2	0.5	mg/L	1	L209097	09/14/2012 11:00	09/14/2012 13:15	SM 2320B
Total Dissolved Solids	**284**		5.0	20.0	mg/L	1	L209077	09/12/2012 15:40	09/12/2012 15:40	SM 2540C
Bromide	0.10	U	0.10	0.50	mg/L	1	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Chloride	**13.4**	D	0.50	2.50	mg/L	5	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Fluoride	**0.34**	B	0.10	0.50	mg/L	1	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Nitrate	**30.4**	D	0.50	2.50	mg/L	5	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Nitrite	0.10	U	0.10	0.50	mg/L	1	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Orthophosphate	0.20	U	0.20	1.00	mg/L	1	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Sulfate	**26.9**	D	0.50	2.50	mg/L	5	L209104	09/12/2012 09:23	09/12/2012 12:47	EPA 300.0 (1993)
Nitrate/Nitrite as N	**6.92**	D	0.100	0.500	mg/L	10	L209174	09/21/2012 10:00	09/21/2012 11:50	EPA 353.2
Total Organic Halides	20.0	U	20.0	100	ug/L	1	L210065	10/03/2012 06:20	10/03/2012 19:30	9020B

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	10/26/2012 22:48

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209077 - Default Prep GenChem										
Blank (L209077-BLK1)				Prepared & Analyzed: 09/12/2012 15:40						
Total Dissolved Solids	5.0 U	5.0	20.0	mg/L						
LCS (L209077-BS1)				Prepared & Analyzed: 09/12/2012 15:40						
Total Dissolved Solids	101	5.0	20.0	mg/L	100.00		101	80-120		
LCS (L209077-BS2)				Prepared & Analyzed: 09/12/2012 15:40						
Total Dissolved Solids	103	5.0	20.0	mg/L	100.00		103	80-120		
Duplicate (L209077-DUP1)		**Source: 1209026-02**		Prepared & Analyzed: 09/12/2012 15:40						
Total Dissolved Solids	291	5.0	20.0	mg/L		295			1.37	20
Batch L209097 - Default Prep GenChem										
Blank (L209097-BLK1)				Prepared: 09/14/2012 11:00 Analyzed: 09/14/2012 13:15						
Total Alkalinity	0.2 U	0.2	0.5	mg/L						
LCS (L209097-BS1)				Prepared: 09/14/2012 11:00 Analyzed: 09/14/2012 13:15						
Total Alkalinity	103	0.2	0.5	mg/L	100.00		103	90-110		
LCS (L209097-BS2)				Prepared: 09/14/2012 11:00 Analyzed: 09/14/2012 13:15						
Total Alkalinity	98.1	0.2	0.5	mg/L	100.00		98.1	90-110		
Duplicate (L209097-DUP1)		**Source: 1209026-02**		Prepared: 09/14/2012 11:00 Analyzed: 09/14/2012 13:15						
Total Alkalinity	127	0.2	0.5	mg/L		129			1.74	20
Batch L209104 - Default Prep GenChem										
Blank (L209104-BLK1)				Prepared: 09/12/2012 09:23 Analyzed: 09/12/2012 10:08						
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	0.10 U	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						

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/26/2012 22:48

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209104 - Default Prep GenChem											
LCS (L209104-BS1)					Prepared: 09/12/2012 09:23 Analyzed: 09/12/2012 10:08						
Fluoride	5.16		0.10	0.50	mg/L	5.0000		103	90-110		
Chloride	4.96		0.10	0.50	mg/L	5.0000		99.2	90-110		
Nitrite	4.95		0.10	0.50	mg/L	5.0000		99.0	90-110		
Bromide	5.09		0.10	0.50	mg/L	5.0000		102	90-110		
Nitrate	5.13		0.10	0.50	mg/L	5.0000		103	90-110		
Orthophosphate	4.92		0.20	1.00	mg/L	5.0000		98.4	90-110		
Sulfate	5.10		0.10	0.50	mg/L	5.0000		102	90-110		
Duplicate (L209104-DUP1)		**Source: 1209026-02**			Prepared: 09/12/2012 09:23 Analyzed: 09/12/2012 12:47						
Fluoride	0.36	B	0.10	0.50	mg/L		0.35			2.82	20
Chloride	13.3	D	0.50	2.50	mg/L		13.6			1.71	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	30.8	D	0.50	2.50	mg/L		30.9			0.422	20
Orthophosphate	0.20	U	0.20	1.00	mg/L		0.20 U				20
Sulfate	27.2	D	0.50	2.50	mg/L		27.2			0.220	20
Matrix Spike (L209104-MS1)		**Source: 1209026-02**			Prepared: 09/12/2012 09:23 Analyzed: 09/12/2012 12:47						
Orthophosphate	5.50		0.20	1.00	mg/L	5.0000	0.20 U	110	80-120		
Matrix Spike (L209104-MS2)		**Source: 1209026-02**			Prepared: 09/12/2012 09:23 Analyzed: 09/12/2012 12:47						
Fluoride	26.1	D	0.50	2.50	mg/L	25.000	0.35	103	80-120		
Chloride	40.2	D	0.50	2.50	mg/L	25.000	13.6	106	80-120		
Nitrite	25.1	D	0.50	2.50	mg/L	25.000	0.10 U	100	80-120		
Bromide	25.0	D	0.50	2.50	mg/L	25.000	0.10 U	100	80-120		
Matrix Spike (L209104-MS3)		**Source: 1209026-02**			Prepared: 09/12/2012 09:23 Analyzed: 09/12/2012 12:47						
Nitrate	79.6	D	1.00	5.00	mg/L	50.000	30.9	97.4	80-120		
Sulfate	75.2	D	1.00	5.00	mg/L	50.000	27.2	95.8	80-120		

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

WC-Hanford, Inc.	Project: RC-008	
2620 Fermi Avenue	Project Number: K3986	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/26/2012 22:48

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209174 - Default Prep GenChem											
Blank (L209174-BLK1)					Prepared: 09/21/2012 10:00 Analyzed: 09/21/2012 10:38						
Nitrate/Nitrite as N	0.010	U	0.010	0.050	mg/L						
LCS (L209174-BS1)					Prepared: 09/21/2012 10:00 Analyzed: 09/21/2012 10:37						
Nitrate/Nitrite as N	0.512		0.010	0.050	mg/L	0.51302		100	90-110		
Duplicate (L209174-DUP1)		**Source: 1209026-02**			Prepared: 09/21/2012 10:00 Analyzed: 09/21/2012 11:48						
Nitrate/Nitrite as N	6.94	D	0.100	0.500	mg/L		6.74			3	20
Matrix Spike (L209174-MS1)		**Source: 1209026-02**			Prepared: 09/21/2012 10:00 Analyzed: 09/21/2012 11:49						
Nitrate/Nitrite as N	18.1	D	0.200	1.00	mg/L	10.000	6.74	114*	90-110		
Batch L210065 - Default Prep GenChem											
Blank (L210065-BLK1)					Prepared: 10/03/2012 06:20 Analyzed: 10/03/2012 19:30						
Total Organic Halides	20.0	U	20.0	100	ug/L						
LCS (L210065-BS1)					Prepared: 10/03/2012 06:20 Analyzed: 10/03/2012 19:30						
Total Organic Halides	49.7	B	20.0	100	ug/L	50.000		99	80-120		
Duplicate (L210065-DUP1)		**Source: 1209026-02**			Prepared: 10/03/2012 06:20 Analyzed: 10/03/2012 19:30						
Total Organic Halides	20.0	U	20.0	100	ug/L		20.0 U				20
Matrix Spike (L210065-MS1)		**Source: 1209026-04**			Prepared: 10/03/2012 06:20 Analyzed: 10/03/2012 19:30						
Total Organic Halides	58.2	B	20.0	100	ug/L	50.000	20.0 U	116	75-125		