

SAF-RC-040
300 Area D4 Waste Characterization
Sampling - Other Solid
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

No Distribution Required

KW 8/22/12
INITIAL/DATE

COMMENTS:

SDG K3955

SAF RC-040

Rad only

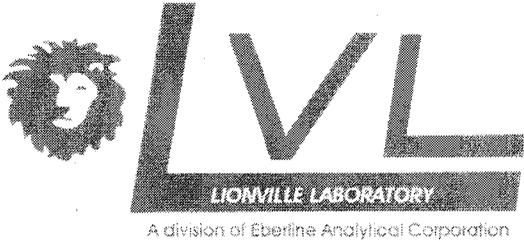
Chem only

Rad & Chem

Complete

Partial

Sample Location/Waste Site: 3621 B/C Sludge



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

14 August 2012

Joan Kessner
 WC-Hanford, Inc.
 2620 Fermi Avenue
 MSIN H4-21
 Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

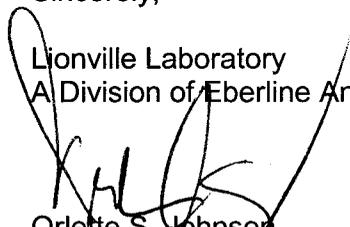
Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	1207047
SDG #	K3955
SAF #	RC-040
Date Received	07/20/12
# Samples	1
Matrix	OTHER SOLID
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
Herbicides	
Metals	X
Inorganics	

The electronic data deliverable (EDD) has been emailed. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,

Lionville Laboratory
 A Division of Eberline Analytical Corporation



Orlette S. Johnson
 Project Manager

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

CHAIN OF CUSTODY

Lionville Laboratory
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford
 Project/SAF/SOW/Release #: RC-040

Date: 7-20-12

LvL Batch #: 1207047

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------|--|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>EX</u> | Airbill # <u>7938 0994 5234</u> | |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals | |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Comments: | |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 5. Samples received cooled or <u>ambient?</u> | Temp <u>23.6</u> °C | Cooler # <u>WCH-11-006</u> | |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): | |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals | |
| 7. COC (Client & LvL) signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 12. Samples received within hold times? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| Short holds taken to wet lab? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> 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.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | |
| Person Contacted _____ | Date _____ | | |



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

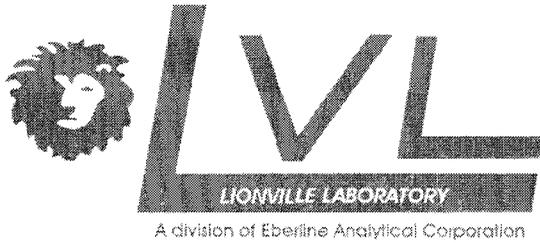
WC-Hanford, Inc.
2620 Fermi Avenue
Richland WA, 99354

Project: RC-040
Project Number: K3955
Project Manager: Joan Kessner

Reported:
08/06/2012 12:11

Analytical Report for TCLP Metals by SW846 1311 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PW60	1207047-01	Other Solid	07/19/2012 09:44	07/20/2012 10:00



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

Case Narrative

Client: WC-HANFORD RC-040
LVL#: 1207047
SDG/SAF#: K3955/RC-040

W.O.#: 60049-001-001-0001-00
Date Received: 07-20-12

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 analysis of 1 TCLP leachate sample.
2. The sample was prepared and analyzed in accordance with methods listed on the data report forms.

The TCLP leachate sample was prepared with a 5-fold dilution for ICP metals due to insufficient sample volume.

The TCLP leachate sample was prepared with a 5-fold dilution for Mercury analyses due to insufficient sample volume.

3. All analyses were performed within the required holding times.
4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).
7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation, MB value less than 5% of the RCRA limit, or samples 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 duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit criteria. The $\pm 20\%$ RPD control limit applies to sample results greater than ten times the MDL.
11. The TCLP extract from sample J1PW60 was selected for the matrix spike (MS) for this analytical batch.

The MS recoveries for all analytes in the TCLP extract were above 50%.

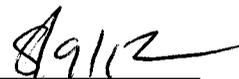
The matrix spike (MS) concentration for Mercury was equivalent to the regulatory level (200 ppb) as per SW846 method 1311. The required spike concentration is above the linear range of the instrument, resulting in a 10-fold dilution (the matrix spike was prepared with a 5-fold dilution). The MS recovery was greater than 50% as per method criteria.

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



Iain Daniels
Laboratory Manager
Lionville Laboratory

alm/07-047



Date



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

WC-Hanford, Inc.
2620 Fermi Avenue
Richland WA, 99354

Project: RC-040
Project Number: K3955
Project Manager: Joan Kessner

Reported:
08/06/2012 12:11

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



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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-040 Project Number: K3955 Project Manager: Joan Kessner	Reported: 08/06/2012 12:11
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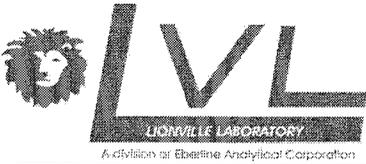
JIPW60
1207047-01 (Other Solid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

TCLP Metals by SW846 1311 6000/7000 series

Arsenic	0.0750 U	0.0750	mg/L	1	L208004	08/02/2012	08/03/2012	6010
Barium	0.0554	0.00500	mg/L	1	L208004	08/02/2012	08/03/2012	6010
Cadmium	0.286	0.0150	mg/L	1	L208004	08/02/2012	08/03/2012	6010
Chromium	0.0153 B	0.0250	mg/L	1	L208004	08/02/2012	08/03/2012	6010
Lead	0.0389 B	0.0500	mg/L	1	L208004	08/02/2012	08/03/2012	6010
Selenium	0.0215 B	0.100	mg/L	1	L208004	08/02/2012	08/03/2012	6010
Silver	0.0300 U	0.0300	mg/L	1	L208004	08/02/2012	08/03/2012	6010
Mercury	0.00100 U	0.00100	mg/L	1	L207189	07/30/2012	07/31/2012	7470



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-------------------------------------------------------------	---------------------------------------------------------------------------	-------------------------------

TCLP Metals by SW846 1311 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207189 - SW 7470A Prep									
Blank (L207189-BLK1)					Prepared: 07/30/2012 Analyzed: 07/31/2012				
Mercury	0.000200 U	0.000200	mg/L						
Blank (L207189-BLK2)					Prepared: 07/30/2012 Analyzed: 07/31/2012				
Mercury	0.000200 U	0.000200	mg/L						
LCS (L207189-BS1)					Prepared: 07/30/2012 Analyzed: 07/31/2012				
Mercury	0.00532	0.000200	mg/L	0.0050000		106	80-120		
Duplicate (L207189-DUP1)					Source: 1207047-01 Prepared: 07/30/2012 Analyzed: 07/31/2012				
Mercury	0.00100 U	0.00100	mg/L		0.00100 U				20
Matrix Spike (L207189-MS1)					Source: 1207047-01 Prepared: 07/30/2012 Analyzed: 07/31/2012				
Mercury	0.206	0.0100	mg/L	0.20000	0.00100 U	103	50-1000		
Batch L208004 - SW 3010A									
Blank (L208004-BLK1)					Prepared: 08/02/2012 Analyzed: 08/03/2012				
Arsenic	0.0150 U	0.0150	mg/L						
Barium	0.00100 U	0.00100	mg/L						
Cadmium	0.00300 U	0.00300	mg/L						
Chromium	0.00500 U	0.00500	mg/L						
Lead	0.0100 U	0.0100	mg/L						
Selenium	0.0200 U	0.0200	mg/L						
Silver	0.00600 U	0.00600	mg/L						
Blank (L208004-BLK3)					Prepared: 08/02/2012 Analyzed: 08/03/2012				
Arsenic	0.0750 U	0.0750	mg/L						
Barium	0.00500 U	0.00500	mg/L						
Cadmium	0.0150 U	0.0150	mg/L						
Chromium	0.0250 U	0.0250	mg/L						
Lead	0.0500 U	0.0500	mg/L						
Selenium	0.100 U	0.100	mg/L						
Silver	0.0300 U	0.0300	mg/L						



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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-040 Project Number: K3955 Project Manager: Joan Kessner	Reported: 08/06/2012 12:11
-------------------------------------------------------------	---------------------------------------------------------------------------	-------------------------------

TCLP Metals by SW846 1311 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch L208004 - SW 3010A

LCS (L208004-BS1)		Prepared: 08/02/2012 Analyzed: 08/03/2012							
Arsenic	10.0	0.0150	mg/L	10.000		100	80-120		
Barium	5.02	0.00100	mg/L	5.0000		100	80-120		
Cadmium	0.259	0.00300	mg/L	0.25000		104	80-120		
Chromium	0.527	0.00500	mg/L	0.50000		105	80-120		
Lead	2.54	0.0100	mg/L	2.5000		101	80-120		
Selenium	9.84	0.0200	mg/L	10.000		98.4	80-120		
Silver	0.505	0.00600	mg/L	0.50000		101	80-120		

Duplicate (L208004-DUP2)		Source: 1207047-01		Prepared: 08/02/2012 Analyzed: 08/03/2012					
Arsenic	0.0750	U	0.0750	mg/L		0.0750 U			20
Barium	0.0559		0.00500	mg/L		0.0554		0.808	20
Cadmium	0.287		0.0150	mg/L		0.286		0.576	20
Chromium	0.0156	B	0.0250	mg/L		0.0153		2.17	20
Lead	0.0386	B	0.0500	mg/L		0.0389		0.736	20
Selenium	0.0183	B	0.100	mg/L		0.0215		16.1	20
Silver	0.0300	U	0.0300	mg/L		0.0300 U			20

Matrix Spike (L208004-MS2)		Source: 1207047-01		Prepared: 08/02/2012 Analyzed: 08/03/2012					
Arsenic	5.30		0.0750	mg/L	5.0000	0.0750 U	106	50-1000	
Barium	98.2		0.00500	mg/L	100.00	0.0554	98.1	50-1000	
Cadmium	1.38		0.0150	mg/L	1.0000	0.286	109	50-1000	
Chromium	5.34		0.0250	mg/L	5.0000	0.0153	106	50-1000	
Lead	5.04		0.0500	mg/L	5.0000	0.0389	100	50-1000	
Selenium	1.03		0.100	mg/L	1.0000	0.0215	101	50-1000	
Silver	5.33		0.0300	mg/L	5.0000	0.0300 U	107	50-1000	

SAMPLE DIGESTION RECORD

Digestion Batch #: L208004
 Date/Time Initiated: 8/12/12 1100
 Date/Time Completed: 8/12/12 1830
 Analyst: MM
 Matrix (circle): Soil ~~Water~~ Other (TCAP leachates)
 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: 96°
 BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <	Type: To/Sol/TC	Texture	Color / Appearance	Artifact	Turb
1207032-01		50	50		TC		yellowish/clear		
L208004-DUP1		50	50				↓		
MS1	0.5	50	50				↓		
1207047-01		10	50				yellow/cloudy	dilution due to	
L208004-DUP2		10	50				↓	some what limited	
MS2	0.1	10	50				↓	volume	
1207052-01		50	50				slightly yellow/clear		RAD
L208004-DUP3		50	50				↓ ↓ ↓		
MS3	0.5	50	50				amber/misty particulates		↓
1207052-02		50	50				clear/colorless		
1207053-01		50	50				amber/clear		
L208004-DUP4		50	50				↓		
MS4	0.5	50	50				↓ / misty particulates		
1207058-01		10	10 50				slightly yellow/clear		
L208004-DUP5		10	10 50				↓		
MS5	0.1	10	10 50				↓		
BLK1		50	50				clear/colorless		
BLK2		50	50				↓		
BLK3		50	50				↓		
BLK4		50	50				↓		
BS1	0.5	50	50				↓		

MM 8/12/12

Spiking IDs / Expiration Date:
 MS#: 1101384
1208459
 LCS#: 1208458

Reagent IDs:
 HNO₃ L08023
 HCl _____
 H₂O₂ _____
 1:1 HNO₃ _____
 1:1 HCl 637-069-01

File ID#: _____
 Data Review By/Date:
AM 8/16/12

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

BLK2 = L207185-BLK1 (for 1207032, 1207058)
 BLK3 = L207155-BLK1 (for 1207047, 1207053)
 BLK4 = L207179-BLK1 (for 1207052)

Page #:

PREPARATION BENCH SHEET

L208004

Lionville Laboratory

Printed: 8/2/2012 7:12:58PM

Prepared using: METALS - SW 3010A

(No Surrogate)

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	Spike ul	Surrogate ul	Client	Extraction Comments
1207032-01	1311/6010B TCLP RCRA ICP MET	08/02/2012 10:40	50	50					WC-Hanford, Inc.	
1207047-01	1311/6010B TCLP RCRA ICP MET	08/02/2012 10:40	10	50					WC-Hanford, Inc.	
1207052-01	1311/6010B TCLP RCRA ICP MET	08/02/2012 10:40	50	50					Navarro Research & Engineering, Inc.	
1207052-02	1311/6010B TCLP RCRA ICP MET	08/02/2012 10:40	50	50					Navarro Research & Engineering, Inc.	
1207053-01	1311/6010B TCLP RCRA ICP MET	08/02/2012 10:40	50	50					ANR Pipeline	
1207058-01	1311/6010B TCLP RCRA ICP MET	08/02/2012 10:40	10	50					Teledyne Brown Engineering	
1208004-BLK1	QC	08/02/2012 10:40	50	50						
1208004-BLK2	QC	08/02/2012 10:40	50	50						L207185-for 1207032/1207058
1208004-BLK3	QC	08/02/2012 10:40	50	50						L207155-for 1207047/1207053
1208004-BLK4	QC	08/02/2012 10:40	50	50						L207179-for 1207052
1208004-BS1	QC	08/02/2012 10:40	50	50	1200458					
1208004-DUP1	QC	08/02/2012 10:40	50	50		1207032-01				
1208004-DUP2	QC	08/02/2012 10:40	10	50		1207047-01				
1208004-DUP3	QC	08/02/2012 10:40	50	50		1207052-01				
1208004-DUP4	QC	08/02/2012 10:40	50	50		1207053-01				
1208004-DUP5	QC	08/02/2012 10:40	10	50		1207058-01				
1208004-MS1	QC	08/02/2012 10:40	50	50	1101384	1207032-01	500			
1208004-MS2	QC	08/02/2012 10:40	10	50	1101384	1207047-01	100			
1208004-MS3	QC	08/02/2012 10:40	50	50	1101384	1207052-01	500			
1208004-MS4	QC	08/02/2012 10:40	50	50	1101384	1207053-01	500			

Extracts Relinquished By *M. Bell*

Date *8/2/12*

Extracts Received By *Procter*

Date *08/03/12*

PREPARATION BENCH SHEET

L208004

Lionville Laboratory

Printed: 8/2/2012 7:12:58PM

Prepared using: METALS - SW 3010A

(No Surrogate)

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	Spike <small>ul</small>	Surrogate <small>ul</small>	Client	Extraction Comments
L208004-MS5	QC	08/02/2012 10:40	10	50	1101384	1207058-01	100			

10000000

Extracts Relinquished By MML Date 8/2/12

Extracts Received By Roster Date 08/02/12

Start Date: <u>7-25-12</u>	End Date: <u>7-26-12</u>	Tumbler Speed: <u>30 RPM</u>
Start Time: <u>12:53</u>	End Time: <u>7:00</u>	Leachate Batch #: <u>L207155</u>
Analyst: <u>RH</u>	Analyst: <u>RH</u>	Leachate Page: <u>1 of 1</u>
SOP: <u>SPI-1311.1</u>	Method: <u>1311.1</u>	Room Temp. (°C): Start <u>21</u> / Finish <u>21</u>
Room Temp. Acceptance Criteria: 23°C ± 2°		

Lvl #: <u>1207047-01</u>	Initial Filtration Data and Comments:
Client ID#: <u>JIPW60</u>	Solids: _____ % / NA
pH After 5 Min: <u>5.26</u>	
pH After Acid/Heat: <u>1.98</u>	
Extraction Fluid/pH: <u>#1 4.97</u>	
Sample Wt.(g): <u>25</u>	
Extract Fluid Vol.(mL): <u>500</u>	
pH After Extraction: <u>4.96</u>	Initial Filtrate Added: _____

Lvl #: <u>1207053-01</u>	Initial Filtration Data and Comments:
Client ID#: <u>MESCRUB1</u>	Solids: _____ % / NA
pH After 5 Min: <u>4.51</u>	*RAD I
pH After Acid/Heat: <u>N/A</u>	
Extraction Fluid/pH: <u>#1 4.97</u>	
Sample Wt.(g): <u>50</u>	
Extract Fluid Vol.(mL): <u>1000</u>	
pH After Extraction: <u>5.01</u>	Initial Filtrate Added: _____

Lvl #: <u>1207054-01</u>	Initial Filtration Data and Comments:
Client ID#: <u>JIPW65</u>	Solids: _____ % / NA
pH After 5 Min: <u>6.23</u>	
pH After Acid/Heat: <u>1.94</u>	
Extraction Fluid/pH: <u>#1 4.97</u>	
Sample Wt.(g): <u>25</u>	
Extract Fluid Vol.(mL): <u>500</u>	
pH After Extraction: <u>5.02</u>	Initial Filtrate Added: _____

Lvl #: <u>L207155</u>	Initial Filtration Data and Comments:
Client ID#: <u>N/A</u>	Solids: _____ % / NA
pH After 5 Min: <u>N/A</u>	Blank
pH After Acid/Heat: <u>N/A</u>	
Extraction Fluid/pH: <u>N/A</u>	
Sample Wt.(g): <u>N/A</u>	
Extract Fluid Vol.(mL): <u>N/A</u>	
pH After Extraction: _____	Initial Filtrate Added: _____

Standard	ID	Prep Date	Expir Date	pH Acceptance Criteria
Fluid #1	<u>1200780</u>	<u>6-18-12</u>	<u>12-18-12</u>	<u>4.93 ± 0.05</u>
Fluid #2	_____	_____	_____	<u>2.88 ± 0.05</u>