



PNNL- SA-61331

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# Geochemical Study of a Grab Sample Collected From 216 B-55 Crib in the 200-SC-1 Operable Unit

Michael Lindberg

JULY 2008



07/09/08 11:38

To: Dana Widrig

From: Michael J. Lindberg

A handwritten signature in black ink, appearing to read 'MJL', is centered below the name 'Michael J. Lindberg'.

Environmental Sciences Laboratory  
Energy and Environment Directorate, Pacific Northwest National Laboratory

Subject: Geochemical Study of a Grab Sample Collected From 216 B-55 Crib in the 200-SC-1 Operable Unit,  
Sample Delivery Group ESL080024, SAF Number F08-031

This letter contains the following information for sample delivery group ESL080024

- Cover Sheet
- Narrative
- Analytical Results
- Quality Control
- Chain of Custodies

## **Introduction**

On May 15, 2008 a grab sample was received from 216 B-55 Crib in the 200-SC-1 Operable Unit for geochemical studies.

## **Analytical Results/Methodology**

The analyses for this project were performed at the 325 building located in the 300 Area of the Hanford Site. The analyses were performed according to Pacific Northwest National Laboratory (PNNL) approved procedures and/or nationally recognized test procedures. The data sets include the sample identification numbers, analytical results, estimated quantification limits (EQL), and quality control data.

## **Quality Control**

The preparatory and analytical quality control requirements, calibration requirements, acceptance criteria, and failure actions are defined in the on-line QA plan "Conducting Analytical Work in Support of Regulatory Programs" (CAW). This QA plan implements the Hanford Analytical Services Quality Assurance Requirements Documents (HASQARD) for PNNL.

## **Definitions**

Dup      Duplicate  
RPD      Relative Percent Difference

## **Sample Receipt**

The sample was received with a chain of custody (COC) and was analyzed according to the sample identification number supplied by the client. The sample was refrigerated upon receipt until prepared for analysis.

The sample was received with custody seals intact unless noted in the Case Narrative.

## **Holding Times**

Holding time is defined as the time from sample preparation to the time of analyses. The prescribed holding times were met for all analytes unless noted in the Case Narrative.

## **Analytical Results**

All reported analytical results meet the requirements of the CAW or client specified SOW unless noted in the case narrative.

## Case Narrative Report

### Test reports/summary forms for blank samples

No Discrepancies Noted

### Laboratory control samples (LCS):

No Discrepancies Noted

### Post spike (PS) and post spike duplicate (PSD) data

No Discrepancies Noted

### Analytical duplicate data

No Discrepancies Noted

### Hold Time Report

No Discrepancies Noted

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## SAMPLES INCLUDED IN THIS REPORT

### 216-B-55 C6743

HEIS No.	Laboratory ID	Matrix	Date Collected	Date Received
B1VDW3	0806012-01	SOIL	5/13/08 07:35	5/15/08 12:50

The following analyses were performed on the following samples included in this report:

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1:1 DI Water Extract

Anions By Ion Chromatography

Moisture Content

Percent Solids

### **SAMPLES ANALYZED IN THIS REPORT**

<b>HEIS No.</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Received</b>
B1VDW3	0806012-01	SOIL	5/13/08 07:35	5/15/08 12:50

**Wet Chemistry**

**Moisture Content (% by Weight) by AGG-WC-001**

<b>Lab ID</b>	<b>HEIS No.</b>	<b>Results</b>	<b>EQL</b>	<b>Analyzed</b>	<b>Batch</b>
0806012-01	B1VDW3	3.01	N/A	6/19/08	8F13002

### Anions by Ion Chromatography

CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
<b>HEIS No.</b>	<b>B1VDW3</b>	<b>Lab ID: 0806012-01</b>					
16984-48-8	Fluoride	<2.07	ug/g dry	2.07	6/19/08	8F17009	AGG-IC-001
16887-00-6	Chloride	<5.16	ug/g dry	5.16	6/19/08	8F17009	AGG-IC-001
14797-65-0	Nitrite	<10.3	ug/g dry	10.3	6/19/08	8F17009	AGG-IC-001
24959-67-9	Bromide	<10.3	ug/g dry	10.3	6/19/08	8F17009	AGG-IC-001
14797-55-8	Nitrate	<10.3	ug/g dry	10.3	6/19/08	8F17009	AGG-IC-001
14808-79-8	Sulfate	44.5	ug/g dry	15.5	6/19/08	8F17009	AGG-IC-001
14265-44-2	Phosphate	<15.5	ug/g dry	15.5	6/19/08	8F17009	AGG-IC-001

**Anions by Ion Chromatography - Quality Control**  
**Environmental Science Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 8F17009 - 1:1 Water Extract (IC)**

**Blank (8F17009-BLK1)**

Prepared: 06/17/08 Analyzed: 06/19/08

Fluoride	<0.200	0.200	ug/g wet							
Chloride	<0.500	0.500	"							
Nitrite	<1.00	1.00	"							
Bromide	<1.00	1.00	"							
Nitrate	<1.00	1.00	"							
Sulfate	<1.50	1.50	"							
Phosphate	<1.50	1.50	"							

**LCS (8F17009-BS1)**

Prepared: 06/17/08 Analyzed: 06/19/08

Fluoride	2.09	0.200	ug/g wet	2.010		104	80-120			
Chloride	5.16	0.500	"	5.025		103	80-120			
Nitrite	9.64	1.00	"	10.05		96.0	80-120			
Bromide	10.2	1.00	"	10.05		102	80-120			
Nitrate	10.4	1.00	"	10.05		103	80-120			
Sulfate	15.2	1.50	"	15.08		101	80-120			
Phosphate	15.0	1.50	"	15.08		99.2	80-120			

**Duplicate (8F17009-DUP1)**

**Source: 0806012-01**

Prepared: 06/17/08 Analyzed: 06/19/08

Fluoride	<2.07	2.07	ug/g dry		ND					20
Chloride	<5.17	5.17	"		ND					20
Nitrite	<10.3	10.3	"		ND					20
Bromide	<10.3	10.3	"		ND					20
Nitrate	<10.3	10.3	"		ND					20
Sulfate	48.1	15.5	"		44.5			7.80		20
Phosphate	<15.5	15.5	"		ND					20



**Anions by Ion Chromatography - Quality Control**  
**Environmental Science Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 8F17009 - 1:1 Water Extract (IC)**

<b>Post Spike (8F17009-PS1)</b>	<b>Source: 0806012-01</b>			Prepared: 06/17/08		Analyzed: 06/19/08	
Fluoride	0.86		ug/mL	0.769	0.019	109	75-125
Chloride	2.3		"	1.92	0.288	105	75-125
Nitrite	3.68		"	3.85	ND	95.7	75-125
Bromide	3.85		"	3.85	ND	100	75-125
Nitrate	4.55		"	3.85	0.334	110	75-125
Sulfate	10.1		"	5.77	4.31	99.8	75-125
Phosphate	5.71		"	5.77	ND	98.9	75-125

<b>COLLECTOR</b> NCO Sampler <i>Kristi Roseme, McIntyre</i>	<b>COMPANY CONTACT</b> TRENT, SJ	<b>TELEPHONE NO.</b> 373-5869	<b>PROJECT COORDINATOR</b> WDRIG, DL	<b>PRICE CODE</b> 8N	<b>DATA TURNAROUND</b> 45 Days / 45 Days
<b>SAMPLING LOCATION</b> C6743, 1-004-SP	<b>PROJECT DESIGNATION</b> 216-B-55 Supplemental Characterization	<b>FIELD LOGBOOK NO.</b> 145F-N-583-1	<b>SAF NO.</b> F08-031	<b>AIR QUALITY</b> <input type="checkbox"/>	
<b>ICE CHEST NO.</b>	<b>FIELD LOGBOOK NO.</b> 145F-N-583-1	<b>ACTUAL SAMPLE DEPTH</b> 27.5' - 30'	<b>COA</b> 1230551278	<b>METHOD OF SHIPMENT</b> GOVERNMENT VEHICLE	<b>10</b>
<b>SHIPPED TO</b> Environmental Sciences Laboratory	<b>OFFSITE PROPERTY NO.</b> N/A	<b>BILL OF LADING/AIR BILL NO.</b> N/A			

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SPECIAL HANDLING AND/OR STORAGE
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)	Cool-d/C	GRP	1	60mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Radioactive Tie TO: B1VDT6 or B1TFM2

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
B1VDW3	SOIL	5-13-08	0735	✓	

CHAIN OF POSSESSION	RECEIVED BY/STORED IN	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM <i>ARW/Inte/qa/14</i>	<i>R-55 site Ref</i>	5-13-08 0830	<i>R-55 site Ref</i>	5-13-08 0830				
RELINQUISHED BY/REMOVED FROM <i>R-55 site Ref</i>	<i>ARW/Inte/qa/14</i>	5-14-08 1100	<i>ARW/Inte/qa/14</i>	5-14-08 1100				
RELINQUISHED BY/REMOVED FROM <i>ARW/Inte/qa/14</i>	<i>MO 745 Ref #1</i>	5-14-08 1230	<i>MO 745 Ref #1</i>	5-14-08 1230				
RELINQUISHED BY/REMOVED FROM <i>ARW/Inte/qa/14</i>	<i>Davis/Inte/qa/14</i>	5-14-08 1230	<i>Davis/Inte/qa/14</i>	5-14-08 1230				
RELINQUISHED BY/REMOVED FROM <i>ARW/Inte/qa/14</i>	<i>D Smith</i>	5-15-08 1230	<i>D Smith</i>	5-15-08 1230				

\*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.  
 \*\* Analytical batch QC must be run on a sample associated with this SAF.  
 (1) IC Anions - 300.0 {Fluoride, Nitrate, Nitrite, Sulfate}