

January 24, 2011

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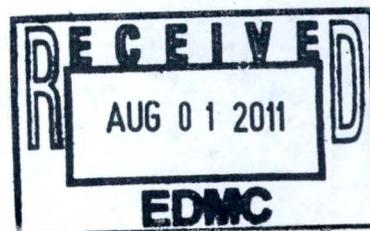
REVISION 1

PNNL-SA-62651

Analytical Data Report for Water Samples Collected From Operable Unit BP-5 B Well

Michael Lindberg

September 2008



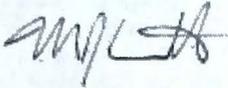
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09/29/08 09:21

To: Dana Widrig

From: Michael J. Lindberg



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

Subject: Analytical Data for Ground Water Samples Collected From Operable Unit BP-5 B Well (C5859/C6226),
Sample Delivery Group ESL080001, SAF Number F08-005

This letter contains the following information for sample delivery group ESL080001

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

Introduction

Between January 10, 2008 and February 26, 2008 groundwater samples were received from Operable Unit BP-5 B Well (C5859/C6226) 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

Samples were received with a chain of custody (COC) and were analyzed according to the sample identification numbers supplied by the client. All Samples were refrigerated upon receipt until prepared for analysis.

All samples were 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.

Hold Time:

Hold Times were not met for pH, Nitrite and Nitrate. Samples were received from the field past the required hold time.

Preparation Blank (PB):

No blanks were analyzed.

Duplicate (DUP):

Duplicates are not required.

Laboratory Control Samples (LCS):

No LCS were analyzed.

Post Spike (PS):

Post-Spike are not required.

Matrix Spike (MS):

No MS were analyzed.

Other QC Criteria:

DISCLAIMER

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SAMPLES INCLUDED IN THIS REPORT

200 BP 5 OU, C5859/C6226 B-Well

HEIS No.	Laboratory ID	Matrix	Date Collected	Date Received
B1T201	0802010-01	WATER	1/8/08 09:30	1/10/08 08:15
B1RLW2	0802036-01	WATER	2/20/08 10:50	2/26/08 13:50

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

Anions By Ion Chromatography

Alkalinity, Titrimetic (pH 4.5)

Metals Water by ICPMS

Metals Water by ICPOES

pH of Waters By Electrode

Specific Conductance

Tc_U Water by ICPMS

SAMPLES ANALYZED IN THIS REPORT

HEIS No.	Laboratory ID	Matrix	Date Collected	Date Received
B1T201	0802010-01	WATER	1/8/08 09:30	1/10/08 08:15
B1RLW2	0802036-01	WATER	2/20/08 10:50	2/26/08 13:50

Wet Chemistry**Alkalinity as CaCO₃ (ug/mL) by Standard Methods 2320B**

Lab ID	HEIS No.	Results	EQL	Analyzed	Batch
0802010-01	B1T201	6.49E2	N/A	1/21/08	8D25005
0802036-01	B1RLW2	1.25E2	N/A	4/02/08	8D02001

Wet Chemistry

Specific Conductance (EC) (mS/cm) by EPA 120.1

Lab ID	HEIS No.	Results	EQL	Analyzed	Batch
0802010-01	B1T201	2.82E0	5.00E-3	1/21/08	8D25005
0802036-01	B1RLW2	1.33E0	5.00E-3	4/02/08	8D01001

Wet Chemistry

pH (pH Units) by AGG-pH-001

Lab ID	HEIS No.	Results	EQL	Analyzed	Batch
0802010-01	B1T201	8.20E0	N/A	1/21/08	8D25005
0802036-01	B1RLW2	7.68E0	N/A	4/02/08	8D01001

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Anions by Ion Chromatography

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CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
HEIS No.	B1T201	Lab ID:		0802010-01			
16984-48-8	Fluoride	7.81E1	ug/mL	2.00E1	1/22/08	8H13001	AGG-IC-001
16887-00-6	Chloride	6.32E1	ug/mL	5.00E1	1/22/08	8H13001	AGG-IC-001
14797-65-0	Nitrite	<1.00E2	ug/mL	1.00E2	1/22/08	8H13001	AGG-IC-001
14797-55-8	Nitrate	3.26E2	ug/mL	1.00E2	1/22/08	8H13001	AGG-IC-001
14808-79-8	Sulfate	4.58E2	ug/mL	1.50E2	1/22/08	8H13001	AGG-IC-001
14265-44-2	Phosphate	<1.50E2	ug/mL	1.50E2	1/22/08	8H13001	AGG-IC-001
HEIS No.	B1RLW2	Lab ID:		0802036-01			
16984-48-8	Fluoride	1.38E0	ug/mL	2.00E-1	4/03/08	8D02005	AGG-IC-001
16887-00-6	Chloride	3.08E1	ug/mL	5.00E-1	4/03/08	8D02005	AGG-IC-001
14797-65-0	Nitrite	2.33E1	ug/mL	1.00E0	4/03/08	8D02005	AGG-IC-001
14797-55-8	Nitrate	2.82E2	ug/mL	1.00E1	4/04/08	8D02005	AGG-IC-001
14808-79-8	Sulfate	1.80E2	ug/mL	1.50E1	4/04/08	8D02005	AGG-IC-001
14265-44-2	Phosphate	<1.50E0	ug/mL	1.50E0	4/03/08	8D02005	AGG-IC-001

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 Total Metals by PNNL-AGG-ICP-AES

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CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
HEIS No.	B1T201	Lab ID: 0802010-01					
7429-90-5	Aluminum	5.43E2	ug/L	5.22E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-39-3	Barium	3.32E1	ug/L	1.95E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-70-2	Calcium	6.62E3	ug/L	8.66E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-48-4	Cobalt	<2.31E1	ug/L	2.31E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-47-3	Chromium	4.05E1	ug/L	1.07E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-50-8	Copper	4.38E1	ug/L	1.27E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-09-7	Potassium	5.26E3	ug/L	1.52E3	1/24/08	8E01005	PNNL-AGG-ICP-AES
7439-95-4	Magnesium	5.59E3	ug/L	1.50E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7439-96-5	Manganese	1.06E2	ug/L	7.62E0	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-02-0	Nickel	<2.84E1	ug/L	2.84E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-62-2	Vanadium	<1.48E2	ug/L	1.48E2	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-66-6	Zinc	7.66E1	ug/L	5.06E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-23-5	Sodium	7.51E5	ug/L	6.48E2	1/24/08	8E01005	PNNL-AGG-ICP-AES
HEIS No.	B1RLW2	Lab ID: 0802036-01					
7429-90-5	Aluminum	<5.22E1	ug/L	5.22E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-39-3	Barium	8.31E1	ug/L	1.95E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-70-2	Calcium	1.12E5	ug/L	8.66E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-48-4	Cobalt	<2.31E1	ug/L	2.31E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-47-3	Chromium	<1.07E1	ug/L	1.07E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-50-8	Copper	<1.27E1	ug/L	1.27E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-09-7	Potassium	1.42E4	ug/L	1.52E3	5/01/08	8D11003	PNNL-AGG-ICP-AES
7439-95-4	Magnesium	3.41E4	ug/L	1.50E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7439-96-5	Manganese	9.44E2	ug/L	7.62E0	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-02-0	Nickel	<2.84E1	ug/L	2.84E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-62-2	Vanadium	<1.48E2	ug/L	1.48E2	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-66-6	Zinc	<5.06E1	ug/L	5.06E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-23-5	Sodium	7.61E4	ug/L	6.48E2	5/01/08	8D11003	PNNL-AGG-ICP-AES

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Radionuclides By ICP-MS

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CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
HEIS No.	B1T201	Lab ID:		0802010-01			
14133-76-7	Technetium-99	<3.50E-1	ug/L	3.50E-1	1/22/08	8D23012	PNNL-AGG-415
	Uranium 238	5.11E2	ug/L	6.76E0	1/22/08	8D23012	PNNL-AGG-415
HEIS No.	B1RLW2	Lab ID:		0802036-01			
14133-76-7	Technetium-99	5.80E-2	ug/L	1.75E-2	4/16/08	8D16003	PNNL-AGG-415
	Uranium 238	6.42E1	ug/L	3.38E-1	4/16/08	8D16003	PNNL-AGG-415

CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
HEIS No.	B1T201	Lab ID: 0802010-01					
14378-38-2	Silver	1.52E-1	ug/L	7.40E-2	1/24/08	8D23011	PNNL-AGG-415
14336-64-2	Cadmium	1.35E0	ug/L	1.65E-1	1/24/08	8D23011	PNNL-AGG-415
14265-72-6	Antimony	1.18E0	ug/L	1.20E-1	1/24/08	8D23011	PNNL-AGG-415
13966-28-4	Lead	4.36E-1	ug/L	2.44E-1	1/24/08	8D23011	PNNL-AGG-415
HEIS No.	B1RLW2	Lab ID: 0802036-01					
14378-38-2	Silver	<7.40E-2	ug/L	7.40E-2	4/24/08	8D21002	PNNL-AGG-415
14336-64-2	Cadmium	8.02E-1	ug/L	1.65E-1	4/24/08	8D21002	PNNL-AGG-415
14265-72-6	Antimony	2.48E0	ug/L	1.20E-1	4/24/08	8D21002	PNNL-AGG-415
13966-28-4	Lead	<2.44E-1	ug/L	2.44E-1	4/24/08	8D21002	PNNL-AGG-415

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F08-005-020

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COLLECTOR

NCO Sampler

COMPANY CONTACT

TRENT, SJ

TELEPHONE NO.

373-5869

PROJECT COORDINATOR

TRENT, SJ

PRICE CODE 7N

DATA TURNAROUND

SAMPLING LOCATION

C5859, I-Perched

225'

PROJECT DESIGNATION

200-BP-5 OU Characterization for B Well - Groundwater

SAF NO. F08-005

AIR QUALITY

45 Days / 45 Days

ICE CHEST NO.

FIELD LOGBOOK NO.

ACTUAL SAMPLE DEPTH

COA 123512ES10

METHOD OF SHIPMENT GOVERNMENT VEHICLE

SHIPPED TO

Environmental Sciences Laboratory

OFFSITE PROPERTY NO.

N/A

BILL OF LADING/AIR BILL NO.

N/A

MATRIX*

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

POSSIBLE SAMPLE HAZARDS/ REMARKS

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)

PRESERVATION

Cool~4C

TYPE OF CONTAINER

G/P

NO. OF CONTAINER(S)

1

VOLUME

1000mL

SAMPLE ANALYSIS

KD - Batch;

SPECIAL HANDLING AND/OR STORAGE

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SAMPLE NO.

BT201

MATRIX*

WATER

SAMPLE DATE SAMPLE TIME

1/8/08 0930 ✓

Lot # 26057

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

Chris Fulton

1-8-08 1330

Mo 745 Fidge #1

1-8-08

1330

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

110745 Ref #1

1-10-08

0700

Kevin Patterson

1-10-08

0700

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

Kevin Patterson

1-10-08

0815

Fluor Hanford

1-10-08

0815

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

LABORATORY SECTION

RECEIVED BY

TITLE

DATE/TIME

FINAL SAMPLE DISPOSITION

DISPOSAL METHOD

DISPOSED BY

DATE/TIME

080001

EC, 2R16

COLLECTOR
NCO Sampler *D. Connolly*
SAMPLING LOCATION
I-128 *C6226 258'*
ICE CHEST NO.

COMPANY CONTACT
TRENT, SJ
TELEPHONE NO.
373-5869
PROJECT DESIGNATION
200-BP-5 OU Characterization for B Well - Groundwater
FIELD LOGBOOK NO.
HNF-N-503-1 1/2
OFFSITE PROPERTY NO.
N/A

PROJECT COORDINATOR
TRENT, SJ
SAF NO.
F08-005
COA
123512ES10
BILL OF LADING/AIR BILL NO.
N/A

PRICE CODE 7N
AIR QUALITY
METHOD OF SHIPMENT
GOVERNMENT VEHICLE

DATA
TURNAROUND
45 Days / 45
Days

SHIPPED TO
Environmental Sciences Laboratory

MATRIX* **POSSIBLE SAMPLE HAZARDS/ REMARKS**
Air Contains Radioactive Material at concentrations
Drum that are not regulated for transportation per 49
Liquids CFR but are not releasable per DOE Order
DS=Drum 5400.5 (1990/1993)
Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

PRESERVATION None Cool~4C
TYPE OF CONTAINER P G/P
NO. OF CONTAINER(S) 1 1
VOLUME 1L 1000mL

SPECIAL HANDLING AND/OR STORAGE
Radioactive tie to B1RLW1

SAMPLE ANALYSIS SEE ITEM (1) IN KD - Batch;
SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B1RLW2	WATER	2-20-08	1050

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
<i>D. Connolly</i>	2-20-08 1200	<i>MO-745 Ref 1</i>	2-20-08 1220
<i>MO 745 Ref 1</i>	2-26-08 1200	<i>M.A. White</i>	2-26-08 1200
<i>M.A. White</i>	2-26-08 1350	<i>P. Irwin</i>	2/26/08 1350
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

(1) URANIUM ISOTOPIC RATIOS {Uranium-234/Uranium-238 ratio, Uranium-236/Uranium-238 Ratio, Uranium-238/Uranium-235 Ratio}
Cond 1.199ms
Temp 18.5°C
PH 8.020
Turb <1000 NTU
D.O. 3.20

LABORATORY SECTION RECEIVED BY

TITLE DATE/TIME

FINAL SAMPLE DISPOSITION DISPOSAL METHOD

DISPOSED BY DATE/TIME

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