PES Environmental, Inc.
Engineering & Environmental Services

June 7, 2011

920.071.01

Weyerhaeuser NR Company
PO Box 9777
Mail Stop EC2 2C1
Federal Way, Washington 98063

Attention: Mr. Ken Johnson

DUPLICATE METALS RESULTS FOR GROUNDWATER – MARCH 2011
WEYERHAEUSER EVERETT EAST SITE
EVERETT, WASHINGTON
CONSENT DECREE 97-2027738

Dear Mr. Johnson:

This letter transmits metals results for a duplicate groundwater sample PES Environmental, Inc. (PES) collected in March 2011 at the Weyerhaeuser NR Company (Weyerhaeuser) Everett East Site. The Washington State Department of Ecology (Ecology) initiated the metals sampling activities, and collected samples at the Everett East Site and other properties as part of an area-wide arsenic study. On behalf of Weyerhaeuser, PES collected a field duplicate of Ecology's metals groundwater sample from the Everett East Site.

Procedures. The groundwater sample was collected on March 22, 2011, during Weyerhaeuser's regularly-scheduled quarterly monitoring event at the site. The sample was collected from on-site Weyerhaeuser monitoring well MW-RA-8-3. Sampling was performed using United States Environmental Protection Agency (USEPA) low flow protocols, including the collection of field measurements for pH, conductivity, dissolved oxygen, and temperature to ensure that the sample was representative of aquifer conditions. Field measurements collected during the events are presented on a Groundwater Sampling Form (Attachment A).

PES duplicated Ecology's sample by filling independent containers as close as possible to the time that Ecology's containers were filled. The duplicate groundwater sample was identified as "MW-RA-8-3-032211." Several aliquots of the sample were collected. One aliquot was collected for total metals analysis by placing the groundwater directly into sample containers without field filtering. Two aliquots were collected for dissolved metals analysis: the first was passed through one 0.45-micron filter, and the second was "double-filtered" by passing the groundwater through two separate 0.45-micron filters.

The sample was transported to Weyerhaeuser Analysis and Testing Services (WATS), a state-approved laboratory located in Federal Way, Washington. The sample was analyzed for: total and dissolved arsenic, cadmium, chromium, copper, lead, antimony, and thallium using USEPA Method 200.8; and total and dissolved mercury by USEPA Method 245.

Laboratory Analytical Results. A copy of the WATS analytical laboratory report for the duplicate metals sample (Service Request 11-0418) is included in Attachment B. In the WATS laboratory report, the result designated "Lab ID 001" shows the total metals result, the result designated "Lab ID 002" shows the dissolved metals result, and the result designated "Lab ID 003" shows the double-filtered dissolved metals result.

Laboratory analytical results indicate that total arsenic (0.0036 milligrams per liter [mg/L]) and total copper (0.0008 mg/L) were detected at concentrations above their respective Method Reporting Limits (MRLs). Dissolved arsenic was detected above the MRL in both the filtered and double-filtered samples, at concentrations of 0.0034 and 0.0036 mg/L, respectively. No other total or dissolved metals were detected at or above the MRLs in the analyzed samples.

The laboratory analytical data was reviewed in accordance with USEPA data validation guidelines. The data validation report is included in Attachment B.

PES appreciates the opportunity to assist Weyerhaeuser with this project. Please call one of the undersigned at (206) 529-3980 if you have any questions.

Sincerely,

PES ENVIRONMENTAL, INC.

Daniel A. Balbiani, P.E.
Principal Engineer

Erin Shaver, L.G.
Project Geologist

Enclosures: Attachment A: Groundwater Sampling Form – MW-RA-8-3
Attachment B: Laboratory Analytical Data Report and Data Validation Memo

ATTACHMENT A

Groundwater Sampling Form – MW-RA-8-3

PES Environmental, Inc.

Engineering & Environmental Services

Page:	1 of
Date/Time:	3/22/11
Project Name:	Everett EAST
Job No:	
Recorded By:	L Doody
Sampled By:	L Doody

GROUNDWATER SAMPLING FORM

Well Type:	☑ Monitoring	☐ Extraction	☐ Other	Well No: MW-RA-8-3
Well Material:	☐ PVC	☑ Stainless Steel	☐ Other	

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches)

☑ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet below top of casing): 11.30

Water-Level Depth (WL in feet below top of casing): 6.93

Pump rate: approximately 200 mL/minute

D. Jobe

PURGING METHOD

☐ Bailer - type: _____

☐ Submersible ☐ Centrifugal ☐ Bladder

☑ Peristaltic - Type: MASTERFLEX

PUMP INTAKE SETTING

☐ Bottom ☐ Top ☑ Middle: _____

Depth in feet (BTOC): 28

Screen interval feet (BTOC) from 5 to 10

FIELD PARAMETER MEASUREMENTS

START TIME: _____ STOP TIME: _____ TOTAL GALLONS REMOVED: _____

Time	Gallons Removed	pH	Conductivity (µmhos/cm)	Temperature (°C)	DTW (feet bgs)	DO mg/L	Observations (color, well condition, odor, cloudiness, etc.)
938	1	7.96	391.6	8.7	6.97	1.86	
943		7.52	336.1	8.5	6.97	1.80	Water appears
949		7.35	309.1	8.5	6.97	1.71	Slightly Turbid
952		7.28	300.1	8.5	NM	1.69	
956		7.25	294.4	8.7	NM	1.67	
959		7.25	294.2	8.7	6.97	1.68	

Notes:

WELL SAMPLING

☐ Bailer ☐ Peristaltic

Sample No.	Time	Volume	Analyses	Bottle Type	Preservative
MW-RA-8-3-032211	1020				
MW-RA-8-3-032211	1030	1	Double Filtered AR	Poly	HNO_3

QUALITY CONTROL SAMPLES

Duplicate Sample No.	Time	Volume	Analyses	Bottle Type	Preservative
Field Blank Sample No.	**Time**	**Volume**	**Analyses**	**Bottle Type**	**Preservative**

ATTACHMENT B

Laboratory Analytical Data Report and Data Validation Memo

Weyerhaeuser Analytical and Testing Services
32901 Weyerhaeuser Way South
Federal Way, Washington 98001

Service Request 11-0418

Report

Everett East Site - March 2011

Client ID:	MW-RA-8-3-032211	MW-RA-8-3-032211 dissolved	MW-RA-8-3-032211 double dissolved		
Date Sampled:	03/22/11	03/22/11	03/22/11		
Time Sampled:	1020	1020	1030		Method
Lab ID:	001	002	003	QL	Number
	mg/L				
As	0.0036	0.0034	0.0036	0.0005	E-200.8M
Cd	< 0.0005	< 0.0005	< 0.0005	0.0005	E-200.8M
Cr	< 0.0005	< 0.0005	< 0.0005	0.0005	E-200.8M
Cu	0.0008	< 0.0005	< 0.0005	0.0005	E-200.8M
Hg	< 0.0001	< 0.0001	< 0.0001	0.0001	E-245
Pb	< 0.0005	< 0.0005	< 0.0005	0.0005	E-200.8M
Sb	< 0.0005	< 0.0005	< 0.0005	0.0005	E-200.8M
Tl	< 0.0005	< 0.0005	< 0.0005	0.0005	E-200.8M

Approved: Dan Deprez Date: 04/14/11
Telephone: (253) 924-6188

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98001

Service Request 11-0418

Metals QC Report

Everett East Site - March 2011

Method Blank Report

Element	Method Blank Found
	mg/L
As	< 0.0005
Cd	< 0.0005
Cr	< 0.0005
Cu	< 0.0005
Hg	< 0.0001
Pb	< 0.0005
Sb	< 0.0005
Tl	< 0.0005

Water Laboratory Control Sample Report

Element	LCSW Found	True Value	Lower Limit	Upper Limit	% Recovery
	mg/L				
As	0.0424	0.0400	0.0340	0.0460	106
Cd	0.0409	0.0400	0.0340	0.0460	102
Cr	0.0425	0.0400	0.0340	0.0460	106
Cu	0.0404	0.0400	0.0340	0.0460	101
Hg	0.0020	0.0020	0.0017	0.0023	100
Pb	0.0397	0.0400	0.0340	0.0460	99
Sb	0.0416	0.0400	0.0340	0.0460	104
Tl	0.0380	0.0400	0.0340	0.0460	95

Approved: Dan Deprez Date: 05/10/11
Telephone: (253) 924-6188

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98001

Service Request 11-0418

Metals QC Report

Everett East Site - March 2011

Duplicate Report for Sample 001

Element	Sample Found	Duplicate Found	RPD
	mg/L		
As	0.0036	0.0040	10.5
Cd	< 0.0005	< 0.0005	NC
Cr	< 0.0005	< 0.0005	NC
Cu	0.0008	0.0008	0.0
Hg	< 0.0001	< 0.0001	NC
Pb	< 0.0005	< 0.0005	NC
Sb	< 0.0005	< 0.0005	NC
Tl	< 0.0005	< 0.0005	NC

Spike Report for Sample 001

Element	Sample Found	Spike Found	Net Spike	Spike Level	% Recovery
	mg/L				
As	0.0036	0.0461	0.0425	0.0400	106
Cd	< 0.0005	0.0411	0.0411	0.0400	103
Cr	< 0.0005	0.0424	0.0424	0.0400	106
Cu	0.0008	0.0385	0.0377	0.0400	94
Hg	< 0.0001	0.00195	0.00195	0.0020	98
Pb	< 0.0005	0.0401	0.0401	0.0400	100
Sb	< 0.0005	0.0423	0.0423	0.0400	106
Tl	< 0.0005	0.0389	0.0389	0.0400	97

Approved: Dan Deprez Date: 05/10/11
Telephone: (253) 924-6188

Weyerhaeuser

Service Request

Analytical Chemistry and Microstructure

11-0418

Title: Everett East Site - March 2011

Samples: 3 ***Tests:*** 6 ***Last Samp:*** 003	***Project Number:***	***PO:***
SAP Order Number: 90-0000-2504	***Order Desc:*** 2760-Everett B-Analy Test WY	
Date Received: 03/22/11	***Date Desired:*** 04/12/11	***Date Completed:***
Submitter: Shaver, Erin	***Location:*** Seattle, WA	***Phone:*** (206) 529-3980
Reviewer: Catalano, Dennis	***Location:*** WTC 2F25	***Phone:*** (253) 924-6242
Copy To:		
Record Book:	***Ref Request:*** 10-1935	***Disposal:***
Comments: Samples were a split with the State.		

Group	*Analysis*	*Test Description*	*Comp List*	*Component List Description*
CHROM	1-EXT3520B	BNA in Water prep Continuous Liq/Liq 4-P-3520C		
CHROM	BNAW-8270C	BNA in Water by EPA 8270C	BNA-PENTA	BNA 8270C - Pentachlorophenol Only
METALS	3-GM-W2008	AM E-200.8M Water Digest for ICPMS		
METALS	3-HG-W	AM E-245 Hg Prep 245.1 - Water		
METALS	HG	Mercury - AM E-245	WATER	Total Mercury in Water
METALS	ICPMS	ICP-MS Metals - AM E-200.8M	W7ASCDCRC2	W-As,Cd,Cr,Cu,Pb,Sb,Tl

Sample ID - Date Sampled - Status Customer Sample Description / ID	Component List		BNA-PENTA			W7ASCDCRC	WATER
	Analysis	1-EXT3520B	BNAW-8270C	3-GM-W2008	3-HG-W	ICPMS	HG
		1	1	1	1	1	1
11-0418-001 - 03/22/011 1020 - Available MW-RA-8-3-032211		V	V	V	V	V	V
11-0418-002 - 03/22/011 1020 - Available MW-RA-8-3-032211 dissolved				V	V	V	V
11-0418-003 - 03/22/011 1030 - Available MW-RA-8-3-032211 double dissolved				V	V	V	V

Printed on: Mar 22, 2011 11:01 PM
Data Retrieved: Mar 22, 2011 11:01 PM

Entered by: Catalano, Dennis
Entered on: Mar 22, 2011 3:41 PM

Weyerhaeuser

Service Request

Analytical Chemistry and Microstructure

11-0418

Title: Everett East Site - March 2011

Group	Analysis	Component List	Test Description	No. Tests	Mult	Charge Amount	Line Total
CHROM	1-EXT3520B		BNA in Water prep Continuous Liq/Liq 4-P-3520C	1	1.00	0.00	0.00
CHROM	BNAW-8270C	BNA-PENTA	BNA in Water by EPA 8270C	1	1.00	303.00	303.00

Total charges for CHROM group ($) 303.00

Group	Analysis	Component List	Test Description	No. Tests	Mult	Charge Amount	Line Total
METALS	3-GM-W2008		AM E-200.8M Water Digest for ICPMS	3	1.00	46.00	138.00
METALS	3-HG-W		AM E-245 Hg Prep 245.1 - Water	3	1.00	46.00	138.00
METALS	HG	WATER	Mercury - AM E-245	3	1.00	0.00	0.00
METALS	ICPMS	W7ASCDCRC2	ICP-MS Metals - AM E-200.8M	3	1.00	69.00	207.00

Total charges for METALS group ($) 483.00

Total charges for Service Request 11-0418 ($) 786.00

Printed on: Mar 22, 2011 11:01 PM
Data Retrieved: Mar 22, 2011 11:01 PM

Entered by: Catalano, Dennis
Entered on: Mar 22, 2011 3:41 PM

Weyerhaeuser

Weyerhaeuser Analytical Chemistry
c/o SLM 216 (253) 924-6293
32901 Weyerhaeuser Way South
Federal Way, WA 98001

11-0418

Sample Analysis Request and Chain of Custody Record

Date	Project Title	Page
3/22	Everett EAST SITE	1 of 1

Client's Name	Account Number/Project Number
PES Environmental	920.071.01

Client's Address	Client's Phone Number	Client's FAX Number
1215 4th Ave 1350 Seattle WA 98161	2065293980	2065293985

Client's E-Mail Address:

Project Manager (Print)	Sampler Name (Print)	Recorder By (Signature)
ERIN SHAVER	Laura Doody	

SAMPLE DESCRIPTION				MATRIX				PRESERVATION								ANALYSIS REQUESTED (WRITE/TYPE IN PARAMETER)				NOTES
METHOD	FIELD SAMPLE ID (15 CHARACTER MAX) (REQUIRED)	DATE (REQUIRED)	TIME	WATER	SOIL/SED	OIL		HCl	H_2SO_4	HNO_3	$Na_2S_2O_3$	4°C	FROZEN	FILTERED	# of Containers	PCP 8270	Dissolved As, Sb, Pb, Cd, Cr, Hg	Total As, Sb, Pb, Cd, Cr, Hg, TL ICV		
	MW-RA-8-3-032211	3/22	1020	X												X	X	X		★ Sampled
	MW-RA-8-3-032211	3/22	1030	X													X			Double filtered

➥ "G"rab, "D"epth composite, or "T"ime composite

ESTIMATED CONCENTRATION RANGE

Percent														
ppm														
ppb														
ppt														

Turnaround Time Required
- ☐ 24 hours
- ☐ 48 hours
- ☐ 7 days
- ☑ ~~2-3~~ weeks, due:
- ☐ Return unused samples
- ☐ IRS Qualified R&D?

Results To: ERIN Shaver

cc:

Report Type
- ☐ Electronic Report
- ☐ Disk Deliverables
- ☐ NPDES/Regulatory
- ☐ Other:

Report Basis
- ☐ As Rcd.
- ☐ OD
- ☐ Volume
- ☐ Wt.

Remarks/Detection Limit Requirements:

Sample Chain of Custody and Shipping Method Record

Relinquished By Sampler (Signature)	Date	Time	Received By (Signature)
	3/22	1519	
Relinquished By (Signature)	Date	Time	Received By Laboratory (Signature)
Air bill Number	Cooler Temp.	Date Received	Time Received
	4.1	3/22/11	1519

E Form 16307 (9/08)

MEMORANDUM

TO: Weyerhaeuser – Everett East
Project File 920.071.01.001

DATE: May 17, 2011

FROM: Jerry Harris

RE: Review of Water Quality Monitoring Data for Weyerhaeuser Everett East Site, Everett, Washington (Well MW-RA-8-3), March 22, 2011

This report summarizes a review of analytical results for a groundwater sample collected by PES personnel on March 22, 2011 from well MW-RA-8-3, located at the Weyerhaeuser Everett East site in Everett, Washington. Laboratory analyses for arsenic, cadmium, chromium, copper, lead, antimony, and thallium by United States Environmental Protection Agency (USEPA) Method 200.8 and mercury by USEPA Method 245 were performed on the sample. The analyses were performed by Weyerhaeuser Analysis and Testing Services (WATS), in Federal Way, Washington. WATS report 11-0418 was reviewed.

DATA QUALIFICATIONS

The comments in this review refer to the laboratory's performance in meeting the data review criteria of USEPA's Contract Laboratory Program National Functional Guidelines for InOrganics Data Review (USEPA, 2002) and method-specific QC guidelines (USEPA, 1983, 1986, 1991).

No data qualifiers were assigned to data in this report.

Data Package

The data package was checked for transcription errors, omissions, or other anomalies. None were noted.

Holding Times and Preservation

The sample was collected using recommended handling and preservation procedures. The sample receipt information provided by the analytical laboratory indicated that the sample in data package 11-0418 was received at a cooler temperature of 4.1 degrees Centigrade

(°C). This temperature was within the recommended preservation temperature range of 4.0°C ± 2.0°C. No qualifications to the data in package 10-1935 were made based on the temperature of the sample.

The sample was analyzed within 23 days of sample collection.. Holding times for water samples are 26 days for mercury and 180 days for the remaining metals. No qualifications were made due to holding time exceedances.

Reporting Limits

The method reporting limits (MRL) for all metals were acceptable for the project. No data was qualified based upon MRLs.

Laboratory Method Blanks

USEPA guidelines recommend the analysis of laboratory method blanks for each type of analysis and matrix at a frequency of one for every 12-hour period, or one per batch. A method blank analysis was performed at the appropriate frequency and no analytes were detected at or above the MRL. No data was qualified.

Surrogate Recovery Results

Surrogates are not required for the metals analyses.

Matrix Spike and Duplicate Matrix Spike Results

USEPA guidelines recommend spiking a sample analyzed for organic or inorganic compounds with target analytes (i.e., a matrix spike [MS]) and analyzing it to evaluate laboratory accuracy, and acceptable compound recovery. A duplicate matrix spike (DMS) or sample duplicate is analyzed to evaluate the precision of the laboratory. USEPA guidelines recommend one MS analysis for each 20 organic samples of similar matrix.

A MS was prepared from the project sample. The percent recovery (%R) for the target analytes were within the laboratory control limits. No qualifications were warranted.

Laboratory Control Sample Results

A laboratory control sample (LCS) is spiked with target analytes and analyzed to provide information on laboratory and analytical method accuracy. USEPA guidelines recommend analyzing one LCS with each batch and for each method. The LCS analysis was performed at the appropriate frequency. The LCS results were within the laboratory QC criteria for all LCS target analytes. No qualifiers were assigned.

Duplicate Results

A sample duplicate was prepared from the project sample. The primary-duplicate relative percent differences (RPDs) were within the control criteria for all detected analytes. No qualifications were warranted.

OVERALL ASSESSMENT OF DATA QUALITY

The data were judged to be acceptable for their intended use. No data qualifiers were assigned.

REFERENCES

USEPA. 1983. Methods for chemical analysis of water and wastes. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA-600/4-79-020.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency. EPA-530/SW-846.

USEPA. 1991. U.S. Environmental Protection Agency contract laboratory program, statement of work for inorganics and organics analyses, multi-media, multi-concentration. U.S. Environmental Protection Agency.

USEPA. 2002. U.S. Environmental Protection Agency contract laboratory program, national functional guidelines for inorganic data review. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency.

Weyerhaeuser

CH 1L32
PO Box 9777
Federal Way, WA 98063-9777
Telephone: (253) 924-3426
E-Mail: ken.johnson@weyerhaeuser.com

June 10, 2011

David South
Senior Engineer
Toxics Cleanup Program
Washington Department of Ecology
3190 - 160th Ave. SE
Bellevue, WA 98008-5452

Subject: Weyerhaeuser Everett East Site (WDOE Toxics Cleanup Program - FS 11)

Dear Mr. South:

At your request, a groundwater sample was collected on March 22, 2011 from monitoring well MW-RA-8-3 on the Everett East Site, and analyzed for total and dissolved arsenic (and other metals). These results are presented in the attached report.

Sincerely,

Ken Johnson
Corporate Environmental Manager