Weyerhaeuser

101 East Marine View Drive
Everett, Washington 98201
Tel (425) 339 2800
Fax (425) 339 2786

November 23, 1998

Paul Skyllingstad
Industrial Section
Department of Ecology
PO Box 47706
Olympia, WA 98504-7706

Re: Weyerhaeuser Everett West Site -- 1998 Annual Evaluation including Thirteenth Round Compliance Ground Water Monitoring Data

Dear Mr. Skyllingstad:

Enclosed are two copies of the report titled "1998 Annual Evaluation including Thirteenth Round Compliance Monitoring Ground Water Sampling Results - Weyerhaeuser Everett West Site," and a computer floppy disk containing sample results.

This data is being submitted according to the terms and schedule outlined in the Consent Decree between Ecology and Weyerhaeuser. Compliance ground water monitoring at the Everett West Site began in January 1995. The sampling and analytical methods, data evaluation, and report format were performed according to methods specified in the Ecology-approved Ground Water Compliance Monitoring Plan for Weyerhaeuser Everett West Site (March 2, 1995).

Should you require further information, please contact me at (425) 339-2871.

Sincerely,

Stuart Triolo

Environmental Engineer

ECO13GW.DOC

Enclosure: 1998 Annual Evaluation including Thirteenth Round Compliance Monitoring Ground Water Sampling Results - Weyerhaeuser Everett West Site (2 copies); and Computer Floppy Disk with laboratory data.

pc: John Gross CH 1K29 - data w/out floppy disk

Glen Wyatt WTC2G2 - floppy disk w/out hard copy data

Mike Elmer - NWPE - data w/out floppy disk

file: CLEANW01

1998 ANNUAL EVALUATION INCLUDING THIRTEENTH ROUND COMPLIANCE MONITORING GROUNDWATER SAMPLING RESULTS - WEYERHAEUSER EVERETT WEST SITE

This report summarizes the 1998 annual results and the thirteenth round sampling event (August 1998) for compliance monitoring groundwater sampling activities performed at the Weyerhaeuser Everett West Site (West Site), at 101 East Marine View Drive in Everett, Washington.

QUARTERLY SAMPLING ACTIVITIES (THIRTEENTH ROUND)

EMCON collected groundwater samples from six West Site monitoring wells (MW-1201, MW-1202, MW-1203, MW-1301, MW-1302, and MW-1501) during this thirteenth round sampling event. All samples were collected on August 13, 1997, except the sample obtained from MW-1202, which was collected on August 28, 1997. MW-1202 could not be located during the initial sampling event because it was covered by dense brush. One field duplicate sample was collected from monitoring well MW-1202 and designated 80828WSGMW-1800. One field blank was prepared and designated 80813WSGMW-1901. The samples were submitted to Weyerhaeuser Analytical Testing Services (WATS) for analyses. A site map including the six groundwater monitoring well locations is shown in Figure 1.

Monitoring well MW-1701 was inadvertently abandoned on February 13, 1998. The Washington State Department of Ecology (Ecology) was notified, and Weyerhaeuser agreed to perform additional assessment if elevated total petroleum hydrocarbons as diesel and motor oil (TPH-D and TPH-O) concentrations were observed in the well (MW-1202) downgradient of the former location of MW-1701.

QUARTERLY LABORATORY ANALYSES

Six groundwater samples, one field duplicate, and one field blank were analyzed TPH-D and TPH-O by Ecology Method WTPH-D extended and for dissolved arsenic by U.S. Environmental Protection Agency Method 200.9. The groundwater samples that were analyzed for dissolved arsenic were filtered before laboratory submittal.

Weyerhaeuser field sampling data sheets were completed at the time of sampling. Copies of the field sampling data sheets, chain-of-custody and request for analyses forms, and laboratory reports are appended to the back of this report. Also included are two diskettes with data files for submittal to Ecology.

QUARTERLY LABORATORY RESULTS

Table 1 shows the depth to water measurements taken from each well before sampling. Table 2 summarizes the groundwater quality field parameters obtained at the time of sampling. Table 3 summarizes the laboratory results in the GIS/Key™ format.

TPH-D was reported both in the groundwater sample and duplicate taken from MW-1202 at a concentration of 0.055 milligrams per liter (mg/L) (estimated) and at MW-1302 at a concentration of 0.10 mg/L. TPH-O was reported in the sample and duplicate collected from MW-1202 at a concentration of 0.12 mg/L (estimated) and 0.15 mg/L (estimated), respectively. Dissolved arsenic was reported in five samples (including the duplicate collected from MW-1202) at concentrations ranging from 3 to 65 micrograms per liter (µg/L).

EMCON performed data validation on the WATS laboratory data. A copy of the data validation report is attached at the back of this report.

A decrease in TPH-D and TPH-O concentrations and an increase in arsenic concentrations were noted in the laboratory results for the thirteenth round of compliance groundwater monitoring.

ANNUAL EVALUATION

Time-trend plots for TPH-D, TPH-O, and dissolved arsenic concentrations reported for groundwater samples from West Site monitoring wells are presented on Figures 2, 3, and 4, respectively. Time-trend plots for West Site groundwater elevations are presented on Figure 5.

The 1998 West Site compliance groundwater monitoring results were evaluated and the highest values for each parameter were compared to site historic reference values identified in the Consent Decree. During the 1998 monitoring period, TPH-D, TPH-O, and dissolved arsenic concentrations did not exceed the parameter-specific reference values by a factor of five. In general, detections during the 1998 sampling event were consistent with data associated with past groundwater monitoring results at the West Site.

This report was prepared by EMCON. For additional information, contact EMCON at (425) 485-5000.

William R. Holdem for

Susan Wilson
Geologist

Steve Nelson, R.G.
Senior Project Hydrogeologist

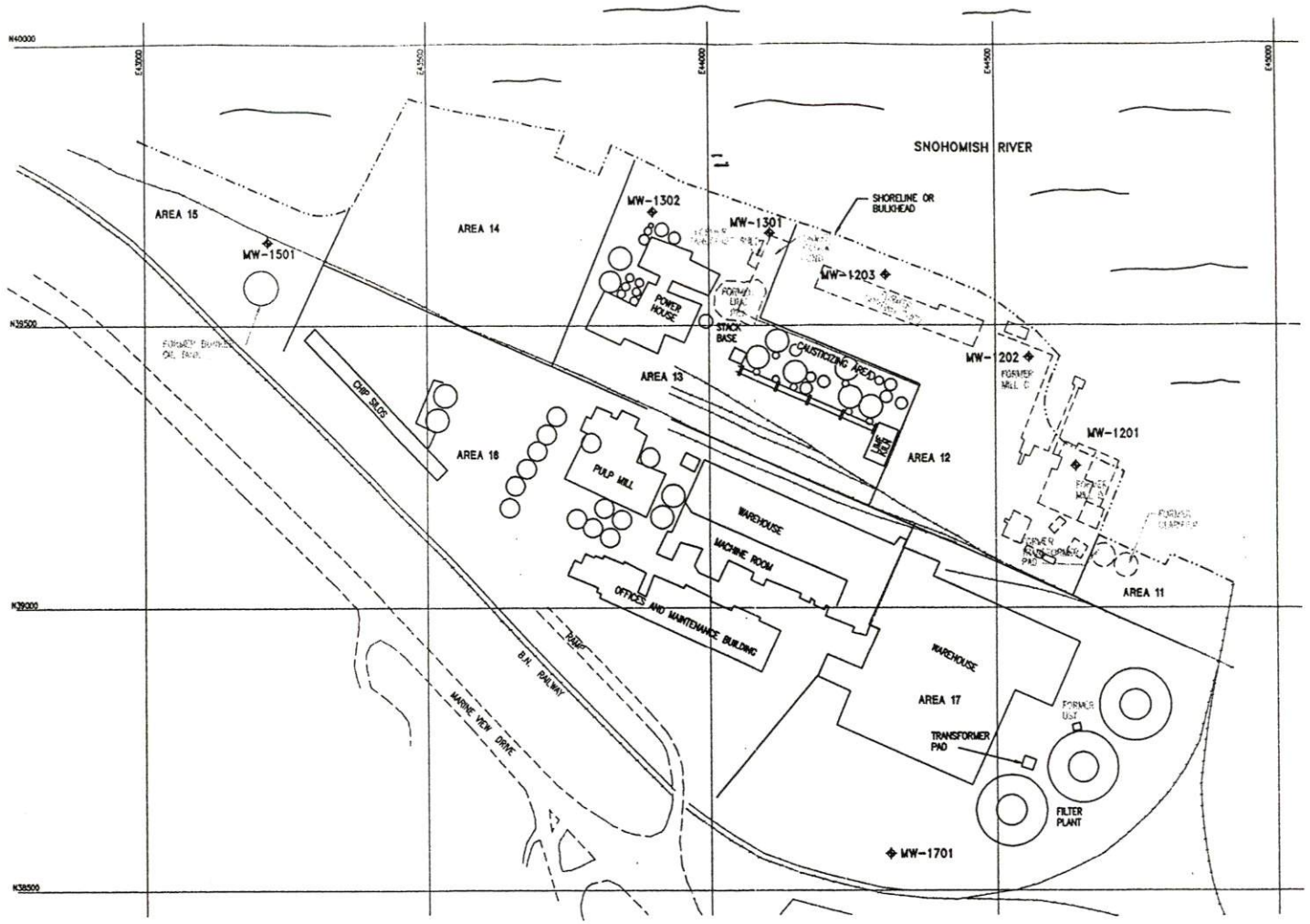
Attachments: Limitations

Figure 1	-	Site Map and Monitoring Well Locations
Figure 2	-	TPH-D Concentrations
Figure 3	-	TPH-O Concentrations
Figure 4	-	Dissolved Arsenic Concentrations
Figure 5	-	Groundwater Elevations
Table 1	-	Depth to Groundwater Measurements
Table 2	-	Summary of Groundwater Field Parameters
Table 3	-	August 1998 Sample Results
Table 4	-	August 1998 Field Blank Sample Results
Attachment A	-	Field Sampling Data Sheets, Chain-of-Custody and Request for Analyses Forms, Laboratory Reports, and Data Validation Report
Diskettes	-	Data Files for Submittal to Ecology

LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.



LEGEND

- MW-1701 ◆ GROUNDWATER MONITORING WELL (EMCON 12/93)
- SHORELINE OR BULKHEAD
- FENCE

EMCON

0 200 400

SCALE (ft)

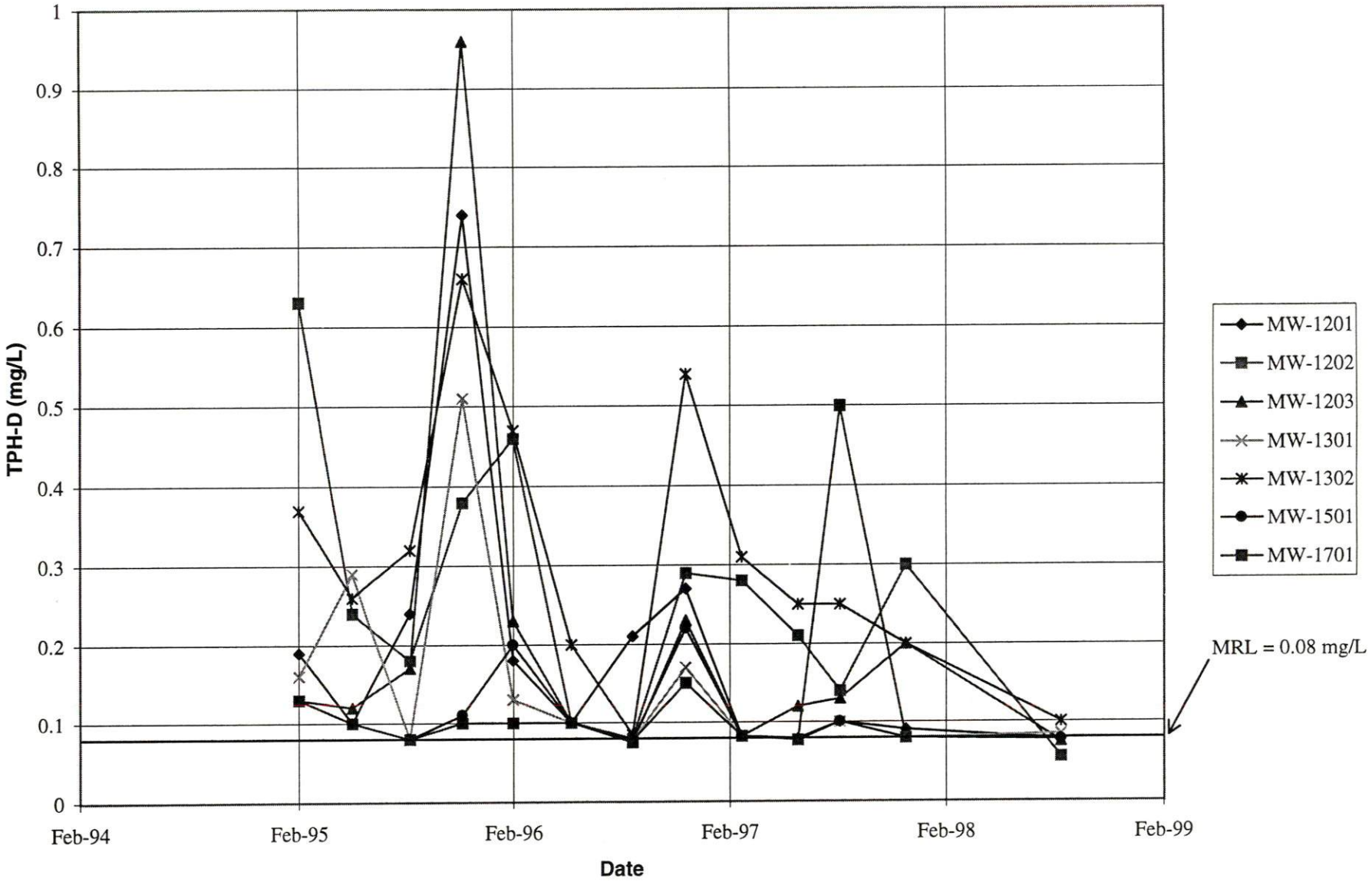
DATE	8-96
DWN.	MLP
REV.	
APPR.	
PROJECT NO.	40141-037.085

Figure 1
WEYERHAEUSER EVERETT WEST SITE
EVERETT, WASHINGTON

SITE MAP AND MONITORING WELL LOCATIONS

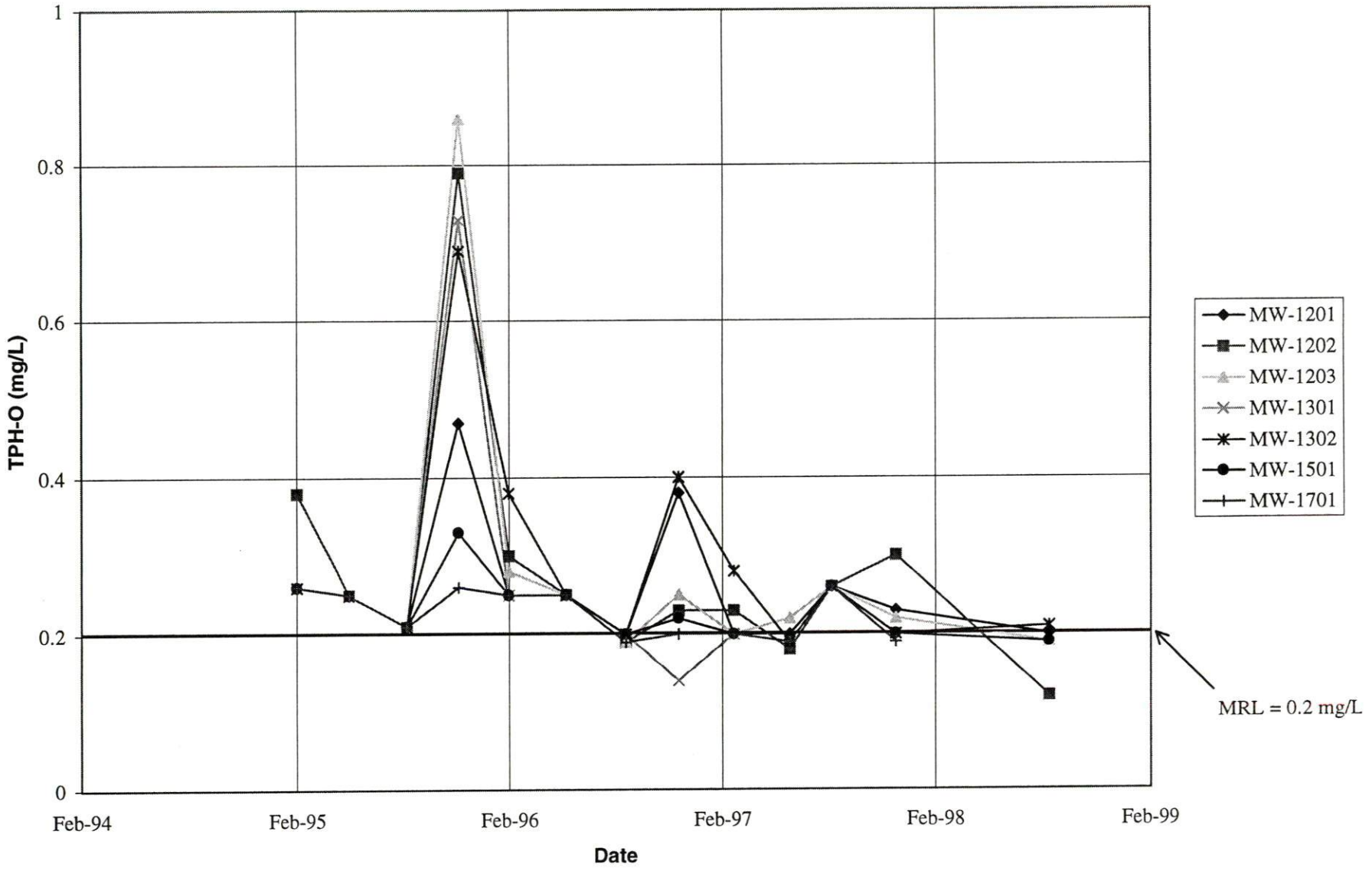
1=200 8-02-96 G:\DWG\0141\037\085\B0085R01

FIGURE 2
WEYERHAEUSER EVERETT WEST SITE
GROUNDWATER COMPLIANCE MONITORING
TPH-D CONCENTRATIONS



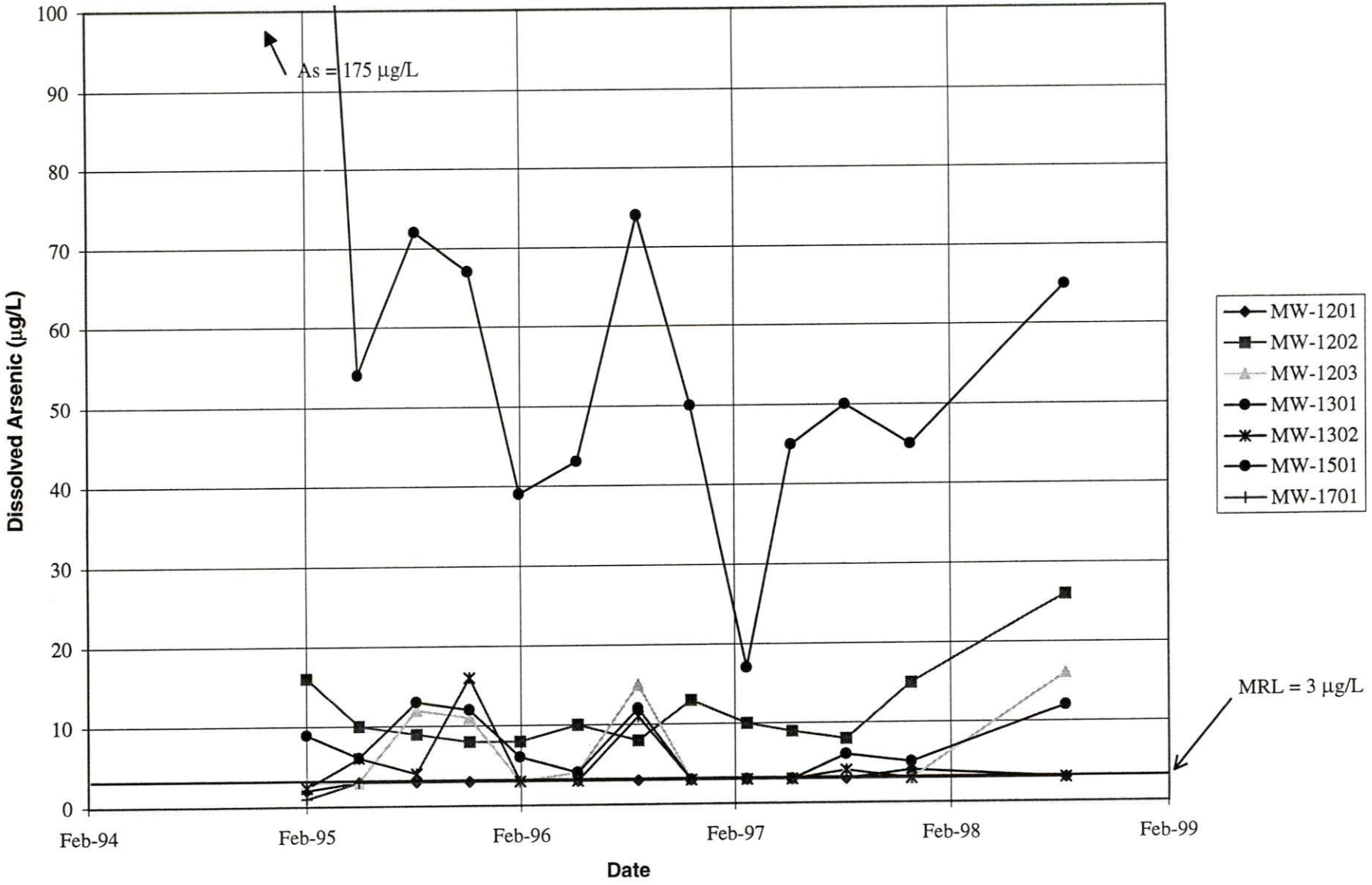
Note: MRL = Method reporting limit

FIGURE 3
WEYERHAEUSER EVERETT WEST SITE
GROUNDWATER COMPLIANCE MONITORING
TPH-O CONCENTRATIONS



Note: MRL = Method reporting limit

FIGURE 4
WEYERHAEUSER EVERETT WEST SITE
GROUNDWATER COMPLIANCE MONITORING
DISSOLVED ARSENIC CONCENTRATIONS



Note: MRL = Method reporting limit

FIGURE 5
WEYERHAEUSER EVERETT WEST SITE
GROUNDWATER COMPLIANCE MONITORING
GROUNDWATER ELEVATIONS

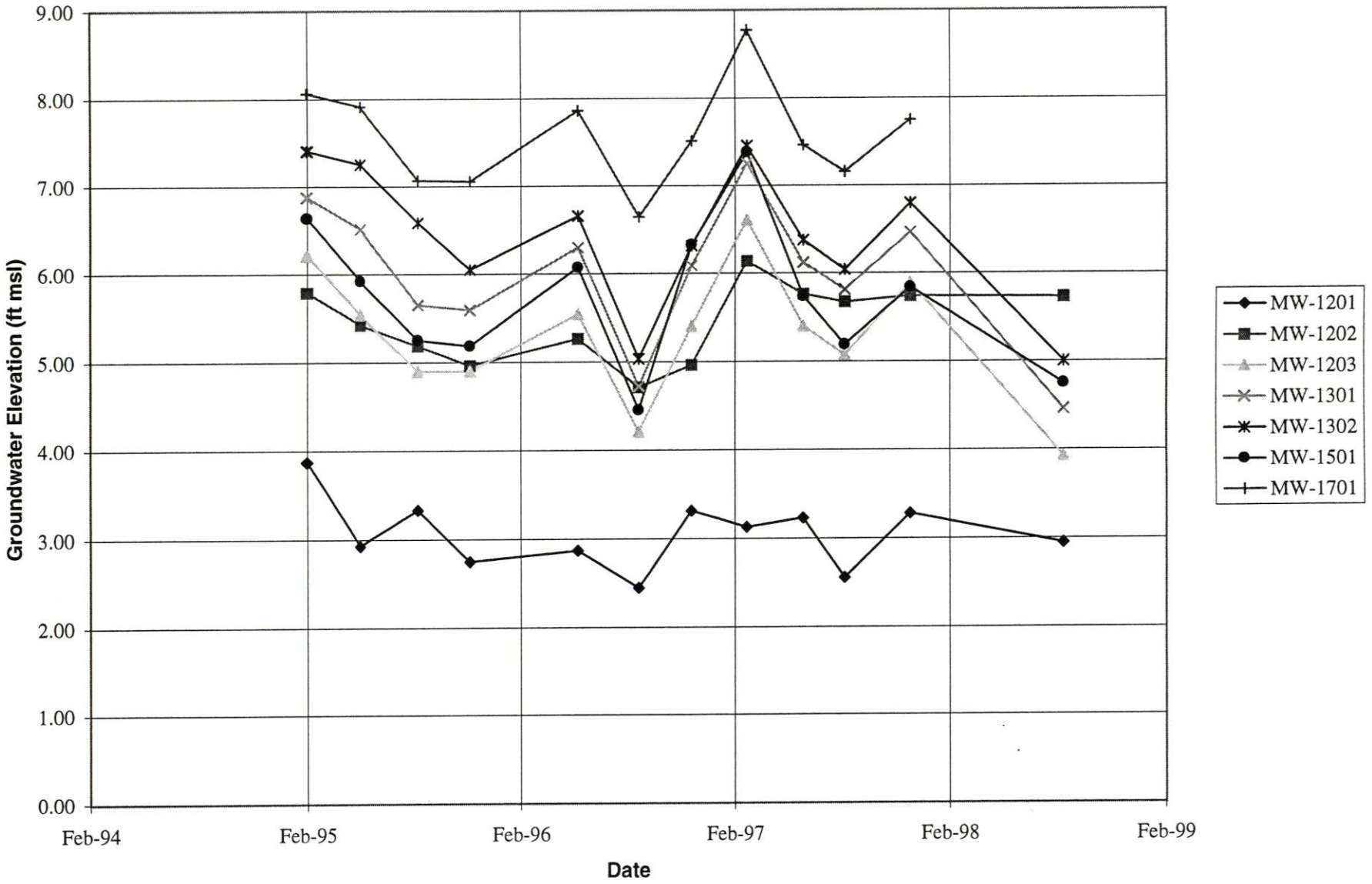


Table 1
Depth to Groundwater Measurements
Weyerhaeuser Everett West Site
August 1998

Well Number	Date Collected	Time	Depth to Water (feet)
MW-1201	8/13/98	1300	12.48
MW-1202	8/28/98	730	7.53
MW-1203	8/13/98	1200	6.82
MW-1301	8/13/98	1030	7.09
MW-1302	8/13/98	930	7.29
MW-1501	8/13/98	1120	5.44
MW-1701	NM	NM	NM

NOTE: NM = not measured; well abandoned on 2/13/98.

Table 2

Summary of Groundwater Field Parameters
Weyerhaeuser Everett West Site
August 1998

Monitoring Well	Sample Designation	Date Collected	Time	pH	Conductivity (µmhos)	Temp (°C)
MW-1201	80813WSGMW-1201	8/13/98	1330	6.30	995	20
MW-1202	80828WSGMW-1202	8/28/98	800	5.96	1236	14
MW-1203	80813WSGMW-1203	8/13/98	1230	7.06	645	20
MW-1301	80813WSGMW-1301	8/13/98	1100	6.94	261	16.5
MW-1302	80813WSGMW-1302	8/13/98	1015	6.90	622	18
MW-1501	80813WSGMW-1501	8/13/98	1150	6.70	277	19
MW-1701	NS	NS	NM	NM	NM	NM
Field Dup.[a]	80828WSGMW-1800	8/28/98	830	5.96	1236	14

NOTE: NS = not sampled.
NM = not measured.

[a] Duplicate of MW-1202.

Table 3

August 1998 Sample Results
Weyerhaeuser Everett West Site

SITE	DATE	RESULT TYPE	TPH (as diesel) (mg/l)	TPH (as motor oil) (mg/l)	Dissolved Arsenic (mg/l)
MW-1201	08/13/98	Primary	<0.078	<0.20	<0.003
MW-1202	08/27/98	Primary	0.055	0.12	0.026
MW-1202	08/27/98	Duplicate	0.055	0.15	0.021
MW-1203	08/13/98	Primary	<0.075	<0.19	0.016
MW-1301	08/13/98	Primary	<0.085	<0.21	0.065
MW-1302	08/13/98	Primary	0.10	<0.21	0.003
MW-1501	08/13/98	Primary	<0.077	<0.19	0.012

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

Table 4

August 1998 Field Blank Sample; Dissolved Arsenic Results
Weyerhaeuser Everett West Site

SAMPLING EVENT: 98-WEST (08/01/98 to 08/30/98)
SAMPLE TYPE: Water
TCL ID: WEST-AS
PF CODE: Dissolved
LAB ID: WEYCO

	SAMPLE INFORMATION	FIELD BLANK 1			
	CASE ID	0852			
	BLANK ID	F180813WSGMW-1901			
	FIELD SAMPLE ID	80813WSGMW-1901			
	LAB SAMPLE ID	98-0852-007			
COMPOUNDS		(mg/l)			
Arsenic		<0.003			

< = Not detected at indicated reporting limit

BLANK ID: Field Blank = Field Blank Id
Rinsate Blank = SDG No
Travel Blank = Custody Id
Method Blank = Batch No
Lab Blank = Batch No

Table 4a

August 1998 Field Blank Sample; TPH Results
Weyerhaeuser Everett West Site

SAMPLING EVENT: 98-WEST (08/01/98 to 08/30/98)
SAMPLE TYPE: Water
TCL ID: WEST-ALL
PF CODE: Total
LAB ID: WEYCO

	SAMPLE INFORMATION	FIELD BLANK 1			
	CASE ID	0852			
	BLANK ID	F180813WSGMW-1901			
	FIELD SAMPLE ID	80813WSGMW-1901			
	LAB SAMPLE ID	98-0852-007			
COMPOUNDS		(mg/l)			
TPH (as diesel)		<0.082			
TPH (as motor oil)		<0.20			

< = Not detected at indicated reporting limit

BLANK ID: Field Blank = Field Blank Id
Rinsate Blank = SDG No
Travel Blank = Custody Id
Method Blank = Batch No
Lab Blank = Batch No

ATTACHMENT A

FIELD SAMPLING DATA SHEETS, CHAIN-OF-CUSTODY AND REQUEST FOR ANALYSES FORMS, LABORATORY REPORTS, AND DATA VALIDATION REPORT

WEYERHAEUSER GROUNDWATER SAMPLING RECORD

Company	Project No.	Site ID
☐ ES&T/WTC ☐ ES&T/NB Emcon	40141-037.92	MW-1201
	Facility Everette-West	Date (m/d/y) 8-13-98

Site Description ☒ Monitoring Well ☐ Extraction Well ☐ Irrigation Well ☐ Spring ☐ Borehole ☐ Probe Other:

Air Temp: 75 ☐ °C ☒ °F Weather: Sunny

Well Locked? ☐ yes ☐ no Damaged/Repairs Needed:

☐ TOC ☐ MP Description:

TOC/MP Stickup: ☐ ft ☐ m above/below ground Well Inside Diameter (ID): ☒ 2-inch ☐ 4-inch Other:

Site Remarks (neaby wells pumping, tide, stream stage, etc.)

Water Level Data Measurement Units: ☒ ft ☐ m Well or Borehole Total Depth (TD) from MP or TOC: 19.8'

☐ E-Tape, # ☐ Steel Tape ☐ Other	Initial	Confirmation	At Start of Purging	At End of Purging			Remarks
Time (hh:mm)	1300						
Depth to Water	12.48						
Tape Correction							
Water Level (WL)							
Product Thickness							
Product Recovery ☐ gallons ☐ liters							

Measure water level from fixed measuring point (MP) or top of well casing (TOC). Record water depth to nearest 0.01 ft or 0.002 m, with minus (-) sign if level is above MP or TOC. If no mark on MP or TOC, measure water level from north side of casing. Measure static or pre-purging water level twice; record initial and confirmation measurements and measurement times (in 24-hour clock format). MP/TOC Stickup measurement is from ground surface to nearest 0.1 ft or 0.01 m. Depth to Water codes: N - not measured; D - dry; O - obstructed; P - pumping; F - flowing (artesian well); R - recently pumped; C - cascading. Water Level (WL) = Depth to Water - Tape Correction factor. Record free product presence at time of water level measurement; use "S" for free product thickness if sheen observed. If free product removed from well, record volume removed in gallons or liters, list product type in "Remarks" column.

Field WQ Data Purge Depth: ☐ Grab ☐ Bailer ☒ Pump Description: Peristaltic

Casing Volume: [19.8 (TD) - 12.48 (WL)] • [____ (Well ID)]^2 • [____ (Conversion Factor)] = 1.20 ☒ gal ☐ liters

Well Goes Dry While Purging ☐

Conversion Factor = 0.0408 for feet and gallons; 0.1544 for feet and liters; 0.5066 for meters and liters; Well ID in inches

☒ Cum. Vol. Purged ☐ Pumping Rate	1.2	2.4	3.6			(Final)	Meter Type	Remarks
Time Measured (hh:mm)								
pH ☐ Temp. Compensated	6.30	6.30	6.30				DSP4-3	
Temperature ☒ °C ☐ °F	20.5	20	20					
Dissolved Oxygen mg/l								
☒ SC or ☐ EC µS/cm	1025	1050	995				DSP4-3	
Turbidity ☐ NTU								
Color/Tint								
Odor								

Record time purging starts and ends in Water Level Data section. Cum. Vol Purged: cumulative volumed removed before sampling, in gallons or liters. Pumping Rate is gpm or Lpm, depending on box checked in casing volume calculation. Use "Final" column above for recording sample field measurements, total volume purged befored sampling or avearage pumping rate during purging. Record equipment calibration methods, decontamination procedures, equipment failures, purge water disposal method, etc. in daily field notes. SC: Specific Conductance corrected for temperature (µS/cm at 25°C); EC: Electrical Conductivity not corrected for temperature (µS/cm). µS/cm = µmho/cm. 1 gallon (US) = 3.785 L = 0.833 Imperial gallon

Sample Data Sample Depth: ☐ Grab ☐ Bailer ☐ Pump Description:

Field Sample ID (unique ID on bottles)	Result Code	Date (m/d/y)	Time (hh:mm)	Bottles (total to lab)	Filtered (0.45 µm)	Lab ID	Case ID	SDG ID	Remarks
80813-WSG-1201	PO	8/13/98	1330	2	As				

Sample ID may be up to 15 characters. **Sample Result Code, Date, and Time must be entered.** Result Codes: PO, Primary Sample; D#, Duplicate Sample; S#, Split Sample (sent to second lab); BF#, Field Blank; BR#, Equipment Rinsate; BT#, Trip Blank; SF#, Field Spike (# = 1 to 9). Lab ID (up to 5 characters) is name of laboratory that will analyze the sample. Case ID (up to 5 characters) and SDG ID (sample delivery group, up to 15 characters) are required for blanks. Case ID may be the lab service request number or yy-mm. SDG may be lab's SDG, a cooler ID number, or mmddyy. Enter sample preservation and handling data on chain-of-custody form. Also record detailed information about duplicate, split, rinsate, spike, and/or blank sample collection/handling in daily field notes.

Sampled By (print) Greg Sandberg Signature [signature]

Date Entered into Database_____ By_____

FORM 16900 (8/94) Printing Services TP-1 Tacoma

WEYERHAEUSER GROUNDWATER SAMPLING RECORD

Company ☐ ES&T/WTC ☐ ES&T/NB	Project No. 40141-037.092	Site ID MW-1203
Emcon	Facility Everette-West	Date (m/d/y) 8-13-98

Site Description ☒ Monitoring Well ☐ Extraction Well ☐ Irrigation Well ☐ Spring ☐ Borehole ☐ Probe Other:

Air Temp: 70 ☐ °C ☒ °F Weather: Sunny

Well Locked? ☐ yes ☐ no Damaged/Repairs Needed:

☐ TOC ☐ MP Description:

TOC/MP Stickup: ☐ ft ☐ m above/below ground Well Inside Diameter (ID): ☒ 2-inch ☐ 4-inch Other:

Site Remarks (neaby wells pumping, tide, stream stage, etc.)

Water Level Data Measurement Units: ☒ ft ☐ m Well or Borehole Total Depth (TD) from MP or TOC: 9.4

☐ E-Tape, #_____ ☐ Steel Tape ☐ Other	Initial	Confirmation	At Start of Purging	At End of Purging			Remarks
Time (hh:mm)	1200						
Depth to Water	6.82						
Tape Correction							
Water Level (WL)							
Product Thickness							
Product Recovery ☐ gallons ☐ liters							

Measure water level from fixed measuring point (MP) or top of well casing (TOC). Record water depth to nearest 0.01 ft or 0.002 m, with minus (-) sign if level is above MP or TOC. If no mark on MP or TOC, measure water level from north side of casing. Measure static or pre-purging water level twice; record initial and confirmation measurements and measurement times (in 24-hour clock format). MP/TOC Stickup measurement is from ground surface to nearest 0.1 ft or 0.01 m. Depth to Water codes: N - not measured; D - dry; O - obstructed; P - pumping; F - flowing (artesian well); R - recently pumped; C - cascading. Water Level (WL) = Depth to Water - Tape Correction factor. Record free product presence at time of water level measurement; use "S" for free product thickness if sheen observed. If free product removed from well, record volume removed in gallons or liters, list product type in "Remarks" column.

Field WQ Data Purge Depth: ☐ Grab ☐ Bailer ☒ Pump Description: Peristaltic

Casing Volume: [9.4 (TD) - 6.82 (WL)] • [____ (Well ID)]^2 • [____ (Conversion Factor)] = 1.42 ☒ gal ☐ liters

Conversion Factor = 0.0408 for feet and gallons; 0.1544 for feet and liters; 0.5066 for meters and liters; Well ID in inches

Well Goes Dry While Purging ☐

☒ Cum. Vol. Purged ☐ Pumping Rate	1.5	1.0	1.5			(Final)	Meter Type	Remarks
Time Measured (hh:mm)								
pH ☐ Temp. Compensated	6.95	7.04	7.06				DSP4-3	
Temperature ☒ °C ☐ °F	20°	20°	20°					
Dissolved Oxygen mg/l								
☒ SC or ☐ EC µS/cm	645	644	645				DSP4-3	
Turbidity ☐ NTU								
Color/Tint								
Odor								

Record time purging starts and ends in Water Level Data section. Cum. Vol Purged: cumulative volumed removed before sampling, in gallons or liters. Pumping Rate is gpm or Lpm, depending on box checked in casing volume calculation. Use "Final" column above for recording sample field measurements, total volume purged befored sampling or avearage pumping rate during purging. Record equipment calibration methods, decontamination procedures, equipment failures, purge water disposal method, etc. in daily field notes. SC: Specific Conductance corrected for temperature (µS/cm at 25°C); EC: Electrical Conductivity not corrected for temperature (µS/cm). µS/cm = µmho/cm. 1 gallon (US) = 3.785 L = 0.833 Imperial gallon

Sample Data Sample Depth: ☐ Grab ☐ Bailer ☐ Pump Description:

Field Sample ID (unique ID on bottles)	Result Code	Date (m/d/y)	Time (hh:mm)	Bottles (total to lab)	Filtered (0.45 µm)	Lab ID	Case ID	SDG ID	Remarks
80813-WSG-1203	P0	8-13-98	1230	2	AS				

Sample ID may be up to 15 characters. Sample Result Code, Date, and Time must be entered. Result Codes: P0, Primary Sample; D#, Duplicate Sample; S#, Split Sample (sent to second lab); BF#, Field Blank; BR#, Equipment Rinsate; BT#, Trip Blank; SF#, Field Spike (# = 1 to 9). Lab ID (up to 5 characters) is name of laboratory that will analyze the sample. Case ID (up to 5 characters) and SDG ID (sample delivery group, up to 15 characters) are required for blanks. Case ID may be the lab service request number or yy-mm. SDG may be lab's SDG, a cooler ID number, or mmddyy. Enter sample preservation and handling data on chain-of-custody form. Also record detailed information about duplicate, split, rinsate, spike, and/or blank sample collection/handling in daily field notes.

Sampled By (print) Greg Sandberg Signature

Date Entered into Database_____ By_____

WEYERHAEUSER GROUNDWATER SAMPLING RECORD

Company ☐ ES&T/WTC ☐ ES&T/NB	Project No. 40141-037.092	Site ID MW-1302
Emcon	Facility Everette West	Date (m/d/y) 8/13/98

Site Description ☒ Monitoring Well ☐ Extraction Well ☐ Irrigation Well ☐ Spring ☐ Borehole ☐ Probe Other:

Air Temp: 65 ☐ °C ☒ °F Weather: Sunny

Well Locked? ☐ yes ☐ no Damaged/Repairs Needed:

☐ TOC ☐ MP Description:

TOC/MP Stickup: ☐ ft ☐ m above/below ground Well Inside Diameter (ID): ☒ 2-inch ☐ 4-inch Other:

Site Remarks (neaby wells pumping, tide, stream stage, etc.)

Water Level Data Measurement Units: ☒ ft ☐ m Well or Borehole Total Depth (TD) from MP or TOC: 9.40

☐ E-Tape, #_____ ☐ Steel Tape ☐ Other	Initial	Confirmation	At Start of Purging	At End of Purging			Remarks
Time (hh:mm)	930						
Depth to Water	7.29						
Tape Correction							
Water Level (WL)							
Product Thickness							
Product Recovery ☐ gallons ☐ liters							

Measure water level from fixed measuring point (MP) or top of well casing (TOC). Record water depth to nearest 0.01 ft or 0.002 m, with minus (-) sign if level is above MP or TOC. If no mark on MP or TOC, measure water level from north side of casing. Measure static or pre-purging water level twice; record initial and confirmation measurements and measurement times (in 24-hour clock format). MP/TOC Stickup measurement is from ground surface to nearest 0.1 ft or 0.01 m. Depth to Water codes: N - not measured; D - dry; O - obstructed; P - pumping; F - flowing (artesian well); R - recently pumped; C - cascading. Water Level (WL) = Depth to Water - Tape Correction factor. Record free product presence at time of water level measurement; use "S" for free product thickness if sheen observed. If free product removed from well, record volume removed in gallons or liters, list product type in "Remarks" column.

Field WQ Data Purge Depth: ☐ Grab ☐ Bailer ☒ Pump Description: Paristaltic

Casing Volume: [9.4 (TD) - 7.29 (WL)] • [_____ (Well ID)]^2 • [_____ (Conversion Factor)] = .34 ☐ gal ☐ liters

Conversion Factor = 0.0408 for feet and gallons; 0.1544 for feet and liters; 0.5066 for meters and liters; Well ID in inches

Well Goes Dry While Purging ☐

☒ Cum. Vol. Purged ☐ Pumping Rate	.40	.80	1.2	1.6		(Final)	Meter Type	Remarks
Time Measured (hh:mm)								
pH ☐ Temp. Compensated	6.80	6.85	6.88	6.90			DSPH	
Temperature ☒ °C ☐ °F	18	18	18	18			~~DSPH~~	
Dissolved Oxygen mg/l								
☒ SC or ☐ EC µS/cm	618	618	620	622			DSPH	
Turbidity ☐ NTU								
Color/Tint								
Odor								

Record time purging starts and ends in Water Level Data section. Cum. Vol Purged: cumulative volumed removed before sampling, in gallons or liters. Pumping Rate is gpm or Lpm, depending on box checked in casing volume calculation. Use "Final" column above for recording sample field measurements, total volume purged befored sampling or aveerage pumping rate during purging. Record equipment calibration methods, decontamination procedures, equipment failures, purge water disposal method, etc. in daily field notes. SC: Specific Conductance corrected for temperature (µS/cm at 25°C); EC: Electrical Conductivity not corrected for temperature (µS/cm). µS/cm = µmho/cm. 1 gallon (US) = 3.785 L = 0.833 Imperial gallon

Sample Data Sample Depth: ☐ Grab ☐ Bailer ☐ Pump Description:

Field Sample ID (unique ID on bottles)	Result Code	Date (m/d/y)	Time (hh:mm)	Bottles (total to lab)	Filtered (0.45 µm)	Lab ID	Case ID	SDG ID	Remarks
80813-WSG-1302	P0	8/13/98	1015	2	AS				

Sample ID may be up to 15 characters. **Sample Result Code, Date, and Time must be entered.** Result Codes: P0, Primary Sample; D#, Duplicate Sample; S#, Split Sample (sent to second lab); BF#, Field Blank; BR#, Equipment Rinsate; BT#, Trip Blank; SF#, Field Spike (# = 1 to 9). Lab ID (up to 5 characters) is name of laboratory that will analyze the sample. Case ID (up to 5 characters) and SDG ID (sample delivery group, up to 15 characters) are required for blanks. Case ID may be the lab service request number or yy-mm. SDG may be lab's SDG, a cooler ID number, or mmddyy. Enter sample preservation and handling data on chain-of-custody form. Also record detailed information about duplicate, split, rinsate, spike, and/or blank sample collection/handling in daily field notes.

Sampled By (print) Greg Sandberg Signature [signature]

Date Entered into Database_____ By_____

SEP 16 1998

Weyerhaeuser

32901 Weyerhaeuser Way South
Federal Way WA 98003
Tel (253) 924-6872
Fax (253) 924-6654

40141037 092

September 15, 1998

Mr. Steve Nelson
EMCON
18912 North Creek Parkway, Suite 100
Bothell, WA 98011

Dear Steve:

Please find attached a copy of our final report for the samples that you requested we analyze for Everett West Site. These are from our service request number 98-0852. Invoicing for this work will be sent directly to Weyerhaeuser. If you have any questions concerning this report, please feel free to contact me at (253) 924-6521.

Thank you for using our laboratory for this analysis and we look forward to working with you on future projects.

Sincerely,

Richard G. Bogar, Ph.D.

Richard Bogar, Chromatography Team Leader
Weyerhaeuser Analytical and Testing Services

Attachments

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 98-0852

Report
Everett/EMCON West Site Waters 40141-037.092

Client ID	**80813-WSG-1201**	**80813-WSG-1203**	**80813-WSG-1301**
Sample Date and Time	**8/13/98 13:30**	**8/13/98 12:30**	**8/13/98 11:00**
Lab ID	**001**	**003**	**004**
	mg/L	mg/L	mg/L
Analyte			
Diesel Fuel Range	< 0.078	< 0.075	< 0.085
Motor Oil Range	< 0.20	< 0.19	< 0.21
Reporting Limit	mg/L	mg/L	mg/L
Diesel Fuel Range	0.078	0.075	0.085
Motor Oil Range	0.20	0.19	0.21
Surrogate (%recovery)			
o-Terphenyl	83%	75%	63%
Date Analyzed	8/19/98	8/19/98	8/19/98

Method: WTPH-D

Approved: Richard Bogar
Telephone: (253)-924-6521

Revised
Date: 10/23/98

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 98-0852

Report
Everett/EMCON West Site Waters 40141-037.092

Client ID	**Method Blank**	**Fortified Blank**
Sample Date and Time		
Lab ID	**DBL1_W081898**	**DLC1_W081898**
	mg/L	% Recovery
Analyte		
Diesel Fuel Range	< 0.080	79
Motor Oil Range	< 0.20	
Reporting Limit	mg/L	
Diesel Fuel Range	0.082	
Motor Oil Range	0.20	
Surrogate (%recovery)		
o-Terphenyl	84%	91%
Date Analyzed	8/19/98	8/19/98

Method: WTPH-D

Approved: Richard Bogar
Telephone: (253)-924-6521

Revised
Date: 10/23/98

Weyerhaeuser

32901 Weyerhaeuser Way South
Federal Way WA 98003
Tel (253) 924-6872
Fax (253) 924-6654

September 24, 1998

Mr. Steve Nelson
EMCON
18912 North Creek Parkway, Suite 100
Bothell, WA 98011

Dear Steve:

Please find attached a copy of our final report for the samples that you requested we analyze for Everett West Site. These are from our service request number 98-0980. Invoicing for this work will be sent directly to Weyerhaeuser. If you have any questions concerning this report, please feel free to contact me at (253) 924-6521.

Thank you for using our laboratory for this analysis and we look forward to working with you on future projects.

Sincerely,

Dennis Catalano, Project Manager
Weyerhaeuser Analytical and Testing Services

Attachments

Cc: Stuart Triolo Everett 34 (billing info only)

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Dennis Catalano
Project Manager

10/8/98
Date

Please feel free to contact me with any questions concerning this data report. I can be reached at (253) 924-6242.

Sincerely,

Dennis Catalano
Weyerhaeuser Analytical & Testing Services

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 98-0980

Report

Everett East Site Waters/EMCON
(µg/L)

QC Report

Duplicate Report	Element	001 Found	Duplicate Found	RPD
	As	26	26	0

Spike Recovery Report	Element	Sample 001	Spike 00001	Net Spike	Spike Level	% Recovery
	As	26	47	21	20	103

Laboratory Control Sample	Element	Sample Found	True Value	Lower Limit	Upper Limit	% Recovery
	As	50	49	42	55	102

Approved: Mary Beth Lanza
Telephone: (253) 924-6013

Date: 09/15/98

Weyerhaeuser Analytical & Testing Services
32901 Weyerhaeuser Way South
Federal Way, WA 98003

Service Request 98-0980

Client ID	Blank 1
Sample Date and Time	
Lab ID	Blank 1
	mg/L
Analyte	
Diesel Fuel Range	0.080 U
Motor Oil Range	0.20 U
Reporting Limit	mg/L
Diesel Fuel Range	0.080
Motor Oil Range	0.20
Surrogate (%recovery)	
o-Terphenyl	83%
Date Analyzed	9/24/98

Method: WTPH-D

Approved: Dennis Catalano
Telephone: (253)-924-6242

Revised
Date: 10/8/98

DATA VALIDATION REPORT
WEYERHAEUSER EVERETT WEST SITE
THIRTEENTH ROUND GROUNDWATER COMPLIANCE MONITORING
AUGUST 1998

DATA QUALIFICATIONS

The following report summarizes the Weyerhaeuser Everett West Site data validation review for six groundwater samples plus one field duplicate collected on August 13 and 28, 1998. Samples were analyzed by Weyerhaeuser Analytical and Testing Services in Tacoma, Washington and reported under service request number 98-0852 and 98-0980. All of the groundwater samples were analyzed for dissolved arsenic and total petroleum hydrocarbons as diesel (TPH-D) and motor oil (TPH-O). Data validation was conducted following procedures specified in the Compliance Monitoring Plan. Samples were labeled as directed by Weyerhaeuser (e.g., the sample from monitoring well MW-1201 was labeled "80813WSGMW-1201"). The field duplicate sample, collected from well MW-1202, was labeled "80828WSGMW-1800." The field blank sample was labeled "80813WSGMW-1901."

HOLDING TIMES

All arsenic and TPH analyses were conducted within holding time limits.

METHOD BLANKS AND FIELD BLANKS

The TPH and dissolved arsenic method blank and field blank results were non-detect.

SURROGATE RECOVERY

All of the surrogate recoveries reported with the TPH analyses were within QC criteria.

DUPLICATE RESULTS

Samples 80828WSGMW-1202 and 80828WSGMW-1800 were field duplicates. Dissolved arsenic was reported in sample MW-1202 (26 µg/L) and the duplicate sample (21 µg/L). TPH-D was reported in both samples at a concentration of 0.055 mg/L. TPH-O was reported in sample MW-1202 (0.12 µg/L) and the duplicate sample (0.15 µg/L). Per EPA guidelines, no qualifiers were assigned to the data based on field duplicate results.

Laboratory duplicates were recorded for 80828WSGMW-1202. Dissolved arsenic was reported in sample MW-1202 and the laboratory duplicate at a concentration of 26 µg/L. TPH-D was reported in sample MW 1202 (0.055 µg/L) and the laboratory duplicate (0.081 µg/L). TPH-O was reported in sample MW-1202 (0.12 µg/L) and the laboratory duplicate (<0.40 µg/L). Per EPA guidelines, no qualifiers were assigned to the data based on field duplicate results.

OVERALL ASSESSMENT OF DATA

All requested analyses were conducted and the data are 100 percent complete. The data are judged to be acceptable for their intended use.