RELEASE # 1583
WEYERHAEUSER SNOQUALMIE Mill
SNOQUALMIE
UST # 3915

WELL ABANDONMENT AND INSTALLATION REPORT FORMER UNDERGROUND FUEL STORAGE TANK AND ABOVE-GROUND ROAD OIL STORAGE TANK AREAS

WEYERHAEUSER SNOQUALMIE MILL

SNOQUALMIE, WASHINGTON

Prepared for

Weyerhaeuser Company

January 12, 1999

Prepared by

EMCON
18912 North Creek Parkway, Suite 200
Bothell, Washington 98011-8016

Project 40141-083.005

ENTERED
3/10/05

CONTENTS

TABLES AND ILLUSTRATIONS

End of Report

Tables

Figures

1 INTRODUCTION

In July 1998, Weyerhaeuser contracted EMCON to conduct groundwater investigation activities at the former underground fuel storage tank (UST) area and the former above-ground road oil storage tank area of the Weyerhaeuser Snoqualmie Mill. The purposes of the work were to characterize the perched groundwater conditions beneath both areas and to prevent potential cross contamination of a sand aquifer beneath the perched groundwater. The tasks completed under the scope of work included the following:

- Abandoned 10 groundwater monitoring wells.
- Drilled and sampled four soil borings (A1-8 through A1-11) at the former UST area and completed each boring as a groundwater monitoring well.
- Drilled and sampled four soil borings (A2-5 through A2-8) at the former road oil storage tank area and completed each boring as a groundwater monitoring well.
- Collected soil samples from each of the soil borings for quantitative chemical analysis.
- Collected groundwater samples from each of the newly installed monitoring wells for quantitative chemical analysis.
- Surveyed the top of casing elevations of the newly installed monitoring wells.
- Prepared this report.

2 BACKGROUND

2.1 General Site Information

The Weyerhaeuser Snoqualmie Mill occupies approximately 300 acres near the Snoqualmie River in Snoqualmie, Washington (Figure 1). The former UST area and the former aboveground road oil storage tank area are located in the southern portion of the site. The former UST area consisted of ten gasoline, diesel, and lubricating oil tanks and associated fuel dispensing equipment that were installed in approximately 1960. The tanks and dispensing equipment were removed in January 1989. During the tank removal, petroleum hydrocarbon-saturated soils were observed in the excavation. Approximately 300 cubic yards of impacted soil were excavated and treated on site by bioremediation (landfarming) methods. The area near the former tank basin is currently inactive.

The former above-ground road oil storage tank area consisted of an 8,000-gallon tank and a 4,000-gallon tank that were installed in approximately 1960. The tanks were removed in November 1988. A steam cleaning rack and a machine shop were located to the northwest and west, respectively, of the former road oil tank area (Figure 2). The steam-cleaning rack and machine shop have been decommissioned and removed. An aboveground lube oil storage facility and a concrete loading dock currently exist to the south and north, respectively, of the former road oil tank area.

2.2 Previous Investigations

From 1989 through 1997, several soil and groundwater investigations and groundwater monitoring events were conducted at the former UST and road oil storage tank areas. The results of each investigation and groundwater monitoring event from 1989 through 1993 are summarized in the EMCON's *Remedial Investigation Report, Former Underground Fuel Storage Tank and Above-Ground Road Oil Storage Tank Areas, Weyerhaeuser Snoqualmie Mill*, dated March 24, 1998. Based on the results of the 1989 investigation activities, approximately 700 and 600 cubic yards of impacted soil were excavated in 1989 from the former UST and road oil storage tank areas, respectively. The approximate areas of excavation are shown on Figure 2. The excavated soil was treated on site by landfarming methods. In 1990, seven groundwater monitoring wells (A1-1 through A1-7) were installed at the former UST area and four monitoring wells (A2-1 through A2-4) were installed at the former road oil storage tank area (Figure 2). The

wells were screened near the top of a saturated sand unit which extends from a depth of approximately 10 to 12 feet below ground surface (bgs) to approximately 30 bgs. At both areas, significant soil contamination typically did not extend to depths greater than 8 feet bgs, and it appeared that shallow silty soils limited lateral and vertical contaminant migration.

From 1990 through 1997, groundwater sample analytical results indicated that the groundwater beneath the former UST area had been impacted by petroleum hydrocarbons, particularly in the vicinity of well A1-3 (located south of the former UST basin; Figure 2). By July 1997, only the sample from A1-3 contained volatile petroleum hydrocarbon (benzene, toluene, ethylbenzene, total xylenes [BTEX], and total petroleum hydrocarbons [TPH] as gasoline) and semivolatile petroleum hydrocarbon (TPH as diesel) concentrations that exceeded Model Toxics Control Act (MTCA) Method A cleanup levels.[1] From 1990 through 1997, groundwater sample analytical results indicated that the groundwater beneath the former road oil storage tank area was impacted by low levels of petroleum hydrocarbons. By July 1997, none of the samples contained petroleum hydrocarbon concentrations above Method A cleanup levels; however, well A2-3 was destroyed before 1997.

In September 1997, EMCON conducted remedial investigation activities at both areas to evaluate the lateral and vertical extents of hydrocarbon-impacted soil, to obtain the soil sample analytical data required by the Washington Department of Ecology's (Ecology) Interim TPH Policy,[2] and to evaluate the direct contact and protection of groundwater risks associated with the remaining TPH in soil. The results of the investigation showed that petroleum hydrocarbons, where present, were typically detected at a depth of approximately 4.5 feet bgs (just above a perched groundwater table), and the concentrations decreased significantly by 7 feet bgs. The investigation also revealed that the hydrocarbon-impacted groundwater is typically perched on top of or within a shallow silt unit above the sand aquifer, and that all of the existing monitoring wells at both areas, except A1-3, are screened too deep to evaluate the perched groundwater conditions. The risk evaluation showed that TPH concentrations in soil of up to 3,600 milligrams per kilogram (mg/kg) in the former UST area and 3,200 mg/kg in the former road oil storage tank area exhibit acceptable risks based on direct contact and protection of groundwater.

---

1 Chapter 173-340 WAC, *The Model Toxics Control Act Cleanup Regulation; Method A Cleanup Levels.* Amended January 1996.

2 Ecology. 1997. *Interim Interpretive and Policy Statement - Cleanup of Total Petroleum Hydrocarbons (TPH).* Publication No. ECY97-600. Washington State Department of Ecology, Toxics Cleanup Program, Olympia, Washington. January.

The results of the 1997 remedial investigation and risk evaluation are described in EMCON's *Remedial Investigation Report, Former Underground Fuel Storage Tank and Above-ground Road Oil Storage Tank Areas, Weyerhaeuser Snoqualmie Mill*, dated March 24, 1998.

3 INVESTIGATION ACTIVITIES

3.1 Monitoring Well Abandonment

Because the ten remaining wells at the two areas (A1-1 through A1-7 and A2-1, A2-2, and A2-4) were screened too deep to monitor perched groundwater conditions or were screened across the perched zone and into the deeper sand aquifer (potential cross contamination), these wells were abandoned on September 15 and 17, 1998. The locations of the wells are shown on Figure 2. Cascade Drilling, Inc., (Cascade) of Woodinville, Washington, conducted the well abandonment activities in accordance with WAC 173-360. All of the wells were abandoned by pulling out the well casings, drilling out the backfill material, and filling the hole with bentonite (hydrated above the water table) and concrete (at the surface). Overdrilling was required because there were no well construction records.

The soil cuttings were temporarily stored on site in labeled 55-gallon drums. Composite samples were collected from the cuttings, and based on TPH concentrations of up to only 240 mg/kg, the cuttings were used as fill at the former Morbark area of the Mill.

3.2 Drilling and Monitoring Well Installation

On September 16, 17, and 18, 1998, soil and perched groundwater conditions were evaluated by drilling and sampling a total of eight soil borings at the former UST and road oil storage tank areas and completing the borings with groundwater monitoring wells (A1-8 through A1-11 [former UST area] and A2-5 through A2-8 [former road oil storage tank area]). The location of the wells are shown on Figure 3. All of the drilling and well installation activities were conducted under the supervision of an EMCON geologist. Drilling services were provided by Cascade.

Each of the borings was advanced using hollow-stem auger drilling equipment to a maximum depth of approximately 9 feet bgs. The monitoring wells were constructed with 2-inch-diameter, schedule 40 PVC casing and 10-slot (0.010-inch) well screen. The wells were screened from 3 to 8 feet bgs. A filter pack of silica sand was placed around each of the screened intervals concurrent with retraction of the auger. Hydrated bentonite pellets were installed above the sand pack to create a well seal. Each well was completed with above-ground, lockable steel casing around the PVC well casing. Following installation,

each well was developed by purging and bailing with a steel bailer in order to minimize the amount of fine-grained material in the well screen and to increase groundwater flow into the well. All of the wells, except A1-8 and A2-8, were poor water producers, with total purge volumes of less than 1.5 quarts from each well. Details of the subsurface exploration procedures, the boring logs, and the well construction details are included in Appendix A.

3.3 Soil Sampling

Soil samples were collected during the drilling of each boring. The samples were collected at approximately 2.5-foot intervals by using a 1.5-inch-diameter split-spoon sampler driven with a 140-pound hammer. The recovered samples were screened for the potential presence of hydrocarbons by using physical appearance, odor, and a photoionization detector (PID). The PID measurements are included on the boring logs at the respective depth intervals. Selected soil samples collected from above the perched groundwater, at the time of drilling, were submitted to the Weyerhaeuser Analytical and Testing Services laboratory in Federal Way, Washington, for quantitative chemical analysis. To reduce headspace caused by poor sample recovery, the soil samples collected at 2.5 and 5 feet bgs from boring A1-8 were composited, and the samples collected at 5 and 7.5 feet bgs from boring A1-9 were composited. Soil sampling and field screening procedures are described in Appendix A.

3.4 Site Geology

Based on the 1997 and 1998 investigations, the surficial geology beneath both areas generally consists of 1 to 9.5 feet of sandy gravel to gravelly sand fill. Where less than 7 feet thick, the fill is underlain by a silt unit that contains trace to abundant organics. Where the silt unit has not been excavated, the unit ranges from 3.5 to 8 feet in thickness. The silt unit, or the fill unit where the silt has been excavated, is underlain by a silty sand to sandy silt unit. The top of the silty sand to sandy silt unit occurs at depths ranging from approximately 6 to 9.5 feet bgs. Based on previous investigation results, the silty sand to sandy silt unit coarsens to a sand unit with depth and extends to a depth of at least 30 feet bgs.

3.5 Site Hydrogeology

Perched groundwater is present in the fill unit (where it extends below 5 feet bgs), the silt unit, and the upper part of the silty sand to sandy silt unit. In September 1997, the perched groundwater was initially detected in the borings at depths of approximately 5 to 6 feet bgs. In September 1998, the perched groundwater was initially detected in the borings at depths of approximately 7 to 8 feet bgs.

The top of casing elevation of each new monitoring well was surveyed to the nearest 0.01-foot, relative to a local site datum, by EMCON personnel. The site datum (the bolt on top of a fire hydrant located between the former UST and road oil storage tank areas) was assigned an elevation of 100.00 feet. The top of casing elevations are presented in Table 1.

During a groundwater sampling event conducted in September 1998, the depths to groundwater were measured in the monitoring wells. The depth to groundwater measurements were collected with an electronic water level probe and converted to groundwater elevations relative to the top of well casing elevations. The depths to groundwater in the wells ranged from 8.80 to 10.00 feet below the top of well casings (the well casing elevations are approximately 2 to 2.5 feet above ground surface). The depth to groundwater measurements and the groundwater elevations are presented in Table 1. On September 24, 1998, the general perched groundwater flow direction beneath both areas was to the southwest (Figure 2).

4 NATURE AND EXTENT OF CONTAMINATION

4.1 Soil Sample Analytical Results

At least one soil sample from each of the soil borings was submitted to Weyerhaeuser Analytical and Testing Services under standard chain-of-custody protocol, for analysis. The samples from the former UST area borings were analyzed for BTEX by USEPA Method 8240, TPH as gasoline (TPH-G) by Ecology Method WTPH-G, and for TPH as diesel (TPH-D) and as oil (TPH-O) by Ecology Method WTPH-D extended (after sulfuric acid/silica gel cleanup). The samples from the former road oil storage tank area borings were analyzed for TPH-D and TPH-O (after sulfuric acid/silica gel cleanup). The soil sample analytical results showed that all of the samples from the UST area borings contained BTEX concentrations below MTCA Method B cleanup levels, and combined TPH (gasoline, diesel, and oil) concentrations below the risk-based (Interim TPH Policy) site action level (3,600 mg/kg).

The soil sample analytical results from the road oil storage tank area borings showed that the combined TPH (diesel and oil) concentration (8,300 mg/kg) in the 5-foot-deep sample from boring A2-6 (designated A2-6-5.0) exceeded the risk-based (Interim TPH Policy) site action level (3,200 mg/kg). Boring A2-6 is located behind the current above-ground lube oil storage facility, approximately 75 feet south of the former tank (Figure 2). The combined TPH concentrations in the other samples were below the risk-based action level. The soil sample analytical results for the borings from both areas are presented in Table 2. Copies of the laboratory reports are included in Appendix B.

4.2 Groundwater Sample Analytical Results

On September 24 and 25, 1998, groundwater samples were collected from all of the monitoring wells in both areas in accordance with the procedures described in Appendix A. The samples were submitted to Weyerhaeuser Analytical and Testing Services under standard chain-of-custody protocol, for analysis. The samples collected from wells A1-8 through A1-11 (former UST area) were analyzed for BTEX by USEPA Method 8260, TPH-G, TPH-D, and TPH-O. The TPH-D and TPH-O analyses were conducted after sulfuric acid/silica gel cleanup. The sample analytical results were below MTCA Method A cleanup levels, except for the benzene concentration (12 micrograms per liter [µg/L]) in the sample from A1-9, the TPH-O concentration (1,800 µg/L) in the

sample from A1-10, and the TPH-D and TPH-O concentrations (1,900 and 4,700 µg/L, respectively) in the sample from A1-11. The groundwater sample analytical results for the former UST area are summarized in Table 3, and the benzene, TPH-G, TPH-D, and TPH-O results are presented on Figure 2.

The samples collected from wells A2-5 through A2-8 (former road oil storage tank area) were analyzed for TPH-D and TPH-O (after silica gel/sulfuric acid cleanup), for volatile organic compounds (VOCs) by USEPA Method 8260, and polynuclear aromatic hydrocarbons by USEPA Method 8270//The sample analytical results were below MTCA Method A cleanup levels, except for the TPH-O concentration (2,600 µg/L) in the sample from A2-5, and the TPH-D and TPH-O concentrations (2,000 and 5,000 µg/L, respectively) in the sample from A2-6. The groundwater sample analytical results for the former road oil storage tank area are summarized in Table 4, and the benzene, TPH-D, and TPH-O results are presented on Figure 2. A copy of the laboratory report is presented in Appendix B.

5 CONCLUSIONS

In September 1998, EMCON conducted groundwater investigation activities at the former UST area and the former aboveground road oil storage tank area of the Weyerhaeuser Snoqualmie Mill. The purposes of the work were to characterize the perched groundwater conditions beneath both areas and to prevent potential cross contamination of a sand aquifer beneath the perched groundwater. The work consisted of abandoning ten groundwater monitoring wells, drilling and sampling four soil borings at each area, completing each of the borings as a groundwater monitoring well, and sampling each well.

The soil sample analytical results showed that all of the samples from the UST area borings contained BTEX concentrations below MTCA Method B cleanup levels, and combined TPH (TPH-G, TPH-D, and TPH-O) concentrations below the risk based (Interim TPH Policy) site action level (3,600 mg/kg). For the road oil storage tank area borings, the sample from boring A2-6 (at 5 feet bgs) contained a combined TPH (TPH-D and TPH-O) concentration (8,300 mg/kg) that exceeded the risk based site action level (3,200 mg/kg). A2-6 is located behind the current above-ground lube oil storage facility (approximately 75 feet south of the former road oil storage tanks). The combined TPH concentrations in the samples from the other borings in the former road oil storage tank area were below the site action level. Based on field screening and soil sample analytical results, petroleum hydrocarbons, where present, were typically detected at a depth of 5 feet bgs (just above the perched groundwater).

Based on the groundwater sample analytical results, the petroleum hydrocarbons in the soil beneath both areas has impacted the perched groundwater. Groundwater sample analytical results from the former UST area wells indicated that the benzene concentration in the sample from A1-9, the TPH-O concentration in the sample from A1-10, and the TPH-D and TPH-O concentrations in the sample from A1-11 exceeded MTCA Method A cleanup levels. Wells A1-9, A1-10, and A1-11 are located hydraulically downgradient (southwest) and cross gradient of the former UST basin. The groundwater sample analytical results from the former road oil storage tank area wells indicated that the TPH-O concentration in the sample from A2-5, and the TPH-D and TPH-O concentrations in the sample from A2-6 exceeded MTCA Method A cleanup levels. Wells A2-5 and A2-6 are located hydraulically downgradient and cross gradient of the former road oil storage tanks.

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.

TABLES

Table 1
Groundwater Monitoring Data
Former UST and Road Oil Storage Tank Areas
Weyerhaeuser Snoqualmie Mill
Snoqualmie, Washington

Well ID	TOC Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation[a] (feet)
Former UST Area Wells				
A1-8	100.31	9/24/98	9.08	91.23
A1-9	99.52	9/24/98	9.27	90.25
A1-10	100.29	9/24/98	10.00	90.29
A1-11	99.46	9/24/98	8.80	90.66
Former Road Oil Storage Tank Area Wells				
A2-5	100.09	9/24/98	10.06	90.03
A2-6	100.56	9/24/98	9.75	90.81
A2-7	100.67	9/24/98	9.26	91.41
A2-8	100.39	9/24/98	9.12	91.27

NOTE: TOC = top of well casing elevation referenced to an arbitrary vertical site datum (the bolt on top of a fire hydrant located between the former UST and road oil storage tank areas).

[a] Groundwater elevation = TOC elevation - depth to water.

Table 2
Soil Sample Analytical Results
Former UST and Road Oil Storage Tank Areas
Weyerhaeuser Snoqualmie Mill
Snoqualmie, Washington

Soil Boring	Sample Name	Approximate Sample Depth (feet)	Date	Benzene[a] (mg/kg)	Toluene[a] (mg/kg)	Ethylbenzene[a] (mg/kg)	Total Xylenes[a] (mg/kg)	TPH as Gasoline[b] (mg/kg)	TPH as Diesel[c] (mg/kg)	TPH as Oil[c] (mg/kg)
Site Cleanup Levels				34.5[d]	16,000[d]	8,000[d]	160,000[d]	3,600[e] / 3,200[f]		
Former UST Area Borings										
A1-8	A1-8-5.0	2.5 - 3.0, 5.0 - 5.5	9/16/98	0.063	0.014	0.16	0.51	27	180	120
A1-9	A1-9-5.0	5.0 - 5.5	9/16/98	0.012	0.012	0.027	0.068	45	88	310
A1-10	A1-10-5.0	5.0 - 5.5, 7.5 - 8.0	9/16/98	<0.001	<0.001	<0.001	<0.002	3.3	6.4	32
A1-11	A1-11-2.5	2.5 - 3.0	9/16/98	0.001	0.001	<0.001	0.003	3.5	13	58
Former Road Oil Storage Tank Area Borings										
A2-5	A2-5-5.0	5.0 - 5.5	9/16/98	NA	NA	NA	NA	NA	17	140
A2-6	A2-6-5.0	5.0 - 5.5	9/16/98	NA	NA	NA	NA	NA	2,100	6,100
A2-7	A2-7-5.0	5.0 - 5.5	9/16/98	NA	NA	NA	NA	NA	<8.4	12
A2-8	A2-8-2.5	2.5 - 3.0	9/16/98	NA	NA	NA	NA	NA	3.9	13

NOTE: mg/kg = milligrams per kilogram (ppm).

Shading indicates that concentration exceeded site cleanup level.

NA = not analyzed.

[a] Benzene, toluene, ethylbenzene, and total xylenes by USEPA Method 8240.

[b] TPH as gasoline by Ecology Method WTPH-G.

[c] TPH as diesel and as oil by Ecology Method WTPH-D extended (after silica gel/sulfuric acid cleanup).

[d] Chapter 173-340 WAC, *The Model Toxics Control Act Cleanup Regulation, Method B Cleanup Levels*. Amended January 1996.

[e] Combined TPH-G, TPH-D, and TPH-O cleanup level for former UST area is based on an evaluation of direct contact and protection of groundwater risks at the site. Risk evaluation was conducted consistent with Ecology's MTCA Interim TPH Policy Statement for TPH, dated January 1997.

[f] Combined TPH-D and TPH-O cleanup level for former road oil storage tank area is based on an evaluation of direct contact and protection of groundwater risks at the site. Risk evaluation was conducted consistent with Ecology's MTCA Interim TPH Policy Statement for TPH, dated January 1997.

Table 3
Groundwater Sample Analytical Results
Former UST Area
Weyerhaeuser Snoqualmie Mill
Snoqualmie, Washington

Well ID	Date Sampled	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethyl-benzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH as Gasoline[b] (µg/L)	TPH as Diesel[c] (µg/L)	TPH as Oil[c] (µg/L)
MTCA Method A Cleanup Levels[d]		5.0	40.0	30.0	20.0	1,000	1,000	1,000
A1-8	9/24/98	4.0	0.9	1.0	5.6	260	330	<180
A1-9	9/24/98	12.0	2.0	0.4	2.8	590	150	180
A1-10	9/24/98	<0.5	<0.5	<0.5	<0.5	<250	320	1,800
A1-11	9/24/98	<0.5	0.6	<0.5	0.2	<250	1,900	4,700

NOTE: mg/L = micrograms per liter (ppb).
Shading indicates that concentrations exceeded site cleanup level.

[a] Benzene, toluene, ethylbenzene, and total xylenes by USEPA Method 8260.

[b] TPH as gasoline by Ecology Method WTPH-G.

[c] TPH as diesel and as oil by Ecology Method WTPH-D extended (after silica gel/sulfuric acid cleanup).

[d] Chapter 173-340 WAC, *The Model Toxics Control Act Cleanup Regulation, Method A Cleanup Levels.* Amended January 1996.

Table 4
Groundwater Sample Analytical Results
Former Road Oil Storage Tank Area
Weyerhaeuser Snoqualmie Mill
Snoqualmie, Washington

Well ID	Date Sampled	TPH as Diesel[a] (µg/L)	TPH as Oil[a] (µg/L)	Fluorene[b] (µg/L)	Acetone[c] (µg/L)	Methylene Chloride[c] (µg/L)	cis-1,2-Dichloro-ethene[c] (µg/L)	Chloroform[c] (µg/L)	Benzene[c] (µg/L)	Toluene[c] (µg/L)	Ethyl-benzene[c] (µg/L)	Total Xylenes[c] (µg/L)	1,3,5-Trimethyl-benzene[c] (µg/L)	1,2,4-Trimethyl-benzene[c] (µg/L)	Naphtha-lene[c] (µg/L)
MTCA Method A Cleanup Levels[d]		1,000	1,000	640[e]	800[e]	5	80[e]	7.17[e]	5	40	30	20	NE	NE	320[e]
A2-5	9/25/98	520	2,600	<5	<5	<0.5	<0.5	0.4	<0.5	0.5	<0.5	<0.7	<0.5	<0.5	<0.5
A2-6	9/25/98	2,600	5,000	1.0	<5	<0.5	2.0	<0.5	0.3	0.8	0.4	3.0	0.5	1.0	0.3
A2-7	9/25/98	190	750	<5	15.0	1.0	<0.5	<0.5	<0.5	1.0	<0.5	0.8	<0.5	<0.5	<0.5
A2-8	9/24/98	90	340	<4	<5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.8	<0.5	<0.5	<0.5

NOTE: mg/L = micrograms per liter.
NE = no cleanup level established.
Shading indicates that concentration exceeded site cleanup level.
Only the detected polynuclear aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs) were included in this table.

[a] TPH as diesel and as oil by Ecology Method WTPH-D extended (after silica gel/sulfuric acid cleanup).

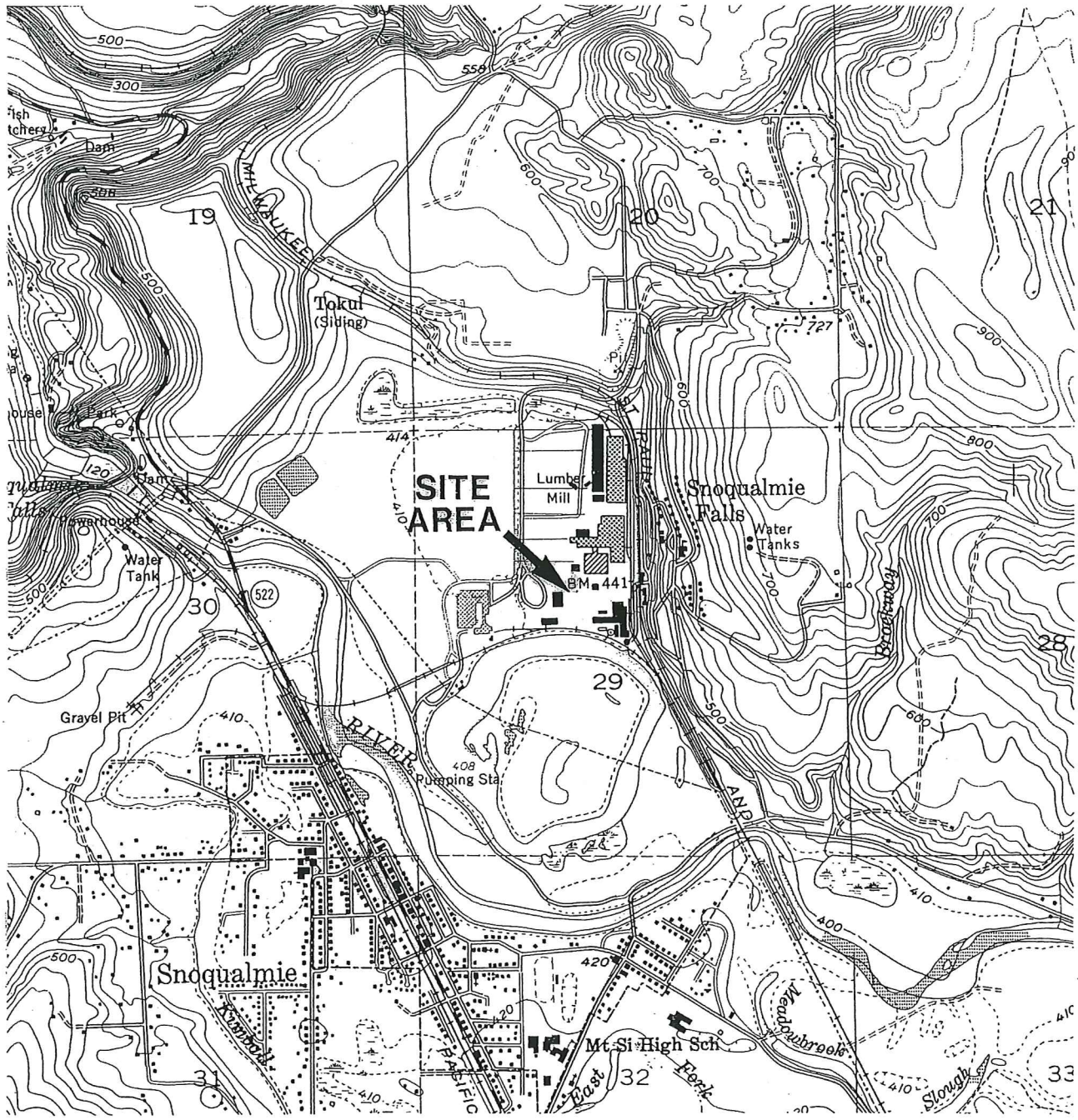
[b] PAHs by USEPA Method 8270.

[c] VOCs by USEPA Method 8260.

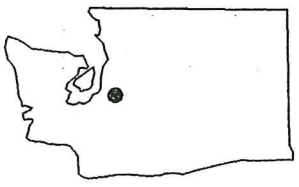
[d] Chapter 173-340 WAC, *The Model Toxics Control Act Cleanup Regulation Method A Cleanup Levels*. Amended January 1996.

[e] MTCA Method B cleanup level was used because there is no Method A cleanup level for this analyte.

FIGURES



SOURCE: USGS 7.5 X 15 MINUTE SERIES, SNOQUALMIE, WASHINGTON 1973.



WASHINGTON

N

0 2000 4000

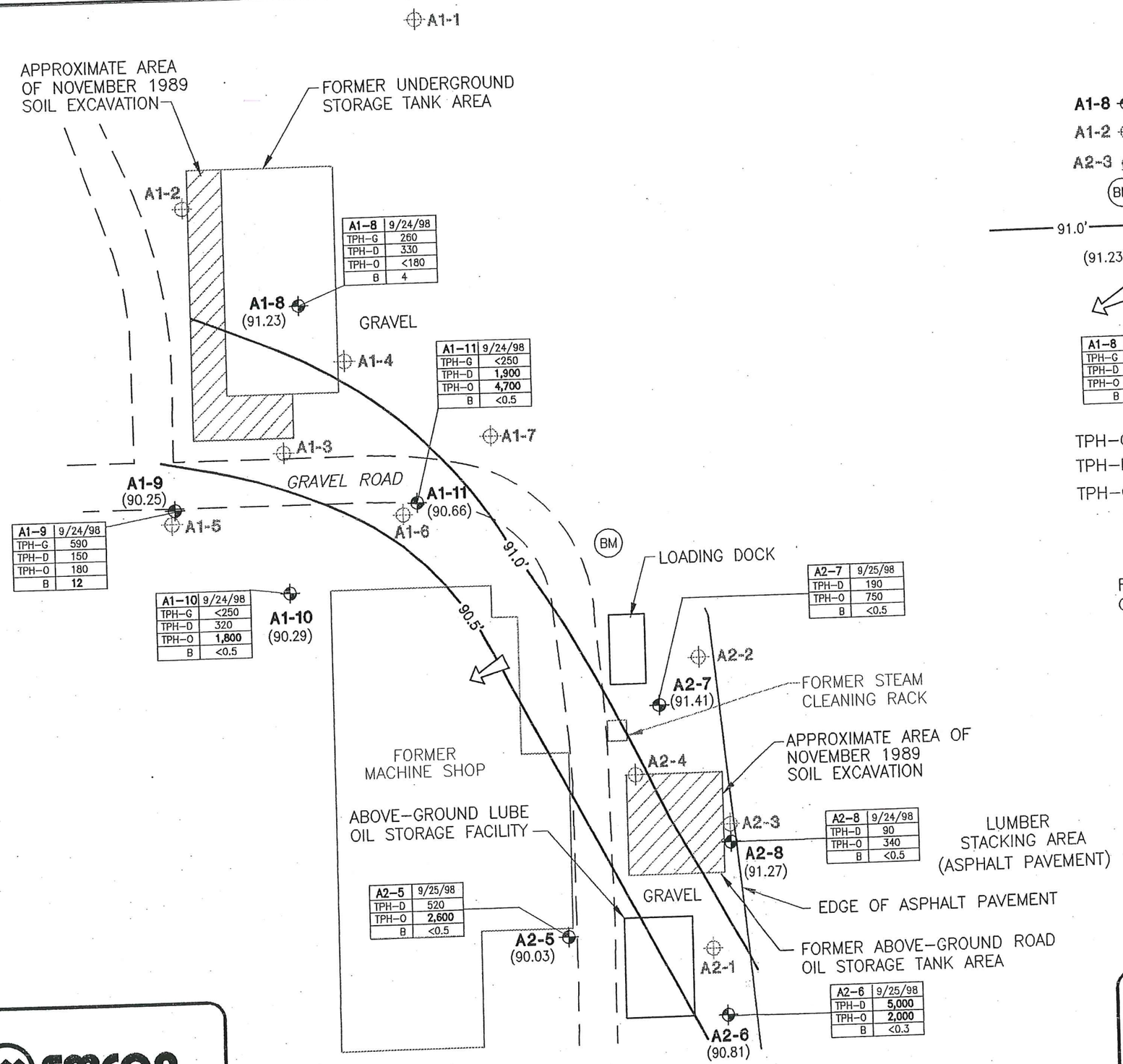
SCALE (ft)

EMCON

DATE 5-97
DWN. MLP
REV.
APPR. MDS
PROJECT NO.
40141-083.001

Figure 1
FORMER UST AND ROAD OIL TANK AREAS
WEYERHAEUSER SNOQUALMIE MILL
SNOQUALMIE, WASHINGTON

SITE VICINITY MAP



LEGEND:

- A1-8 — Monitoring Well Location
- A1-2 — Abandoned Monitoring Well Location
- A2-3 — Destroyed Monitoring Well Location
- BM — Bench Mark (Fire Hydrant)
- 91.0' — Inferred Groundwater Elevation Contour (Feet)
- (91.23) — Groundwater Elevation (Feet) on September 24, 1998 Referenced to an Arbitrary Site Datum (100.00 feet)
- Inferred Groundwater Flow Direction

A1-8	9/24/98
TPH-G	260
TPH-D	330
TPH-O	<180
B	4

Sample Analytical Results in Micrograms per Liter (ppb)

TPH-G = Total Petroleum Hydrocarbons as Gasoline
TPH-D = Total Petroleum Hydrocarbons as Diesel
TPH-O = Total Petroleum Hydrocarbons as Oil
B = Benzene

Results in **Bold** Exceed MTCA Method A Cleanup Levels

N

0 60 120

SCALE (ft)

DATE	12-98
DWN	mlp
APP	MDS
REV	
PROJECT NO.	40141-083.005

FIGURE 2
FORMER UST AND ROAD OIL TANK AREAS
WEYERHAEUSER SNOQUALMIE MILL
SNOQUALMIE, WASHINGTON
GROUNDWATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS - SEPTEMBER 1998

EMCON

APPENDIX A

SUBSURFACE EXPLORATION PROCEDURES

SUBSURFACE EXPLORATION PROCEDURES

This appendix documents the procedures EMCON used to perform the investigation activities described in this report. The appendix includes information on the following subjects:

- Drilling
- Soil sampling
- Soil screening
- Monitoring well installations
- Groundwater sampling
- Decontamination

Soil Borings

The subsurface exploration program conducted for this investigation consisted of advancing and sampling eight soil borings by using hollow stem auger drilling equipment. The borings penetrated to a maximum depth of approximately 9 feet below ground surface (bgs). Boring logs, which include soil descriptions, are contained in this appendix. The soil boring locations are shown on Figure 2 of this report. The boring locations were horizontally surveyed by EMCON personnel.

The soil borings were drilled on September 16, 17, and 18, 1998, by Cascade Drilling, Inc., of Woodinville, Washington. During drilling of each boring, soil samples were collected by using 1.5-inch outside-diameter split-spoon samplers driven with a 140-pound hammer. The 18-inch-long soil samples were collected at approximately 2.5-foot intervals. Each soil sample was described generally consistent with the Unified Soil Classification System (Figure A-1). The drilling and sampling tools were steam cleaned or decontaminated with nonphosphatic soap before each use. The drilling activities were directed and logged by an EMCON geologist.

Soil Sampling

Soil samples recovered from the soil borings were split into at least two approximately equal portions. Using stainless steel spoons, the first portion was transferred to laboratory-prepared glass jars with Teflon™-lined lids and placed in a chilled cooler for

transport to the testing laboratory. Chain-of-custody procedures were used to document the sample handling. The second portion was placed in a clean sealable plastic bag for field screening. Field screening methods are discussed below.

Soil Screening

Soil samples were screened for volatile organic compounds by using a photoionization detector (PID) at the time of the collection. The PID is a subjective analysis affected by, among other influences, climate (e.g., temperature and humidity), soil type and conditions, instrument calibration, and operation. A Thermo Environmental Instruments OVM/Datalogger Model 580B PID, was calibrated to 100 parts per million isobutylene. The intent of the field screening was to qualitatively compare samples and to assist in sample selection for chemical analysis.

The samples were placed in clean, sealable plastic bags. Each sealed plastic bag was then allowed to stand in the back of a field vehicle for approximately 15 minutes. The plastic bag was then punctured with the PID probe, and the maximum reading in the headspace above the soil was recorded. The PID measurements are listed on the boring logs presented in this appendix. They are recorded at their respective depth intervals.

Monitoring Well Installations

Soil borings were completed as groundwater monitoring wells. The wells were constructed of 2-inch-diameter, schedule 40, flush-threaded PVC riser pipe attached to a 5-foot section of 0.010-inch mill-cut screen. RMC™ 2/12 silica sand was installed as filter material from approximately ½-foot below to approximately 1 foot above the screened interval. Hydrated bentonite chips were placed above the sand pack to approximately ½-foot below ground surface. An above-grade, 4-inch-diameter, carbon steel pipe with locking cap was secured in place with concrete and surrounded by three concrete-filled steel bumper posts to protect each well. Figure A-2 presents generalized monitoring well construction details.

Groundwater Sampling

Groundwater monitoring wells were developed immediately following installation to remove accumulated sediment and to improve the flow of formation water into the well screen. A steel bailer lowered by new polypropylene rope was utilized to "surge" and develop the well.

All of the monitoring wells were sampled in September 1998. After calculating the volume of water in each well casing, peristaltic pumps with PVC tubing were employed to

purge a minimum of three casing volumes of water from each well. Field parameters (pH, temperature, conductivity, and dissolved oxygen) were measured after each well volume had been removed. Purging continued until field parameter measurements stabilized to within 10 percent of the previous measurement, or until the well was purged dry. Groundwater samples were collected using disposable polyethylene bailers, when water levels had recovered sufficiently. Samples were submitted in laboratory-prepared glass containers, under standard chain-of-custody procedures.

Development water and purged water were transported to EMCON's office in Bothell, Washington, treated by carbon filtration, and discharged to the sanitary sewer under Metro permit no. 461.

Depth to Groundwater Measurements

All depth to groundwater measurements were obtained by using an electronic water level indicator. Measurements were obtained by lowering the device into the well until it indicated that the water surface was encountered and then by measuring the distance from the top of the inside riser pipe to the probe. All of the measurements were recorded to the nearest 0.01 foot.

All groundwater monitoring wells were surveyed for vertical elevations to the nearest 0.01 foot by EMCON personnel. The wells were surveyed to a local site datum allowing determination of relative elevations of groundwater, and consequently, groundwater migration direction at the time the measurements were obtained. The site datum was assumed to have an elevation of 100.00 feet.

Field Equipment Decontamination Procedures

All sampling equipment (e.g., spoons, bailers, etc.) were routinely decontaminated after each use and between sample locations. The equipment was decontaminated with a nonphosphatic soap in a distilled water solution, a stiff-bristle brush, a 1:1 (methanol:deionized water) rinse, followed by a thorough deionized water rinse. A new disposable polyethylene bailer was used to collect a single sample set at each monitoring well. The bailers were disposed after each use. The used decontamination fluid was transported to EMCON's office for treatment by carbon filtration, and disposal into the sanitary sewer.

Sample Descriptions

Classification of soils in this report is based on visual field observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless stated. Visual-manual classification methods of ASTM D 2488 were used as an identification guide. Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits is estimated based on visual observation and is presented parenthetically on the test pit logs.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS: MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS: MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS: MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS: MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS: LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS: LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

DENSITY/CONSISTENCY			
SAND or GRAVEL		SILT or CLAY	
Density	Standard Penetration Resistance in Blows/Foot	Consistency	Standard Penetration Resistance in Blows/Foot
Very loose	0-4	Very soft	0-2
Loose	4-10	Soft	2-4
Medium dense	10-30	Medium stiff	4-8
Dense	30-50	Stiff	8-15
Very dense	>50	Very stiff	15-30
		Hard	>30

MOISTURE	
Modifier	Description
Dry	Little perceptible moisture
Damp	Some perceptible moisture, probably below optimum
Moist	Probably near optimum moisture content
Wet	Much perceptible moisture, probably above optimum

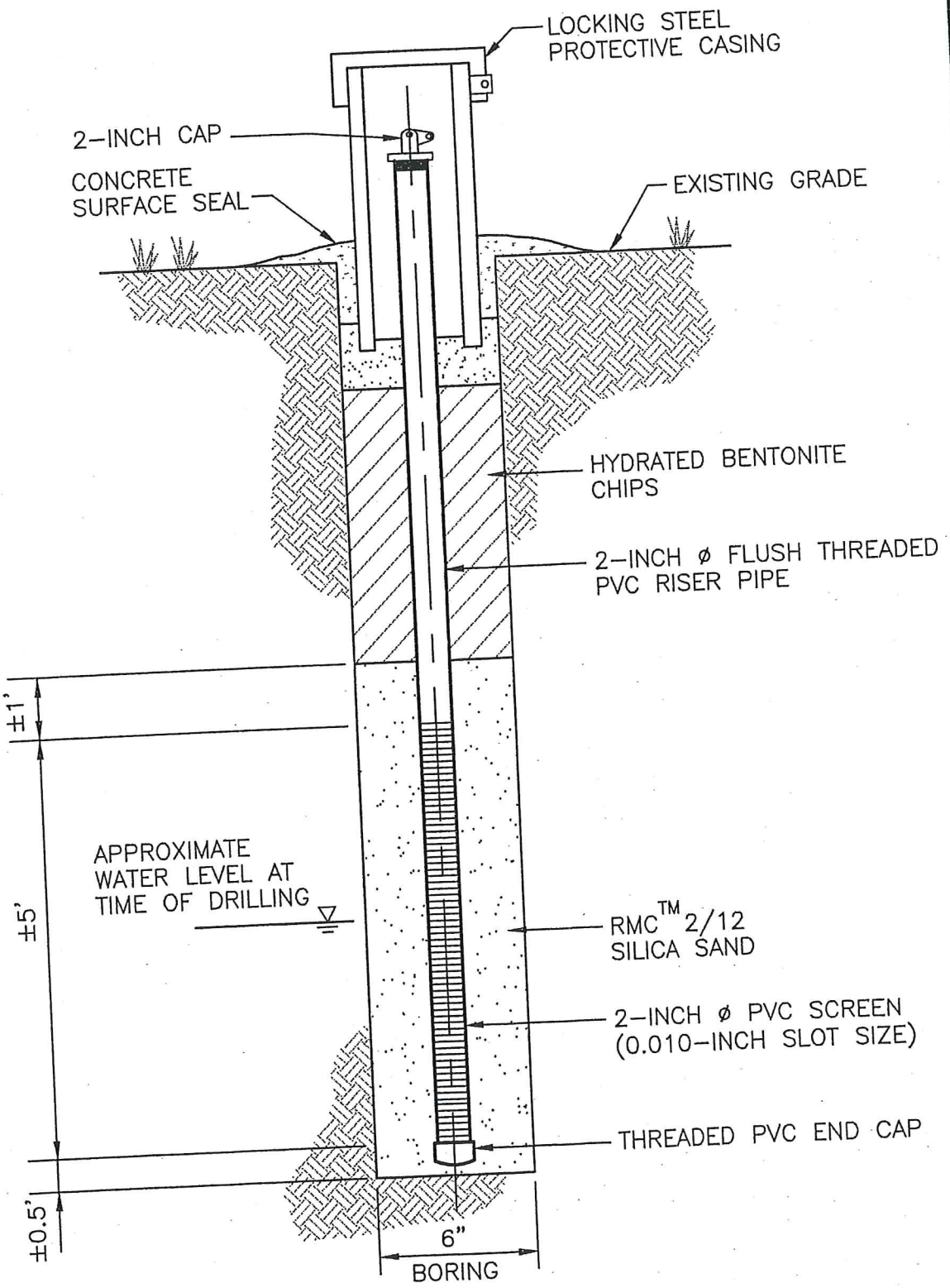
MINOR CONSTITUENTS	
Modifier	Estimated Percentage
Trace	<5
Few	5-10
Little	10-25
Some	25-45

emcon

DATE 12-98
DWN mlp
APP MDS
REV
PROJECT NO. 40141-083.005

FIGURE A-1
FORMER UST AND ROAD OIL TANK AREAS
WEYERHAEUSER SNOQUALMIE MILL
SNOQUALMIE, WASHINGTON

SOIL CLASSIFICATION SYSTEM



emcon

DATE 12–98
DWN M
APP mlp
REV MDS
PROJECT NO.
40141–083.005

FIGURE A-2
FORMER UST AND ROAD OIL TANK AREAS
WEYERHAEUSER SNOQUALMIE MILL
SNOQUALMIE, WASHINGTON
GENERALIZED
WELL INSTALLATION DETAIL

LOG OF EXPLORATORY BORING

PROJECT NAME	Weyerhaeuser Snoqualmie Mill	BORING NO.	A1-8
LOCATION	Snoqualmie, Washington	PAGE	1 OF 1
DRILLED BY	Cascade Drilling, Inc.	REFERENCE ELEV.	
DRILL METHOD	Hollow Stem Auger	TOTAL DEPTH	8 feet
LOGGED BY	Michelle Macias	DATE COMPLETED	9/16/98

SAMPLE NUMBER AND TYPE	BLOWS PER FOOT	PID (ppm)	GROUND WATER LEVEL	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
SS-8-2.5*	3-4-3 (7)	31						**0.0 to 4.5 feet: GRAVELLY SAND WITH SILT (ML);** brown to gray; fine to medium; some coarse sand to medium subangular to subrounded gravel; firm; moist; petroleum hydrocarbon-like odor. (FILL)
SS-8-5*	4-6-6 (12)	15		5				**4.5 to 6.5 feet: SILT (ML);** brown to gray; nonplastic to low plasticity; trace fine to medium sand; stiff; moist.
SS-8-7.5	3-3-3 (6)	--	▽					@ 7.0 feet: wet. @ 7.5 feet: no recovery.
				10				Total depth drilled = 8.0 feet. Total depth sampled = 6.0 feet.
				15				**WELL COMPLETION DETAILS:** +2.5 to 3.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC blank riser pipe. 3.0 to 8.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC well screen with 0.010-inch machine-cut slots and 2-inch-diameter flush-threaded Schedule 40 PVC pointed end cap. 0.0 to 0.5 feet: Concrete. 0.5 to 2.0 feet: Bentonite chips hydrated with potable water. 2.0 to 8.0 feet: RMC 2/12 silica sand.
				20				

EMCON®

REMARKS

(1) SS = Samples collected with a 1.5-inch inside diameter split spoon sampler.
(2) Blow counts represent SPT results.
(3) PID = Photoionization detector calibrated using +/- 100 ppm isobutylene gas.
(4) White triangle = field estimate of water level at time of drilling.
(5) * = Sample submitted for laboratory analysis.

LOG OF EXPLORATORY BORING

PROJECT NAME	Weyerhaeuser Snoqualmie Mill	BORING NO.	A1-9
LOCATION	Snoqualmie, Washington	PAGE	1 OF 1
DRILLED BY	Cascade Drilling, Inc.	REFERENCE ELEV.	
DRILL METHOD	Hollow Stem Auger	TOTAL DEPTH	9 feet
LOGGED BY	Michelle Macias	DATE COMPLETED	9/16/98

SAMPLE NUMBER AND TYPE	BLOWS PER FOOT	PID (ppm)	GROUND WATER LEVEL	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
SS-9-2.5	6-8-9 (17)	--						**0.0 to 3.5 feet: SANDY SILTY GRAVEL (GW);** brown; fine to medium; few fines; few fine sand. (FILL) @ 2.5 feet: no recovery.
SS-9-5*	3-2-3 (5)	14		5				**3.5 to 7.0 feet: SILT (ML);** brown to gray; nonplastic to low plasticity; trace fine to medium sand; firm; moist; no hydrocarbon-like odors. (MARSH DEPOSIT)
SS-9-7.5*	3-2-4 (6)	14	▽	10				**7.0 to 9.0 feet: SILTY SAND (SM);** brown; fine; some low plasticity silt; loose; moist to wet; petroleum hydrocarbon-like odor. (ALLUVIAL DEPOSIT) @ 8.0 feet: wet. Total depth drilled = 8.0 feet. Total depth sampled = 9.0 feet.
				15				**WELL COMPLETION DETAILS:** +2.0 to 3.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC blank riser pipe. 3.0 to 8.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC well screen with 0.010-inch machine-cut slots and 2-inch-diameter flush-threaded Schedule 40 PVC pointed end cap. 0.0 to 0.5 feet: Concrete. 0.5 to 2.0 feet: Bentonite chips hydrated with potable water. 2.0 to 8.0 feet: RMC 2/12 silica sand.
				20				

REMARKS

(1) SS = Samples collected with a 1.5-inch inside diameter split spoon sampler.
(2) Blow counts represent SPT results.
(3) PID = Photoionization detector calibrated using +/- 100 ppm isobutylene gas.
(4) White triangle = field estimate of water level at time of drilling.
(5) * = Sample submitted for laboratory analysis.

EMCON®

LOG OF EXPLORATORY BORING

PROJECT NAME	Weyerhaeuser Snoqualmie Mill	BORING NO.	A1-10
LOCATION	Snoqualmie, Washington	PAGE	1 OF 1
DRILLED BY	Cascade Drilling, Inc.	REFERENCE ELEV.	
DRILL METHOD	Hollow Stem Auger	TOTAL DEPTH	8 feet
LOGGED BY	Michelle Macias	DATE COMPLETED	9/16/98

SAMPLE NUMBER AND TYPE	BLOWS PER FOOT	PID (ppm)	GROUND WATER LEVEL	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
SS-10-2.5	2-2-2 (4)	--						**0.0 to 3.5 feet: SANDY SILTY GRAVEL (GW);** brown; fine to medium; few fine sand. (FILL)
								@ 2.5 feet: no recovery; wood in sampler shoe.
SS-10-5*	2-1-3 (4)	0		5				**3.5 to 6.5 feet: SILT (ML);** brown; low plasticity; trace fine sand; moist; no hydrocarbon-like odor. (ALLUVIAL DEPOSIT)
			▽					@ 7.0 feet: wet.
SS-10-7.5	2-3-4 (7)	--						@ 7.5 feet: no recovery.
				10				Total depth drilled = 8.0 feet. Total depth sampled = 6.5 feet.
				15				**WELL COMPLETION DETAILS:** +2.5 to 3.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC blank riser pipe. 3.0 to 8.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC well screen with 0.010-inch machine-cut slots and 2-inch-diameter flush-threaded Schedule 40 PVC pointed end cap.
				20				0.0 to 0.5 feet: Concrete. 0.5 to 2.0 feet: Bentonite chips hydrated with potable water. 2.0 to 8.0 feet: RMC 2/12 silica sand.

REMARKS

(1) SS = Samples collected with a 1.5-inch inside diameter split spoon sampler.
(2) Blow counts represent SPT results.
(3) PID = Photoionization detector calibrated using +/- 100 ppm isobutylene gas.
(4) White triangle = field estimate of water level at time of drilling.
(5) * = Sample submitted for laboratory analysis.

EMCON®

LOG OF EXPLORATORY BORING

PROJECT NAME	Weyerhaeuser Snoqualmie Mill	BORING NO.	A1-11
LOCATION	Snoqualmie, Washington	PAGE	1 OF 1
DRILLED BY	Cascade Drilling, Inc.	REFERENCE ELEV.	
DRILL METHOD	Hollow Stem Auger	TOTAL DEPTH	9 feet
LOGGED BY	Michelle Macias	DATE COMPLETED	9/16/98

SAMPLE NUMBER AND TYPE	BLOWS PER FOOT	PID (ppm)	GROUND WATER LEVEL	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
SS-11-2.5*	2-1-2 (3)	0		5				**0.0 to 1.0 foot: SANDY SILTY GRAVEL (GM);** brown; fine to medium; few fine sand; few fines. (FILL) **1.0 to 7.0 feet: SILT (ML);** gray; low plasticity; trace fine sand; very loose to loose; moist; petroleum hydrocarbon-like odor. (MARSH DEPOSIT)
SS-11-5	8-6-2 (8)	0	▽	10				@ 7.0 feet: wet. **7.0 to 9.0 feet: SILTY SAND (SM);** brown; fine; some low plasticity silt; loose; wet. (ALLUVIAL DEPOSIT)
SS-11-7.5	3-4-3 (7)	0		15				Total depth drilled = 8.0 feet. Total depth sampled = 9.0 feet.
				20				**WELL COMPLETION DETAILS:** +2.5 to 3.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC blank riser pipe. 3.0 to 8.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC well screen with 0.010-inch machine-cut slots and 2-inch-diameter flush-threaded Schedule 40 PVC pointed end cap. 0.0 to 0.5 feet: Concrete. 0.5 to 2.0 feet: Bentonite chips hydrated with potable water. 2.0 to 8.0 feet: RMC 2/12 silica sand.

EMCON®

REMARKS

(1) SS = Samples collected with a 1.5-inch inside diameter split spoon sampler.
(2) Blow counts represent SPT results.
(3) PID = Photoionization detector calibrated using +/- 100 ppm isobutylene gas.
(4) White triangle = field estimate of water level at time of drilling.
(5) * = Sample submitted for laboratory analysis.

LOG OF EXPLORATORY BORING

PROJECT NAME	**Weyerhaeuser Snoqualmie Mill**	BORING NO.	**A2-5**
LOCATION	**Snoqualmie, Washington**	PAGE	**1 OF 1**
DRILLED BY	**Cascade Drilling, Inc.**	REFERENCE ELEV.	
DRILL METHOD	**Hollow Stem Auger**	TOTAL DEPTH	**9 feet**
LOGGED BY	**Michelle Macias**	DATE COMPLETED	**9/17/98**

SAMPLE NUMBER AND TYPE	BLOWS PER FOOT	PID (ppm)	GROUND WATER LEVEL	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
								0.0 to 2.0 feet: SANDY SILTY GRAVEL (GM); brown; fine to medium; some fines; few fine sand. (FILL)
SS-5-2.5	3-4-5 (9)	0						**2.0 to 9.0 feet: SILT (ML);** brown with local iron staining; low plasticity; trace fine sand; moist to wet; trace scattered rootlets; no hydrocarbon-like odors. (MARSH DEPOSIT)
SS-5-5*	4-5-4 (9)	1		5				
SS-5-7.5	3-3-3 (6)	0	▽					@ 7.5 feet: wet.
				10				Total depth drilled = 8.0 feet. Total depth sampled = 9.0 feet.
				15				**WELL COMPLETION DETAILS:** +2.5 to 3.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC blank riser pipe. 3.0 to 8.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC well screen with 0.010-inch machine-cut slots and 2-inch-diameter flush-threaded Schedule 40 PVC pointed end cap. 0.0 to 0.5 feet: Concrete. 0.5 to 2.0 feet: Bentonite chips hydrated with potable water. 2.0 to 8.0 feet: RMC 2/12 silica sand.
				20				

EMCON®

REMARKS

(1) SS = Samples collected with a 1.5-inch inside diameter split spoon sampler.
(2) Blow counts represent SPT results.
(3) PID = Photoionization detector calibrated using +/- 100 ppm isobutylene gas.
(4) White triangle = field estimate of water level at time of drilling.
(5) * = Sample submitted for laboratory analysis.

LOG OF EXPLORATORY BORING

PROJECT NAME	**Weyerhaeuser Snoqualmie Mill**	BORING NO.	**A2-6**
LOCATION	**Snoqualmie, Washington**	PAGE	**1 OF 1**
DRILLED BY	**Cascade Drilling, Inc.**	REFERENCE ELEV.	
DRILL METHOD	**Hollow Stem Auger**	TOTAL DEPTH	**8.5 feet**
LOGGED BY	**Michelle Macias**	DATE COMPLETED	**9/18/98**

SAMPLE NUMBER AND TYPE	BLOWS PER FOOT	PID (ppm)	LITHOLOGIC DESCRIPTION
SS-6-2.5	5-4-6 (10)	--	**0.0 to 3.0 feet: SANDY SILTY GRAVEL (GM);** brown; fine to medium; some fines; few fine sand. (FILL)
			@ 2.5 feet: no recovery
			3.0 to 7.0 feet: SILT (ML); gray; low plasticity; trace fine sand; soft; moist; petroleum hydrocarbon-like odor. (MARSH DEPOSIT)
SS-6-5*	2-1-2 (3)	28	
			@ 7.0 feet: wet.
SS-6-7.5	1-1-1 (2)	3	**7.0 to 9.0 feet: SILTY SAND (SM);** gray with local iron staining; fine; some low plasticity silt; very loose; wet; petroleum hydrocarbon-like odor. (ALLUVIAL DEPOSIT)

Total depth drilled = 8.0 feet.
Total depth sampled = 8.5 feet.

WELL COMPLETION DETAILS:

+2.5 to 3.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC blank riser pipe.

3.0 to 8.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC well screen with 0.010-inch machine-cut slots and 2-inch-diameter flush-threaded Schedule 40 PVC pointed end cap.

0.0 to 0.5 feet: Concrete.

0.5 to 2.0 feet: Bentonite chips hydrated with potable water.

2.0 to 8.0 feet: RMC 2/12 silica sand.

EMCON®

REMARKS

(1) SS = Samples collected with a 1.5-inch inside diameter split spoon sampler.
(2) Blow counts represent SPT results.
(3) PID = Photoionization detector calibrated using +/- 100 ppm isobutylene gas.
(4) White triangle = field estimate of water level at time of drilling.
(5) * = Sample submitted for laboratory analysis.

LOG OF EXPLORATORY BORING

PROJECT NAME	**Weyerhaeuser Snoqualmie Mill**	BORING NO.	**A2-7**
LOCATION	**Snoqualmie, Washington**	PAGE	**1 OF 1**
DRILLED BY	**Cascade Drilling, Inc.**	REFERENCE ELEV.	
DRILL METHOD	**Hollow Stem Auger**	TOTAL DEPTH	**9 feet**
LOGGED BY	**Michelle Macias**	DATE COMPLETED	**9/17/98**

SAMPLE NUMBER AND TYPE	BLOWS PER FOOT	PID (ppm)	GROUND WATER LEVEL	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
SS-7-2.5	1-1-1 (2)	0						**0.0 to 1.0 foot: SANDY SILTY GRAVEL (GW);** brown; fine to medium; few fines; few fine sand. (FILL)
SS-7-5*	1-1-1 (2)	0		5				**1.0 to 6.0 feet: SILT (ML);** gray; low plasticity; little fine sand; trace medium sand; trace scattered rootlets; soft; moist; no hydrocarbon-like odors. (MARSH DEPOSIT)
SS-7-7.5	1-1-1 (2)	0	▽					**6.0 to 9.0 feet: SILTY SAND (SM);** gray; fine; some low plasticity silt; very loose; moist to wet; no hydrocarbon-like odors. (ALLUVIAL DEPOSIT)
				10				Total depth drilled = 8.0 feet. Total depth sampled = 9.0 feet.
				15				**WELL COMPLETION DETAILS:** +2.5 to 3.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC blank riser pipe. 3.0 to 8.0 feet: 2-inch-diameter flush-threaded schedule 40 PVC well screen with 0.010-inch machine-cut slots and 2-inch-diameter flush-threaded Schedule 40 PVC pointed end cap. 0.0 to 0.5 feet: Concrete. 0.5 to 2.0 feet: Bentonite chips hydrated with potable water. 2.0 to 8.0 feet: RMC 2/12 silica sand.
				20				

EMCON®

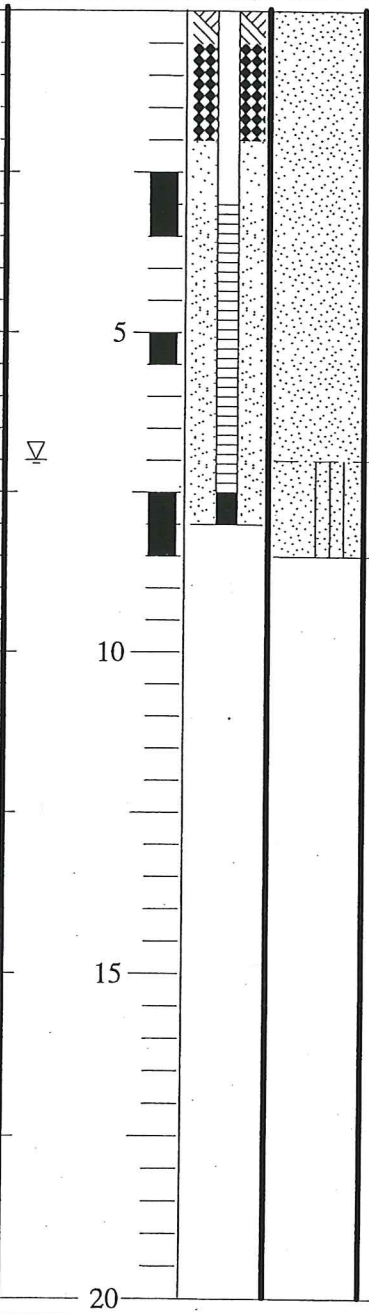
REMARKS

(1) SS = Samples collected with a 1.5-inch inside diameter split spoon sampler.
(2) Blow counts represent SPT results.
(3) PID = Photoionization detector calibrated using +/- 100 ppm isobutylene gas.
(4) White triangle = field estimate of water level at time of drilling.
(5) * = Sample submitted for laboratory analysis.

LOG OF EXPLORATORY BORING

PROJECT NAME	**Weyerhaeuser Snoqualmie Mill**	BORING NO.	**A2-8**
LOCATION	**Snoqualmie, Washington**	PAGE	**1 OF 1**
DRILLED BY	**Cascade Drilling, Inc.**	REFERENCE ELEV.	
DRILL METHOD	**Hollow Stem Auger**	TOTAL DEPTH	**8.5 feet**
LOGGED BY	**Michelle Macias**	DATE COMPLETED	**9/18/98**

SAMPLE NUMBER AND TYPE	BLOWS PER FOOT	PID (ppm)
SS-8-2.5*	20-15-18 (33)	2
SS-8-5	11-5-5 (10)	2
SS-8-7.5	6-5-5 (10)	2



0.0 to 7.0 feet: GRAVELLY SAND (SP); brown; fine to coarse; some fine to medium subangular gravel; loose to dense; moist; no hydrocarbon-like odors. (FILL)

@ 7.0 feet: wet.

7.0 to 8.5 feet: SAND WITH SILT (SP-SM); brown; medium to coarse; few nonplastic silt to fine sand; trace fine subangular gravel; loose; wet. (ALLUVIAL DEPOSIT)

Total depth drilled = 8.0 feet.
Total depth sampled = 8.5 feet.

WELL COMPLETION DETAILS:

+2.5 to 3.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC blank riser pipe.

3.0 to 8.0 feet: 2-inch-diameter flush-threaded Schedule 40 PVC well screen with 0.010-inch machine-cut slots and 2-inch-diameter flush-threaded Schedule 40 PVC pointed end cap.

0.0 to 0.5 feet: Concrete.

0.5 to 2.0 feet: Bentonite chips hydrated with potable water.

2.0 to 8.0 feet: RMC 2/12 silica sand.

EMCON®

REMARKS

(1) SS = Samples collected with a 1.5-inch inside diameter split spoon sampler.
(2) Blow counts represent SPT results.
(3) PID = Photoionization detector calibrated using +/- 100 ppm isobutylene gas.
(4) White triangle = field estimate of water level at time of drilling.
(5) * = Sample submitted for laboratory analysis.

APPENDIX B

LABORATORY REPORTS

Weyerhaeuser

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

October 14, 1998

MS Kelly Rankich
EMCON
18912 North Creek Parkway, Suite 100
Bothell, WA 98011

Dear Kelly:

Please find attached a copy of our final report for the samples that you requested we analyze for Snoqualmie UST. These are from our service request number 98-1120. 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) 924-6242.

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

Weyerhaeuser

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

SDG NARRATIVE

Organic Analysis

WEYERHAEUSER (WEYER)
ANALYTICAL AND TESTING SERVICES

Case Number 98-1120
SDG Number 98-1120-001

PROJECT: Snoqualmie UST Area

The samples from this SDG were received on 9/17/98. The SDG was composed of soil samples for analysis of BTEX by EPA 8240, WTPH-G, and WTPH-D extended with acid silica gel cleanup. The following analyses were performed:

SAMPLE ID	LAB ID	MATRIX	ANALYSIS
A1-8-5	98-1120-001	SOIL	BTEX;WTPH-G;WTPH-D
A1-8-5Dup	98-1120-001Dup	SOIL	WTPH-D
A1-9-5.0	98-1120-002	SOIL	BTEX;WTPH-G;WTPH-D
A1-9-5.0Dup	98-1120-002Dup	SOIL	WTPH-G
A1-9-5.0Trip	98-1120-002Trip	SOIL	WTPH-G
A1-10-5.0	98-1120-003	SOIL	BTEX;WTPH-G;WTPH-D
A1-10-5.0MS	98-1120-003MS	SOIL	BTEX
A1-10-5.0MSD	98-1120-003MSD	SOIL	BTEX
A1-11-2.5	98-1120-004	SOIL	BTEX;WTPH-G;WTPH-D
LCS001	LCS001	Fortified Blank	BTEX;WTPH-G;WTPH-D

Laboratory comments for this sample delivery group are listed below. The comments are broken up into categories for ease of explanation.

1. BTEX (EPA 8240)

   a) The BTEX values were reported down to 1.0 ppb as per the request. An LCS was performed at the 1.0 ug/Kg level to insure adequate response.

2. WTPH-G

   a) The method calls for an MS/MSD pair. This set was inadvertently not spiked and hence these are reported as sample, Duplicate, and Triplicate. The LCS was performed indicating that the method was in control.

3. WTPH-D

   a) No comments on this data set.

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

10/14/98
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

Analytical Testing Services

Date 6-98

Page 1 of 1

Weyerhaeuser — Sample Analysis Request/Chain of Custody Form

Facility: Snoqualmie - UST Area
Sampler's Project No.: 70370 (40141-083.005)
Weyerhaeuser Account No.: 00E
Sampled by: ☐ Facility ☐ E&AS/WTC ☐ E&AS/NB
Consultant: EMCON
Address: 18912 N. Creek Pkwy, Bothell
Phone No.: (425) 485-5000 FAX: (425) 486-9766
Project Manager (print): Kelly Rankich
Sampler Name (print): Michelle Lange
Recorded By (signed): Michelle Lange

Method	Field Sample ID (15 characters max.)	Date (m/d/y)	Time (hh:mm)	Depth (ft / m)	Matrix: Water	Soil/Sed	Oil	Preservative: HCl	H_2SO_4	HNO_3	$Na_2S_2O_3$	Filtered	Number of Containers	Notes
*	A1-8-2.5	9-16-98	0900	2.5		X							1	headspace
	A1-9-5.0	"	1130	5.0		X							1	
	A1-10-5.0	"	1300	5.0		X							1	
	A1-11-2.5	"	1500	2.5		X							1	

Method: G, grab; D, depth composite; T, time composite. Depth required for soil or sediment samples.

Analyses Requested (circle or write in parameters)

pH Cond TDS TSS Color Tannins | Volatile Organics / (BTEX) 8020 | Semi-volatile Organics | (TPH: 418.1) (TPH-G) (TPH-D ext.) (1) | Ca Mg Na K Fe Mn | Metals (list below) | NH_3 HCO_3 CO_3 Cl F NO_3 SO_4 | AOX | TCLP: Metals VOA SVOA Pest Herb PCBs | Dioxin: Total / 2,3,7,8-TCDD / 2,3,7,8-TCDF | CN | BOD P-ortho | TKN P-total TOC COD

Remarks/Detection Limit Requirements

(1) w/silica gel sulfuric acid cleanup

* ID on bottle = A1-8-5

Use this ID per Kelly R. 9-17-98 BC

Reporting and QA/QC Requirements

RESULTS TO: Kelly Rankich
CC:

☐ CLP Package
☐ NPDES Permit
☐ Other:
☐ Electronic Report

☐ Samples on Ice or Blue Ice

Lab Turn-Around Time

☐ 24 Hr ☐ 48 Hr ☐ 7 Day
☒ 2-3 wk Date Due:

Laboratory

☐ WATS/WTC ☐ WATS/NB
☐ Other:

Lab SR#:
Case ID:
SDG ID:

Sample Chain of Custody and Shipping Method Record

	Date	Time		
Relinquished By Sampler (signature): Michelle Lange	9-16-98	1530	Received By (signature):	Shipping Method
Relinquished By (signature):	Date	Time	Received By (signature):	Airbill No.
Relinquished By (signature):	Date	Time	Received For Laboratory By (signature): B Chappel 9.17.98	0830

Samples Received Intact: yes Cooler Temp: 4 °C

WATS/WTC: 32901 Weyerhaeuser Way South, Federal Way, WA 98003 (206-924-6293)

WATS/NB: New Bern R&D Field Station, Highway 43 North, New Bern, NC 28563 (919-633-7238)

53000

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A1-8-5

Lab Name: WEYERHAEUSER Contract: 046-5648

Lab Code: WEYER Case No.: 981120 Method : 8240 SDG No.: A1-8-5

Matrix: (soil/water) SOIL Lab Sample ID: 001

Sample wt/vol: 1.0 (g/mL) G Lab File ID: B8561

Level: (low/med) LOW Date Received: 09/17/98

% Moisture: not dec. 20 Date Analyzed: 09/26/98

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	63	
108-88-3	Toluene	14	
100-41-4	Ethylbenzene	160	
106-42-3	mp-Xylene	490	
95-47-6	o-Xylene	18	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A1-9-5.0

Lab Name: WEYERHAEUSER Contract: 046-5648

Lab Code: WEYER Case No.: 981120 Method : 8240 SDG No.: A1-8-5

Matrix: (soil/water) SOIL Lab Sample ID: 002

Sample wt/vol: 2.5 (g/mL) G Lab File ID: B8563

Level: (low/med) LOW Date Received: 09/17/98

% Moisture: not dec. 13 Date Analyzed: 09/26/98

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	12	
108-88-3	Toluene	12	
100-41-4	Ethylbenzene	27	
106-42-3	mp-Xylene	61	
95-47-6	o-Xylene	7	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A1-10-5.0

Lab Name: WEYERHAEUSER Contract: 046-5648

Lab Code: WEYER Case No.: 981120 Method : 8240 SDG No.: A1-8-5

Matrix: (soil/water) SOIL Lab Sample ID: 003

Sample wt/vol: 5.0 (g/mL) G Lab File ID: B8557

Level: (low/med) LOW Date Received: 09/17/98

% Moisture: not dec. 28 Date Analyzed: 09/26/98

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
106-42-3	mp-Xylene	1	U
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A1-11-2.5

Lab Name: WEYERHAEUSER Contract: 046-5648

Lab Code: WEYER Case No.: 981120 Method : 8240 SDG No.: A1-8-5

Matrix: (soil/water) SOIL Lab Sample ID: 004

Sample wt/vol: 5.0 (g/mL) G Lab File ID: B8560

Level: (low/med) LOW Date Received: 09/17/98

% Moisture: not dec. 27 Date Analyzed: 09/26/98

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	0.7	J
108-88-3	Toluene	1	J
100-41-4	Ethylbenzene	1	U
106-42-3	mp-Xylene	2	
95-47-6	o-Xylene	0.8	J

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: WEYERHAEUSER Contract: 046-5648

Lab Code: WEYER Case No.: 981120 Method : 8240 SDG No.: A1-8-5

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL) #	SMC2 (BFB) #	SMC3 (DCE) #	OTHER	TOT OUT
01	A1-8-5	102	92	94	0	0
02	A1-9-5.0	110	89	95	0	0
03	A1-10-5.0	99	95	92	0	0
04	A1-11-2.5	106	89	93	0	0
05	VLCS001	96	98	97	0	0
06	A1-10-5.0MS	100	94	95	0	0
07	A1-10-5.0MSD	103	91	95	0	0
08	VBLKS1	98	98	96	0	0

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(84-138)
SMC2 (BFB)	= Bromofluorobenzene	(59-113)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: WEYERHAEUSER Contract: 046-5648

Lab Code: WEYER Case No.: 981120 Method : 8240 SDG No.: A1-8-5

Matrix Spike - EPA Sample No.: A1-10-5.0 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	69.40	0	67.92	98	59-172
Trichloroethene	69.40	0	64.44	93	62-137
Benzene	69.40	0	66.94	96	66-142
Toluene	69.40	0	66.67	96	59-139
Chlorobenzene	69.40	0	65.42	94	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	69.40	67.36	97	1	22	59-172
Trichloroethene	69.40	65.69	95	2	24	62-137
Benzene	69.40	68.61	99	3	21	66-142
Toluene	69.40	69.58	100	4	21	59-139
Chlorobenzene	69.40	66.53	96	2	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A1-10-5.0MS

Lab Name: WEYERHAEUSER Contract: 046-5648

Lab Code: WEYER Case No.: 981120 Method : 8240 SDG No.: A1-8-5

Matrix: (soil/water) SOIL Lab Sample ID: 003MS

Sample wt/vol: 5.0 (g/mL) G Lab File ID: B8558

Level: (low/med) LOW Date Received: 09/17/98

% Moisture: not dec. 28 Date Analyzed: 09/26/98

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	67	
108-88-3	Toluene	67	
100-41-4	Ethylbenzene	1	U
106-42-3	mp-Xylene	1	U
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

A1-10-5.0MSD

Lab Name: WEYERHAEUSER Contract: 046-5648

Lab Code: WEYER Case No.: 981120 Method : 8240 SDG No.: A1-8-5

Matrix: (soil/water) SOIL Lab Sample ID: 003MSD

Sample wt/vol: 5.0 (g/mL) G Lab File ID: B8559

Level: (low/med) LOW Date Received: 09/17/98

% Moisture: not dec. 28 Date Analyzed: 09/26/98

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	69	
108-88-3	Toluene	70	
100-41-4	Ethylbenzene	1	U
106-42-3	mp-Xylene	1	U
95-47-6	o-Xylene	1	U

Service Request 98-1120

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

Report (Updated 12/7/98)
Snoqualmie UST Area

Client ID	**A1-8-5**	**A1-9-5.0**	**A1-10-5.0**
Sample Date and Time	**9/16/98 0900**	**9/16/98 1130**	**9/16/98 1300**
Lab ID	**001**	**002**	**003**
	mg/Kg	mg/Kg	mg/Kg
Analyte	(O.D. basis)	(O.D. basis)	(O.D. basis)
Gasoline Range	27	45	3.3 J
Surrogate (%recovery)			
Trifluorotoluene	95%	110%	95%
Bromofluorobenzene	115%	120%	90%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-G

Approved: Richard Bogar
Telephone: (253)-924-6242

Date: 12/7/98

Service Request 98-1120

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

Report (Updated 12/7/98)
Snoqualmie UST Area

Client ID	**A1-11-2.5**	**A1-9-5.0Dup**	**A1-9-5.0Trip**
Sample Date and Time	**9/16/98 1500**	**9/16/98 1130**	**9/16/98 1130**
Lab ID	**004**	**002Dup**	**002Trip**
	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)
Analyte			
Gasoline Range	3.5 J	40	44
Surrogate (%recovery)			
Trifluorotoluene	75%	100%	100%
Bromofluorobenzene	85%	110%	110%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-G

Approved: Richard Bogar
Telephone: (253)-924-6242

Date: 12/7/98

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

Service Request 98-1120

Report (Updated 12/7/98)
Snoqualmie UST Area

Client ID	**Method Blank**	**LCS**
Sample Date and Time		
Lab ID	**Blank1**	**LCS1**
	mg/Kg	
Analyte	(O.D. basis)	% Recovery
Gasoline Range	<5	115%
Surrogate (%recovery)		
Trifluorotoluene	120%	120%
Bromofluorobenzene	115%	120%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-G

Approved: Richard Bogar
Telephone: (253)-924-6242

Date: 12/7/98

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

Service Request 98-1120

Report (Updated 12/7/98)
Snoqualmie UST Area

Client ID	**A1-8-5**	**A1-9-5.0**	**A1-10-5.0**
Sample Date and Time	**9/16/98 0900**	**9/16/98 1130**	**9/16/98 1300**
Lab ID	**001**	**002**	**003**
	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)
Analyte			
Diesel Fuel Range	180	88	6.4 J
Motor Oil Range	120	310	32
Surrogate (%recovery)			
o-Terphenyl	109%	118%	90%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

Approved: Richard Bogar
Telephone: (253)-924-6242

Date: 12/7/98

Service Request 98-1120

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

Report (Updated 12/7/98)
Snoqualmie UST Area

Client ID	**A1-11-2.5**	**A1-8-5.0Dup**	**Method Blank**
Sample Date and Time	**9/16/98 1500**	**9/16/98 1130**	
Lab ID	**004**	**001Dup**	**Blank1**
	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)
Analyte			
Diesel Fuel Range	13	230	<6.7
Motor Oil Range	58	160	<17
Surrogate (%recovery)			
o-Terphenyl	107%	98%	95%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

Approved: Richard Bogar
Telephone: (253)-924-6242

Date: 12/7/98

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

Service Request 98-1120

Report (Updated 12/7/98)
Snoqualmie UST Area

Client ID	**LCS**
Sample Date and Time	
Lab ID	**LCS1**

Analyte	% Recovery
Diesel Fuel Range	92%
Motor Oil Range	-
Surrogate (%recovery)	
o-Terphenyl	105%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

Approved: Richard Bogar
Telephone: (253)-924-6242

Date: 12/7/98

Weyerhaeuser

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

SDG NARRATIVE

Organic Analysis

WEYERHAEUSER (WEYER)
ANALYTICAL AND TESTING SERVICES

Case Number 98-1132
SDG Number 98-1132-001

PROJECT: Snoqualmie Mill AST Area

The samples from this SDG were received on 9/17/98 and 9/18/98. The SDG was composed of soil samples for analysis of WTPH-D extended with acid silica gel cleanup. The following analyses were performed:

SAMPLE ID	LAB ID	MATRIX	ANALYSIS
A2-5-5	98-1132-001	SOIL	WTPH-D
A2-7-5	98-1132-002	SOIL	WTPH-D
A2-6-5.0	98-1132-003	SOIL	WTPH-D
A2-8-2.5	98-1132-004	SOIL	WTPH-D
LCS001	LCS001	Fortified Blank	WTPH-D

Laboratory comments for this sample delivery group are listed below. The comments are broken up into categories for ease of explanation.

1. WTPH-D

   a) No comments with this data set.

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

11/14/98
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

SR Title : Weyerhaeuser/Emcon/Snoqualmie - AST Area
Number of Samples : 4

Submitter Name : Rankich, Kelly
Submitter Address : Bothell, WA
Submitter Phone : 425-485-5000
Charge Number : 046-5648
PO Number : OOE# 7037071

Date Received : 09/18/98
Date Desired : 10/02/98
Cost Multiplier : 1.000
Hardcopy Format :
Disk Format :

Reviewer : Bogar, Rick
Reviewer Address : WTC 2F25
Reviewer Phone : 6251

ORB Number :
Date Completed :

Copy to :
Comments/Notes : Emcon # 40141-083.005

Reference SR : 98-1120

Revisions :

Test Name	Test Description	Component List
1-AS-TPH	Acid/Silica Cleanup	
1-TPHDW-S	WTPH-D/Soil Prep	
DIESEL-S	Diesel in Soil WTPHD	
SL-OD-1	105C Solids (Solid)	

Lab ID	Client Sample ID	Date Sampled	Test Name
001	A2-5-5	09/17/98 0000	1-AS-TPH 1-TPHDW-S DIESEL-S SL-OD-1
002	A2-7-5	09/17/98 0000	1-AS-TPH 1-TPHDW-S DIESEL-S SL-OD-1

Entered By CHAPPEB

Printed 10/14/98

003	A2-6-5.0	09/18/98 0830	1-AS-TPH 1-TPHDW-S DIESEL-S SL-OD-1	
004	A2-8-2.5	09/18/98 0000	1-AS-TPH 1-TPHDW-S DIESEL-S SL-OD-1	

Group	Test Name	No. of Samples	Cost per Sample($)	Cost Mult	Line Total
CHROM	1-AS-TPH	4	10.00	1.00	40.00
CHROM	1-TPHDW-S	4	0.00	1.00	0.00
CHROM	DIESEL-S	4	79.00	1.00	316.00
CHROM	SL-OD-1	4	10.00	1.00	40.00
	Total CHROM Charges ($)				396.00

Ref #	Group	Memo Charge Description	Notes/PO Number	Line Total($)

Cost Summary

Total Test Charges ($)	396.00
Total Memo Charges ($)	0.00
Total Charges for Service Request ($)	396.00

Weyerhaeuser

Analytical & Testing Services

Sample Analysis Request/Chain of Custody Form

Date 1-12-98

Page 1 of 1

Facility: Snoqualmie - AST Area

Sampler's Project No.: 70370

Weyerhaeuser Account No.: 00E

Sampled by: ☐ Facility ☐ E&AS/WTC ☐ E&AS/NB

Consultant: EMCON

Address: 18912 N. Creek Pkwy, Bothell

Phone No.: (425) 485-5000 FAX: (425) 486-9766

Project Manager (print): Kelly Rankich

Sampler Name (print): Michelle Lange

Recorded By (signed): Michelle Lange

Sample Description (ID, Date, Time are Required)

Method	Field Sample ID (15 characters max.)	Date (m/d/y)	Time (hh:mm)	Depth (ft / m)	Matrix: Water	Matrix: Soil/Sed	Matrix: Oil	Preservative: HCl	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: $Na_2S_2O_3$	Preservative: Filtered	Number of Containers
	A2-6-5.0	9-18-98	0830	5		X							1
	A2-8-2.5					X							1

Analyses Requested (circle or write in parameters): pH, Cond, TDS, TSS, Color, Tannins; Volatile Organics / BTEX; Semi-volatile Organics (BNA); TPH: 418.1, TPH-G, TPH-D (1); Ca, Mg, Na, K, Fe, Mn; Metals (list below); NH_3, HCO_3, CO_3, Cl, F, NO_3, SO_4; AOX; TCLP: Metals, VOA, SVOA, Pest, Herb, PCBs; Dioxin: Total / 2,3,7,8-TCDD / 2,3,7,8-TCDF; CN; BOD, P-ortho; TKN, P-total, TOC, COD

Notes

Method: G, grab; D, depth composite; T, time composite. Depth required for soil or sediment samples.

☐ Samples on Ice or Blue Ice

Lab Turn-Around Time

☐ 24 Hr ☐ 48 Hr ☐ 7 Day ☒ 2-3 wk Date Due:

Reporting and QA/QC Requirements

RESULTS TO: Kelly Rankich

CC:

☐ CLP Package ☐ NPDES Permit ☐ Other: ☐ Electronic Report

Remarks/Detection Limit Requirements

(1) WTPH-Dx w/ silica gel/sulfuric acid cleanup step

Laboratory

☐ WATS/WTC ☐ WATS/NB ☐ Other:

Lab SR#:

Case ID:

SDG ID:

Sample Chain of Custody and Shipping Method Record

	Date	Time		
Relinquished By Sampler (signature): Michelle Lange	9-18-98	1000	Received By (signature):	Shipping Method
Relinquished By (signature):	Date	Time	Received By (signature):	Airbill No.
Relinquished By (signature):	Date	Time	Received For Laboratory By (signature): Dana L. Schafer	9/21/98

Samples Received Intact: YES Cooler Temp: 4 °C

WATS/WTC: 32901 Weyerhaeuser Way South, Federal Way, WA 98003 (206-924-6293)

WATS/NB: New Bern R&D Field Station, Highway 43 North, New Bern, NC 28563 (919-633-7238)

Form 16307 (2/96) Printing Services TP-1 Tacoma

Service Request 98-1132

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

Report
Snoqualmie Mill AST Area

Client ID	A2-5-5	A2-7-5	A2-6-5.0
Sample Date and Time	9/17/98 0000	9/17/98 0000	9/18/98 0830
Lab ID	001	002	003
	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)
Analyte			
Diesel Fuel Range	17	<8.4	2100
Motor Oil Range	140	12 J	6100
Surrogate (%recovery)			
o-Terphenyl	104%	90%	140%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

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

Date: 10/14/98

Service Request 98-1132

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

Report
Snoqualmie Mill AST Area

Client ID Sample Date and Time Lab ID	A2-8-2.5 9/18/98 0000 004	Method Blank Blank1	LCS LCS1
	mg/Kg (O.D. basis)	mg/Kg (O.D. basis)	% Recovery
Analyte			
Diesel Fuel Range	3.9 J	<6.7	92%
Motor Oil Range	13 J	<17	-
Surrogate (%recovery)			
o-Terphenyl	96%	95%	105%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

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

Date: 10/14/98

Weyerhaeuser

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

October 27, 1998

Ms. Kelly Rankich
EMCON
18912 North Creek Parkway, Suite 100
Bothell, WA 98011

Dear Kelly:

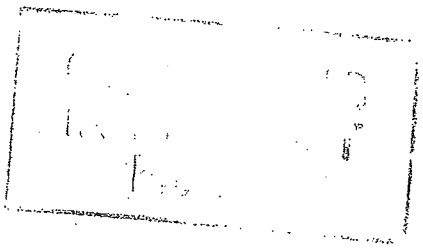
Please find attached a copy of our final report for the samples that you requested we analyze for Snoqualmie UST/AST and Snoqualmie former Morbark sites. These are from our service request number 98-1197 and 98-1198. Invoicing for this work will be sent directly to Weyerhaeuser. If you have any questions concerning this report, please feel free to contact me at (253) 924-6242.

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



Weyerhaeuser

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

SDG NARRATIVE

Organic Analysis

WEYERHAEUSER (WEYER)
ANALYTICAL AND TESTING SERVICES

Case Number 98-1197
SDG Number 98-1197-001

PROJECT: Snoqualmie UST/AST Area

The samples from this SDG were received on 9/26/98. The SDG was composed of water samples for analysis of BTEX by EPA 8260, VOAs by 8260, PAHs, WTPH-G, and WTPH-D extended with acid silica gel cleanup. The following analyses were performed:

SAMPLE ID	LAB ID	MATRIX	ANALYSIS
A1-8-0998	98-1197-001	Water	BTEX;WTPH-G;WTPH-D
A1-8-0998Dup	98-1197-001Dup	Water	WTPH-G
A1-9-0998	98-1197-002	Water	BTEX;WTPH-G;WTPH-D
A1-10-0998	98-1197-003	Water	BTEX;WTPH-G;WTPH-D
A1-11-0998	98-1197-004	Water	BTEX;WTPH-G;WTPH-D
A2-5-0998	98-1197-005	Water	VOA
A2-7-0998	98-1197-006	Water	VOA;PAH
A2-7-0998MS	98-1197-006MS	Water	VOA
A2-7-0998MSD	98-1197-006MSD	Water	VOA
A2-8-0998	98-1197-007	Water	VOA;PAH;WTPH-D
A2-8-0998MS	98-1197-007MS	Water	PAH
A2-8-0998MSD	98-1197-007MSD	Water	PAH
A2-7-0998	98-1197-008	Water	WTPH-D
A2-5-0998	98-1197-009	Water	PAH;WTPH-D
A2-6-0998	98-1197-010	Water	VOA;PAH;WTPH-D
A2-6-0998Dup	98-1197-010Dup	Water	WTPH-D
Trip Blank	98-1197-011	Water	VOA
Trip BlankDup	98-1197-011Dup	Water	VOA

Laboratory comments for this sample delivery group are listed below. The comments are broken up into categories for ease of explanation.

1. BTEX (EPA 8240)

   a) The BTEX values were reported down to 0.5 ppb as per the request. An LCS-was performed at the 0.5 ug/L level to insure adequate response.

2. WTPH-G

   a) No comments with this data set.

3. WTPH-D

   a) The duplicate pair did not replicate very well for either diesel or motor oil. The method does not have acceptance limits for the precidion for these compounds. No further action was taken.

4. VOA

   a) A trace hit of toluene was detected in the trip blank. We ran the other vial as a duplicate and confirmed that this was found in both vials. This value was 5 times lower than our reporting limit, however, we have reported the value and flagged it as a "J" qualified hit. Our method blank was clean , indicating that the laboratory system was in control.

5. PAHs

   a) The LCS as well as sample A2-5-0998 had very low surrogate recoveries. This was most likely due to a leak in our evaporation device. No further sample existed to rerun this sample.

   b) Pyrene recovery was low in the MS and MSD indicating a matrix problem. No further action was taken.

   c) Terphenyl recovery was low in all samples except for the blank indicating a matrix problem. The method allows one surrogate to be out of range, hence no further action was taken.

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.

10/27/98
Date

Dennis Catalano
Project Manager

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

SR Title : Snoqualmie UST/AST area OOE# 7037071
Number of Samples : 11

Submitter Name : Rankich, Kelly
Submitter Address : Bothell, WA
Submitter Phone : 425-485-5000
Charge Number : 046-5648
PO Number : OOE# 7037071

Date Received : 09/26/98
Date Desired : 10/12/98
Cost Multiplier : 1.000
Hardcopy Format :
Disk Format :

Reviewer : Bogar, Rick
Reviewer Address : WTC 2F25
Reviewer Phone : 6251

ORB Number :
Date Completed : 10/27/98

Copy to :
Comments/Notes : * Samples contain LOTS of sediment *

Reference SR : 98-1132, 1120

Revisions : $$ REMOVED VOA8260BT FROM 011** **10/13 - CHANGED VOA CODES - $$ PER RLE**

Test Name	Test Description	Component List
1-AS-TPH	Acid/Silica Cleanup	
1-EXT3520	Ext 3520C	
1-TPHDW-W	WTPH-D/Water Prep	
1-TPHGW-W	WTPH-G/Water Prep	
BNAW-8270C	PAH-ONLY	BNA in Water by 8270	BNA 8270C - PAH Only
DIESEL-W	Diesel in H2O WTPHD	
GAS-W	Gas in H2O/WTPH-G	
VOA8260L	VOA - Water - 8260Lo	
VOA8260LBT	BTEX - W - 8260Low	

Lab ID	Client Sample ID	Date Sampled	Test Name

Entered By SCHAFED

Printed 10/27/98

001	A1-8-0998	09/24/98 1350	1-AS-TPH 1-TPHDW-W 1-TPHGW-W DIESEL-W GAS-W VOA8260LBT	
002	A1-9-0998	09/24/98 1315	1-AS-TPH 1-TPHDW-W 1-TPHGW-W DIESEL-W GAS-W VOA8260LBT	
003	A1-10-0998	09/24/98 1250	1-AS-TPH 1-TPHDW-W 1-TPHGW-W DIESEL-W GAS-W VOA8260LBT	
004	A1-11-0998	09/24/98 1240	1-AS-TPH 1-TPHDW-W 1-TPHGW-W DIESEL-W GAS-W VOA8260LBT	
005	A2-5-0998	09/24/98 1530	VOA8260L	
006	A2-7-0998	09/24/98 1445	1-EXT3520 BNAW-8270C VOA8260L	PAH-ONLY
007	A2-8-0998	09/24/98 1500	1-AS-TPH 1-EXT3520 1-TPHDW-W BNAW-8270C DIESEL-W VOA8260L	PAH-ONLY
008	A2-7-0998	09/25/98 1345	1-AS-TPH 1-TPHDW-W DIESEL-W	
009	A2-5-0998	09/25/98 1355	1-AS-TPH 1-EXT3520 1-TPHDW-W BNAW-8270C DIESEL-W	PAH-ONLY
010	A2-6-0998	09/25/98 1410	1-AS-TPH 1-EXT3520 1-TPHDW-W BNAW-8270C	PAH-ONLY

Entered By SCHAFED

Printed 10/27/98

			DIESEL-W VOA8260L	
011	Trip Blank	09/16/98 0000	VOA8260L	

Group	Test Name	No. of Samples	Cost per Sample($)	Cost Mult	Line Total
CHROM	1-AS-TPH	8	10.00	1.00	80.00
CHROM	1-EXT3520	4	0.00	1.00	0.00
CHROM	1-TPHDW-W	8	0.00	1.00	0.00
CHROM	1-TPHGW-W	4	0.00	1.00	0.00
CHROM	BNAW-8270C PAH-ONLY	4	250.00	1.00	1000.00
CHROM	DIESEL-W	8	79.00	1.00	632.00
CHROM	GAS-W	4	79.00	1.00	316.00
	Total CHROM Charges ($)				2028.00
VOA_HIRES	VOA8260L	5	175.00	1.00	875.00
VOA_HIRES	VOA8260LBT	4	125.00	1.00	500.00
	Total VOA_HIRES Charges ($)				1375.00

Ref #	Group	Memo Charge Description	Notes/PO Number	Line Total($)

Cost Summary	
Total Test Charges ($)	3403.00
Total Memo Charges ($)	0.00
Total Charges for Service Request ($)	3403.00

Service Request 98-1197

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

Report
Snoqualmie UST/AST area

Client ID		A1-8-0998	A1-9-0998	A1-10-0998
Sample Date and Time		9/24/98 13:50	9/24/98 13:15	9/24/98 12:50
Lab ID		001	002	003
Analyte	CAS	ug/L	ug/L	ug/L
Benzene	71-43-2	4	12	< 0.5
Toluene	108-88-3	0.9	2	< 0.5
Ethylbenzene	100-41-4	1	0.4 J	< 0.5
m,p-Xylene	108-38-3 / 106-42-3	5	2	< 0.5
o-Xylene	95-47-6	0.6	0.8	< 0.5
Surrogates (%recovery)	QC Limits			
1,2-Dichloroethane-d4	(76-114)	96 %	91 %	93 %
Toluene-d8	(88-110)	100 %	103 %	99 %
Bromoflourobenzene	(86-115)	95 %	99 %	102 %
Date Analyzed		10/5/98	10/3/98	10/5/98

Client ID		A1-11-0998	Method Blank	Method Blank
Sample Date and Time		2/10/98 12:40	NA	NA
Lab ID		004	VBLKW1	VBLKW2
Analyte	CAS	ug/L	ug/L	ug/L
Benzene	71-43-2	< 0.5	< 0.5	< 0.5
Toluene	108-88-3	0.6	< 0.5	< 0.5
Ethylbenzene	100-41-4	< 0.5	< 0.5	< 0.5
m,p-Xylene	108-38-3 / 106-42-3	0.2 J	< 0.5	< 0.5
o-Xylene	95-47-6	< 0.5	< 0.5	< 0.5
Surrogates (%recovery)	QC Limits			
1,2-Dichloroethane-d4	(76-114)	96 %	107 %	101 %
Toluene-d8	(88-110)	100 %	103 %	99 %
Bromoflourobenzene	(86-115)	98 %	103 %	104 %
Date Analyzed		10/5/98	10/3/98	10/5/98

J: Detected below the calibrated range.

Approved: Randy Eatherton R Eatherton Date: 10/12/98
Telephone: (253) 924-6431

Method: EPA 8260

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

Service Request 98-1197

Report
Snoqualmie UST/AST area

Client ID		A2-5-0998	A2-7-0998	A2-8-0998
Sample Date and Time		9/24/98 15:30	9/24/98 14:45	9/24/98 15:00
Lab ID		005	006	007
		ug/L	ug/L	ug/L
Analyte	CAS			
Dichlorodifluoromethane	75-71-8	< 0.5	< 0.5	< 0.5
Chloromethane	74-87-3	< 0.5	< 0.5	< 0.5
Vinyl chloride	75-01-4	< 0.5	< 0.5	< 0.5
Bromomethane	74-83-9	< 0.5	< 0.5	< 0.5
Chloroethane	75-00-3	< 0.5	< 0.5	< 0.5
Acetone	67-64-1	< 5	15	< 5
Trichlorofluoromethane	75-69-4	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene	75-35-4	< 0.5	< 0.5	< 0.5
Methylene Chloride	75-09-2	< 0.5	1	< 0.5
1,2-Dichloroethene-trans	156-60-5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	75-34-3	< 0.5	< 0.5	< 0.5
2,2-Dichloropropane	594-20-7	< 0.5	< 0.5	< 0.5
1,2-Dichloroethene-cis	156-59-2	< 0.5	< 0.5	< 0.5
Bromochloromethane	74-97-5	< 0.5	< 0.5	< 0.5
Chloroform	67-66-3	0.4 J	< 0.5	< 0.5
2-Butanone	78-93-3	< 5	< 5	< 5
1,1,1-Trichloroethane	71-55-6	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	56-23-5	< 0.5	< 0.5	< 0.5
1,1-Dichloropropene	563-58-6	< 0.5	< 0.5	< 0.5
Benzene	71-43-2	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	107-06-2	< 0.5	< 0.5	< 0.5
Trichloroethene	79-01-6	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	78-87-5	< 0.5	< 0.5	< 0.5
Dibromomethane	74-95-3	< 0.5	< 0.5	< 0.5
Bromodichloromethane	75-27-4	< 0.5	< 0.5	< 0.5
1,3-Dichloropropene-cis	10061-01-5	< 0.5	< 0.5	< 0.5
Toluene	108-88-3	0.5	1	0.6
1,3-Dichloropropene-trans	10061-02-6	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	79-00-5	< 0.5	< 0.5	< 0.5
4-Methyl-2-Pentanone	108-10-1	< 5	< 5	< 5
2-Hexanone	591-78-6	< 5	< 5	< 5
Tetrachloroethene	127-18-4	< 0.5	< 0.5	< 0.5
1,3-Dichloropropane	142-28-9	< 0.5	< 0.5	< 0.5
Dibromochloromethane	124-48-1	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane	106-93-4	< 0.5	< 0.5	< 0.5
Chlorobenzene	108-90-7	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	63-20-6	< 0.5	< 0.5	< 0.5

J: Detected below the calibrated range.

Approved: Randy Eatherton R Eatherton Date: 10/12/98
Telephone: (253) 924-6431

Method: EPA 8260

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

Service Request 98-1197

Report
Snoqualmie UST/AST area

Client ID		A2-5-0998	A2-7-0998	A2-8-0998
Sample Date and Time		9/24/98 15:30	9/24/98 14:45	9/24/98 15:00
Lab ID		005	006	007
		ug/L	ug/L	ug/L
Analyte	CAS			
Ethyl benzene	100-41-4	< 0.5	< 0.5	< 0.5
m,p-Xylene	108-38-3 / 106-42-3	0.2 J	0.6	0.3 J
o-Xylene	95-47-6	< 0.5	0.2 J	< 0.5
Styrene	100-42-5	< 0.5	< 0.5	< 0.5
Bromoform	75-25-2	< 0.5	< 0.5	< 0.5
Isopropylbenzene	98-82-8	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	79-34-5	< 0.5	< 0.5	< 0.5
Bromobenzene	108-86-1	< 0.5	< 0.5	< 0.5
1,2,3-Trichloropropane	96-18-4	< 0.5	< 0.5	< 0.5
n-Propylbenzene	103-65-1	< 0.5	< 0.5	< 0.5
2-Chlorotoluene	95-49-8	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	106-43-4	< 0.5	< 0.5	< 0.5
1,3,5-Trimethylbenzene	108-67-8	< 0.5	< 0.5	< 0.5
tert-Butylbenzene	98-06-6	< 0.5	< 0.5	< 0.5
1,2,4-Trimethylbenzene	95-63-6	< 0.5	< 0.5	< 0.5
sec-Butylbenzene	135-98-8	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	541-73-1	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	106-46-7	< 0.5	< 0.5	< 0.5
p-Isopropyltoluene	99-87-6	< 0.5	< 0.5	< 0.5
1,2-Dichlorobenzene	95-50-1	< 0.5	< 0.5	< 0.5
n-Butylbenzene	104-51-8	< 0.5	< 0.5	< 0.5
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.5	< 0.5	< 0.5
1,2,4-Trichlorobenzene	120-82-1	< 0.5	< 0.5	< 0.5
Naphthalene	91-20-3	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	87-68-3	< 0.5	< 0.5	< 0.5
1,2,3-Trichlorobenzene	87-61-6	< 0.5	< 0.5	< 0.5
Surrogates (%recovery)	QC Limits			
1,2-Dichloroethane-d4	(80-120)	103 %	100 %	102 %
Toluene-d8	(80-120)	104 %	103 %	102 %
Bromoflourobenzene	(80-120)	100 %	105 %	98 %
Date Analyzed		10/3/98	10/3/98	10/3/98

J: Detected below the calibrated range.

Approved: Randy Eatherton
Telephone: (253) 924-6431

Date: 10/12/98

Method: EPA 8260

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

Service Request 98-1197

Report
Snoqualmie UST/AST area

Client ID		A2-6-0998	Trip Blank	Trip BlankDUP
Sample Date and Time		9/25/98 14:10	9/16/98	9/16/98
Lab ID		010	011	011DUP
		ug/L	ug/L	ug/L
Analyte	CAS			
Ethyl benzene	100-41-4	0.4 J	< 0.5	< 0.5
m,p-Xylene	108-38-3 / 106-42-3	2	< 0.5	< 0.5
o-Xylene	95-47-6	1	< 0.5	< 0.5
Styrene	100-42-5	< 0.5	< 0.5	< 0.5
Bromoform	75-25-2	< 0.5	< 0.5	< 0.5
Isopropylbenzene	98-82-8	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	79-34-5	< 0.5	< 0.5	< 0.5
Bromobenzene	108-86-1	< 0.5	< 0.5	< 0.5
1,2,3-Trichloropropane	96-18-4	< 0.5	< 0.5	< 0.5
n-Propylbenzene	103-65-1	< 0.5	< 0.5	< 0.5
2-Chlorotoluene	95-49-8	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	106-43-4	< 0.5	< 0.5	< 0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	< 0.5	< 0.5
tert-Butylbenzene	98-06-6	< 0.5	< 0.5	< 0.5
1,2,4-Trimethylbenzene	95-63-6	1	< 0.5	< 0.5
sec-Butylbenzene	135-98-8	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	541-73-1	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	106-46-7	< 0.5	< 0.5	< 0.5
p-Isopropyltoluene	99-87-6	< 0.5	< 0.5	< 0.5
1,2-Dichlorobenzene	95-50-1	< 0.5	< 0.5	< 0.5
n-Butylbenzene	104-51-8	< 0.5	< 0.5	< 0.5
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.5	< 0.5	< 0.5
1,2,4-Trichlorobenzene	120-82-1	< 0.5	< 0.5	< 0.5
Naphthalene	91-20-3	0.3 J	< 0.5	< 0.5
Hexachlorobutadiene	87-68-3	< 0.5	< 0.5	< 0.5
1,2,3-Trichlorobenzene	87-61-6	< 0.5	< 0.5	< 0.5
Surrogates (%recovery)	QC Limits			
1,2-Dichloroethane-d4	(80-120)	98 %	99 %	96 %
Toluene-d8	(80-120)	98 %	102 %	98 %
Bromoflourobenzene	(80-120)	95 %	105 %	106 %
Date Analyzed		10/5/98	10/3/98	10/5/98

J: Detected below the calibrated range.

Approved: Randy Eatherton
Telephone: (253) 924-6431

Date: 10/12/98

Method: EPA 8260

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

Service Request 98-1197

Report
Snoqualmie UST/AST area

Client ID		Method Blank	Method Blank
Sample Date and Time		NA	NA
Lab ID		VBLKW1	VBLKW2
		ug/L	ug/L
Analyte	CAS		
Dichlorodifluoromethane	75-71-8	< 0.5	< 0.5
Chloromethane	74-87-3	< 0.5	< 0.5
Vinyl chloride	75-01-4	< 0.5	< 0.5
Bromomethane	74-83-9	< 0.5	< 0.5
Chloroethane	75-00-3	< 0.5	< 0.5
Acetone	67-64-1	< 5	< 5
Trichlorofluoromethane	75-69-4	< 0.5	< 0.5
1,1-Dichloroethene	75-35-4	< 0.5	< 0.5
Methylene Chloride	75-09-2	< 0.5	< 0.5
1,2-Dichloroethene-trans	156-60-5	< 0.5	< 0.5
1,1-Dichloroethane	75-34-3	< 0.5	< 0.5
2,2-Dichloropropane	594-20-7	< 0.5	< 0.5
1,2-Dichloroethene-cis	156-59-2	< 0.5	< 0.5
Bromochloromethane	74-97-5	< 0.5	< 0.5
Chloroform	67-66-3	< 0.5	< 0.5
2-Butanone	78-93-3	< 5	< 5
1,1,1-Trichloroethane	71-55-6	< 0.5	< 0.5
Carbon Tetrachloride	56-23-5	< 0.5	< 0.5
1,1-Dichloropropene	563-58-6	< 0.5	< 0.5
Benzene	71-43-2	< 0.5	< 0.5
1,2-Dichloroethane	107-06-2	< 0.5	< 0.5
Trichloroethene	79-01-6	< 0.5	< 0.5
1,2-Dichloropropane	78-87-5	< 0.5	< 0.5
Dibromomethane	74-95-3	< 0.5	< 0.5
Bromodichloromethane	75-27-4	< 0.5	< 0.5
1,3-Dichloropropene-cis	10061-01-5	< 0.5	< 0.5
Toluene	108-88-3	< 0.5	< 0.5
1,3-Dichloropropene-trans	10061-02-6	< 0.5	< 0.5
1,1,2-Trichloroethane	79-00-5	< 0.5	< 0.5
4-Methyl-2-Pentanone	108-10-1	< 5	< 5
2-Hexanone	591-78-6	< 5	< 5
Tetrachloroethene	127-18-4	< 0.5	< 0.5
1,3-Dichloropropane	142-28-9	< 0.5	< 0.5
Dibromochloromethane	124-48-1	< 0.5	< 0.5
1,2-Dibromoethane	106-93-4	< 0.5	< 0.5
Chlorobenzene	108-90-7	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	63-20-6	< 0.5	< 0.5

Approved: Randy Eatherton R. Eatherton Date: 10/12/98
Telephone: (253) 924-6431

Method: EPA 8260

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

Service Request 98-1197

Report
Snoqualmie UST/AST area

Client ID		Method Blank	Method Blank
Sample Date and Time		NA	NA
Lab ID		VBLKW1	VBLKW2
		ug/L	ug/L
Analyte	CAS		
Ethyl benzene	100-41-4	< 0.5	< 0.5
m,p-Xylene	108-38-3 / 106-42-3	< 0.5	< 0.5
o-Xylene	95-47-6	< 0.5	< 0.5
Styrene	100-42-5	< 0.5	< 0.5
Bromoform	75-25-2	< 0.5	< 0.5
Isopropylbenzene	98-82-8	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	79-34-5	< 0.5	< 0.5
Bromobenzene	108-86-1	< 0.5	< 0.5
1,2,3-Trichloropropane	96-18-4	< 0.5	< 0.5
n-Propylbenzene	103-65-1	< 0.5	< 0.5
2-Chlorotoluene	95-49-8	< 0.5	< 0.5
4-Chlorotoluene	106-43-4	< 0.5	< 0.5
1,3,5-Trimethylbenzene	108-67-8	< 0.5	< 0.5
tert-Butylbenzene	98-06-6	< 0.5	< 0.5
1,2,4-Trimethylbenzene	95-63-6	< 0.5	< 0.5
sec-Butylbenzene	135-98-8	< 0.5	< 0.5
1,3-Dichlorobenzene	541-73-1	< 0.5	< 0.5
1,4-Dichlorobenzene	106-46-7	< 0.5	< 0.5
p-Isopropyltoluene	99-87-6	< 0.5	< 0.5
1,2-Dichlorobenzene	95-50-1	< 0.5	< 0.5
n-Butylbenzene	104-51-8	< 0.5	< 0.5
1,2-Dibromo-3-Chloropropane	96-12-8	< 0.5	< 0.5
1,2,4-Trichlorobenzene	120-82-1	< 0.5	< 0.5
Naphthalene	91-20-3	< 0.5	< 0.5
Hexachlorobutadiene	87-68-3	< 0.5	< 0.5
1,2,3-Trichlorobenzene	87-61-6	< 0.5	< 0.5
Surrogates (%recovery)	QC Limits		
1,2-Dichloroethane-d4	(80-120)	107 %	101 %
Toluene-d8	(80-120)	103 %	99 %
Bromoflourobenzene	(80-120)	103 %	104 %
Date Analyzed		10/3/98	10/5/98

Approved: Randy Eatherton
Telephone: (253) 924-6431

Date: 10/12/98

Method: EPA 8260

WATER VOLATILE MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RECOVERY
METHOD 8260

Lab Name: WEYERHAEUSER Contract: 046-5648 SAS No.: NA

Lab Code: WEYER Case No.: 98-1197 SDG No.: NA

Matrix Spike- SAMPLE # 006 Client ID: A2-7-0998

Date analyzed: 10/5/98

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONC. (ug/L)	MS CONC. (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	10.00	0.00	9.97	100	61-145
Trichloroethene	10.00	0.00	9.66	97	71-120
Benzene	10.00	0.00	9.72	97	76-127
Toluene	10.00	0.96	10.39	94	76-125
Chlorobenzene	10.00	0.00	9.94	99	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONC. (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	10.00	10.20	102	2	14	61-145
Trichloroethene	10.00	10.02	100	4	14	71-120
Benzene	10.00	9.85	99	1	11	76-127
Toluene	10.00	10.67	97	3	13	76-125
Chlorobenzene	10.00	10.41	104	5.	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

_____

WATER VOLATILE LCS RECOVERY
METHOD 8260

Lab Name: WEYERHAEUSER Contract: 046-5648 SAS No.: NA

Lab Code: WEYER Case No.: 98-1197 SDG No.: NA

Matrix Spike- VLCS001

Date Analyzed 10/3/98

COMPOUND	SPIKE ADDED (ug/L)		LCS CONC. (ug/L)	LCS % REC #	QC LIMITS REC.
1,1-Dichloroethene	1.00		1.02	102	80-120
Trichloroethene	1.00		0.986	99	80-120
Benzene	1.00		1.01	101	80-120
Toluene	1.00		1.02	102	80-120
Chlorobenzene	1.00		0.948	95	80-120

Column to be used to flag recovery values with an asterisk

* Values outside of qc limits

LCS RECOVERY: 0 out of 5 outside limits

COMMENTS: _____

_____

Service Request 98-1197

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

Report
Snoqualmie UST/AST area OOE# 7037071

Client ID		A2-7-0998	A2-8-0998	A2-5-0998
Sample Date and Time		9/24/98 14:45	9/24/98 15:00	9/25/98 13:55
Lab ID		98-1197-006	98-1197-007	98-1197-009
Analyte (ug/L, ppb)	CAS			
Naphthalene	91-20-3	5 U	4 U	5 U
2-Methylnaphthalene	91-57-6	5 U	4 U	5 U
2-Chloronaphthalene	91-58-7	5 U	4 U	5 U
Acenaphthylene	208-96-8	5 U	4 U	5 U
Acenaphthene	83-32-9	5 U	4 U	5 U
Dibenzofuran	132-64-9	5 U	4 U	5 U
Fluorene	86-73-7	5 U	4 U	5 U
Phenanthrene	85-01-8	5 U	4 U	5 U
Anthracene	120-12-7	5 U	4 U	5 U
Fluoranthene	206-44-0	5 U	4 U	5 U
Pyrene	129-00-0	5 U	4 U	5 U
Benzo(a)Anthracene	56-55-3	5 U	4 U	5 U
Chrysene	218-01-9	5 U	4 U	5 U
Benzo(b)fluoranthene	205-99-2	5 U	4 U	5 U
Benzo(k)fluoranthene	207-08-9	5 U	4 U	5 U
Benzo(a)pyrene	50-32-8	5 U	4 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	5 U	4 U	5 U
Dibenzo(a,h)anthracene	53-70-3	5 U	4 U	5 U
Carbazole	86-74-8	5 U	4 U	5 U
Benzo(g,h,i)perylene	191-24-2	5 U		
Surrogates (%recovery)	Limits			
2-Fluorophenol	34 - 92	77%	73%	27%
Phenol-d5	29 - 94	85%	75%	29%
Nitrobenzene-d5	57 - 99	76%	68%	28%
2-Fluorobiphenyl	51 - 99	84%	58%	24%
2,4,6-Tribromophenol	41 - 123	96%	77%	29%
Terphenyl-d14	55 - 141	36%	16%	6%
2-Chlorophenol-d4	54 - 90	75%	76%	29%
1,2-Dichlorobenzene-d4	43 - 81	68%	60%	24%
Date Extracted		10/1/98	10/1/98	10/1/98
Date Analyzed		10/16/98	10/23/98	10/16/98

Date: 10/27/98

Approved: Richard Bogar
Telephone (253)924-6521

Service Request 98-1197

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

Report
Snoqualmie UST/AST area OOE# 7037071

Client ID	A2-6-0998	SBL4X1_100198
Sample Date and Time	9/25/98 14:10	
Lab ID	98-1197-010	SBL4X1_100198

Analyte (ug/L, ppb)	CAS		
Naphthalene	91-20-3	4 U	4 U
2-Methylnaphthalene	91-57-6	4 U	4 U
2-Chloronaphthalene	91-58-7	4 U	4 U
Acenaphthylene	208-96-8	4 U	4 U
Acenaphthene	83-32-9	4 U	4 U
Dibenzofuran	132-64-9	4 U	4 U
Fluorene	86-73-7	1 J	4 U
Phenanthrene	85-01-8	4 U	4 U
Anthracene	120-12-7	4 U	4 U
Fluoranthene	206-44-0	4 U	4 U
Pyrene	129-00-0	4 U	4 U
Benzo(a)Anthracene	56-55-3	4 U	4 U
Chrysene	218-01-9	4 U	4 U
Benzo(b)fluoranthene	205-99-2	4 U	4 U
Benzo(k)fluoranthene	207-08-9	4 U	4 U
Benzo(a)pyrene	50-32-8	4 U	4 U
Indeno(1,2,3-cd)pyrene	193-39-5	4 U	4 U
Dibenzo(a,h)anthracene	53-70-3	4 U	4 U
Carbazole	86-74-8	4 U	4 U
Benzo(g,h,i)perylene	191-24-2	4 U	4 U
Surrogates (%recovery)	Limits		
2-Fluorophenol	34 - 92	99%	80%
Phenol-d5	29 - 94	92%	80%
Nitrobenzene-d5	57 - 99	88%	76%
2-Fluorobiphenyl	51 - 99	70%	76%
2,4,6-Tribromophenol	41 - 123	117%	89%
Terphenyl-d14	55 - 141	50%	100%
2-Chlorophenol-d4	54 - 90	67%	80%
1,2-Dichlorobenzene-d4	43 - 81	76%	68%
Date Extracted		10/1/98	10/1/98
Date Analyzed		10/16/98	10/23/98

Approved: Richard Bogar
Telephone (253)924-6521

Date: 10/27/98

WATER SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: WEYERHAEUSER Contract:

Lab Code: WEYER Case No.: 98-1197 Method: 8270B SDG No.: 98-1197-001

Matrix Spike - EPA Sample No.: A2-8-0998

COMPOUND	SPIKE ADDED (ug/L)	BLANK CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMIT REC.
Phenol	120	0.0	89	74	31- 9
2-Chlorophenol	120	0.0	90	75	39- 9
1,4-Dichlorobenzene	83	0.0	45	54	34- 8
N-Nitrosodinpropylamine	83	0.0	54	65	43-10
1,2,4-Trichlorobenzene	83	0.0	45	54	37-10
4-Chloro-3-Methylphenol	120	0.0	97	81	46-10
Acenaphthene	83	0.0	49	59	48-10
4-Nitrophenol	120	0.0	110	92	29-11
2,4-Dinitrotoluene	83	0.0	60	72	50-10
Pentachlorophenol	120	0.0	79	66	59-12
Pyrene	83	0.0	17	20*	46-13

COMPOUND	SPIKE ADDED (ug/L)	BSD CONCENTRATION (ug/L)	BSD % REC #	CONC % RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	120	76	63	16	42	31- 9
2-Chlorophenol	120	80	67	12	40	39- 9
1,4-Dichlorobenzene	83	41	49	9	28	34- 8
N-Nitrosodinpropylamine	83	48	58	12	38	43-10
1,2,4-Trichlorobenzene	83	41	49	9	28	37-10
4-Chloro-3-Methylphenol	120	81	68	18	42	46-10
Acenaphthene	83	43	52	13	31	48-10
4-Nitrophenol	120	90	75	20	50	29-11
2,4-Dinitrotoluene	83	50	60	18	38	50-10
Pentachlorophenol	120	64	53*	21	50	59-12
Pyrene	83	12	14*	34*	31	46-13

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 11 outside limits
Spike Recovery: 3 out of 22 outside limits

COMMENTS: _____

Service Request 98-1197

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

Report
Snoqualmie UST/AST Area

Client ID Sample Date and Time Lab ID	A1-8-0998 9/24/98 1350 001	A1-9-0998 9/24/98 1315 002	A1-10-0998 9/24/98 1250 003
	mg/L	mg/L	mg/L
Analyte Gasoline Range	0.26	0.59	< 0.25
Surrogate (%recovery) Trifluorotoluene Bromofluorobenzene	75% 95%	75% 95%	80% 95%

Method: WTPH-G

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

Date: 10/27/98

Service Request 98-1197

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

Report
Snoqualmie UST/AST Area

Client ID Sample Date and Time Lab ID	A1-11-0998 9/24/98 1240 004	A1-8-0998Dup 9/24/98 1350 001Dup	Method Blank Blank1
	mg/L	mg/L	mg/L
Analyte Gasoline Range	< 0.25	0.26	< 0.25
Surrogate (%recovery) Trifluorotoluene Bromofluorobenzene	65% 85%	80% 100%	80% 95%

Method: WTPH-G

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

Date: 10/27/98

Service Request 98-1197

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

Report
Snoqualmie UST/AST Area

	LCS
Client ID	
Sample Date and Time	
Lab ID	LCS1
	% Recovery
Analyte	
Gasoline Range	110%
Surrogate (%recovery)	
Trifluorotoluene	85%
Bromofluorobenzene	100%

Method: WTPH-G

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

Date: 10/27/98

Service Request 98-1197

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

Report
Snoqualmie UST/AST Site

Client ID Sample Date and Time Lab ID	A1-8-0998 9/24/98 1350 001	A1-9-0998 9/24/98 1315 002	A1-10-0998 9/24/98 1250 003
	mg/L	mg/L	mg/L
Analyte			
Diesel Fuel Range	0.33	0.15	0.32
Motor Oil Range	< 0.18	0.18 J	1.8
Surrogate (%recovery)			
o-Terphenyl	87%	85%	66%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

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

Date: 10/27/98

Service Request 98-1197

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

Report
Snoqualmie UST/AST Site

Client ID	A1-11-0998	A2-8-0998	A2-7-0998
Sample Date and Time	9/24/98 1240	9/24/98 1500	9/25/98 1345
Lab ID	004	007	008
Analyte	mg/L	mg/L	mg/L
Diesel Fuel Range	1.9	0.09	0.19
Motor Oil Range	4.7	0.34	0.75
Surrogate (%recovery)			
o-Terphenyl	76%	63%	81%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

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

Date: 10/27/98

Service Request 98-1197

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

Report
Snoqualmie UST/AST Site

Client ID	A2-5-0998	A2-6-0998	A2-6-0998Dup
Sample Date and Time	9/25/98 1355	9/25/98 1410	9/25/98 1410
Lab ID	009	010	10Dup
	mg/L	mg/L	mg/L
Analyte			
Diesel Fuel Range	0.52	2.0	0.98
Motor Oil Range	2.6	5.0	2.0
Surrogate (%recovery)			
o-Terphenyl	91%	88%	97%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

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

Date: 10/27/98

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

Service Request 98-1197

Report
Snoqualmie UST/AST Site

Client ID Sample Date and Time Lab ID	Blank Blank 1001	Blank Blank 1002	LCS LCS
	mg/L	mg/L	% Recovery
Analyte			
Diesel Fuel Range	< 0.08	< 0.08	83%
Motor Oil Range	< 0.20	<0.20	--
Surrogate (%recovery)			
o-Terphenyl	71%	92%	93%

J: Indicates an estimated value due to the value falling below the quantitation limit.

Method: WTPH-D

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

Date: 10/27/98