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17 October 1997

BP Oil Company
295 SW 41st Street
Building 13, Suite N
Renton,Washington 98055

Attention: Mr. Scott Hooton

Subject: ***Groundwater Monitoring and Sampling Report***
3rd Quarter 1997

BP Service Station No. 11066

2421 148th NE
Bellevue, Washington

This report presents the results of groundwater monitoring and sampling activities performed on 28 August 1997 at the above site.

Introduction

The property is an operating service station, located on the northwest corner of the intersection of NE 24th and 14th NE in Bellevue, Washington (Figure 1).

Presently, the following groundwater wells exist on site:

- Four four-inch inside diameter (ID) groundwater monitoring wells;
- Three two-inch ID groundwater monitoring wells.
- One four-inch diameter recovery well (MW-7).
- Two two-inch diameter wells/sparge points.

Passive product skimmers were present in monitoring wells MW-1, 7 & 8. Sorbent tubes were present in monitoring wells MW-2, 3 & 6.

The approximate site boundaries, locations of existing buildings and underground storage tanks, approximate locations of existing monitoring wells, and other pertinent site information are presented on the Site and Exploration Plan, Figure 2.

Groundwater Monitoring

Fluid level measurements in each monitoring well were completed with an interface probe to indicate thickness of liquid petroleum hydrocarbons (LPH), if present, and depth to groundwater relative to the top of the well casings (TOC). Groundwater measurements in the site wells ranged from 19 to 20 feet below ground surface, relative elevations are based on an arbitrary datum. The inferred groundwater migration direction is to the south. This determination is based upon groundwater measurements from the monitoring wells on site, corrected for the presence of LPH. Historical fluid level measurements are presented on the attached Summary Table.

Thicknesses <0.01 to 0.11 feet of phase separated liquid petroleum hydrocarbons (LPH) were measured in six monitoring wells.

Dissolved oxygen levels were measured directly in the well using a cable-mounted polarographic probe, correcting for temperature and salinity.

Sampling Procedures and Analyses

Groundwater samples were collected from two the seven site monitoring 28 August 1997 for analytical laboratory testing. To obtain a sample representative of the surrounding formation, each well was purged of at least three well volumes of groundwater prior to sampling. A new disposable bailer for each well was used to obtain discrete and representative groundwater samples. The samples were then decanted into laboratory prepared containers, labeled, and immediately placed into a chilled cooler for transport to American Environmental Network, Inc. (Durham, OR). Chain-of-custody procedures were followed to track sample possession from the time of collection until receipt by the analytical laboratory.

The following analyses were performed on select groundwater samples:

- Washington Total Petroleum Hydrocarbons-Gasoline range with Benzene, Toluene, Ethylbenzene, and total Xylenes distinction using Washington Department of Ecology (Ecology) test method WTPH-G/BTEX;
- MTBE (Methyl-tertiary-butyl-ether) by EPA Method 8020M.

Analytical Laboratory Results

In general, petroleum hydrocarbon concentrations ranged from below method detection limits up to 6.9 ug/l benzene for samples MW-4, 5, 9. The remaining site wells were not sampled due to the presence of LPH.

A summary of the results of analytical tests performed on groundwater samples collected at the subject site to date are presented in the attached Summary Table. The analytical results for this sampling event are also presented on Figure 2. The AEN report and complete Chain of Custody form is also attached.

LPH Recovery

Recovery of LPH has been accomplished to date with the following results:

WELL	DATE	DEPTH TO PRODUCT (feet)	THICKNESS (feet)	VOLUME RECOVERED (gallons)
MW-1	10/30/96	22.66	0.04	0.25
	11/13/96	22.75	0.03	0.2
	11/27/96	22.51	<0.01	0
	12/11/96	22.34	<0.01	0
	03/06/97	18.71	0.1	0
	05/15/97	19.40	<0.01	0.1
	5/29/97	18.81	<0.01	0
			TOTAL	**0.55**
MW-2	10/30/96	23.68	0.01	0.25
	11/13/96	22.88	0.01	0.1
	11/27/96	22.25	<0.01	0
	12/11/96	21.98	<0.01	0
	3/6/97	18.85	<0.01	0
	05/15/97	18.70	<0.01	0
	5/29/97	-	<0.01	0
			TOTAL	**0.35**
MW-3	10/30/96	22.76	0.02	0.1
	11/13/96	22.76	0.01	0.1
	11/27/96	22.54	<0.01	0
	12/11/96	21.99	<0.01	0
	3/6/97	19.26	<0.01	0
	05/15/97	18.76	<0.01	0
	5/29/97	-	<0.01	0
			TOTAL	**0.2**

WELL	DATE	DEPTH TO PRODUCT (feet)	THICKNESS (feet)		VOLUME RECOVERED (gallons)
MW-6	10/30/96	22.87	0.30		0.1
	11/13/96	23.75	0.25		0.1
	11/27/96	23.52	0.02		0.1
	12/11/96	23.3	0.01		0
	3/6/97	20.06	<0.01		0
	05/15/97	19.79	<0.01		0
	5/29/97	19.83	<0.01		0
				TOTAL	0.3
MW-7	10/30/96	22.95	0.04		0.2
	11/13/96	22.88	0.12		0.2
	11/27/96	22.94	0.03		0.25
	12/11/96	22.28	0.01		0.2
	3/6/97	19.15	<0.01		0.5
	05/15/97	18.8	<0.01		0
	5/29/97	19.03	<0.01		0
				TOTAL	1.35
MW-8	10/30/96	21.74	0.01		0.1
	11/13/96	21.73	0.01		0
	11/27/96	21.91	0.01		0.1
	12/11/96	20.91	<0.01		0
	3/6/97	17.70	<0.01		0
	05/15/97	17.75	<0.01		0
	5/29/97	17.96	<0.01		0
				TOTAL	0.2

Summary

Thicknesses ranging from <0.01 to 0.11 feet of LPH were measured in six monitoring wells this quarter. Passive skimmers were present in monitoring wells MW-1, 7 & 8. Sorbent tubes are present in wells MW-2, 3 & 6. Dissolved TPH and BTEX concentrations in groundwater samples were similar to previous sampling events.

We appreciate this opportunity to be of service to BP Oil Company. If you have any questions or comments regarding this letter report or other aspects of this project, please do not hesitate to call at your earliest convenience.

Respectfully submitted,

Charles A. Gove & Associates

David G. Cooper, P.G.
Environmental Geologist

Enclosures:

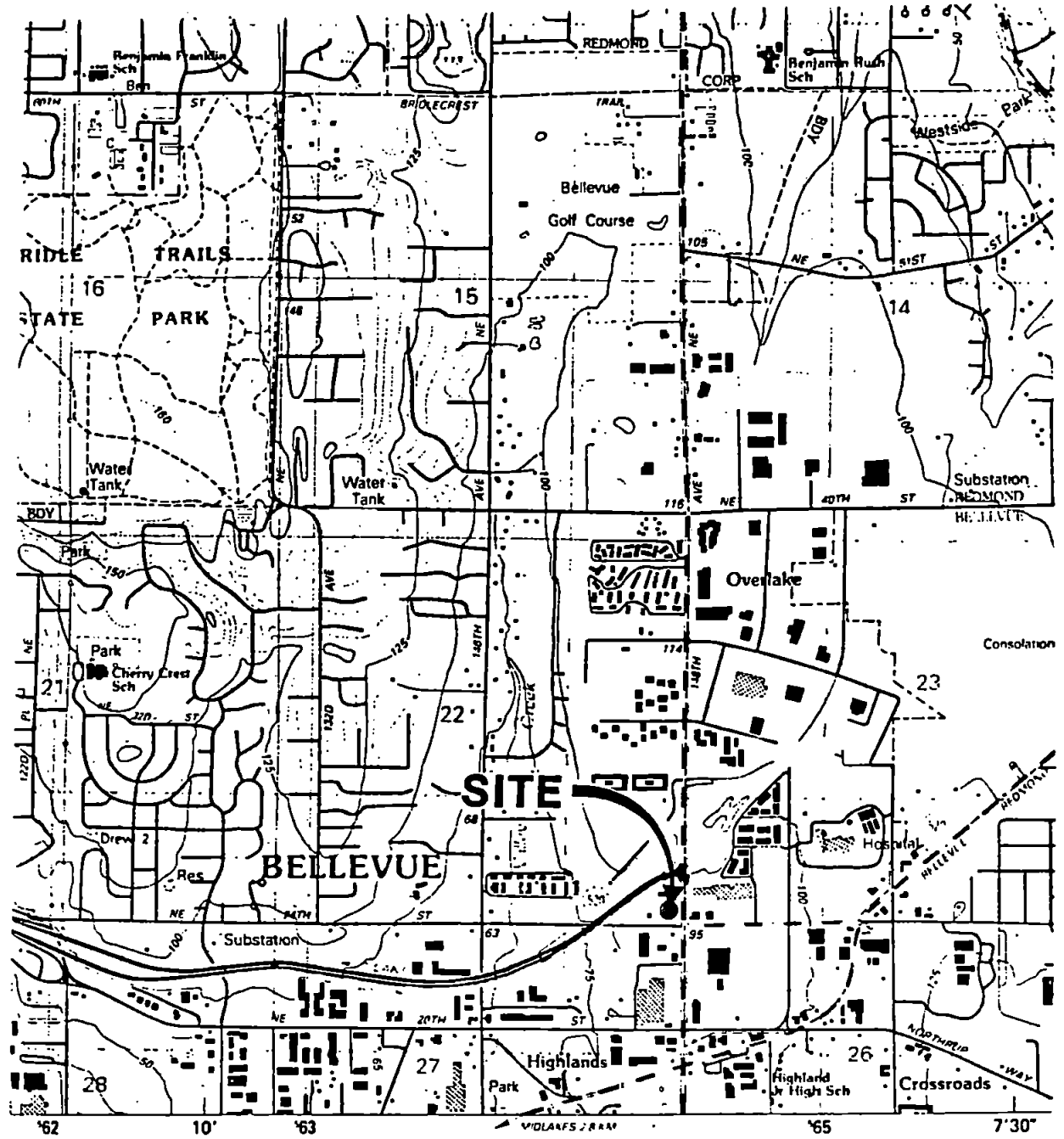
Summary of Fluid Level Measurements and Analytical Results

Figure 1 - Location Map

Figure 2 - Site and Exploration Plan

CAG Groundwater Sampling/Monitoring Field Form

AEN Report and Chain of Custody



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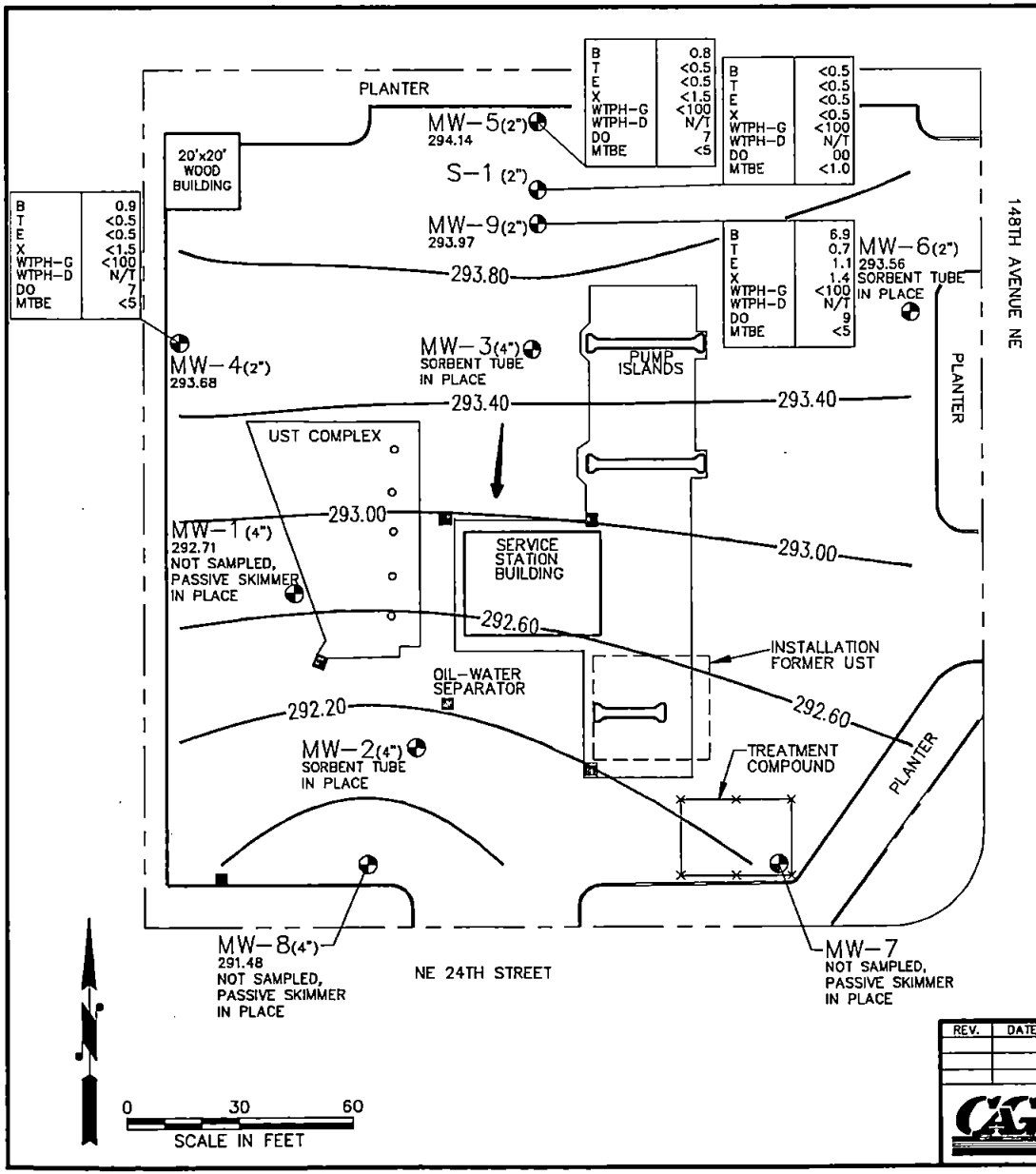
LOCATION MAP – FIGURE 1
BP SITE #11066
BELLEVUE, WASHINGTON

Date	Scale	FILE:	JOB#:
8/22/94	NTS		94081



B	0.8
T	<0.5
E	<0.5
X	<1.5
WTPH-G	<100
WTPH-D	N/T
DO	7
MTBE	<5

B	<0.5
T	<0.5
E	<0.5
X	<0.5
WTPH-G	<100
WTPH-D	N/T
DO	00
MTBE	<1.0

B	0.9
T	<0.5
E	<0.5
X	<1.5
WTPH-G	<100
WTPH-D	N/T
DO	7
MTBE	<5

B	6.9
T	0.7
E	1.1
X	1.4
WTPH-G	<100
WTPH-D	N/T
DO	9
MTBE	<5

LEGEND

MW-2 — MONITORING WELL LOCATION

20.10 — SPOT GROUNDWATER SURFACE ELEVATION IN FEET

—18.56— INFERRED GROUNDWATER SURFACE ELEVATION CONTOUR IN FEET

INFERRED DIRECTION OF GROUNDWATER FLOW

GROUND WATER TEST RESULTS
28-AUG-97

CONCENTRATIONS IN PARTS PER BILLION (PPB)
(OR METHOD DETECTION LIMIT IF PRECEDED BY "<")

B	BENZENE BY EPA METHOD 8020
T	TOLUENE BY EPA METHOD 8020
E	ETHYLBENZENE BY EPA METHOD 8020
X	XYLENES BY EPA METHOD 8020
WTPH-G	WASHINGTON TOTAL PETROLEUM HYDROCARBONS FOR GASOLINE (EPA METHOD WTPH-G)
WTPH-D	WASHINGTON TOTAL PETROLEUM HYDROCARBONS FOR DIESEL (EPA METHOD WTPH-D)
DO	DISSOLVED OXYGEN (%)
MTBE	METHYL-TERTIARY-BUTYL-ETHER (EPA METHOD 8020M)
N/T	NOT TESTED

B	<0.5
T	<0.5
E	<0.5
X	<1.5
WTPH-G	<100
WTPH-D	N/T
DO	35
MTBE	<5

COMPOUNDS — CONCENTRATIONS OR DETECTION LIMITS

SOURCE OF BASE MAP:- Geraghty & Miller, Inc.

REV.	DATE	BY	DESCRIPTION

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SITE & EXPLORATION PLAN FIGURE - 2
BP SITE #11066
BELLEVUE, WASHINGTON

Drawn	Scale 1"=30'-0"	SHEETS SHEET
Approved	Date 3/3/95	CAD FILE: 11066 JOB#

Summary of Fluid Level Measurements & Grou **Analytical Results**
BP Service Station No. 11066
2421 148th Avenue NE
Bellevue, Washington

Well Number	Top of Casing Elevation (ft)	Date Collected	Product Thickness (ft)	Depth to Water (ft)	Groundwater Elevation (ft)*	WTPH-D (ug/l)	WTPH-G (ug/l)	MTBE (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Total Xylenes (ug/l)	Total Lead (ug/l)	Dissolved Lead (ug/l)	Turbidity (NTU)	Dissolved Oxygen (%)
MW-1	313.08	2-Mar-92	0.03	23.42	289.684	Not sampled, LPH present										
		4-Apr-92	0.18	23.52	289.704	Not sampled, LPH present										
		12-May-92	0.23	23.49	289.774	Not sampled, LPH present										
		11-Jun-92	0.53	23.95	289.554	Not sampled, LPH present										
		26-May-93	0.07	24.62	288.516	Not sampled, LPH present										
		28-Jun-94	1.03	24.72	289.184	Not sampled, passive skimmer in place										
		29-Sep-94	0.68	25.08	288.644	Not sampled, passive skimmer in place										
		13-Dec-94	0.82	25.10	288.636	Not sampled, passive skimmer in place										
		3-Mar-95	0.47	23.27	290.186	Not sampled, passive skimmer in place										
		8-Jun-95	SHEEN	22.50	290.56	Not sampled, passive skimmer in place										
		30-Aug-95	0.17	23.40	289.816	Not sampled, passive skimmer in place										
		1-Dec-95	0.51	24.59	288.898	Not sampled, passive skimmer in place										
	312.94	4-Mar-96	0.01	21.06	291.888	Not sampled, passive skimmer in place										
		4-Jun-96	0.01	20.89	292.058	Not sampled, passive skimmer in place										
		6-Sep-96	0.03	22.14	290.824	Not sampled, passive skimmer in place										
		4-Dec-96	sheen	22.34	290.6	Not sampled, passive skimmer in place										
		6-Mar-97	0.01	18.72	294.23	Not sampled, passive skimmer in place										
		29-May-97	sheen	18.81	294.13	Not sampled, passive skimmer in place										
		28-Aug-97	sheen	20.23	292.71	Not sampled, passive skimmer in place										
MW-2	312.13	2-Mar-92	1.55	24.35	289.02	Not sampled, LPH present										
		4-Apr-92	1.59	24.34	289.062	Not sampled, LPH present										
		12-May-92	1.61	24.26	289.158	Not sampled, LPH present										
		11-Jun-92	0.36	23.76	288.668	Not sampled, LPH present										
		26-May-93	0.43	24.45	288.024	Not sampled, LPH present										
		28-Jun-94	0.93	24.40	288.474	Not sampled, passive skimmer in place										
		29-Sep-94	0.92	25.02	287.846	Not sampled, passive skimmer in place										
		13-Dec-94	1.51	25.46	287.878	Not sampled, passive skimmer in place										
		3-Mar-95	0.18	23.95	288.324	Not sampled, passive skimmer in place										
		8-Jun-95	0.22	22.53	289.776	Not sampled, passive skimmer in place										
		30-Aug-95	0.14	23.25	288.992	Not sampled, passive skimmer in place										
		1-Dec-95	0.16	24.09	288.168	Not sampled, passive skimmer in place										
		4-Mar-96	0.01	21.11	291.028	Not sampled, passive skimmer in place										
		4-Jun-96	0.02	21.05	291.096	Not sampled, passive skimmer in place										
		6-Sep-96	0.05	22.16	290.01	Not sampled, passive skimmer in place										
		4-Dec-96	sheen	21.98	290.15	Not sampled, passive skimmer in place										
		6-Mar-97	sheen	18.86	Sorbent tube in place											
		29-May-97	sheen	-	Sorbent tube in place											
		28-Aug-97	sheen	20.34	Sorbent tube in place											
MW-3	313.7	2-Mar-92	0.04	23.50	290.232											
		4-Apr-92	0.2	23.50	290.36											
		12-May-92	0.21	23.43	290.438											
		11-Jun-92	1.47	24.39	290.486											
		26-May-93	0.19	24.50	289.352											
		28-Jun-94	0.45	23.95	290.11											
		29-Sep-94	0.43	24.79	289.254											
		13-Dec-94	0.36	24.67	289.318											
		3-Mar-95	0.41	23.07	290.958											
		8-Jun-95	0.15	22.42	291.4											
		30-Aug-95	0.22	23.52	290.356											
		1-Dec-95	0.09	24.21	289.562											
		4-Mar-96	<0.01	21.11	292.59											
		4-Jun-96	0.01	21.05	292.658											
		6-Sep-96	0.1	22.29	291.49											
		4-Dec-96	sheen	22.99	290.71											
		6-Mar-97	sheen	19.26	Sorbent tube in place											
		29-May-97	sheen	-	Sorbent tube in place											
		28-Aug-97	sheen	20.39	Sorbent tube in place											
MW-4	314.21	23-May-93				<50	<50	NT	0.9	<0.5	<0.5	<1	6	NT	NT	
		26-May-93	0	24.63	289.58											
		28-Jun-94	0	23.88	290.33		<100	NT	0.7	<0.5	<0.5	<0.5	NT	NT	NT	14
		29-Sep-94	0	24.83	289.38	NT	<100	NT	0.8	<0.5	<0.5	<0.5	NT	NT	NT	4
		13-Dec-94	0	24.61	289.6	NT	<100	NT	0.9	<0.5	<0.5	<0.5	NT	NT	NT	14
		3-Mar-95	0	22.92	291.29	NT	<100	NT	1.1	<0.5	<0.5	<0.5	NT	NT	NT	8
		8-Jun-95	0	22.25	291.96	NT	<100	NT	1.3	<0.5	<0.5	<0.5	NT	NT	NT	5
		30-Aug-95	0	23.37	290.84	NT	<100	NT	0.58	<0.5	<0.5	<0.5	NT	NT	NT	8
		1-Dec-95	0	24.44	289.77	NT	<100	NT	<0.5	<0.5	<0.5	<0.5	NT	NT	NT	3
		4-Mar-96	0	22.22	291.99	NT	<100	NT	1.5	<0.5	<0.5	<0.5	NT	NT	NT	5
		4-Jun-96	0	21.20	293.01	NT	<100	NT	2	<0.5	<0.5	<0.5	NT	NT	NT	7
		6-Sep-96	0	22.56	291.65	NT	<100	<1.0	<0.5	<0.5	<0.5	<0.5	NT	NT	NT	6
		4-Dec-96	0	22.56	291.65	NT	<100	<1.0	<0.5	<0.5	<0.5	<0.5	NT	NT	NT	7
		6-Mar-97	0	19.32	294.89	NT	<100	<10	2.3	<0.5	<0.5	<1.5	NT	NT	NT	3
		29-May-97	0	18.97	295.24	NT	<100	<5	2.3	<0.5	<0.5	<1.5	NT	NT	NT	4
		28-Aug-97	0	20.53	293.68	NT	<100	<5	0.9	<0.5	<0.5	<1.5	NT	NT	NT	7

Summary of Fluid Level Measurements dwater Analytical Results
BP Service Station No. 11066
2421 148th Avenue NE
Bellevue, Washington

Well Number	Top of Casing Elevation (ft)	Date Collected	Product Thickness (ft)	Depth to Water (ft)	Groundwater Elevation (ft)*	WTPH-D (ug/l)	WTPH-G (ug/l)	MTBE (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Total Xylenes (ug/l)	Total Lead (ug/l)	Dissolved Lead (ug/l)	Turbidity (NTU)	Dissolved Oxygen (%)
MW-5	315.62	23-May-93				<50	110		2	0.9	4.9	10	28	NT	NT	
		26-May-93	0	25.27	290.35											
		28-Jun-94	0	24.52	291.1		<100		<0.5	<0.5	<0.5	<0.5	NT	NT	NT	1
		29-Sep-94	0	25.51	290.11	NT	<100		<0.5	<0.5	<0.5	<0.5	NT	NT	NT	33
		13-Dec-94	0	25.34	290.28	NT	<100		0.9	<0.5	<0.5	<0.5	NT	NT	NT	40
		3-Mar-95	0	23.57	292.05	NT	<100		<0.5	<0.5	<0.5	<0.5	NT	NT	NT	37
		8-Jun-95	0	22.96	292.66	NT	<100		<0.5	<0.5	<0.5	<0.5	NT	NT	NT	6
		30-Aug-95	0	24.14	291.48	NT	<100		<0.5	<0.5	<0.5	<0.5	NT	NT	NT	16
		1-Dec-95	0	25.13	290.49	NT	<100		<0.5	<0.5	<0.5	<0.5	NT	NT	NT	37
		4-Mar-96	0	21.81	293.81	NT	<100		<0.5	<0.5	<0.5	<0.5	NT	NT	NT	25
		4-Jun-96	0	21.89	293.73	NT	<100		<0.5	<0.5	<0.5	<0.5	NT	NT	NT	5
		6-Sep-96	0	23.29	292.33	NT	<100	<1.0	<0.5	<0.5	<0.5	<0.5	NT	NT	NT	7
		4-Dec-96	0	23.33	292.29	NT	<100	<1.0	<0.5	<0.5	<0.5	<0.5	NT	NT	NT	32
		6-Mar-97	0	20.14	295.48	NT	<100	<10	0.8	<0.5	<0.5	<1.5	NT	NT	NT	2
		29-May-97	0	19.88	295.74	NT	<100	<5	0.8	<0.5	<0.5	<1.5	NT	NT	NT	4
		28-Aug-97	0	21.48	294.14	NT	<100	<5	0.8	<0.5	<0.5	<1.5	NT	NT	NT	7
MW-6	314.62	23-May-93				2100	70000		6600	12000	880	6800	31	NT	NT	
		26-May-93	0	25.21	289.61											
		28-Jun-94	0.12	24.76	290.156	Not sampled due to presence of LPH.										
		29-Sep-94	0.43	25.80	289.364	Not sampled due to presence of LPH.										
		13-Dec-94	0.33	25.83	289.264	Not sampled. LPH present.										
		3-Mar-95	0.09	24.02	290.872	Not sampled. LPH present.										
		8-Jun-95	0.1	23.30	291.6	Not sampled. LPH present.										
		30-Aug-95	0.36	24.51	290.598	Not sampled. LPH present.										
		1-Dec-95	0.38	25.55	289.574	Not sampled. LPH present.										
		4-Mar-96	<0.01	22.23	292.59	Not sampled. LPH present.										
		4-Jun-96	0.02	22.00	292.836	Not sampled. LPH present.										
		6-Sep-96	0.23	23.25	291.754	Not sampled. LPH present.										
		4-Dec-96	0.01	23.31	291.518	Not sampled. LPH present.										
		6-Mar-97	sheen	20.06	294.76	Sorbent tube installed										
		29-May-97	sheen	19.83	294.99	Sorbent tube in place										
		28-Aug-97	sheen	21.26	293.56	Sorbent tube in place										
MW-7	311.95	26-May-93	3.91	27.16	287.918	Not sampled due to presence of LPH.										
		28-Jun-94	Not measured due to installed pump.			Not sampled due to presence of LPH.										
		29-Sep-94	"			Not sampled due to presence of LPH.										
		13-Dec-94	"			Not sampled due to presence of LPH.										
		8-Jun-95	"			Not sampled due to presence of LPH.										
		30-Aug-95	"			Not sampled due to presence of LPH.										
		1-Dec-95	"			Not sampled due to presence of LPH.										
		4-Mar-96	"			Not sampled due to presence of LPH.										
		4-Jun-96	"			Not sampled due to presence of LPH.										
		6-Sep-96	"			Not sampled due to presence of LPH.										
		4-Dec-96	0.01	22.29		Not sampled, passive skimmer in place										
		6-Mar-97	<0.01	19.15		Not sampled, passive skimmer in place										
		29-May-97	sheen	19.03		Not sampled, passive skimmer in place										
		28-Aug-97	sheen	20.39		Not sampled, passive skimmer in place										
MW-8	310.82	26-May-93	0	23.03	287.79	Not sampled, LPH present										
		28-Jun-94	0.48	23.33	287.874	Not sampled, passive skimmer in place										
		29-Sep-94	0.36	23.75	287.358	Not sampled, passive skimmer in place										
		13-Dec-94	2.56	25.46	287.408	Not sampled, passive skimmer in place										
		3-Mar-95	2.32	23.72	288.956	Not sampled, passive skimmer in place										
		8-Jun-95	0.65	22.06	289.28	Not sampled, passive skimmer in place										
		30-Aug-95	0.4	22.59	288.56	Not sampled, passive skimmer in place										
		1-Dec-95	0.27	23.35	287.686	Not sampled, passive skimmer in place										
		4-Mar-96	0.01	20.17	290.658	Not sampled, passive skimmer in place										
		4-Jun-96	0.01	20.21	290.618	Not sampled, passive skimmer in place										
		6-Sep-96	0.02	21.27	289.566	Not sampled, passive skimmer in place										
		4-Dec-96	sheen	20.91	289.91	Not sampled, passive skimmer in place										
		6-Mar-97	sheen	17.70	293.12	Not sampled, passive skimmer in place										
		29-May-97	sheen	17.96	292.86	Not sampled, passive skimmer in place										
		28-Aug-97	sheen	19.34	291.48	Not sampled, passive skimmer in place										
MW-9	314.9	8-Jun-95	0	22.81	292.09	NT	<100		8	<0.5	0.58	1.1	NT	NT	NT	9
		30-Aug-95	0	23.90	291	NT	<100		26	<0.5	1.9	2.3	NT	NT	NT	4
		1-Dec-95	0	24.92	289.98	NT	<100		18	<0.5	<0.5	<0.5	NT	NT	NT	6
		4-Mar-96	0	21.67	293.23	NT	<100		17	0.5	0.9	1	NT	NT	NT	4
		4-Jun-96	0	21.53	293.37	NT	200		44	<0.5	0.6	5.4	NT	NT	NT	5
		6-Sep-96	0	22.89	292.01	NT	100	7.6	31	<0.5	<0.5	2.9	NT	NT	NT	4
		4-Dec-96	0	22.93	291.97	NT	<100	1.3	14	<0.5	<0.5	<0.5	NT	NT	NT	7
		6-Mar-97	0	19.67	295.23	NT	<100	<10	14	<0.5	0.7	<1.5	NT	NT	NT	3
		29-May-97	0	19.36	295.54	NT	<100	<5	23	0.7	1.5	<1.5	NT	NT	NT	3
		28-Aug-97	0	20.93	293.97	NT	<100	<5	6.9	0.7	1.1	1.4	NT	NT	NT	9

Notes:
Groundwater elevation established relative to an arbitrary datum of 100.00 feet.
* = Groundwater elevation is corrected for the effects of LPH using the following formula:
TOC - (DTW - (PT)(0.80)) were TOC = Top of Casing, DTW = Depth to Water,
PT = Product Thickness, and 0.80 = Typical Specific Gravity for Gasoline.
** = Groundwater elevation was not measured on this date.
WTPH-G = total petroleum hydrocarbons - gasoline, by Ecology Method WTPH-G.
MTBE (Methyl-tert-butyl-ether) by EPA Method 8020M
Benzene, Toluene, Ethyl Benzene and Total Xylenes (BTEX) were analyzed by EPA Method 8020.
Total and dissolved lead by EPA Method 7421.
NT = Not tested.
All concentrations are expressed in ug/l.
Concentrations preceded by a "<" are laboratory method detection limits. The method detection limit may vary depending on the laboratory used and sample characteristics.

Charles A. G & Associates, Inc.
Consulting Engineers
11-106th Ave S.E., Suite 8, Bellevue, WA 98004
P.O. Box 3963, Bellevue, WA 98009-3963
PH (206) 451-1212 FAX (206) 451-8856

GROUNDWA SAMPLING / MONITORING

Location 11066, 24th + 148th / Bellevue JOB # 94081

Method of Collection 55 Weather Rainy, 65° Page 1 of 1

Sampled By: Bill Dougherty Date 8/28/97

SAMPLE #	WELL TYPE	DEPTH TO PRODUCT	DEPTH TO WATER	PRODUCT THICKNESS	DEPTH TO BOTTOM	VOLUME PURGED	DRY?	O2 % SAT	COND. uS	TEMP oC	PH	TIME SAMPLED
MW5	2	-	21.48	-	33.4	6	N	7	115	23.8		10:50
MW4	2	-	20.53	-	34.5	7	N	8	520	22.8		11:20
MW9	2	-	20.93	-	28.6	5	Y	9	424	23.7		11:50
MW6	2	-	21.26	sheen	tube							
MW1	4	-	20.23	sheen	skimmer empty							
MW3	4	-	~~20.39~~	sheen	tube							
MW2	4	~~20.23~~	~~20.34~~	0.11	replaced tube							
MW8	4	-	19.34	sheen	tube							
MW7	4	-	20.39	0.01	skimmer empty							
					TOTAL PURGED	18						

COMMENTS:
Treatment system not operating
New fenced area
Allowed wells to stabilized 2 hours before measurement
No Veeder Root
7 bbls

3 WELL VOLUMES: 2" ID = 0.5 gal/ft 4" ID = 2.0 gal/ft 6" ID = 4.4 gal/ft

BP EXPLORATION & OIL, INC.
ENVIRONMENTAL REMEDIATION MANAGEMENT
DATA REVIEW CHECKLIST

BP Site Number: 11066
ERM Contact: S. HOOTON
Sampling Date: 8/28/97
Matrix Desription: GROUNDWATER
Date Final Report Received: 9/5/97
Laboratory & Location: NEL

	Yes	No	NA
1. Is BP contract release number consistent with analytical report?			✓
2. Was report submitted within the specified timeframe?	✓		
3. Does report agree with the COC?	✓		
4. Are units consistent with the given matrix?	✓		
5. Were any target analytes/compounds detected in blanks (ie. trip or equipment)?			✓
6. Are duplicate water samples within __%?	✓		
7. Are holding times met?	✓		
8. Are surrogates within limits using laboratory criteria?	✓		
9. Are MS/MSD acceptable using laboratory criteria?	✓		
10. Are LCS results acceptable using laboratory criteria?	✓		

Notes/Comments:

Data Validation Completed by (print): K. Cooper
(signature): K. Cooper
Date: 9/15/97

American Environmental Network, Inc.

17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 684-0447

Dave Cooper
Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

Date: 09/05/1997
AEN Account No.: 90054
AEN Job Number: 97.02363

Project: BP Site 11066 / H106722
Location: BP - Bellevue 94081

Sample analysis in support of the project referenced above has been completed and results are presented on the following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Sample Number	Sample Description	Matrix Type	Date Taken	Date Received
84480	MW-5	GROUND WATER	08/28/1997	08/29/1997
84481	MW-4	GROUND WATER	08/28/1997	08/29/1997
84482	MW-9	GROUND WATER	08/28/1997	08/29/1997

Approved by:

Andi Hoevet
Project Manager
AEN, INC.

Technical Review
AEN, INC.

ANALYTICAL REPORT

Dave Cooper
Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

09/05/1997
Job No.: 97.02363

Project Name: BP Site 11066 / H106722
Date Received: 08/29/1997

Sample Number 84480 — Sample Description MW-5

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
BTEX/MTBE/WTPH-G						
Dilution Factor		1			09/03/1997	
Benzene	8020	ND	0.5	ug/L	09/03/1997	
Toluene	8020	ND	0.5	ug/L	09/03/1997	
Ethyl Benzene	8020	ND	0.5	ug/L	09/03/1997	
Xylenes	8020	ND	1.5	ug/L	09/03/1997	
MTBE	8015 M	ND	5.0	ug/L	09/03/1997	
WTPH-G	WTPH-G	ND	100	ug/L	09/03/1997	

Sample Number 84481 — Sample Description MW-4

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
BTEX/MTBE/WTPH-G						
Dilution Factor		1			09/03/1997	
Benzene	8020	0.9	0.5	ug/L	09/03/1997	
Toluene	8020	ND	0.5	ug/L	09/03/1997	
Ethyl Benzene	8020	ND	0.5	ug/L	09/03/1997	
Xylenes	8020	ND	1.5	ug/L	09/03/1997	
MTBE	8015 M	ND	5.0	ug/L	09/03/1997	
WTPH-G	WTPH-G	ND	100	ug/L	09/03/1997	

Sample Number 84482 — Sample Description MW-9

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
BTEX/MTBE/WTPH-G						
Dilution Factor		1			09/04/1997	
Benzene	8020	6.9	0.5	ug/L	09/04/1997	
Toluene	8020	0.7	0.5	ug/L	09/04/1997	
Ethyl Benzene	8020	1.1	0.5	ug/L	09/04/1997	
Xylenes	8020	1.4	1.5	ug/L	09/04/1997	

A sample result of ND indicates the parameter was Not Detected at the reporting limit.

ANALYTICAL REPORT

Dave Cooper
Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

09/05/1997
Job No.: 97.02363

Project Name: BP Site 11066 / H106722
Date Received: 08/29/1997

Sample Number	Sample Description
84482	MW-9

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
MTBE	8015 M	ND	5.0	ug/L	09/04/1997	
WTPH-G	WTPH-G	ND	100	ug/L	09/04/1997	

A sample result of ND indicates the parameter was Not Detected at the reporting limit.

SURROGATE REPORT

Dave Cooper
Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

09/05/1997
Job No.: 97.02363

Project Name: BP Site 11066 / H106722
Date Received: 08/29/1997

SURROGATES	METHODS	RESULTS		DATE ANALYZED	FLAG
Sample Number	Sample Description				
84480	MW-5				
TFT (Surr.)		109	%	09/03/1997	
Sample Number	Sample Description				
84481	MW-4				
TFT (Surr.)		105	%	09/03/1997	
Sample Number	Sample Description				
84482	MW-9				
TFT (Surr.)		103	%	09/04/1997	

QUALITY CONTROL REPORT
CONTINUING CALIBRATION VERIFICATION

Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

Date: 09/05/1997

Job Number: 97.02363

Contact: Dave Cooper
Project: BP Site 11066 / H106722

Analyte	CCV True Concentration	Concentration Found	Percent Recovery	Date Analyzed
BTEX/MTBE/WTPH-G				
Benzene	40.0	37.6	94.0	09/03/1997
Toluene	40.0	37.5	93.8	09/03/1997
Ethyl Benzene	40.0	36.8	92.0	09/03/1997
Xylenes	120	113	94.2	09/03/1997
WTPH-G	1000	1060	106.0	09/03/1997
MTBE	20.0	38.0	190.0	09/03/1997
TFT (Surr.)	100	121	121.0	09/03/1997

CCV - Continuing Calibration Verification

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland, OR 97224

QUALITY CONTROL REPORT
LABORATORY CONTROL STANDARD

Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

Date: 09/05/1997

Job Number: 97.02363

Contact: Dave Cooper
Project: BP Site 11066 / H106722

Analyte	LCS True Concentration	Concentration Found	LCS % Recovery	Flags	Date Analyzed
BTEX/MTBE/WTPH-G					
Benzene	20.0	18.7	93.5		09/03/1997
Toluene	20.0	18.9	94.5		09/03/1997
Ethyl Benzene	20.0	18.5	92.5		09/03/1997
Xylenes	60.0	57.2	95.3		09/03/1997
WTPH-G	500	520	104.0		09/03/1997
TFT (Surr.)	100	113	113.0		09/03/1997

LCS - Laboratory Control Standard

American Environmental Network , Inc. (503)684-0447 (503)620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland OR 97224

QUALITY CONTROL REPORT
MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

Date: 09/05/1997

Job Number: 97.02363

Contact: Dave Cooper
Project: BP Site 11066 / H106722

Analyte	Matrix Spike Result	Sample Result	Spike Amount	Units	Percent Recovery	MSD Result	MSD Spike Amount	Units	Percent Recovery	MS/MSD RPD	Flags
BTEX/MTBE/WTPH-G											
Benzene	38.1	ND	40.0	ug/L	95.3	38.4	40.0	ug/L	96.0	0.7	
Toluene	38.0	ND	40.0	ug/L	95.0	38.0	40.0	ug/L	95.0	0.0	
Ethyl Benzene	37.0	ND	40.0	ug/L	92.5	36.7	40.0	ug/L	91.8	0.8	
Xylenes	114	ND	120	ug/L	95.0	113	120	ug/L	94.2	0.8	
MTBE		ND		ug/L	105.0			ug/L	107.8	2.6	

QC Sample:

NOTE: Matrix Spike Samples may not be samples from this job.

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
dil.= Diluted Out

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX
17400 SW Upper Boones Ferry Rd., Portland, OR 97224

QUALITY CONTROL REPORT
BLANKS

Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

Date: 09/05/1997

Job Number: 97.02363

Contact: Dave Cooper
Project: BP Site 11066 / H106722
Location: BP - Bellevue 94081

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
BTEX/MTBE/WTPH-G				
Dilution Factor	1			09/03/1997
Benzene	ND	0.5	ug/L	09/03/1997
Toluene	ND	0.5	ug/L	09/03/1997
Ethyl Benzene	ND	0.5	ug/L	09/03/1997
Xylenes	ND	1.5	ug/L	09/03/1997
WTPH-G	ND	100	ug/L	09/03/1997
MTBE	ND	10	ug/L	09/03/1997
TFT (Surr.)	110		%	09/03/1997

QUALITY CONTROL REPORT
DUPLICATES

Charles A. Gove & Assoc.
P.O. Box 3963
Bellevue, WA 98055

Date: 09/05/1997

Job Number: 97.02363

Contact: Dave Cooper
Project: BP Site 11066 / H106722

Analyte	Original Analysis	Duplicate Analysis	Units	RPD	Date Analyzed	Flag
BTEX/MTBE/WTPH-G						
WTPH-G	ND	ND	ug/L		09/03/1997	
BTEX/MTBE/WTPH-G						
WTPH-G	ND	ND	ug/L		09/03/1997	

NOTE: Duplicates may not be samples from this job.

RPD - Relative Percent Difference

FLAG GLOSSARY

A	This sample does not have a typical gasoline pattern.
B1	This sample does not have a typical diesel pattern.
B	Analyte found in the associated blank as well as the sample.
C	The sample contains a lighter hydrocarbon than gasoline.
CN	See case narrative
CS	Outside control limits or unusual matrix; see case narrative.
D	The sample extends to a heavier hydrocarbon range than gasoline.
d	Results on a dry weight basis
DIL	Result was calculated from dilution.
E	The sample extends to a lighter hydrocarbon range than diesel.
F	The sample extends to a heavier hydrocarbon range than diesel.
G	The positive result for gasoline is due to single component comtamination.
I	The oil pattern for this sample is not typical.
J	The result for this compound is an estimated concentration.
L	The LCS recovery exceeded control limits. See the LCS page of this report.
LM	The LCS recovery exeeded control limits; the MS/MSD were in control validating the batch.
M	MS and/or MSD percent recovery exceeds control limits.
MD	Unable to calculate MS/MSD recovery due to high amount of analyte; greater than 4 times spike level.
MR	The MS/MSD RPD is greater than method critera. The sample was re-extracted and re-analyzed with similar results indica a non-homogeneous sample.
MM	The Matrix Spike exceeded control limits; LCS/LCS-D were in control validating the batch.
MI	Outside control limits due to matrix interference.
N	Manual integration performed on sample for quantification.
N/A	Not Applicable.
NC	Not calcuable.
NO	Not Analyzed.
P	A post digestion spike was analyzed, and recoveries were within control limits.
Q	Detection limits elevated due to sample matrix.
R	The duplicate RPD was greater than 20%. The sample was re-extracted and re-analyzed with similar results. This indicates a matrix interference in the sample, likely a non-homogeneity of the sample.
RD	RPD not applicable for results less than five times the reporting limit.
RP	MS/MSD RPD is greater than 20%
SR	Surrogate recovery outside control limits. See the surrogate page of the report.
SD	Unable to quantitate surrogate due to sample dilution.
SC	Sample not provided to laboratory in proper sampling container.
V	Volatile analysis was requested, sample container received with headspace.
X1	The duplicate RPD was greater than 20%. Due to insufficient sample, re-analysis was not possible.
X	Sample was analyzed outside recommended holding times.
Y	The result for this parameter was greater than the TCLP regulatory limit.
Z	The pattern seen for the parameter being analyzed is not typical.

97.02363

CHAIN OF CUSTODY

No. 071912 Page 1 of 1

CONSULTANT'S NAME	ADDRESS	CITY	STATE	ZIP CODE
Charles Grove & Assoc.	PO Box 3963	Bellevue	WA	98009

BP SITE NUMBER	BP CORNER ADDRESS/CITY	CONSULTANT PROJECT NUMBER
11066	24th + 148th / Bellevue	94081

CONSULTANT PROJECT MANAGER	PHONE NUMBER	FAX NUMBER	CONSULTANT CONTRACT NUMBER
Dave Cooper	451-1212	451-8856	H106722
BP CONTACT	**BP ADDRESS**	**PHONE NUMBER**	**FAX NO.**
Pete DeSantis	295 SW 41st / Renton	251-8209	251-0736
LAB CONTACT	**LABORATORY ADDRESS**	**PHONE NUMBER**	**FAX NO.**
Andi Hoevet	Durham, OR	503 684-0447	620-0393

SAMPLED BY (Please Print Name)	SAMPLED BY (Signature)	SHIPMENT DATE	SHIPMENT METHOD
Bill Dougherty	Bill Dougherty	8/28/97	UPS

TAT: ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☐ Standard 2 Weeks

ANALYSIS REQUIRED

AIRBILL NUMBER: N200 392 35 T 2

SAMPLE DESCRIPTION	COLLECTION DATE / TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE	LAB SAMPLE #	WTPH-G BTEX MTBE	COMMENTS
MW5	10:50	Water	2	VOA			X	
MW4	11:20	↓	↓	↓			X	
MW9	11:50	↓	↓	↓			X	

BP

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Bill Dougherty	8/28/97	16:50			

ADDITIONAL COMMENTS: Include Trip Blank results from 11049 in report

CLV-16722
PKG/50

Distribution: White - Original (with Data)
Yellow - BP
Pink - Lab
Blue - Consultant Field Staff