BP OIL

BP Oil Company
Environmental Remediation Management
295 SW 41st Street
Renton, Washington 98055-4931
(425) 251-0667
Fax No: (425) 251-0736

June 23, 1998

Ms Lynn Gooding
WASHINGTON DEPT. OF ECOLOGY
PO BOX 47775
OLYMPIA WA 98504

File Name BP 11085
County Pierce
File Type GW
Your Name NB

RE: BP OIL FACILITY #11085
728 Meridian Street East
Puyallup, WA

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT; DATED MAY 29th, 1998** for the above referenced facility.

If you should have any questions or comments regarding this site, I may be reached at (425) 251-0689.

Sincerely,

Scott T. Hooton
Environmental Remediation Management

STH:sb MSWORD\ERM11085

cc: Tosco Marketing Co., 3977 Leary Way NW, Seattle, WA 98107

Mr. Mike Davis, Tacoma-Pierce County Health Dept.; 3629 South D Street,Tacoma WA 98408

Site File

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11085
728 Meridian Street E
Puyallup, Washington

Project No. 20-45-01-001

Prepared for:

BP Oil Company
Environmental Resources Management
295 SW 41st Street
Building 13, Suite N
Renton, Washington

Prepared by:

Alisto Engineering Group
1145 - 12th Avenue NW, Suite C-4A
Issaquah, Washington

May 29, 1998

Bill Dougherty
Project Engineer

Dave Cooper, P.G.
Supervising Geologist

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11085
728 Meridian Street E
Puyallup, Washington

Project No. 20-45-01-001

May 29, 1998

INTRODUCTION

This report presents the results and findings of the March 19, 1998 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11085, 728 Meridian Street E, Puyallup, Washington. A site vicinity map is shown on Figure 1.

FIELD PROCEDURES

Field activities were performed in accordance with the procedures and guidelines of the Washington State Department of Ecology.

Before purging and sampling, the groundwater level in each well was measured from a permanent mark on top of the casing to the nearest 0.01 foot using an electronic sounder. The depth to groundwater and top of casing elevation data were used to calculate the groundwater elevation in each well in reference to an arbitrary datum. The survey data and groundwater elevation measurements collected to date are presented in Table 1.

Before sample collection, each well was purged of 3 casing volumes while recording field readings of pH, temperature, electrical conductivity, and dissolved oxygen. Groundwater samples were collected for laboratory analysis by lowering a bottom-fill, decontaminated bailer to just below the water level in the well. The samples were transferred from the bailer into laboratory-supplied containers and immediately placed in a chilled cooler for transport. The field report and sampling data sheets are presented in Appendix A.

SAMPLING AND ANALYTICAL RESULTS

The results of monitoring and laboratory analysis of the groundwater samples for this and previous quarters are summarized in Table 1. The potentiometric groundwater elevations as calculated from the results of this monitoring event are shown on Figure 2. The results of groundwater analysis are shown on Figure 3. The laboratory report and chain of custody record are presented in Appendix B.

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11085
728 MERIDIAN STREET EAST, PUYALLUP, WASHINGTON

ALISTO PROJECT NO. 20-045

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	PRODUCT THICKNESS (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	WTPH-D (ug/l)	WTPH-G (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl-Benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)	Total Lead (ug/l)	PCE (ug/l)	TCE (ug/l)	Vinyl Chloride (ug/l)	Dissolved Oxygen (%-ppm)
MW-1	4/2/92	350.90	0	4.84	346.06	269	190	4.5	<1.0	<1.0	<1.0	NT	2.8	57	5.4	<1.0	-
MW-1	5/7/92		0	4.75	346.15												
MW-1	6/9/92		0	5.25	345.65												
MW-1	7/20/94		0	5.65	345.25	<250	<100	16	<0.5	<0.5	<0.5	NT	NT	NT	NT	NT	7
MW-1	11/1/94		0	6.46	344.44	NT	130	100	1.4	2.1	6.2	NT	NT	NT	NT	NT	9
MW-1	1/11/95		0	4.96	345.94												
MW-1	4/12/95		0	4.06	346.84	NT	270	100	2.4	2.4	3.7	NT	NT	NT	NT	NT	9
MW-1	7/11/95		0	5.08	345.82	NT	130	36	<0.5	1.7	1.2	NT	NT	NT	NT	NT	10
MW-1	10/2/95		0	5.98	344.92	NT	240	27	0.61	2.2	<0.5	NT	NT	NT	NT	NT	8
MW-1	1/5/96		0	4.36	346.54	NT	140	43	<0.5	<0.5	<0.5	NT	NT	NT	NT	NT	3
MW-1	3/29/96		0	3.35	347.55	NT	300	180	<0.5	2.7	13	NT	NT	NT	NT	NT	5
MW-1	7/15/96		0	4.40	346.5	NT	200	58	0.5	8.1	0.6	NT	NT	29	23	<1.0	5
MW-1	10/16/96		0	5.79	345.11	NT	200	42	<0.5	9.2	<0.5	5.3	NT	43	26	<1.0	6
MW-1	1/3/97		0	2.65	348.25	NT	310	57	0.5	<0.5	2.3	<10	NT	20	22	<1.0	3
MW-1	4/25/97		0	3.33	347.57	NT	280	110	0.5	8.9	1.7	<5	NT	49	37	<0.5	3
MW-1	7/2/97		0	4.31	346.59	NT	230	18	<0.5	3.4	<1.5	<5	NT	16	50	<2	6%
MW-1	9/25/97		0	5.46	345.44	NT	140	27	1.1	4.4	<1.5	<5	NT	54	86	<10	-
MW-1	3/19/98		0	4.22	346.68	NT	160	72	0.51	0.56	<1.5	<2	NT	87	33	<2	0.6ppm
MW-2	4/2/92	352.23	0	5.12	347.11	340	1700	100	260	30	230		3.6	48	7.4	<1.0	-
MW-2	5/7/92		0	5.11	347.12												
MW-2	6/9/92		0	5.59	346.64												
MW-2	7/20/94		0.08	6.05	346.05	Not sampled. LPH present.											
MW-2	11/1/94		0.1	8.01	344.3	Not sampled. LPH present.											
MW-2	1/11/95		Sheen	5.19	347.04												
MW-2	4/12/95		<.01	6.48	345.75	Not sampled. LPH present.											
MW-2	7/11/95		<.01	5.61	346.62	Not sampled. LPH present.											
MW-2	10/2/95		0.01	6.53	345.52	Not sampled. LPH present.											
MW-2	1/5/96		0.01	4.65	347.40	Not sampled. LPH present.											
MW-2	3/29/96	352.04	Sheen	3.52	348.52	Not sampled. LPH present.											
MW-2	7/15/96		<.01	4.44	347.6	Not sampled. LPH present.											
MW-2	10/16/96		Sheen	6.92	345.12	Not sampled. LPH present.											
MW-2	1/3/97		sheen	3.02	349.02	Not sampled. LPH present.											
MW-2	4/25/97		sheen	3.60	Sorbent tube in place												
MW-2	7/2/97		sheen	-	Sorbent tube in place												
MW-2	9/25/97		sheen	-	Sorbent tube in place												
MW-2	3/19/98		sheen	4.50	Sorbent tube in place		37000	70	1600	600	3900	<2	NT	130	6.3	<2	
MW-3	4/2/92	350.50	0	6.31	344.19	450	870	190	8	74	100	NT	2.4	8.2	2.7	12	-
MW-3	5/7/92		0	6.20	344.3												
MW-3	6/9/92		0	6.56	343.94												
MW-3	7/20/94		0	6.73	343.77	730	1400	200	9.1	130	120	NT	NT	NT	NT	NT	18
MW-3	11/1/94		0	7.12	343.38	NT	1800	160	6.9	150	100	NT	NT	NT	NT	NT	23
MW-3	1/11/95		0	6.34	344.16												
MW-3	4/12/95		0	5.74	344.76	NT	5300	560	91	390	440	NT	NT	NT	NT	NT	8
MW-3	7/11/95		0	6.18	344.32	NT	4700	610	35	420	410	NT	NT	NT	NT	NT	6
MW-3	10/2/95		0	6.68	343.82	NT	3700	480	9.1	310	250	NT	NT	NT	NT	NT	4
MW-3	1/5/96		0.01	5.78	344.73	NT	5000	520	11	470	420	NT	NT	NT	NT	NT	3
MW-3	3/29/96		0	5.36	345.14	NT	3100	430	13	430	290	NT	NT	NT	NT	NT	5
MW-3	7/15/96		0	5.78	344.72	NT	3300	420	7.8	400	250	NT	NT	3.8	0.6	10	4
MW-3	10/16/96		0	6.54	343.96	NT	3700	300	8.4	300	190	31	NT	1	0.2	12	7
MW-3	1/3/97		0	4.91	345.59	NT	2600	220	16	210	180	<10	NT	14	1.7	9.5	3

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11085
728 MERIDIAN STREET EAST, PUYALLUP, WASHINGTON

ALISTO PROJECT NO. 20-045

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	PRODUCT THICKNESS (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	WTPH-D (ug/l)	WTPH-G (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl-Benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)	Total Lead (ug/l)	PCE (ug/l)	TCE (ug/l)	Vinyl Chloride (ug/l)	Dissolved Oxygen (%-ppm)
MW-3	4/25/97		0	5.19	345.31	NT	4100	290	20	340	230	<50	NT	4.1	0.4	20	3
MW-3	7/2/97		0	5.58	344.92	NT	5000	340	23	470	350	58	NT	<10	<10	<20	5%
MW-3	9/25/97		0	6.28	344.22	NT	3800	240	15	350	230	<100	NT	7.9	<1	37	-
MW-3	3/19/98		0	5.70	344.80	NT	3600	210	13	440	180	<2	NT	8.6	1.2	15	0.5ppm
MW-4	10/16/96	355.01	0	8.54	346.47	NT	100	<1.0	<0.5	<0.5	<0.5	<1.0	NT	200	6.6	<1	25
MW-4	1/3/97		0	5.41	349.6	NT	<100	<0.5	<0.5	<0.5	<0.5	<10	NT	110	1.8	<1	56
MW-4	4/25/97		0	5.88	349.13	NT	<100	<0.5	<0.5	<0.5	<0.5	<5	NT	520	9.4	<0.5	25
MW-4	6/2/97		0	6.75	348.26	NT	260	<0.5	<0.5	<0.5	<1.5	<5	NT	550	7.6	<2	22%
MW-4	9/25/97		0	7.81	347.20	NT	190	<0.5	<0.5	<0.5	<1.5	<5	NT	420	5.9	<2	-
MW-4	3/19/98		0	6.60	348.41	NT	<100	<0.5	<0.5	<0.5	<1.5	<2	NT	190	3.4	<2	8.1ppm
MW-5	7/2/97	348.18	0	5.18	343.00	NT	4300	32	<5.0	35	57	<50	NT	<1.0	<1.0	<2	7%
MW-5	9/25/97		0	6.13	342.05	NT	2600	60	32	21	26	<50	NT	<1	<1	<2	-
MW-5	3/19/98		0	5.18	343.00	NT	2000	22	19	10	21	<2	NT	<1	<1	<2	0.7ppm
MW-7	7/2/97	341.03	0	6.15	334.88	NT	<100	<0.5	<0.5	<0.5	<1.5	<5	NT	66	2.6	<2	25%
MW-7	9/25/97		0	6.19	334.84	NT	<100	<0.5	<0.5	<0.5	<1.5	<5	NT	49	2.4	<2	-
MW-7	3/19/88		0	6.03	335.00	NT	<100	<0.5	<0.5	<0.5	<1.5	<2	NT	25	1.8	<2	6.5ppm
TW-6	4/15/94		0	5.07		61	15	1.3	<0.5	<0.5	<0.5	NT	NT	NT	NT	NT	-
TW-6	7/20/94		0	5.76		<250	<100	<0.5	<0.5	<0.5	<0.5	NT	NT	NT	NT	NT	23
TW-6	11/1/94	349.69	0	6.12	343.57	NT	<100	<0.5	<0.5	<0.5	<0.5	NT	NT	NT	NT	NT	8
TW-6	1/11/95		0	5.49	344.2												
TW-6	4/12/95		0	4.95	344.74	NT	510	48	4	10	16	NT	NT	NT	NT	NT	8
TW-6	7/11/95		0	5.30	344.39	NT	140	5	0.58	4.3	7.5	NT	NT	NT	NT	NT	9
TW-6	10/2/95		0	5.74	343.95	NT	<100	1.2	<0.5	<0.5	<0.5	NT	NT	NT	NT	NT	4
TW-6	1/5/96		0	4.92	344.77	NT	<100	2	<0.5	<0.5	<0.5	NT	NT	NT	NT	NT	4
TW-6	3/29/96		0	4.60	345.09	NT	200	3.1	1.6	1.4	6.3	NT	NT	NT	NT	NT	5
TW-6	7/15/96		0	4.90	344.79	NT	200	2.7	2.5	2	8	NT	NT	85	5.1	<1.0	7
TW-6	10/16/96		0	5.50	344.19	NT	<100	<1.0	<0.5	<0.5	<0.5	<1.0	NT	63	4.4	<1.0	6
TW-6	1/3/97		0	4.05	345.64	NT	230	7.2	6.6	4.6	21	<10	NT	60	4.5	<1	5
TW-6	4/25/97		0	4.39	345.3	NT	480	13	20	13	60	<5	NT	170	8.2	<0.5	4
TW-6	7/2/97		0	4.69	345	NT	<100	<0.5	<0.5	<0.5	<1.5	<5	NT	220	6.7	<2	4%
TW-6	9/25/97		0	5.24	344.45	NT	<100	<0.5	0.7	<0.5	<1.5	<5	NT	170	5	<2	-
TW-6	3/19/98		0	4.81	344.88	NT	130	3	4.2	2.8	12	<2	NT	130	5.3	<2	1.7ppm

Notes:

Groundwater elevation based on survey datum set by Geraghty & Miller.

* = 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-D = Total Petroleum Hydrocarbons, diesel range, by Ecology Method WTPH-D.

WTPH-G = Total Petroleum Hydrocarbons, gasoline range, by Ecology Method WTPH-G.

MTBE (Methyl-tert-butyl-ether) by EPA Method 8015M or 8260

Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), by EPA Method 8020.

Total lead by EPA Method 7421.

Halogenated VOC's by EPA 8010 or 8260 (For full suite of compounds see lab certificates)

NT = Not tested.

All concentration are expressed in micrograms/liter (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.

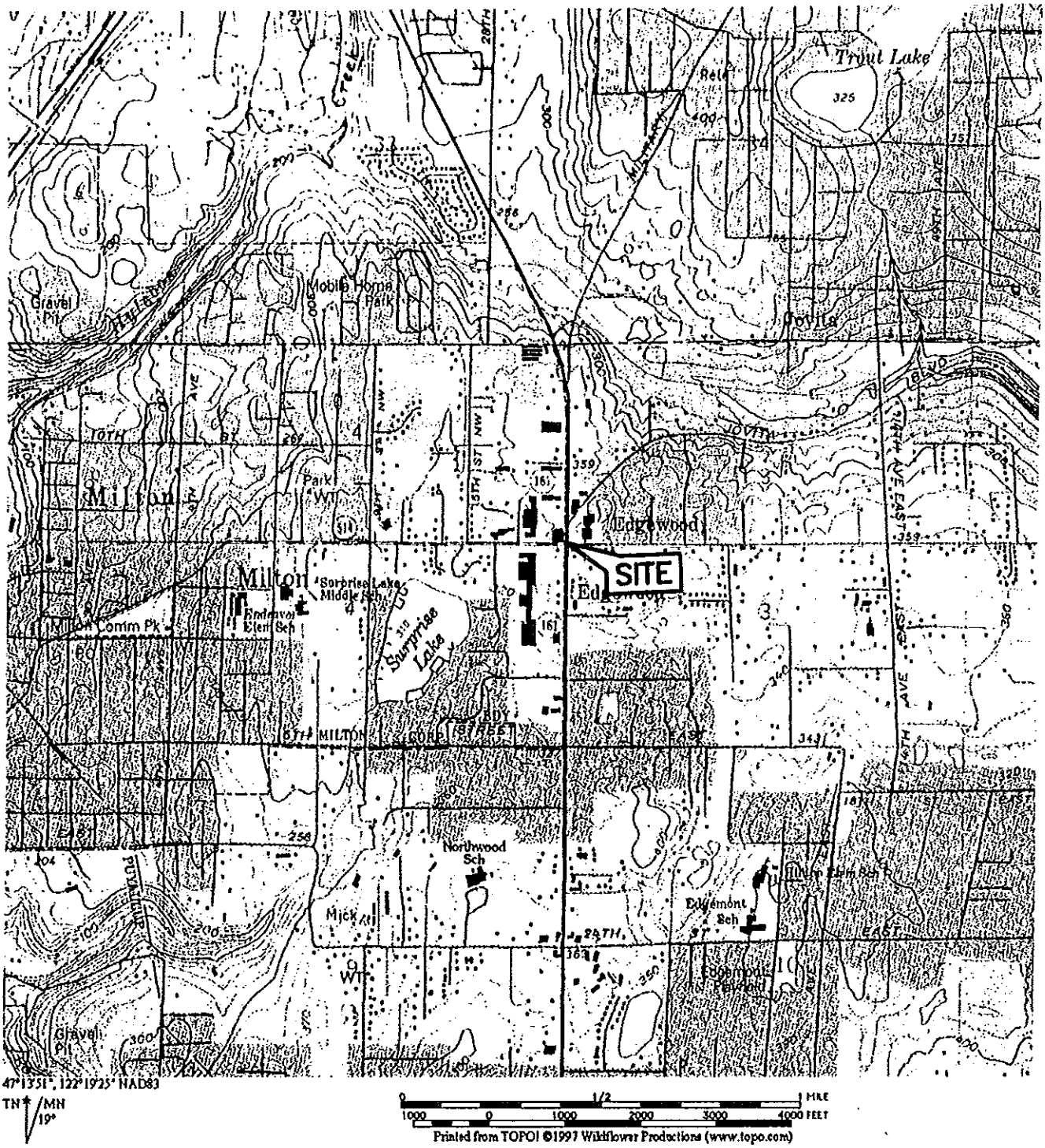


FIGURE 1

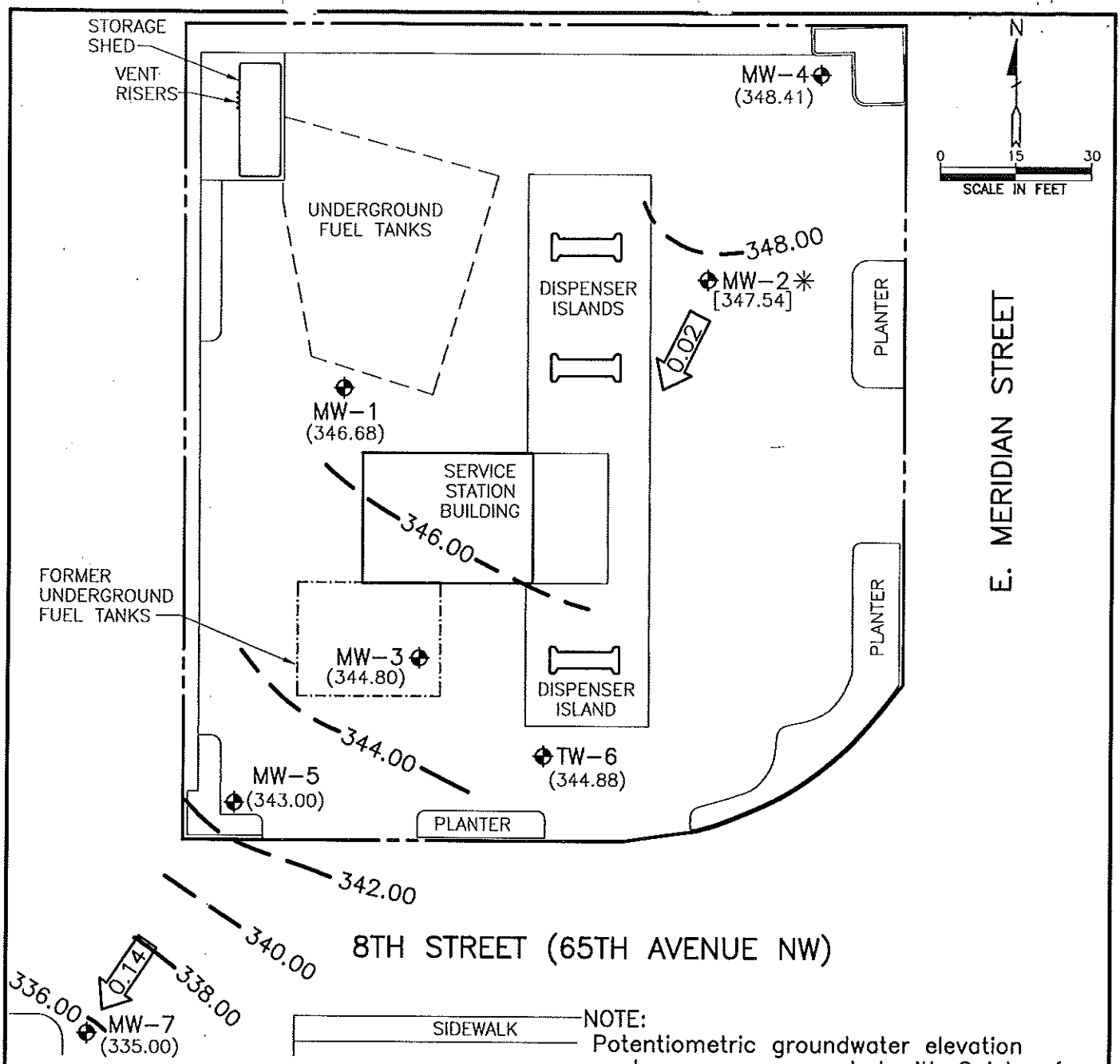
SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11085
728 E. MERIDIAN STREET
MILTON, WASHINGTON

PROJECT NO. 20-045

ALISTO ENGINEERING GROUP
SEATTLE, WASHINGTON

20045B—DWG 3-4-98 REV 1=1



NOTE:
Potentiometric groundwater elevation contours were generated with Quicksurf using the Kriging method with a spherical variogram on a triangulated grid surface.

LEGEND

◆	GROUNDWATER MONITORING WELL
(335.00)	GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
336.00	GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL–2.00 FEET)
0.02	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT
[347.54]	GROUNDWATER ELEVATION NOT USED IN PREPARING CONTOURS
✳	SORBENT TUBE IN PLACE

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

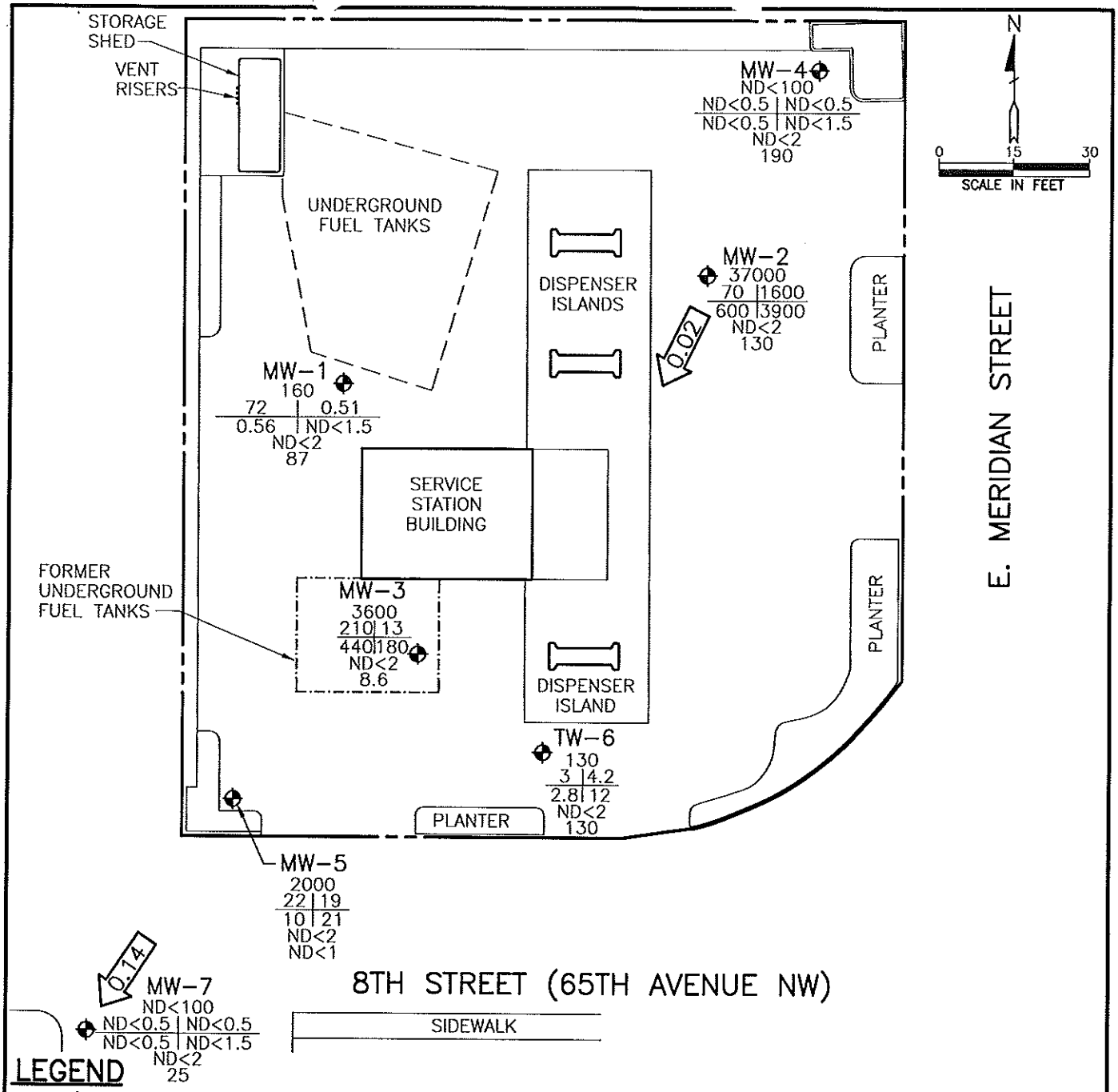
MARCH 19, 1998

BP OIL SERVICE STATION 11085
728 E. MERIDIAN STREET
MILTON, WASHINGTON

PROJECT NO. 20–045

ALISTO ENGINEERING GROUP
SEATTLE, WASHINGTON

20045A—.DWG 5-4-98 ROW 1=30



LEGEND

◆	GROUNDWATER MONITORING WELL
TPH-G B | T E | X MTBE PCE	CONCENTRATION OF CONSTITUENTS IN MICROGRAMS PER LITER
TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
MTBE	METHYL TERT BUTYL ETHER
PCE	TETRACHLOROETHENE
ND	NOT DETECTED ABOVE REPORTED DETECTION LIMIT
0.02	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

MARCH 19, 1998

BP OIL SERVICE STATION 11085
728 E. MERIDIAN STREET
MILTON, WASHINGTON

PROJECT NO. 20-045

ALISTO ENGINEERING GROUP
SEATTLE, WASHINGTON

20045E-1.DWG 5-4-98 RKW 1=30

APPENDIX A

FIELD REPORT / SAMPLING DATA SHEETS

ALISTO ENGINEERING GROUP

1145 - 12th AVENUE NW, SUITE C-4A
ISSAQUAH, WA 98027, (425) 837-3944, fax 837-8543

Field Report / Sampling Data Sheet

Station No: 11085 Date: 3/19/98
Project No.: 20-45-01-001 Day: S M T W (TH) F S A
Address: 728 Meridian St. E City: Puyallup
Contract No.: H328893 Sampler: Bill Dougherty

DEPTH TO GROUNDWATER SUMMARY

WELL ID	DEPTH TO WATER	PRODUCT THICKNESS	LEVEL TIME	WELL ID	DEPTH TO WATER	PRODUCT THICKNESS	LEVEL TIME	WELL ID	DEPTH TO WATER	PRODUCT THICKNESS	LEVEL TIME
MW7	6.03	-	9:52	MW2	4.86	sheen	12:24				
MW5	5.18	-	9:54								
TW6	4.81	-	9:56								
MW1	4.22	-	9:58								
MW3	5.70	-	12:20								
MW4	6.60	-	12:22								

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW7	6.03	2	✓	-	Y (N)			57.8	6.47	147	6.5

Tot. Depth - Water Level= 19.1 x Well Vol. Factor= x#vol. to Purge= 7 PurgeVol.
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

⊗ TPH-G/BTEX___ ⊗ MTBE___ ○ TPH Diesel___ ⊗ 8010 (601)
TIME/SAMPLE ID: 10:30

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW5	5.18	4	✓	-	Y (N)			57.7	6.69	302	0.7

Tot. Depth - Water Level= 13.0 x Well Vol. Factor= x#vol. to Purge= 16 PurgeVol.
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments: Bailed dry, slow recovery

⊗ TPH-G/BTEX___ ⊗ MTBE___ ○ TPH Diesel___ ⊗ 601
TIME/SAMPLE ID: 12:10

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
TW6	4.81	2	✓	-	Y (N)			53.1	6.71	144	1.7

Tot. Depth - Water Level= 18.8 x Well Vol. Factor= x#vol. to Purge= 7 PurgeVol.
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

⊗ TPH-G/BTEX___ ⊗ MTBE___ ○ TPH Diesel___ ⊗ 601
TIME/SAMPLE ID: 11:00

FIELD INSTRUMENT CALIBRATION DATA

pH METER ✓ 4.00 ___ 7.00 6.95 10.00 ___ TEMPERATURE COMPENSATED (Y) N TIME ___
D.O. METER ✓ ZERO d.O. SOLUTION ___ BAROMETRIC PRESSURE 30.1 TEMP 60 WEATHER Cloudy
CONDUCTIVITY METER ✓ 700 10,000 ___ TURBIDITY METER ___ 5.0 NTU ___ OTHER ___
LEAK DETECTOR : ___ ALARM MODE ___ NON ALARM MODE

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING
GROUP
1145- 12th AVENUE NW, SUITE C-4A
ISSAQUAH, WA 98027, (425) 837-3944, fax 837-8543

Station No: 11085 Date: 3/19/98
Project No.: 20-45-01-001 Day: S M T W (TH) F SA
Address: 728 Meridian St. E City: Puyallup
Contract No.: H328893 Sampler: Bill Dougherty

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW1	4.22	4	✓	–	Y (N)			50.6	6.62	207	0.6

Total Depth - Water Level= 18.5 x Well Vol. Factor= x#vol. to Purge= PurgeVol. 28
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

⊗ TPH-G/BTEX___ ⊗ MTBE___ ○ TPH Diesel___ ⊗ 601
TIME/SAMPLE ID: 11:40

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW3	5.70	4	✓	–	Y (N)			54.6	6.68	280	0.5

Tot. Depth - Water Level= 20.0 x Well Vol. Factor= x#vol. to Purge= PurgeVol. 28
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments: Bailed dry

⊗ TPH-G/BTEX___ ⊗ MTBE___ ○ TPH Diesel___ ⊗ 601
TIME/SAMPLE ID: 12:50

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW4	6.60	2	✓	–	Y (N)			53.4	6.80	70	8.1

Tot. Depth - Water Level= 15.0 x Well Vol. Factor= x#vol. to Purge= PurgeVol. 5
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

⊗ TPH-G/BTEX___ ⊗ MTBE___ ○ TPH Diesel___ ⊗ 601
TIME/SAMPLE ID: 13:10

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW2	4.50	4	✓	Sheen	(Y) N						

Tot. Depth - Water Level= 23.8 x Well Vol. Factor= x#vol. to Purge= PurgeVol. 38
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments: Replaced sorbent tube

⊗ TPH-G/BTEX___ ⊗ MTBE___ ○ TPH Diesel___ ⊗ 601
TIME/SAMPLE ID: 14:00

No treatment system
No bbls
Construction to the south

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

BP Site Number: 11085
ERM Contact: S MOOTON
Sampling Date: 3/19/98
Matrix Desription: WATER
Date Final Report Received: 3/31/98
Laboratory & Location: MW AUSTIN

	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): M Cooper
(signature):
Date: 4/4/98

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

American Environmental Network, Inc.

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

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998
AEN Account No.: 90054
AEN Job Number: 98.00688

Project: BP 11085 / H328893
Location: 20-45-01-001

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
91949	MW 7	Water	03/19/1998	03/20/1998
91950	MW 5	Water	03/19/1998	03/20/1998
91951	TW 6	Water	03/19/1998	03/20/1998
91952	MW 1	Water	03/19/1998	03/20/1998
91953	MW 3	Water	03/19/1998	03/20/1998
91954	MW 4	Water	03/19/1998	03/20/1998
91955	MW 2	Water	03/19/1998	03/20/1998
91956	Trip Blank	Water	03/19/1998	03/20/1998

Approved by:

Andi Hoevet
Project Manager
AEN, INC.

Technical Review
AEN, INC.

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number	Sample Description
91949	MW 7

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
HAL. ORGS. & BTEX BY GC/MS (W)						
Dilution Factor	8260	1			03/26/1998	
Chloromethane	8260	ND	2.0	ug/L	03/26/1998	
Bromomethane	8260	ND	2.0	ug/L	03/26/1998	
Vinyl Chloride	8260	ND	2.0	ug/L	03/26/1998	
Chloroethane	8260	ND	2.0	ug/L	03/26/1998	
Methylene Chloride	8260	ND	50	ug/L	03/26/1998	
Trichlorofluoromethane	8260	ND	1.0	ug/L	03/26/1998	
1,1-Dichloroethene	8260	ND	1.0	ug/L	03/26/1998	
1,1-Dichloroethane	8260	ND	1.0	ug/L	03/26/1998	
trans-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/26/1998	
cis-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/26/1998	
Chloroform	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichloroethane (EDC)	8260	ND	1.0	ug/L	03/26/1998	
1,1,1-Trichloroethane	8260	ND	1.0	ug/L	03/26/1998	
Carbon Tetrachloride	8260	ND	1.0	ug/L	03/26/1998	
Bromodichloromethane	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichloropropane	8260	ND	1.0	ug/L	03/26/1998	
trans-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/26/1998	
Trichloroethene	8260	1.8	1.0	ug/L	03/26/1998	
Dibromochloromethane	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dibromoethane (EDB)	8260	ND	1.0	ug/L	03/26/1998	
1,1,2-Trichloroethane	8260	ND	1.0	ug/L	03/26/1998	
cis-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/26/1998	
2-Chloroethylvinyl ether	8260	ND	5.0	ug/L	03/26/1998	
Bromoform	8260	ND	1.0	ug/L	03/26/1998	
1,1,2,2-Tetrachloroethane	8260	ND	1.0	ug/L	03/26/1998	
Tetrachloroethene	8260	25	1.0	ug/L	03/26/1998	
Chlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
MTBE	8260	ND	2.0	ug/L	03/26/1998	
1,3-Dichlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichlorobenzene	8260	ND	1.0	ug/L	03/26/1998	

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number 91949 — Sample Description: MW 7

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
1,4-Dichlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
BTEX/WTPH-Gasoline (W)						
Dilution Factor		1			03/26/1998	
Benzene	8020	ND	0.5	ug/L	03/26/1998	
Toluene	8020	ND	0.5	ug/L	03/26/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	03/26/1998	
Xylenes, total	8020	ND	1.5	ug/L	03/26/1998	
WTPH-Gasoline	WTPH-G	ND	100	ug/L	03/24/1998	

Sample Number 91950 — Sample Description: MW 5

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
HAL. ORGS. & BTEX BY GC/MS (W)						
Dilution Factor	8260	1			03/26/1998	
Chloromethane	8260	ND	2.0	ug/L	03/26/1998	
Bromomethane	8260	ND	2.0	ug/L	03/26/1998	
Vinyl Chloride	8260	ND	2.0	ug/L	03/26/1998	
Chloroethane	8260	ND	2.0	ug/L	03/26/1998	
Methylene Chloride	8260	ND	50	ug/L	03/26/1998	
Trichlorofluoromethane	8260	ND	1.0	ug/L	03/26/1998	
1,1-Dichloroethene	8260	ND	1.0	ug/L	03/26/1998	
1,1-Dichloroethane	8260	ND	1.0	ug/L	03/26/1998	
trans-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/26/1998	
cis-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/26/1998	
Chloroform	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichloroethane (EDC)	8260	ND	1.0	ug/L	03/26/1998	
1,1,1-Trichloroethane	8260	ND	1.0	ug/L	03/26/1998	
Carbon Tetrachloride	8260	ND	1.0	ug/L	03/26/1998	
Bromodichloromethane	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichloropropane	8260	ND	1.0	ug/L	03/26/1998	
trans-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/26/1998	

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number: 91950
Sample Description: MW 5

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
Trichloroethene	8260	ND	1.0	ug/L	03/26/1998	
Dibromochloromethane	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dibromoethane (EDB)	8260	ND	1.0	ug/L	03/26/1998	
1,1,2-Trichloroethane	8260	ND	1.0	ug/L	03/26/1998	
cis-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/26/1998	
2-Chloroethylvinyl ether	8260	ND	5.0	ug/L	03/26/1998	
Bromoform	8260	ND	1.0	ug/L	03/26/1998	
1,1,2,2-Tetrachloroethane	8260	ND	1.0	ug/L	03/26/1998	
Tetrachloroethene	8260	ND	1.0	ug/L	03/26/1998	
Chlorobenzene	8260	1.1	1.0	ug/L	03/26/1998	
MTBE	8260	ND	2.0	ug/L	03/26/1998	
1,3-Dichlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichlorobenzene	8260	2.8	1.0	ug/L	03/26/1998	
1,4-Dichlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
BTEX/WTPH-Gasoline (W)						
Dilution Factor		1			03/26/1998	
Benzene	8020	22	0.5	ug/L	03/26/1998	
Toluene	8020	19	0.5	ug/L	03/26/1998	
Ethyl Benzene	8020	10	0.5	ug/L	03/26/1998	
Xylenes, total	8020	21	1.5	ug/L	03/26/1998	
WTPH-Gasoline	WTPH-G	2,000	1000	ug/L	03/24/1998	DIL

Sample Number: 91951
Sample Description: TW 6

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
HAL. ORGS. & BTEX BY GC/MS (W)						
Dilution Factor	8260	1			03/26/1998	
Chloromethane	8260	ND	2.0	ug/L	03/26/1998	
Bromomethane	8260	ND	2.0	ug/L	03/26/1998	
Vinyl Chloride	8260	ND	2.0	ug/L	03/26/1998	
Chloroethane	8260	ND	2.0	ug/L	03/26/1998	

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

ANALYTICAL REPORT

Dave Cooper
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1145 12th Ave. NW
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03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number	Sample Description
91951	TW 6

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
Methylene Chloride	8260	ND	50	ug/L	03/26/1998	
Trichlorofluoromethane	8260	ND	1.0	ug/L	03/26/1998	
1,1-Dichloroethene	8260	ND	1.0	ug/L	03/26/1998	
1,1-Dichloroethane	8260	ND	1.0	ug/L	03/26/1998	
trans-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/26/1998	
cis-1,2-Dichloroethene	8260	4.6	1.0	ug/L	03/26/1998	
Chloroform	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichloroethane (EDC)	8260	ND	1.0	ug/L	03/26/1998	
1,1,1-Trichloroethane	8260	ND	1.0	ug/L	03/26/1998	
Carbon Tetrachloride	8260	ND	1.0	ug/L	03/26/1998	
Bromodichloromethane	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichloropropane	8260	ND	1.0	ug/L	03/26/1998	
trans-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/26/1998	
Trichloroethene	8260	5.3	1.0	ug/L	03/26/1998	
Dibromochloromethane	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dibromoethane (EDB)	8260	ND	1.0	ug/L	03/26/1998	
1,1,2-Trichloroethane	8260	ND	1.0	ug/L	03/26/1998	
cis-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/26/1998	
2-Chloroethylvinyl ether	8260	ND	5.0	ug/L	03/26/1998	
Bromoform	8260	ND	1.0	ug/L	03/26/1998	
1,1,2,2-Tetrachloroethane	8260	ND	1.0	ug/L	03/26/1998	
Tetrachloroethene	8260	130	1.0	ug/L	03/26/1998	
Chlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
MTBE	8260	ND	2.0	ug/L	03/26/1998	
1,3-Dichlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
1,2-Dichlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
1,4-Dichlorobenzene	8260	ND	1.0	ug/L	03/26/1998	
BTEX/WTPH-Gasoline (W)						
Dilution Factor		1			03/26/1998	
Benzene	8020	3.0	0.5	ug/L	03/26/1998	
Toluene	8020	4.2	0.5	ug/L	03/26/1998	
Ethyl Benzene	8020	2.8	0.5	ug/L	03/26/1998	

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number: 91951
Sample Description: TW 6

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
Xylenes, total	8020	12	1.5	ug/L	03/26/1998	
WTPH-Gasoline	WTPH-G	130	100	ug/L	03/24/1998	

Sample Number: 91952
Sample Description: MW 1

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
HAL. ORGS. & BTEX BY GC/MS (W)						
Dilution Factor	8260	1			03/27/1998	
Chloromethane	8260	ND	2.0	ug/L	03/27/1998	
Bromomethane	8260	ND	2.0	ug/L	03/27/1998	
Vinyl Chloride	8260	ND	2.0	ug/L	03/27/1998	
Chloroethane	8260	ND	2.0	ug/L	03/27/1998	
Methylene Chloride	8260	ND	50	ug/L	03/27/1998	
Trichlorofluoromethane	8260	ND	1.0	ug/L	03/27/1998	
1,1-Dichloroethene	8260	ND	1.0	ug/L	03/27/1998	
1,1-Dichloroethane	8260	ND	1.0	ug/L	03/27/1998	
trans-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/27/1998	
cis-1,2-Dichloroethene	8260	5.2	1.0	ug/L	03/27/1998	
Chloroform	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichloroethane (EDC)	8260	ND	1.0	ug/L	03/27/1998	
1,1,1-Trichloroethane	8260	ND	1.0	ug/L	03/27/1998	
Carbon Tetrachloride	8260	ND	1.0	ug/L	03/27/1998	
Bromodichloromethane	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichloropropane	8260	ND	1.0	ug/L	03/27/1998	
trans-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/27/1998	
Trichloroethene	8260	33	1.0	ug/L	03/27/1998	
Dibromochloromethane	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dibromoethane (EDB)	8260	ND	1.0	ug/L	03/27/1998	
1,1,2-Trichloroethane	8260	ND	1.0	ug/L	03/27/1998	
cis-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/27/1998	
2-Chloroethylvinyl ether	8260	ND	5.0	ug/L	03/27/1998	

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number: 91952
Sample Description: MW 1

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
Bromoform	8260	ND	1.0	ug/L	03/27/1998	
1,1,2,2-Tetrachloroethane	8260	ND	1.0	ug/L	03/27/1998	
Tetrachloroethene	8260	87	1.0	ug/L	03/27/1998	
Chlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
MTBE	8260	ND	2.0	ug/L	03/27/1998	
1,3-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
1,4-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
BTEX/WTPH-Gasoline (W)						
Dilution Factor		1			03/26/1998	
Benzene	8020	72	0.5	ug/L	03/26/1998	
Toluene	8020	0.51	0.5	ug/L	03/26/1998	
Ethyl Benzene	8020	0.56	0.5	ug/L	03/26/1998	
Xylenes, total	8020	ND	1.5	ug/L	03/26/1998	
WTPH-Gasoline	WTPH-G	160	100	ug/L	03/24/1998	

Sample Number: 91953
Sample Description: MW 3

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
HAL. ORGS. & BTEX BY GC/MS (W)						
Dilution Factor	8260	1			03/27/1998	
Chloromethane	8260	ND	2.0	ug/L	03/27/1998	
Bromomethane	8260	ND	2.0	ug/L	03/27/1998	
Vinyl Chloride	8260	15	2.0	ug/L	03/27/1998	
Chloroethane	8260	ND	2.0	ug/L	03/27/1998	
Methylene Chloride	8260	ND	50	ug/L	03/27/1998	
Trichlorofluoromethane	8260	ND	1.0	ug/L	03/27/1998	
1,1-Dichloroethene	8260	ND	1.0	ug/L	03/27/1998	
1,1-Dichloroethane	8260	ND	1.0	ug/L	03/27/1998	
trans-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/27/1998	
cis-1,2-Dichloroethene	8260	6.7	1.0	ug/L	03/27/1998	

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number	Sample Description
91953	MW 3

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
Chloroform	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichloroethane (EDC)	8260	ND	1.0	ug/L	03/27/1998	
1,1,1-Trichloroethane	8260	ND	1.0	ug/L	03/27/1998	
Carbon Tetrachloride	8260	ND	1.0	ug/L	03/27/1998	
Bromodichloromethane	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichloropropane	8260	ND	1.0	ug/L	03/27/1998	
trans-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/27/1998	
Trichloroethene	8260	1.2	1.0	ug/L	03/27/1998	
Dibromochloromethane	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dibromoethane (EDB)	8260	ND	1.0	ug/L	03/27/1998	
1,1,2-Trichloroethane	8260	ND	1.0	ug/L	03/27/1998	
cis-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/27/1998	
2-Chloroethylvinyl ether	8260	ND	5.0	ug/L	03/27/1998	
Bromoform	8260	ND	1.0	ug/L	03/27/1998	
1,1,2,2-Tetrachloroethane	8260	ND	1.0	ug/L	03/27/1998	
Tetrachloroethene	8260	8.6	1.0	ug/L	03/27/1998	
Chlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
MTBE	8260	ND	2.0	ug/L	03/27/1998	
1,3-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
1,4-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
BTEX/WTPH-Gasoline (W)						
Dilution Factor		1			03/26/1998	
Benzene	8020	210	10	ug/L	03/27/1998	DIL
Toluene	8020	13	0.5	ug/L	03/26/1998	
Ethyl Benzene	8020	440	10	ug/L	03/27/1998	DIL
Xylenes, total	8020	180	1.5	ug/L	03/26/1998	
WTPH-Gasoline	WTPH-G	3,600	2000	ug/L	03/27/1998	DIL

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number: 91954
Sample Description: MW 4

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
HAL. ORGS. & BTEX BY GC/MS (W)						
Dilution Factor	8260	1			03/27/1998	
Chloromethane	8260	ND	2.0	ug/L	03/27/1998	
Bromomethane	8260	ND	2.0	ug/L	03/27/1998	
Vinyl Chloride	8260	ND	2.0	ug/L	03/27/1998	
Chloroethane	8260	ND	2.0	ug/L	03/27/1998	
Methylene Chloride	8260	ND	50	ug/L	03/27/1998	
Trichlorofluoromethane	8260	ND	1.0	ug/L	03/27/1998	
1,1-Dichloroethene	8260	ND	1.0	ug/L	03/27/1998	
1,1-Dichloroethane	8260	ND	1.0	ug/L	03/27/1998	
trans-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/27/1998	
cis-1,2-Dichloroethene	8260	1.9	1.0	ug/L	03/27/1998	
Chloroform	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichloroethane (EDC)	8260	ND	1.0	ug/L	03/27/1998	
1,1,1-Trichloroethane	8260	ND	1.0	ug/L	03/27/1998	
Carbon Tetrachloride	8260	ND	1.0	ug/L	03/27/1998	
Bromodichloromethane	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichloropropane	8260	ND	1.0	ug/L	03/27/1998	
trans-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/27/1998	
Trichloroethene	8260	3.4	1.0	ug/L	03/27/1998	
Dibromochloromethane	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dibromoethane (EDB)	8260	ND	1.0	ug/L	03/27/1998	
1,1,2-Trichloroethane	8260	ND	1.0	ug/L	03/27/1998	
cis-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/27/1998	
2-Chloroethylvinyl ether	8260	ND	5.0	ug/L	03/27/1998	
Bromoform	8260	ND	1.0	ug/L	03/27/1998	
1,1,2,2-Tetrachloroethane	8260	ND	1.0	ug/L	03/27/1998	
Tetrachloroethene	8260	190	1.0	ug/L	03/27/1998	
Chlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
MTBE	8260	ND	2.0	ug/L	03/27/1998	
1,3-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number 91954 — Sample Description: MW 4

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
1,4-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
BTEX/WTPH-Gasoline (W)						
Dilution Factor		1			03/26/1998	
Benzene	8020	ND	0.5	ug/L	03/26/1998	
Toluene	8020	ND	0.5	ug/L	03/26/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	03/26/1998	
Xylenes, total	8020	ND	1.5	ug/L	03/26/1998	
WTPH-Gasoline	WTPH-G	ND	100	ug/L	03/24/1998	

Sample Number 91955 — Sample Description: MW 2

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
HAL. ORGS. & BTEX BY GC/MS (W)						
Dilution Factor	8260	1			03/27/1998	
Chloromethane	8260	ND	2.0	ug/L	03/27/1998	
Bromomethane	8260	ND	2.0	ug/L	03/27/1998	
Vinyl Chloride	8260	ND	2.0	ug/L	03/27/1998	
Chloroethane	8260	ND	2.0	ug/L	03/27/1998	
Methylene Chloride	8260	ND	50	ug/L	03/27/1998	
Trichlorofluoromethane	8260	ND	1.0	ug/L	03/27/1998	
1,1-Dichloroethene	8260	ND	1.0	ug/L	03/27/1998	
1,1-Dichloroethane	8260	ND	1.0	ug/L	03/27/1998	
trans-1,2-Dichloroethene	8260	ND	1.0	ug/L	03/27/1998	
cis-1,2-Dichloroethene	8260	17	1.0	ug/L	03/27/1998	
Chloroform	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichloroethane (EDC)	8260	ND	1.0	ug/L	03/27/1998	
1,1,1-Trichloroethane	8260	ND	1.0	ug/L	03/27/1998	
Carbon Tetrachloride	8260	ND	1.0	ug/L	03/27/1998	
Bromodichloromethane	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichloropropane	8260	ND	1.0	ug/L	03/27/1998	
trans-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/27/1998	

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number: 91955
Sample Description: MW 2

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
Trichloroethene	8260	6.3	1.0	ug/L	03/27/1998	
Dibromochloromethane	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dibromoethane (EDB)	8260	ND	1.0	ug/L	03/27/1998	
1,1,2-Trichloroethane	8260	ND	1.0	ug/L	03/27/1998	
cis-1,3-Dichloropropene	8260	ND	1.0	ug/L	03/27/1998	
2-Chloroethylvinyl ether	8260	ND	5.0	ug/L	03/27/1998	
Bromoform	8260	ND	1.0	ug/L	03/27/1998	
1,1,2,2-Tetrachloroethane	8260	ND	1.0	ug/L	03/27/1998	
Tetrachloroethene	8260	130	1.0	ug/L	03/27/1998	
Chlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
MTBE	8260	ND	2.0	ug/L	03/27/1998	
1,3-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
1,2-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
1,4-Dichlorobenzene	8260	ND	1.0	ug/L	03/27/1998	
BTEX/WTPH-Gasoline (W)						
Dilution Factor		10			03/26/1998	
Benzene	8020	70	10	ug/L	03/26/1998	DIL
Toluene	8020	1,600	10	ug/L	03/26/1998	DIL
Ethyl Benzene	8020	600	10	ug/L	03/26/1998	DIL
Xylenes, total	8020	3,900	30	ug/L	03/26/1998	DIL
WTPH-Gasoline	WTPH-G	37,000	1000	ug/L	03/24/1998	

Sample Number: 91956
Sample Description: Trip Blank

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
BTEX/MTBE/WTPH-G						
Dilution Factor		1			03/26/1998	
Benzene	8020	ND	0.5	ug/L	03/26/1998	
Toluene	8020	ND	0.5	ug/L	03/26/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	03/26/1998	
Xylenes	8020	ND	1.5	ug/L	03/26/1998	

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

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
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Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

Sample Number	Sample Description
91956	Trip Blank

PARAMETERS	METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
MTBE	8015 M	ND	5.0	ug/L	03/26/1998	
WTPH-G	WTPH-G	ND	100	ug/L	03/24/1998	

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

SURROGATE REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

SURROGATES	METHODS	RESULTS		DATE ANALYZED	FLAG
Sample Number	Sample Description				
91949	MW 7				
1,2-DCA-d4 (Surr.)	8260	99	%	03/26/1998	
Toluene-d8 (Surr.)	8260	99	%	03/26/1998	
Bromofluorobenzene (Surr)	8260	103	%	03/26/1998	
aaa-TFT (BTEX-Surr.)	8020	109	%	03/26/1998	
aaa-TFT (Gas Surr.)	WTPH-G	100	%	03/24/1998	
Sample Number	Sample Description				
91950	MW 5				
1,2-DCA-d4 (Surr.)	8260	104	%	03/26/1998	
Toluene-d8 (Surr.)	8260	107	%	03/26/1998	
Bromofluorobenzene (Surr)	8260	104	%	03/26/1998	
aaa-TFT (BTEX-Surr.)	8020	101	%	03/26/1998	
aaa-TFT (Gas Surr.)	WTPH-G	79	%	03/24/1998	
Sample Number	Sample Description				
91951	TW 6				
1,2-DCA-d4 (Surr.)	8260	104	%	03/26/1998	
Toluene-d8 (Surr.)	8260	101	%	03/26/1998	
Bromofluorobenzene (Surr)	8260	100	%	03/26/1998	
aaa-TFT (BTEX-Surr.)	8020	114	%	03/26/1998	
aaa-TFT (Gas Surr.)	WTPH-G	92	%	03/24/1998	
Sample Number	Sample Description				
91952	MW 1				
1,2-DCA-d4 (Surr.)	8260	104	%	03/27/1998	
Toluene-d8 (Surr.)	8260	100	%	03/27/1998	
Bromofluorobenzene (Surr)	8260	97	%	03/27/1998	
aaa-TFT (BTEX-Surr.)	8020	99	%	03/26/1998	
aaa-TFT (Gas Surr.)	WTPH-G	97	%	03/24/1998	

SURROGATE REPORT

Dave Cooper
Alisto Engineering Group
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Issaquah, WA 98027

03/31/1998
Job No.: 98.00688

Project Name: BP 11085 / H328893
Date Received: 03/20/1998

SURROGATES	METHODS	RESULTS		DATE ANALYZED	FLAG
Sample Number	Sample Description				
91953	MW 3				
1,2-DCA-d4 (Surr.)	8260	105	%	03/27/1998	
Toluene-d8 (Surr.)	8260	100	%	03/27/1998	
Bromofluorobenzene (Surr)	8260	100	%	03/27/1998	
aaa-TFT (BTEX-Surr.)	8020	95	%	03/26/1998	
aaa-TFT (Gas Surr.)	WTPH-G	88	%	03/24/1998	
Sample Number	Sample Description				
91954	MW 4				
1,2-DCA-d4 (Surr.)	8260	105	%	03/27/1998	
Toluene-d8 (Surr.)	8260	101	%	03/27/1998	
Bromofluorobenzene (Surr)	8260	98	%	03/27/1998	
aaa-TFT (BTEX-Surr.)	8020	109	%	03/26/1998	
aaa-TFT (Gas Surr.)	WTPH-G	96	%	03/24/1998	
Sample Number	Sample Description				
91955	MW 2				
1,2-DCA-d4 (Surr.)	8260	118	%	03/27/1998	
Toluene-d8 (Surr.)	8260	109	%	03/27/1998	
Bromofluorobenzene (Surr)	8260	99	%	03/27/1998	
aaa-TFT (BTEX-Surr.)	8020	108	%	03/26/1998	
aaa-TFT (Gas Surr.)	WTPH-G	82	%	03/24/1998	
Sample Number	Sample Description				
91956	Trip Blank				
TFT (Surr.)		112	%	03/26/1998	

QUALITY CONTROL REPORT
CONTINUING CALIBRATION VERIFICATION

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998

Job Number: 98.00688

Contact: Dave Cooper
Project: BP 11085 / H328893

Analyte	CCV True Concentration	Concentration Found	Percent Recovery	Date Analyzed
HAL. ORGS. & BTEX BY GC/MS (W)				
1,1-Dichloroethene	50	49.3	98.6	03/26/1998
Trichloroethene	50	51.0	102.0	03/26/1998
Chlorobenzene	50	49.5	99.0	03/26/1998
HAL. ORGS. & BTEX BY GC/MS (W)				
1,1-Dichloroethene	50	48.9	97.8	03/26/1998
Trichloroethene	50	52.8	105.6	03/26/1998
Chlorobenzene	50	51.2	102.4	03/26/1998
HAL. ORGS. & BTEX BY GC/MS (W)				
1,1-Dichloroethene	50	47.9	95.8	03/27/1998
Trichloroethene	50	47.5	95.0	03/27/1998
Chlorobenzene	50	48.1	96.2	03/27/1998
BTEX/WTPH-Gasoline (W)				
Benzene	40.0	43.0	107.5	03/24/1998
Toluene	40.0	41.0	102.5	03/24/1998
Ethyl Benzene	40.0	39.6	99.0	03/24/1998
Xylenes, total	120	123	102.5	03/24/1998
WTPH-Gasoline	1000	1050	105.0	03/24/1998
aaa-TFT (Gas Surr.)	100	97	97.0	03/24/1998
aaa-TFT (BTEX-Surr.)	100	106	106.0	03/24/1998

CCV - Continuing Calibration Verification

QUALITY CONTROL REPORT
MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998

Job Number: 98.00688

Contact: Dave Cooper
Project: BP 11085 / H328893

Analyte	Matrix Spike Result	Sample Result	Spike Amount	Units	Percent Recovery	MSD Result	MSD Spike Amount	Units	Percent Recovery	MS/MSD RPD	Flags
HAL. ORGS. & BTEX BY GC/MS											
1,1-Dichloroethene	46.8	ND	50	ug/L	93.6	48.0	50	ug/L	96.0	2.5	
Trichloroethene	52.4	ND	50	ug/L	104.8	52.7	50	ug/L	105.4	0.6	
Chlorobenzene	50.7	ND	50	ug/L	101.4	51.2	50	ug/L	102.4	1.0	
HAL. ORGS. & BTEX BY GC/MS											
1,1-Dichloroethene	49.5	ND	50	ug/L	99.0	49.9	50	ug/L	99.8	0.8	
Trichloroethene	49.2	ND	50	ug/L	98.4	48.5	50	ug/L	97.0	1.4	
Chlorobenzene	49.8	ND	50	ug/L	99.6	50.1	50	ug/L	100.2	0.5	
BTEX/WTPH-Gasoline (W)											
Benzene	40.3	0.91	40.0	ug/L	98.5	40.6	40.0	ug/L	99.2	0.7	
Toluene	38.6	ND	40.0	ug/L	96.5	38.1	40.0	ug/L	95.3	1.3	
Ethyl Benzene	36.8	ND	40.0	ug/L	92.0	36.6	40.0	ug/L	91.5	0.5	
Xylenes, total	114	ND	120	ug/L	95.0	113	120	ug/L	94.2	0.8	
BTEX/MTBE/WTPH-G											
Benzene	40.3	0.91	40.0	ug/L	98.5	40.6	40.0	ug/L	99.2	0.7	
Toluene	38.6	ND	40.0	ug/L	96.5	38.1	40.0	ug/L	95.3	1.3	
Ethyl Benzene	36.8	ND	40.0	ug/L	92.0	36.6	40.0	ug/L	91.5	0.5	
Xylenes	114	ND	120	ug/L	95.0	113	120	ug/L	94.2	0.8	

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

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998

Job Number: 98.00688

Contact: Dave Cooper
Project: BP 11085 / H328893
Location: 20-45-01-001

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
HAL. ORGS. & BTEX BY GC/MS (W)				
Chloromethane	ND	2.0	ug/L	03/26/1998
Vinyl Chloride	ND	2.0	ug/L	03/26/1998
Bromomethane	ND	5.0	ug/L	03/26/1998
Chloroethane	ND	2.0	ug/L	03/26/1998
Trichlorofluoromethane	ND	2.0	ug/L	03/26/1998
1,1-Dichloroethene	ND	1.0	ug/L	03/26/1998
Methylene Chloride	ND	50	ug/L	03/26/1998
trans-1,2-Dichloroethene	ND	1.0	ug/L	03/26/1998
MTBE	ND	2.0	ug/L	03/26/1998
1,1-Dichloroethane	ND	1.0	ug/L	03/26/1998
cis-1,2-Dichloroethene	ND	1.0	ug/L	03/26/1998
Chloroform	ND	1.0	ug/L	03/26/1998
1,1,1-Trichloroethane	ND	1.0	ug/L	03/26/1998
Carbon Tetrachloride	ND	1.0	ug/L	03/26/1998
1,2-Dichloroethane (EDC)	ND	1.0	ug/L	03/26/1998
Trichloroethene	ND	1.0	ug/L	03/26/1998
1,2-Dichloropropane	ND	1.0	ug/L	03/26/1998
Bromodichloromethane	ND	1.0	ug/L	03/26/1998
2-Chloroethylvinyl ether	ND	10	ug/L	03/26/1998
cis-1,3-Dichloropropene	ND	1.0	ug/L	03/26/1998
trans-1,3-Dichloropropene	ND	1.0	ug/L	03/26/1998
1,1,2-Trichloroethane	ND	1.0	ug/L	03/26/1998
Tetrachloroethene	ND	1.0	ug/L	03/26/1998
Dibromochloromethane	ND	1.0	ug/L	03/26/1998
1,2-Dibromoethane (EDB)	ND	1.0	ug/L	03/26/1998

QUALITY CONTROL REPORT
BLANKS

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998

Job Number: 98.00688

Contact: Dave Cooper
Project: BP 11085 / H328893
Location: 20-45-01-001

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
Chlorobenzene	ND	1.0	ug/L	03/26/1998
Bromoform	ND	1.0	ug/L	03/26/1998
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	03/26/1998
1,3-Dichlorobenzene	ND	1.0	ug/L	03/26/1998
1,4-Dichlorobenzene	ND	1.0	ug/L	03/26/1998
1,2-Dichlorobenzene	ND	1.0	ug/L	03/26/1998
1,2-DCA-d4 (Surr.)	102		%	03/26/1998
Toluene-d8 (Surr.)	98		%	03/26/1998
Bromofluorobenzene (Surr)	101		%	03/26/1998
HAL. ORGS. & BTEX BY GC/MS (W)				
Chloromethane	ND	2.0	ug/L	03/26/1998
Vinyl Chloride	ND	2.0	ug/L	03/26/1998
Bromomethane	ND	5.0	ug/L	03/26/1998
Chloroethane	ND	2.0	ug/L	03/26/1998
Trichlorofluoromethane	ND	2.0	ug/L	03/26/1998
1,1-Dichloroethene	ND	1.0	ug/L	03/26/1998
Methylene Chloride	ND	50	ug/L	03/26/1998
trans-1,2-Dichloroethene	ND	1.0	ug/L	03/26/1998
MTBE	ND	2.0	ug/L	03/26/1998
1,1-Dichloroethane	ND	1.0	ug/L	03/26/1998
cis-1,2-Dichloroethene	ND	1.0	ug/L	03/26/1998
Chloroform	ND	1.0	ug/L	03/26/1998
1,1,1-Trichloroethane	ND	1.0	ug/L	03/26/1998
Carbon Tetrachloride	ND	1.0	ug/L	03/26/1998
1,2-Dichloroethane (EDC)	ND	1.0	ug/L	03/26/1998
Trichloroethene	ND	1.0	ug/L	03/26/1998

QUALITY CONTROL REPORT
BLANKS

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998

Job Number: 98.00688

Contact: Dave Cooper
Project: BP 11085 / H328893
Location: 20-45-01-001

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
1,2-Dichloropropane	ND	1.0	ug/L	03/26/1998
Bromodichloromethane	ND	1.0	ug/L	03/26/1998
2-Chloroethylvinyl ether	ND	10	ug/L	03/26/1998
cis-1,3-Dichloropropene	ND	1.0	ug/L	03/26/1998
trans-1,3-Dichloropropene	ND	1.0	ug/L	03/26/1998
1,1,2-Trichloroethane	ND	1.0	ug/L	03/26/1998
Tetrachloroethene	ND	1.0	ug/L	03/26/1998
Dibromochloromethane	ND	1.0	ug/L	03/26/1998
1,2-Dibromoethane (EDB)	ND	1.0	ug/L	03/26/1998
Chlorobenzene	ND	1.0	ug/L	03/26/1998
Bromoform	ND	1.0	ug/L	03/26/1998
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	03/26/1998
1,3-Dichlorobenzene	ND	1.0	ug/L	03/26/1998
1,4-Dichlorobenzene	ND	1.0	ug/L	03/26/1998
1,2-Dichlorobenzene	ND	1.0	ug/L	03/26/1998
1,2-DCA-d4 (Surr.)	102		%	03/26/1998
Toluene-d8 (Surr.)	99		%	03/26/1998
Bromofluorobenzene (Surr)	101		%	03/26/1998
HAL. ORGS. & BTEX BY GC/MS (W)				
Chloromethane	ND	2.0	ug/L	03/27/1998
Vinyl Chloride	ND	2.0	ug/L	03/27/1998
Bromomethane	ND	5.0	ug/L	03/27/1998
Chloroethane	ND	2.0	ug/L	03/27/1998
Trichlorofluoromethane	ND	2.0	ug/L	03/27/1998
1,1-Dichloroethene	ND	1.0	ug/L	03/27/1998
Methylene Chloride	ND	50	ug/L	03/27/1998

QUALITY CONTROL REPORT
BLANKS

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998

Job Number: 98.00688

Contact: Dave Cooper
Project: BP 11085 / H328893
Location: 20-45-01-001

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
trans-1,2-Dichloroethene	ND	1.0	ug/L	03/27/1998
MTBE	ND	2.0	ug/L	03/27/1998
1,1-Dichloroethane	ND	1.0	ug/L	03/27/1998
cis-1,2-Dichloroethene	ND	1.0	ug/L	03/27/1998
Chloroform	ND	1.0	ug/L	03/27/1998
1,1,1-Trichloroethane	ND	1.0	ug/L	03/27/1998
Carbon Tetrachloride	ND	1.0	ug/L	03/27/1998
1,2-Dichloroethane (EDC)	ND	1.0	ug/L	03/27/1998
Trichloroethene	ND	1.0	ug/L	03/27/1998
1,2-Dichloropropane	ND	1.0	ug/L	03/27/1998
Bromodichloromethane	ND	1.0	ug/L	03/27/1998
2-Chloroethylvinyl ether	ND	10	ug/L	03/27/1998
cis-1,3-Dichloropropene	ND	1.0	ug/L	03/27/1998
trans-1,3-Dichloropropene	ND	1.0	ug/L	03/27/1998
1,1,2-Trichloroethane	ND	1.0	ug/L	03/27/1998
Tetrachloroethene	ND	1.0	ug/L	03/27/1998
Dibromochloromethane	ND	1.0	ug/L	03/27/1998
1,2-Dibromoethane (EDB)	ND	1.0	ug/L	03/27/1998
Chlorobenzene	ND	1.0	ug/L	03/27/1998
Bromoform	ND	1.0	ug/L	03/27/1998
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	03/27/1998
1,3-Dichlorobenzene	ND	1.0	ug/L	03/27/1998
1,4-Dichlorobenzene	ND	1.0	ug/L	03/27/1998
1,2-Dichlorobenzene	ND	1.0	ug/L	03/27/1998
1,2-DCA-d4 (Surr.)	101		%	03/27/1998
Toluene-d8 (Surr.)	101		%	03/27/1998

QUALITY CONTROL REPORT
BLANKS

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998

Job Number: 98.00688

Contact: Dave Cooper
Project: BP 11085 / H328893
Location: 20-45-01-001

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
Bromofluorobenzene (Surr)	98		%	03/27/1998
BTEX/WTPH-Gasoline (W)				
Dilution Factor	1			03/24/1998
Benzene	ND	0.5	ug/L	03/24/1998
Toluene	ND	0.5	ug/L	03/24/1998
Ethyl Benzene	ND	0.5	ug/L	03/24/1998
Xylenes, total	ND	1.5	ug/L	03/24/1998
WTPH-Gasoline	ND	100	ug/L	03/24/1998
aaa-TFT (Gas Surr.)	102		%	03/24/1998
aaa-TFT (BTEX-Surr.)	103		%	03/24/1998

QUALITY CONTROL REPORT
DUPLICATES

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 03/31/1998

Job Number: 98.00688

Contact: Dave Cooper
Project: BP 11085 / H328893

Analyte	Original Analysis	Duplicate Analysis	Units	RPD	Date Analyzed	Flag
BTEX/WTPH-Gasoline (W)						
WTPH-Gasoline	ND	ND	ug/L		03/24/1998	
BTEX/MTBE/WTPH-G						
WTPH-G	ND	ND	ug/L		03/24/1998	

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 was 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.
Q1	Detection limits elevated due to high levels of non-target compounds. Sample(s) run at a dilution.
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.

CHAIN OF CUSTODY

No. 090413

Page 1 of 1

CONSULTANT'S NAME: Aliston Engineering Grp	CONSULTANT'S ADDRESS: 1145 - 12th Ave NW Ste A, Issaquah, WA 98027		
BP SITE NUMBER: 11085	BP SITE / FACILITY ADDRESS: 8th & Meridian / Puyallup		CONSULTANT PROJECT NUMBER: 20-45-91-00
CONSULTANT PROJECT MANGER: Dave Cooper	PHONE NUMBER: 425 837-3944	FAX NUMBER: 837-8543	CONSULTANT CONTRACT NUMBER: H328F13
BP CONTACT: Pete DeSantis	BP ADDRESS: 295 SW 41st / Renton	PHONE NUMBER: 1425 251-8209	FAX NO.: 251-0736
LAB CONTACT: Andi Hoevet	LABORATORY ADDRESS: Durham, OR	PHONE NUMBER: 503 644-0447	FAX NO.: 620-0393
BP CONTACT REQUESTING RUSH TAT (Print BP Contact Name)	RUSH REQUESTED OF (Print Consultant Contact Name)	DATE/TIME	SHIPMENT DATE: 3/19/98 / SHIPMENT METHOD: UPS

TAT: ☐ 24 Hours ☒ 48 Hours ☐ 72 Hours ☒ Standard 7 or 14 Days

ANALYSIS REQUIRED

AIRBILL NUMBER: N2W049011 1

SAMPLE DESCRIPTION	COLLECTION DATE	COLLECTION TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	WTPH-G	BTEX	MTBE	8010	COMMENTS
MW7	3/19/98	10:30	water	4	VOA		X	X	X	X	
MW5	↓	12:10	↓	↓	↓		X	X	X	X	
TW6		11:00					X	X	X	X	
MW1		11:40					X	X	X	X	
MW3		12:50					X	X	X	X	
MW4		13:10					X	X	X	X	
MW2		14:00					X	X	X	X	
T.P Blank	↓		↓	1	↓		X	X	X		
2 By											

SAMPLED BY (Please Print Name): Bill Daugherty

SAMPLED BY (Signature): Bill Daugherty

ADDITIONAL COMMENTS

RELINQUISHED BY / AFFILIATION (Print Name / Signature)	DATE	TIME	ACCEPTED BY / AFFILIATION (Print Name / Signature)	DATE	TIME
Bill Daugherty	3/19/98	17:15			

CLV-16722-A (2/97)
PKG/50

DISTRIBUTION: WHITE - ORIGINAL (WITH DATA) YELLOW - BP PINK - LAB BLUE - CONSULTANT FIELD STAFF