



BP OIL

BP Oil Company

16400 Southcenter Parkway, Suite 301
Tukwila, Washington 98188
93 NOV 5 PM 12:37
(206) 575-4077

October 29, 1993

Mr. Richard Hiatt
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, CA 94612

RE: BP OIL FACILITY #11133
2220 98th Avenue
Oakland, California

Dear Mr. Hiatt:

Attached please find our GROUND WATER MONITORING AND SAMPLING REPORT DATED OCTOBER 7, 1993 for the above referenced facility.

Please call me at (206) 394-5243 with questions regarding this submission.

Respectfully,

Scott T. Hooton
Environmental Resources Management

STH:jc ERM11133

cc: Mr. Barney Chan, Alameda County Health Care Service Agency,
80 Swan Way, Room 200, Oakland, CA 94621

Mr. Brady Nagle, Alisto, 1777 Oakland Blvd., Suite 200,
Walnut Creek, CA 94596

Mr. Robert Merriken, Mobil Oil Corp, 3225 Gallows Road,
Fairfax, VA 22037

. Site file

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11133
2220 98th Avenue
Oakland, California

Project No. 10-025-02-001



Prepared for:

BP Oil Company
Environmental Resource Management
16400 Southcenter Parkway, Suite 301
Tukwila, Washington

Prepared by:

Alisto Engineering Group
1777 Oakland Boulevard, Suite 200
Walnut Creek, California
295 - 1650

October 7, 1993

Brady Nagle

Brady Nagle
Project Manager

Al Sevilla

Al Sevilla, P.E.
Principal



3/14 product recovery canister in Pas-1 + MW-1 to emptied every 2 weeks. send AMS in a timely manner



GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11133
2220 98th Avenue
Oakland, California

Project No. 10-025-02-001

October 7, 1993

INTRODUCTION

This report presents the results and findings of the July 15, 1993 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11133, 2220 98th Avenue, Oakland, California. A site vicinity map is shown in Figure 1.

FIELD PROCEDURES

Field activities were performed in accordance with the procedures and guidelines of the Alameda County Health Care Services Agency and the California Regional Water Quality Control Board, San Francisco Bay Region.

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 mean sea level. 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, and electrical conductivity. Groundwater samples were collected for laboratory analysis by lowering a bottom-fill, disposable bailer to just below the water level in the well. The samples were transferred from the bailer into laboratory-supplied containers. The water sampling field survey forms are presented in Appendix A.

SAMPLING AND ANALYTICAL RESULTS

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 interpreted from the results of this monitoring event are shown in Figure 2. Isoconcentration maps of total petroleum hydrocarbons as gasoline and benzene are shown in Figures 3 and 4. 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. 11133
 2220 96TH AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-025

WELL ID	DATE OF MONITORING/ SAMPLING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
MW-1	04/05/91	34.46	---	---	---	---	---	---	---	---	---
MW-1	04/01/92	34.46	11.25	0.01	23.22	---	---	---	---	---	---
MW-1	07/06/92	34.46	13.61	0.02	20.87	---	---	---	---	---	---
MW-1	10/07/92	34.46	15.15	0.09	19.38	---	---	---	---	---	---
MW-1	01/14/93	34.46	10.73	0.01	23.74	---	---	---	---	---	---
MW-1	04/22/93	34.46	11.64	0.16	22.94	---	---	---	---	---	---
MW-1	07/15/93	34.46	13.50	1.11	21.79	---	---	---	---	---	---
MW-2	04/05/91	35.50	16.62	0.00	18.88	ND<50	0.6	0.9	ND<0.3	ND<0.3	SUP
MW-2	04/01/92	35.50	11.25	0.00	24.25	---	---	---	---	---	---
MW-2	04/02/92	35.50	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	APP
MW-2	07/06/92	35.50	12.72	0.00	22.78	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-2	10/07/92	35.50	15.08	0.00	20.42	ND<50	ND<0.5	1.8	ND<0.5	2.3	ANA
MW-2	01/14/93	35.50	9.69	0.00	25.81	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
MW-2	04/22/93	35.50	10.46	0.00	25.04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
MW-2	07/15/93	35.50	12.02	0.00	23.48	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
MW-3	04/05/91	36.53	17.84	0.00	18.69	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	SUP
MW-3	04/01/92	36.53	15.64	0.00	20.89	---	---	---	---	---	---
MW-3	04/02/92	36.53	---	---	---	ND<50	1.4	ND<0.5	ND<0.5	ND<0.5	APP
MW-3	07/06/92	36.53	19.03	0.00	17.50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-3	10/07/92	36.53	21.83	0.00	14.70	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-3	01/14/93	36.53	15.96	0.00	20.57	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
MW-3	04/22/93	36.53	16.20	0.00	20.33	2800	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
MW-3	07/15/93	36.53	16.82	0.00	19.71	1400	1.2	ND<0.5	2.0	3.5	PACE
AW-1	04/05/91	38.11	25.44	0.00	12.67	4100	1500	69	100	83	SUP
AW-1	04/01/92	38.11	23.22	0.00	14.89	---	---	---	---	---	---
AW-1	04/02/92	38.11	---	---	---	11000	1800	210	210	490	APP
AW-1	07/06/92	38.11	24.89	0.00	13.22	6500	4000	40	290	530	ANA
AW-1	10/07/92	38.11	26.55	0.00	11.56	4700	1500	41	47	300	ANA
QC-1 (c)	10/07/92	38.11	---	---	---	2900	1200	25	37	210	ANA
AW-1	01/14/93	38.11	23.73	0.00	14.38	2800	830	31	140	240	PACE
QC-1 (c)	01/14/93	38.11	---	---	---	4100	1700	28	130	230	PACE
AW-1	04/22/93	38.11	22.29	0.00	15.82	39000	14000	530	1800	6100	PACE
AW-1	07/15/93	38.11	22.50	0.00	15.61	6200	2200	28	210	540	PACE
AW-2	04/05/91	36.83	22.36	0.00	14.47	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	SUP
AW-2	04/01/92	36.83	20.81	0.00	16.02	---	---	---	---	---	---
AW-2	04/02/92	36.83	---	---	---	130	25	2.3	0.7	2.1	APP
AW-2	07/06/92	36.83	23.57	0.00	13.26	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
AW-2	10/07/92	36.83	25.24	0.00	11.59	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
AW-2	01/14/93	36.83	20.82	0.00	16.01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
AW-2	04/22/93	36.83	19.37	0.00	17.46	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
AW-2	07/15/93	36.83	21.29	0.00	15.54	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE

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 BP OIL COMPANY SERVICE STATION NO. 11133
 2220 98TH AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-025

WELL ID	DATE OF MONITORING/ SAMPLING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
AW-3	04/05/91	39.13	23.90	0.00	15.23	5200	980	450	95	310	SUP
AW-3	04/01/92	39.13	22.50	0.00	16.63	4700	890	47	43	110	APP
AW-3	07/06/92	39.13	23.26	0.00	15.87	3900	3100	30	80	99	ANA
AW-3	10/07/92	39.13	24.75	0.00	14.38	5000	2600	ND<0.5	ND<0.5	59	ANA
AW-3	01/14/93	39.13	23.59	0.00	15.54	350	250	ND<0.5	ND<0.5	ND<0.5	PACE
AW-3	04/22/93	39.13	19.42	0.00	19.71	240	71	2.4	0.6	4.0	PACE
AW-3	07/15/93	39.13	20.09	0.00	19.04	650	71	2.8	1.5	1.1	PACE
AW-4	04/05/91	39.08	25.12	0.00	13.96	110000	40000	13000	2000	5500	SUP
AW-4	04/01/92	39.08	23.56	0.00	15.52	230000	57000	31000	2900	7600	APP
AW-4 (d)	04/01/92	39.08	23.56	0.00	15.52	210000	55000	23000	2900	7000	APP
AW-4	07/06/92	39.08	25.87	0.00	13.21	38000	18000	5400	2000	6100	ANA
AW-4	10/07/92	39.08	27.53	0.00	11.55	120000	41000	26000	4700	13000	ANA
AW-4	01/14/93	39.08	24.12	0.00	14.96	62000	18000	14000	2700	7700	PACE
AW-4	04/22/93	39.08	21.47	0.00	17.61	18000	1100	2100	320	3500	PACE
AW-4	07/15/93	39.08	23.30	0.00	15.78	21000	820	2300	590	3800	PACE
AW-5	04/05/91	38.51	25.48	0.00	13.03	420	31	7.5	20	68	SUP
AW-5	04/01/92	38.51	23.95	0.00	14.56	--	--	--	--	--	--
AW-5	04/02/92	38.51	--	--	--	4000	270	63	190	290	APP
AW-5	07/06/92	38.51	26.48	0.00	12.03	1400	160	ND<2.5	250	58	ANA
AW-5	10/07/92	38.51	28.18	0.00	10.33	360	12	0.6	8.7	5	ANA
AW-5	01/14/93	38.51	24.15	0.00	14.36	1700	270	7.5	130	62	PACE
AW-5	04/22/93	38.51	22.43	0.00	16.08	2700	780	30	220	180	PACE
QC-1	04/22/93	38.51	--	--	--	3500	780	29	240	210	PACE
AW-5	07/15/93	38.51	24.31	0.00	14.20	1300	69	16	67	120	PACE
QC-1	07/15/93	38.51	--	--	--	1300	68	8.3	64	99	PACE
AW-6	04/05/91	37.08	22.48	0.00	14.60	1100	80	19	1.4	230	SUP
AW-6	04/01/92	37.08	22.50	0.00	14.58	--	--	--	--	--	--
AW-6	04/02/92	37.08	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	APP
AW-6	07/06/92	37.08	22.74	0.00	14.34	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
AW-6	10/07/92	37.08	24.64	0.00	12.44	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
AW-6	01/14/93	37.08	22.36	0.00	14.72	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
AW-6	04/22/93	37.08	22.82	0.00	14.26	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
AW-6	07/15/93	37.08	20.49	0.00	16.59	ND<50	ND<0.5	ND<0.5	ND<0.5	0.8	PACE
AW-7	04/05/91	37.60	23.38	0.00	14.22	ND<50	0.4	0.7	ND<0.3	ND<0.3	SUP
AW-7	04/01/92	37.60	21.92	0.00	15.68	--	--	--	--	--	--
AW-7	04/02/92	37.60	--	--	--	ND<50	ND<0.5	3.2	1.0	5.4	APP
AW-7	07/06/92	37.60	24.50	0.00	13.10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
AW-7	10/07/92	37.60	26.18	0.00	11.42	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
AW-7	01/14/93	37.60	22.03	0.00	15.57	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
AW-7	04/22/93	37.60	21.18	0.00	16.42	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
AW-7	07/15/93	37.60	22.09	0.00	15.51	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
 BP OIL COMPANY SERVICE STATION NO. 11133
 2220 98TH AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-025

WELL ID	DATE OF MONITORING/ SAMPLING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
AW-8	04/05/91	40.86	26.68	0.00	14.18	80	1.9	2.2	0.5	1.3	SUP
AW-8	04/01/92	40.86	25.11	0.00	15.75	73	ND<0.5	0.7	ND<0.5	0.6	APP
AW-8	07/06/92	40.86	28.43	0.00	14.43	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
AW-8	10/07/92	40.86	28.59	0.00	12.27	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
AW-8	01/14/93	40.86	25.55	0.00	15.31	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
AW-8	04/22/93	40.86	22.29	0.00	18.57	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
AW-8	07/15/93	40.86	23.42	0.00	17.44	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
RW-1	04/05/91	37.73	--	0.00	--	--	--	--	--	--	--
RW-1	04/01/92	37.73	22.81	0.30	15.14	--	--	--	--	--	--
RW-1	07/06/92	37.73	28.92	0.41	11.12	--	--	--	--	--	--
RW-1	10/07/92	37.73	28.51	1.26	10.16	--	--	--	--	--	--
RW-1	01/14/93	37.73	23.75	0.25	14.17	--	--	--	--	--	--
RW-1	04/22/93	37.73	22.70	1.38	16.07	--	--	--	--	--	--
RW-1	07/15/93	37.73	26.10	0.81	12.24	--	--	--	--	--	--
QC-2 (e)	10/07/92	--	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
QC-2 (e)	01/14/93	--	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
QC-2 (e)	04/22/93	--	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE
QC-2 (e)	07/15/93	--	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	PACE

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
ppb	Parts per billion
--	Not analyzed/available
ND	Not detected above reported detection limit
SUP	Superior Analytical Laboratories, Inc.
APP	Applied Analytical
ANA	Anamatrix, Inc.
PACE	Pace, Inc.

NOTES:

- (a) Top of casing elevations surveyed to the nearest 0.01 foot above mean sea level.
- (b) Groundwater elevations adjusted assuming a specific gravity of 0.75 for free product.
- (c) Blind duplicate.
- (d) Duplicate.
- (e) Travel blank.



SOURCE:
 USGS MAP, OAKLAND EASE AND SAN LEANDRO
 QUADRANGLES, CALIFORNIA. 7.5 MINUTE SERIES. 1956.
 PHOTOREVISED 1980.



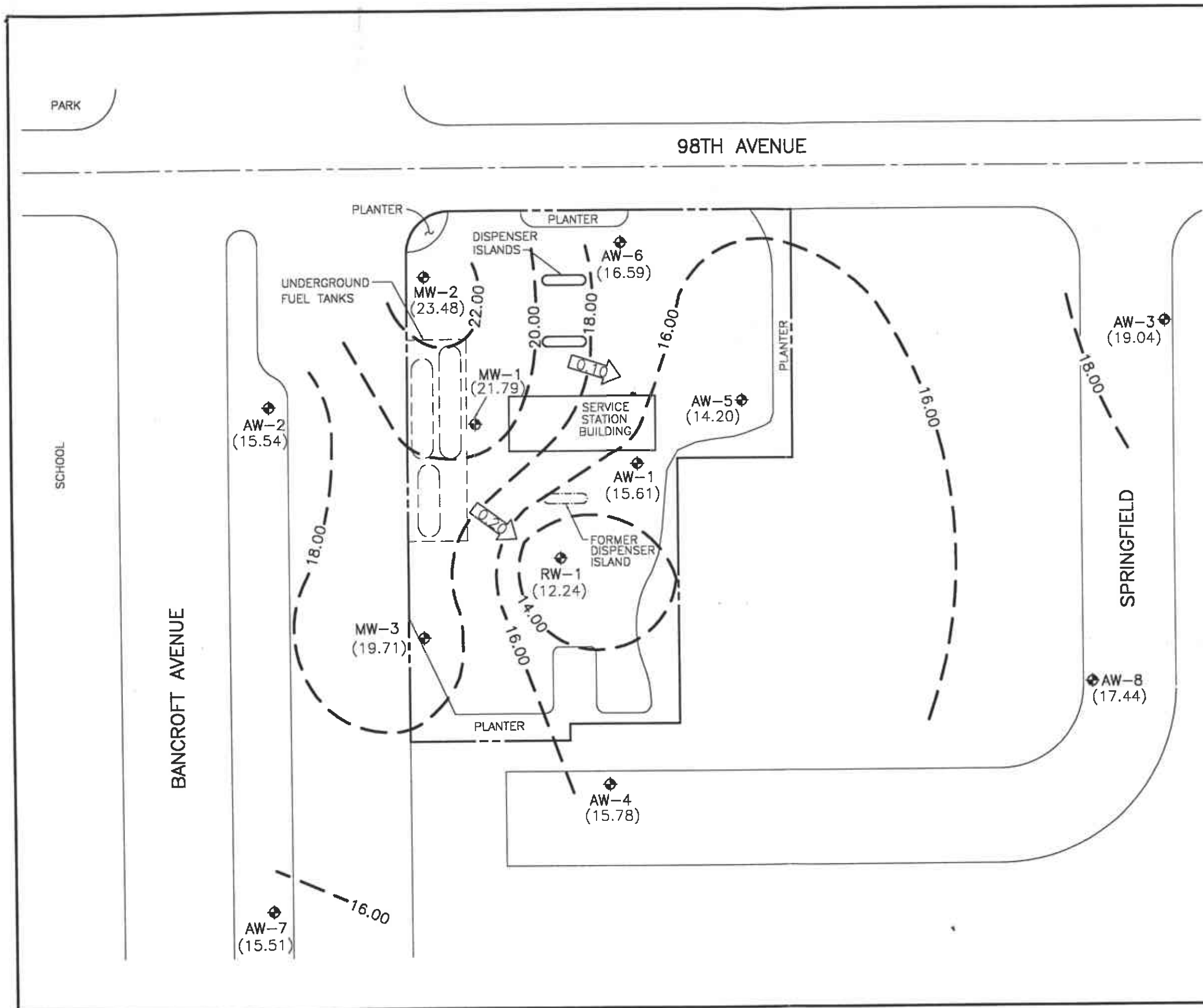
FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11133
 2220 98TH AVENUE
 OAKLAND, CALIFORNIA
 PROJECT NO. 10-025



ALISTO ENGINEERING GROUP
 WALNUT CREEK, CALIFORNIA



- LEGEND**
- ◆ GROUNDWATER MONITORING WELL
 - (16.59) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
 - 16.00 - GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL - 2.00 FOOT)
 - ← 0.10 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

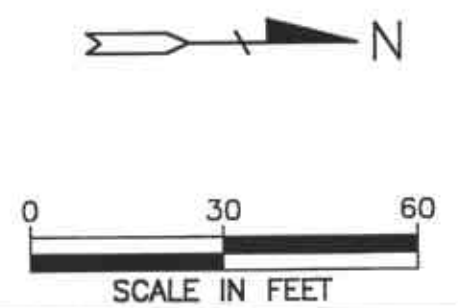
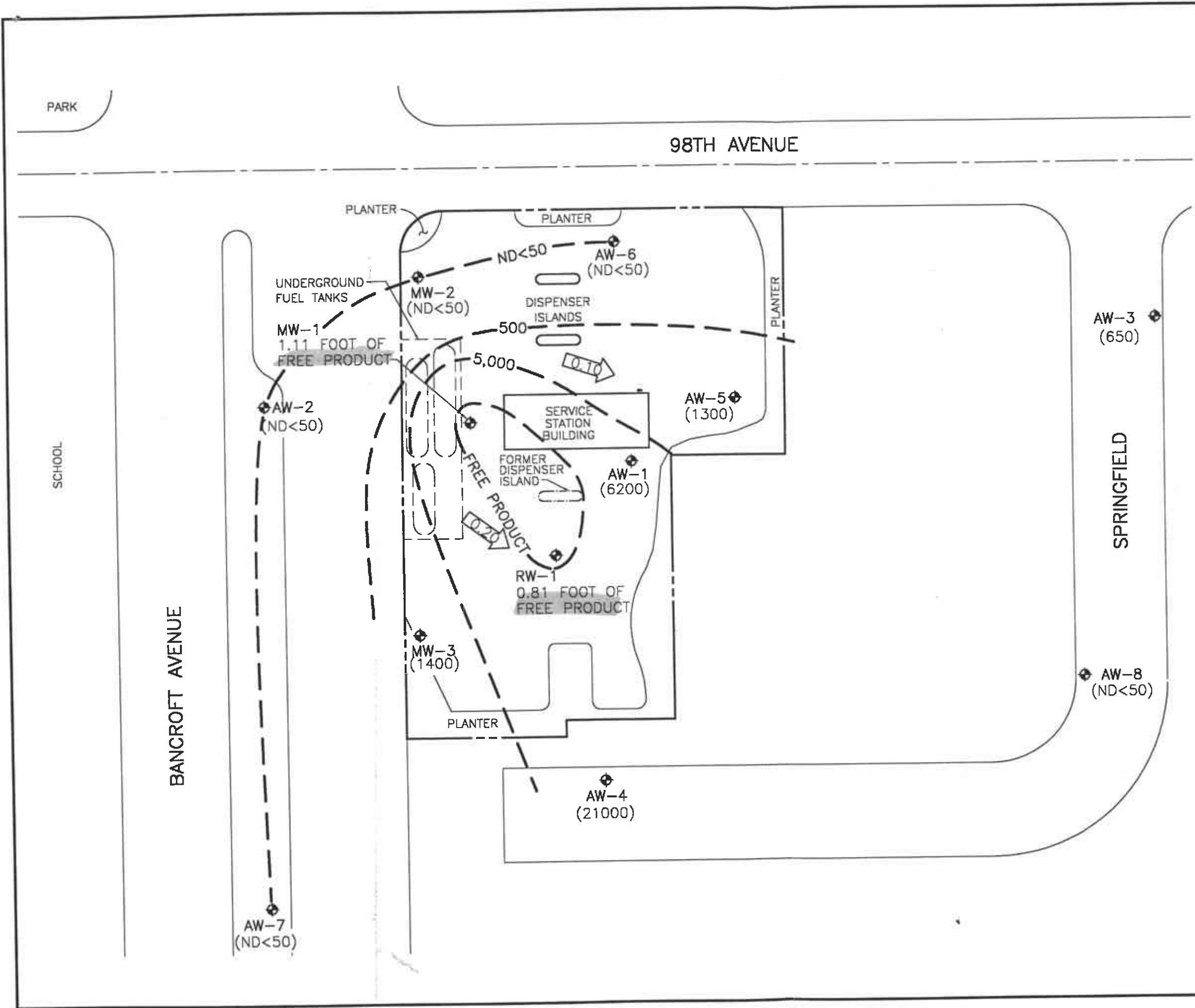


FIGURE 2
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP
JULY 15, 1993
 BP OIL SERVICE STATION NO. 11133
 2220 98TH AVENUE
 OAKLAND, CALIFORNIA
 PROJECT NO. 10-025

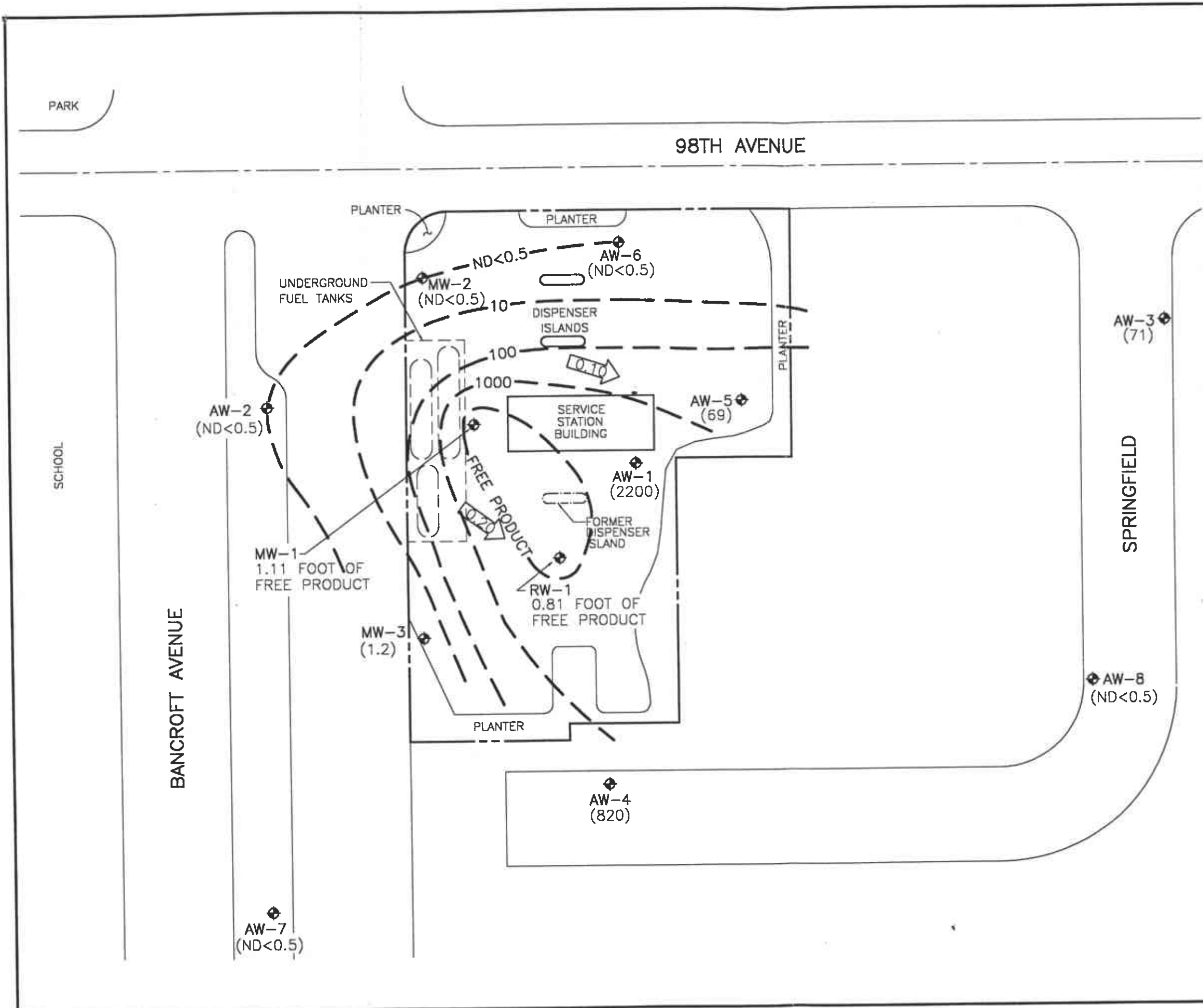
100330-01/06 8-13-93 11/93



LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (650) TOTAL PETROLEUM HYDROCARBONS AS GASOLINE CONCENTRATION IN PARTS PER BILLION
- 500 - TOTAL PETROLEUM HYDROCARBONS AS GASOLINE ISOCONCENTRATION CONTOUR IN PARTS PER BILLION
- ← 0.10 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3
TOTAL PETROLEUM HYDROCARBONS AS GASOLINE ISOCONCENTRATION CONTOUR MAP
JULY 15, 1993
 BP OIL SERVICE STATION NO. 11133
 2220 98TH AVENUE
 OAKLAND, CALIFORNIA
 PROJECT NO. 10-025



LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (71) BENZENE CONCENTRATION IN PARTS PER BILLION
- 10 - BENZENE ISOCONCENTRATION CONTOUR IN PARTS PER BILLION
- ← 0.10 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

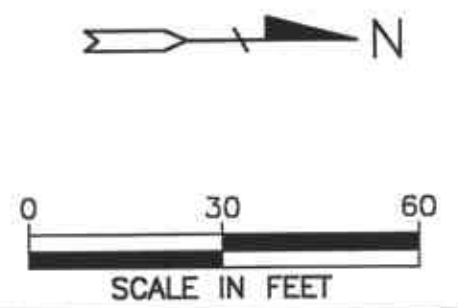


FIGURE 4
BENZENE ISOCONCENTRATION CONTOUR MAP
JULY 15, 1993
 BP OIL SERVICE STATION NO. 11133
 2220 98TH AVENUE
 OAKLAND, CALIFORNIA
 PROJECT NO. 10-025

100257-01.DWG 8-17-93 1108 1-30

APPENDIX A
WATER SAMPLING FIELD SURVEY FORMS

Field Report / Data Sheet

O Groundwater Sampling O Groundwater Monitoring O Well Development O Drill Support O Stockpile Sampling

Firm: ALISTO	Date: 7/15/93	Station #: BP1133	Day: M Tu W Th F
Project Number: 10-025-02-001	Field Technician: DJBIRD	Address: 2220 98th Ave., Oakland.	Weather: clear
116 Liberty st Santa Cruz, Ca 95060 (408) 459-0718			Milage: _____ mi

DT/Order	Well ID	Lock	Exp Cap	Total Depth (feet)	1st Depth to Water (feet)	2nd Depth to Water (feet)	Depth to Product (feet)	Product Thickness	Comments	
2	AW-1	ok	ok	38.6	22.50	22.50				2
6	AW-2	ok	ok	35.2	21.29	21.29				2
3	AW-3	ok	ok	35.75	20.09	20.09				2
5	AW-4	ok	ok	33.9	23.30	23.30				2
8	AW-5	ok	ok	42.9	24.31	24.31				4
7	AW-6	ok	ok	34.2	20.49	20.49				4
1	AW-7	ok	ok	32.3	22.09	22.09				2
4	AW-8	ok	ok	39.2	23.42	23.42				2
12	MW-1	ok	ok	NM	13.50	13.50	12.39	1.11	Product	2
9	MW-2	ok	ok	31.4	12.02	12.02				2
10	MW-3	ok	ok	34.1	16.82	16.82				2
13	RW-1	ok	ok	NM	26.10	26.10	25.29	0.81	Product	6

Notes:

2 drums left at site.

Inv#:

Birch Technical Services

GROUNDWATER SAMPLING FORM

116 Liberty Street
 Santa Cruz, Ca 95060
 (408) 459-0718

Well Number: MW-1

Project Number: 10-025

Sample Type: Groundwater Trip Blank Duplicate of _____

Station Number: BP11133

Sampled by: Dan Birch

Date: 7/15/93

WELL PURGING

PURGE VOLUME Casing Diameter (inches) 2" 3" 4" 4.5" 6" _____
 Volume Factors: 0.1632 0.3672 0.6528 0.826 1.469 _____

Total Depth of Well _____ Initial Water Level: _____

PURGE METHOD:

Total Volume Purged: _____ Time Elapsed: _____

- Honda Pump
- Disposable Poly Tubing (____ ft)
- Speed Winch
- Disposable PVC Bailer(s) (____)
- Other _____

Calculated Purge Volume:

_____ - _____ = _____ x _____ = _____ x _____ = _____ (gallons)
 Total Depth Water Level Well Vol. Fac. #of vol. to Purge Calculated Purge Volume

Subjective Analysis Prior to Purging

PARAMETER EQUIPMENT CALIBRATION

SHEEN Yes No Depth to Product 12.39 (ft) Product Thickness 1.11 (ft)

pH Meter #: _____ Time: _____

Solution pH 7.00 _____ at _____ °F

Solution pH 4.00 _____ at _____ °F

Solution pH 10.00 _____ at _____ °F

Water Level Meter#: _____

COMMENTS:

Product

SAMPLING METHOD

- OPVC Disposable Bailer
- Teflon Bailer
- Other: _____

Time Sampled
 (24 hour clock)
NOT

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
TPH-G/BTEX		VOA's	HCl
TPH- Diesel		Amber Liter	
TOG 5520 BF		Amber Liter	H ₂ SO ₄

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD



REPORT OF LABORATORY ANALYSIS

Alisto Engineering Group
1777 Oakland Blvd., Ste. 200
Walnut Creek, CA 94596

July 30, 1993
PACE Project Number: 430716516

Attn: Mr. Bill Howell

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116007
Date Collected: 07/15/93
Date Received: 07/16/93
AW-1

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):				
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	1200	6200	07/26/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):				
Benzene	ug/L	12	2200	07/26/93
Toluene	ug/L	12	28	07/26/93
Ethylbenzene	ug/L	12	210	07/26/93
Xylenes, Total	ug/L	12	540	07/26/93

Mr. Bill Howell
 Page 2

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116023
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: AW-2

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/27/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	07/27/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/27/93
Benzene	ug/L	0.5	ND	07/27/93
Toluene	ug/L	0.5	ND	07/27/93
Ethylbenzene	ug/L	0.5	ND	07/27/93
Xylenes, Total	ug/L	0.5	ND	07/27/93

Mr. Bill Howell
 Page 3

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116058
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: AW-3

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/27/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	650	07/27/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/27/93
Benzene	ug/L	0.5	71	07/27/93
Toluene	ug/L	0.5	2.8	07/27/93
Ethylbenzene	ug/L	0.5	1.5	07/27/93
Xylenes, Total	ug/L	0.5	1.1	07/27/93

Mr. Bill Howell
 Page 4

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116082
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: AW-4

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	500	21000
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			
Benzene	ug/L	5.0	820
Toluene	ug/L	5.0	2300
Ethylbenzene	ug/L	5.0	590
Xylenes, Total	ug/L	5.0	3800



REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
Page 5

July 30, 1993
PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116090
Date Collected: 07/15/93
Date Received: 07/16/93
Client Sample ID: AW-5

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			07/27/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	500	1300
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			07/27/93
Benzene	ug/L	5.0	69
Toluene	ug/L	5.0	16
Ethylbenzene	ug/L	5.0	67
Xylenes, Total	ug/L	5.0	120

Mr. Bill Howell
 Page 6

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116104
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: AW-6

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	07/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			
Benzene	ug/L	0.5	07/28/93
Toluene	ug/L	0.5	07/28/93
Ethylbenzene	ug/L	0.5	07/28/93
Xylenes, Total	ug/L	0.5	07/28/93

Mr. Bill Howell
 Page 7

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116112
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: AW-7

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	07/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/28/93
Benzene	ug/L	0.5	ND	07/28/93
Toluene	ug/L	0.5	ND	07/28/93
Ethylbenzene	ug/L	0.5	ND	07/28/93
Xylenes, Total	ug/L	0.5	ND	07/28/93

Mr. Bill Howell
 Page 8

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116120
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: AW-8

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	07/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/28/93
Benzene	ug/L	0.5	ND	07/28/93
Toluene	ug/L	0.5	ND	07/28/93
Ethylbenzene	ug/L	0.5	ND	07/28/93
Xylenes, Total	ug/L	0.5	ND	07/28/93

Mr. Bill Howell
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July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116139
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: MW-2

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

Mr. Bill Howell
 Page 10

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116147
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: MW-3

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	1400
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			
Benzene	ug/L	0.5	1.2
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	2.0
Xylenes, Total	ug/L	0.5	3.5

Mr. Bill Howell
 Page 11

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116155
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: QC-1

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/27/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	500	1300	07/27/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/27/93
Benzene	ug/L	5.0	68	07/27/93
Toluene	ug/L	5.0	8.3	07/27/93
Ethylbenzene	ug/L	5.0	64	07/27/93
Xylenes, Total	ug/L	5.0	99	07/27/93

Mr. Bill Howell
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July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PACE Sample Number: 70 0116198
 Date Collected: 07/15/93
 Date Received: 07/16/93
 Client Sample ID: QC-2

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>DATE ANALYZED</u>
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	07/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/28/93
Benzene	ug/L	0.5	ND	07/28/93
Toluene	ug/L	0.5	ND	07/28/93
Ethylbenzene	ug/L	0.5	ND	07/28/93
Xylenes, Total	ug/L	0.5	ND	07/28/93

These data have been reviewed and are approved for release.



Darrell C. Cain
 Regional Director



REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
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FOOTNOTES
for pages 1 through 12

July 30, 1993
PACE Project Number: 430716516

Client Reference: BP Station # 11133

MDL Method Detection Limit
ND Not detected at or above the MDL.

Mr. Bill Howell
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QUALITY CONTROL DATA

July 30, 1993
PACE Project Number: 430716516

Client Reference: BP Station # 11133

PURGEABLE FUELS AND AROMATICS
Batch: 70 23140
Samples: 70 0116007, 70 0116023

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	1000	87%	87%	0%
Benzene	ug/L	0.5	100	100%	102%	1%
Toluene	ug/L	0.5	100	101%	104%	2%
Ethylbenzene	ug/L	0.5	100	107%	110%	2%
Xylenes, Total	ug/L	0.5	300	105%	109%	3%

REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
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QUALITY CONTROL DATA

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PURGEABLE FUELS AND AROMATICS

Batch: 70 23192

Samples: 70 0116058, 70 0116082, 70 0116090, 70 0116112, 70 0116120
 70 0116139, 70 0116147, 70 0116155, 70 0116198

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	1000	89%	86%	3%
Benzene	ug/L	0.5	100	101%	102%	0%
Toluene	ug/L	0.5	100	102%	105%	2%
Ethylbenzene	ug/L	0.5	100	111%	112%	0%
Xylenes, Total	ug/L	0.5	300	109%	111%	1%

REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
 Page 16

QUALITY CONTROL DATA

July 30, 1993
 PACE Project Number: 430716516

Client Reference: BP Station # 11133

PURGEABLE FUELS AND AROMATICS

Batch: 70 23237
 Samples: 70 0116104

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	1000	87%	87%	0%
Benzene	ug/L	0.5	100	100%	99%	1%
Toluene	ug/L	0.5	100	103%	103%	0%
Ethylbenzene	ug/L	0.5	100	110%	111%	0%
Xylenes, Total	ug/L	0.5	300	110%	111%	0%

Mr. Bill Howell
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FOOTNOTES
for pages 14 through 16

July 30, 1993
PACE Project Number: 430716516

Client Reference: BP Station # 11133

MDL Method Detection Limit
ND Not detected at or above the MDL.
RPD Relative Percent Difference



B.P. OIL COMPANY
 16400 Southcenter Parkway, Suite 301, Tukwila, WA 98188
CHAIN OF CUSTODY

430716.516

No 0107.

Novato, CA, 11 Digital Drive, 94949
 Phone: (415) 883-6100 Fax: (415) 883-2673

Huntington Beach, CA, 5702 Bolsa Avenue, 92649
 Phone: (714) 892-2565 Fax: (714) 890-4032

Consultant's Name: ALISTO ENGINEERING Consultant Project #: 10-025-02-001 Page 1 of 1

Address: 1777 OAKLAND BLVD, STE 200

Project Contact: Bill Howell Phone #: 5102951650 Fax #: _____ Consultant Work Order #: 10-025-02-001

Sampled by (print): DAN BIRD Sampler's Signature: [Signature] B.P. Site Location #: BP11133

Shipment Method: _____ Airbill #: _____ Shipment Date: 5/18/93 B.P. Site Location: 98th St., OAKLAND

TAT: 24 hr 48 hr 72 hr Standard (10 day) ANALYSIS REQUIRED

Sample Description	Collection Date/Time	Matrix Soil/Water <u>Time</u>	Prsv	# of Cont	PACE Sample #	TPH/GAS/BTEX EPA 8015/8020	TPH/Diesel EPA 8015	TRPH EPA 418.1	HVOC 8010	ANALYSIS REQUIRED										Sample Condition as Received				
										Temperature ° C: _____	Cooler #: _____	Inbound Seal Yes No	Outbound Seal Yes No											
												COMMENTS												
AW-1	7/15/93	1555	HD	3	11600.7	X																		
AW-2		1334			11602.3	X																		
AW-3		1401			11605.8	X																		
AW-4		1420			11608.2	X																		
AW-5		1435			11609.0	X																		
AW-6		1532			11610.4	X																		
AW-7		1320			11611.2	X																		
AW-8		1349			11612.0	X																		
MW-2		1515			11613.9	X																		
MW-3		1459			11614.7	X																		
QC-1		1439			11615.5	X																		
QC-2				2	11619.8	X																		

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time	Additional Comments:
<u>[Signature]</u>	5/17/93	1700	<u>[Signature]</u>	7/16	1605	PACE # F955421
<u>[Signature]</u>	7/16	1730	<u>[Signature]</u>	7/16	1730	