

GROUNDWATER MONITORING AND SAMPLING REPORT

**BP Oil Company Service Station No. 11109
4280 Foothill Boulevard
Oakland, California**

Project No. 10-014

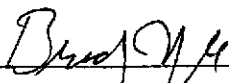
Prepared for:

**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**

July 8, 1993



**Brady Nagle
Project Manager**



**Al Sevilla, P.E.
Principal**



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INTRODUCTION

This report presents the results and findings of the April 21, 1993 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11109, 4280 Foothill Boulevard, 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 the 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 relative 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

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 interpreted from the results of this monitoring event are shown in Figure 2. Isoconcentration maps for total petroleum hydrocarbons as gasoline and benzene detected in the groundwater samples 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 MONITORING AND SAMPLING
 BP OIL COMPANY SERVICE STATION NO. 11109
 4280 FOOTHILL BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-014

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-4	02/05/90	37.09	20.75	0.00	16.34	620	---	ND<0.5	9	ND<0.5	10	---	---	SUP
MW-4	02/14/91	37.09	21.73	0.00	15.36	180	---	ND<0.3	ND<0.3	0.4	2	---	---	SUP
MW-4	05/13/91	37.09	18.55	0.00	18.54	72	---	0.7	ND<0.3	ND<0.3	ND<0.3	---	---	SUP
MW-4	07/24/91	37.09	21.31	0.00	15.78	---	---	---	---	---	---	---	---	---
MW-4	10/03/91	37.09	22.57	0.00	14.52	57	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	SUP
MW-4	10/15/91	37.09	22.88	0.00	14.21	---	---	---	---	---	---	---	---	---
MW-4	12/04/91	37.09	22.54	0.00	14.55	---	---	---	---	---	---	---	---	---
MW-4	12/16/91	37.09	22.59	0.00	14.50	---	---	---	---	---	---	---	---	---
MW-4	01/06/92	37.09	22.00	0.00	15.09	480	---	0.8	3.2	1.9	7.7	---	---	ANA
MW-4	01/22/92	37.09	21.58	0.00	15.51	---	---	---	---	---	---	---	---	---
MW-4	01/28/92	37.09	21.42	0.00	15.67	---	---	---	---	---	---	---	---	---
MW-4	02/05/92	37.09	21.10	0.00	15.99	---	---	---	---	---	---	---	---	---
MW-4	02/12/92	37.09	20.74	0.00	16.35	---	---	---	---	---	---	---	---	---
MW-4	02/17/92	37.09	19.78	0.00	17.31	---	---	---	---	---	---	---	---	---
MW-4	04/03/92	37.09	16.80	0.00	20.29	---	---	---	---	---	---	---	---	---
MW-4	04/08/92	37.09	17.13	0.00	19.96	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-4	04/14/92	37.09	17.74	0.00	19.35	---	---	---	---	---	---	---	---	---
MW-4	04/29/92	37.09	18.56	0.00	18.53	---	---	---	---	---	---	---	---	---
MW-4	05/07/92	37.09	19.10	0.00	17.99	---	---	---	---	---	---	---	---	---
MW-4	07/03/92	37.09	20.71	0.00	16.38	ND<50	---	0.6	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-4	10/08/92	37.09	22.43	0.00	14.66	270	---	ND<0.5	2.1	2.5	3.2	---	---	ANA
MW-4	12/31/92	37.09	19.58	0.00	17.51	150	---	ND<0.5	ND<0.5	ND<0.5	1.3	---	---	ANA
MW-4	04/21/93	37.09	17.79	0.00	19.30	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-5	10/03/91	36.55	18.08	0.00	18.47	79000	---	13000	7400	1400	6200	---	---	SUP
MW-5	10/15/91	36.55	18.55	0.00	18.00	---	---	---	---	---	---	---	---	---
MW-5	12/04/91	36.55	18.44	0.13	18.21	---	---	---	---	---	---	---	---	---
MW-5	12/16/91	36.55	18.66	0.01	17.90	---	---	---	---	---	---	---	---	---
MW-5	(h) 01/06/92	36.55	19.12	0.11	17.51	---	---	---	---	---	---	---	---	---
MW-5	01/22/92	36.55	14.59	0.00	21.96	---	---	---	---	---	---	---	---	---
MW-5	01/28/92	36.55	15.25	0.00	21.30	---	---	---	---	---	---	---	---	---
MW-5	02/05/92	36.55	15.58	SHEEN	20.97	---	---	---	---	---	---	---	---	---
MW-5	02/12/92	36.55	15.54	0.01	21.02	---	---	---	---	---	---	---	---	---
MW-5	02/17/92	36.55	13.98	SHEEN	22.57	---	---	---	---	---	---	---	---	---
MW-5	04/03/92	36.55	13.63	0.04	22.95	---	---	---	---	---	---	---	---	---
MW-5	(h) 04/08/92	36.55	13.17	0.01	23.39	---	---	---	---	---	---	---	---	---
MW-5	04/14/92	36.55	13.45	0.01	23.11	---	---	---	---	---	---	---	---	---
MW-5	04/29/92	36.55	13.75	0.07	22.85	---	---	---	---	---	---	---	---	---
MW-5	05/07/92	36.55	16.15	0.04	20.43	---	---	---	---	---	---	---	---	---
MW-5	(h) 07/03/92	36.55	17.67	0.08	18.94	---	---	---	---	---	---	---	---	---
MW-5	09/01/92	36.55	17.83	0.50	19.10	---	---	---	---	---	---	---	---	---
MW-5	(h) 10/08/92	36.55	17.86	0.82	19.38	---	---	---	---	---	---	---	---	---
MW-5	(h) 12/31/92	36.55	15.20	SHEEN	21.35	---	---	---	---	---	---	---	---	---
MW-5	(h) 04/21/93	36.55	12.64	0.02	23.93	---	---	---	---	---	---	---	---	---

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING AND SAMPLING
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 4280 FOOTHILL BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-014

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-6	10/03/91	38.57	20.73	0.00	17.84	ND<50	---	0.7	0.8	ND<0.3	1.3	---	---	SUP
MW-6	10/15/91	38.57	21.20	0.00	17.37	---	---	---	---	---	---	---	---	---
MW-6	12/04/91	38.57	21.26	0.00	17.31	---	---	---	---	---	---	---	---	---
MW-6	12/16/91	38.57	21.12	0.00	17.45	---	---	---	---	---	---	---	---	---
MW-6	01/06/92	38.57	20.29	0.00	18.28	ND<50	---	ND<0.5	ND<0.5	ND<0.5	1.6	---	---	ANA
MW-6	01/22/92	38.57	20.12	0.00	18.45	---	---	---	---	---	---	---	---	---
MW-6	01/28/92	38.57	20.20	0.00	18.37	---	---	---	---	---	---	---	---	---
MW-6	02/05/92	38.57	20.09	0.00	18.48	---	---	---	---	---	---	---	---	---
MW-6	02/12/92	38.57	19.15	0.00	19.42	---	---	---	---	---	---	---	---	---
MW-6	02/17/92	38.57	18.02	0.00	20.55	---	---	---	---	---	---	---	---	---
MW-6	04/03/92	38.57	16.62	0.00	21.95	---	---	---	---	---	---	---	---	---
MW-6	04/08/92	38.57	17.06	0.00	21.51	ND<50	---	0.6	ND<0.5	0.8	ND<0.5	---	---	ANA
MW-6	04/14/92	38.57	17.23	0.00	21.34	---	---	---	---	---	---	---	---	---
MW-6	04/29/92	38.57	18.12	0.00	20.45	---	---	---	---	---	---	---	---	---
MW-6	05/07/92	38.57	18.52	0.00	20.05	---	---	---	---	---	---	---	---	---
MW-6	07/03/92	38.57	19.71	0.00	18.86	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-6	10/08/92	38.57	21.22	0.00	17.35	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
QC-1	(g) 10/08/92	38.57	21.22	0.00	17.35	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-6	12/31/92	38.57	21.33	0.00	17.24	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-6	04/21/93	38.57	16.45	0.00	22.12	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-7	10/03/91	37.64	14.93	0.00	22.71	360	---	62	13	3.4	20	---	---	SUP
MW-7	10/15/91	37.64	15.16	0.00	22.48	---	---	---	---	---	---	---	---	---
MW-7	12/04/91	37.64	15.41	0.00	22.23	---	---	---	---	---	---	---	---	---
MW-7	12/16/91	37.64	15.21	0.00	22.43	---	---	---	---	---	---	---	---	---
MW-7	01/06/92	37.64	14.56	0.00	23.08	1100	---	170	ND<0.5	24	23	---	---	ANA
MW-7	01/22/92	37.64	14.63	0.00	23.01	---	---	---	---	---	---	---	---	---
MW-7	01/28/92	37.64	14.73	0.00	22.91	---	---	---	---	---	---	---	---	---
MW-7	02/05/92	37.64	14.58	0.00	23.05	---	---	---	---	---	---	---	---	---
MW-7	02/12/92	37.64	13.94	0.00	23.70	---	---	---	---	---	---	---	---	---
MW-7	02/17/92	37.64	13.10	0.00	24.54	---	---	---	---	---	---	---	---	---
MW-7	04/03/92	37.64	12.66	0.00	24.96	---	---	---	---	---	---	---	---	---
MW-7	04/08/92	37.64	12.77	0.00	24.87	750	---	150	ND<0.5	23	9.9	---	---	ANA
MW-7	04/14/92	37.64	13.02	0.00	24.62	---	---	---	---	---	---	---	---	---
MW-7	04/29/92	37.64	13.59	0.00	24.05	---	---	---	---	---	---	---	---	---
MW-7	05/07/92	37.64	13.95	0.00	23.69	---	---	---	---	---	---	---	---	---
MW-7	07/03/92	37.64	14.73	0.00	22.91	660	---	210	ND<2.5	33	8	---	---	ANA
MW-7	10/08/92	37.64	15.75	0.00	21.89	320	---	49	1.4	13	6.2	---	---	ANA
MW-7	12/31/92	37.64	13.57	0.00	24.07	900	---	100	ND<2.5	28	4.3	---	---	ANA
MW-7	04/21/93	37.64	14.56	0.00	23.08	510	---	83	1.2	10	5.8	---	---	PACE

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WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-8	10/03/91	35.18	22.37	0.00	12.81	ND<50	--	ND<0.3	0.6	ND<0.3	0.9	--	--	SUP
MW-8	10/15/91	35.18	22.70	0.00	12.48	--	--	--	--	--	--	--	--	--
MW-8	12/04/91	35.18	22.44	0.00	12.74	--	--	--	--	--	--	--	--	--
MW-8	12/16/91	35.18	22.47	0.00	12.71	--	--	--	--	--	--	--	--	--
MW-8	01/06/92	35.18	21.94	0.00	13.24	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	ANA
MW-8	01/22/92	35.18	21.44	0.00	13.74	--	--	--	--	--	--	--	--	--
MW-8	01/28/92	35.18	21.20	0.00	13.98	--	--	--	--	--	--	--	--	--
MW-8	02/05/92	35.18	20.88	0.00	14.30	--	--	--	--	--	--	--	--	--
MW-8	02/12/92	35.18	20.54	0.00	14.64	--	--	--	--	--	--	--	--	--
MW-8	02/17/92	35.18	19.99	0.00	15.19	--	--	--	--	--	--	--	--	--
MW-8	04/03/92	35.18	16.75	0.00	18.43	--	--	--	--	--	--	--	--	--
MW-8	04/08/92	35.18	16.57	0.00	18.61	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	ANA
MW-8	04/14/92	35.18	INACCESSIBLE	--	--	--	--	--	--	--	--	--	--	--
MW-8	04/29/92	35.18	18.61	0.00	16.57	--	--	--	--	--	--	--	--	--
MW-8	05/07/92	35.18	18.41	0.00	16.77	--	--	--	--	--	--	--	--	--
MW-8	07/03/92	35.18	20.35	0.00	14.83	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	ANA
MW-8	(i) 10/08/92	35.18	21.74	0.00	13.44	--	--	--	--	--	--	--	--	--
MW-8	12/31/92	35.18	19.09	0.00	16.09	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	ANA
MW-8	04/21/93	35.18	18.92	0.00	16.26	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	PACE

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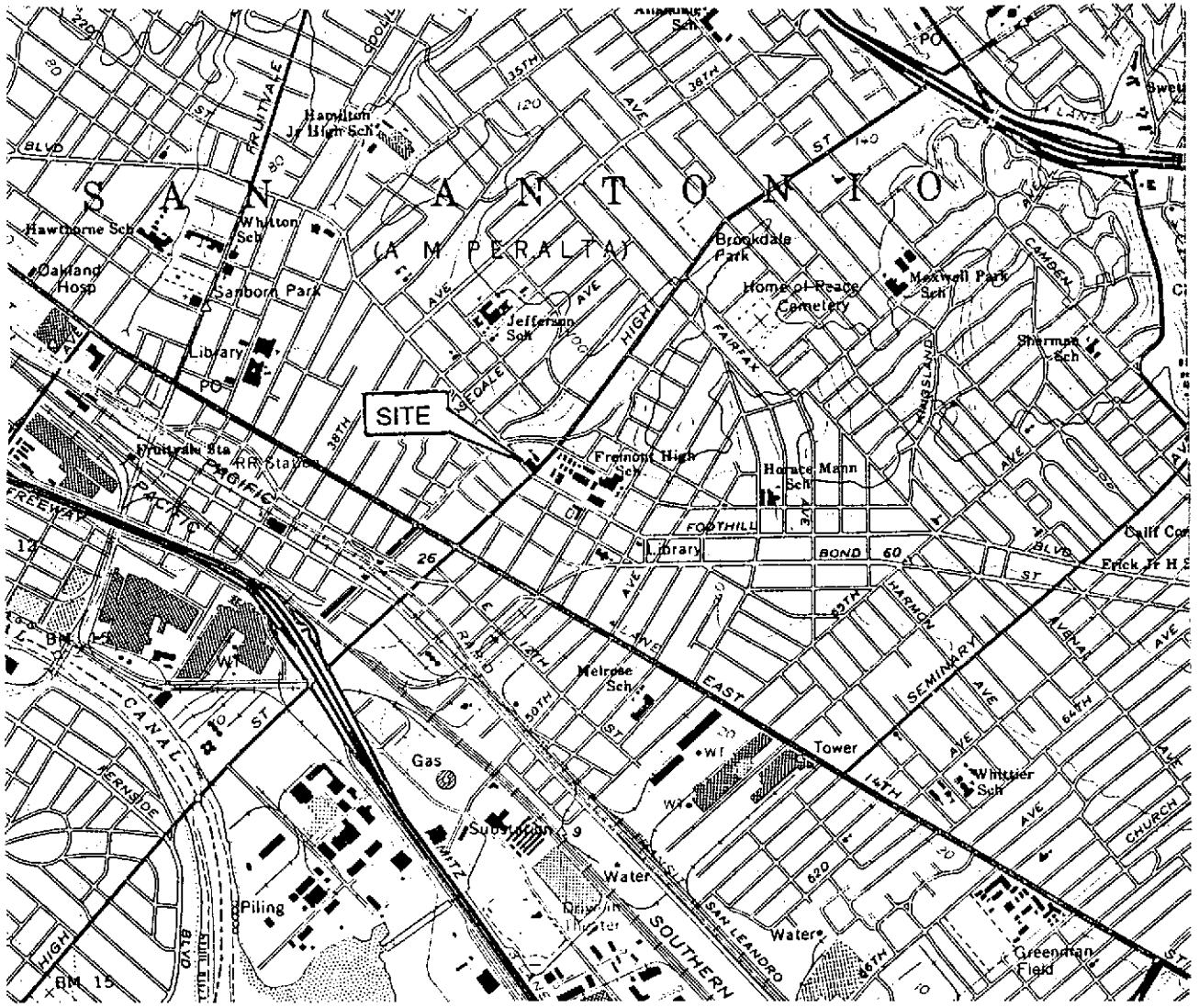
WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-9	10/03/91	38.24	14.12	0.00	24.12	ND<50	---	ND<0.3	0.4	ND<0.3	ND<0.3	---	---	SUP
MW-9	10/15/91	38.24	14.27	0.00	23.97	---	---	---	---	---	---	---	---	---
MW-9	12/04/91	38.24	13.84	0.00	24.40	---	---	---	---	---	---	---	---	---
MW-9	12/16/91	38.24	14.18	0.00	24.06	---	---	---	---	---	---	---	---	---
MW-9	01/06/92	38.24	13.42	0.00	24.82	ND<50	---	ND<0.5	ND<0.5	ND<0.5	0.9	---	---	ANA
MW-9	01/22/92	38.24	13.75	0.00	24.49	---	---	---	---	---	---	---	---	---
MW-9	01/28/92	38.24	14.76	0.00	23.48	---	---	---	---	---	---	---	---	---
MW-9	02/05/92	38.24	13.38	0.00	24.86	---	---	---	---	---	---	---	---	---
MW-9	02/12/92	38.24	11.86	0.00	26.38	---	---	---	---	---	---	---	---	---
MW-9	02/17/92	38.24	10.78	0.00	27.46	---	---	---	---	---	---	---	---	---
MW-9	04/03/92	38.24	11.63	0.00	26.61	---	---	---	---	---	---	---	---	---
MW-9	04/08/92	38.24	12.25	0.00	25.99	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-9	04/14/92	38.24	12.32	0.00	25.92	---	---	---	---	---	---	---	---	---
MW-9	04/29/92	38.24	13.07	0.00	25.17	---	---	---	---	---	---	---	---	---
MW-9	05/07/92	38.24	14.43	0.00	23.81	---	---	---	---	---	---	---	---	---
MW-9	07/03/92	38.24	13.85	0.00	24.39	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-9	10/08/92	38.24	14.89	0.00	23.35	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-9	12/31/92	38.24	11.90	0.00	26.34	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
MW-9	04/21/93	38.24	13.68	0.00	24.56	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2	(i) 10/08/92	---	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
QC-2	(j) 12/31/92	---	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	ANA
QC-2	(j) 04/21/93	---	---	---	---	---	---	---	---	---	---	---	ND	PACE

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
TOG	Total oil and grease
HVOC	Halogenated volatile organic compounds
(ppb)	Parts per billion
---	Not analyzed/applicable
ND	Not detected above reported detection limits
SUP	Superior Analytical Laboratory
ANA	Anametrix, Inc.
PACE	Pace Inc.

NOTES:

- (a) Top of casing elevations surveyed relative to the City of Oakland survey station, with an elevation of 42.19 feet above mean sea level.
- (b) Groundwater elevations adjusted assuming a specific gravity of 0.75 for free product.
- (c) Well destroyed during tank removal in November 1990.
- (d) Methylene chloride.
- (e) 1,2-dichloroethane.
- (f) Sample collected from MW-2 for TPH-D analysis received in laboratory 7 days after collected; sample exceeded EPA recommended holding time for TPH-D on a water matrix.
- (g) Blind duplicate.
- (h) Well not sampled due to presence of free product.
- (i) Well not sampled due to abandoned vehicle parked over well.
- (j) Travel blank.



SOURCE:
 USGS MAP, OAKLAND EAST QUADRANGLE,
 CALIFORNIA, 7.5 MINUTE SERIES, 1959.
 PHOTOREVISED 1980.

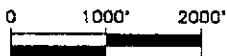
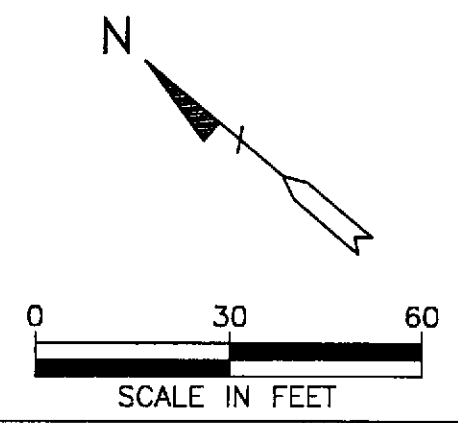
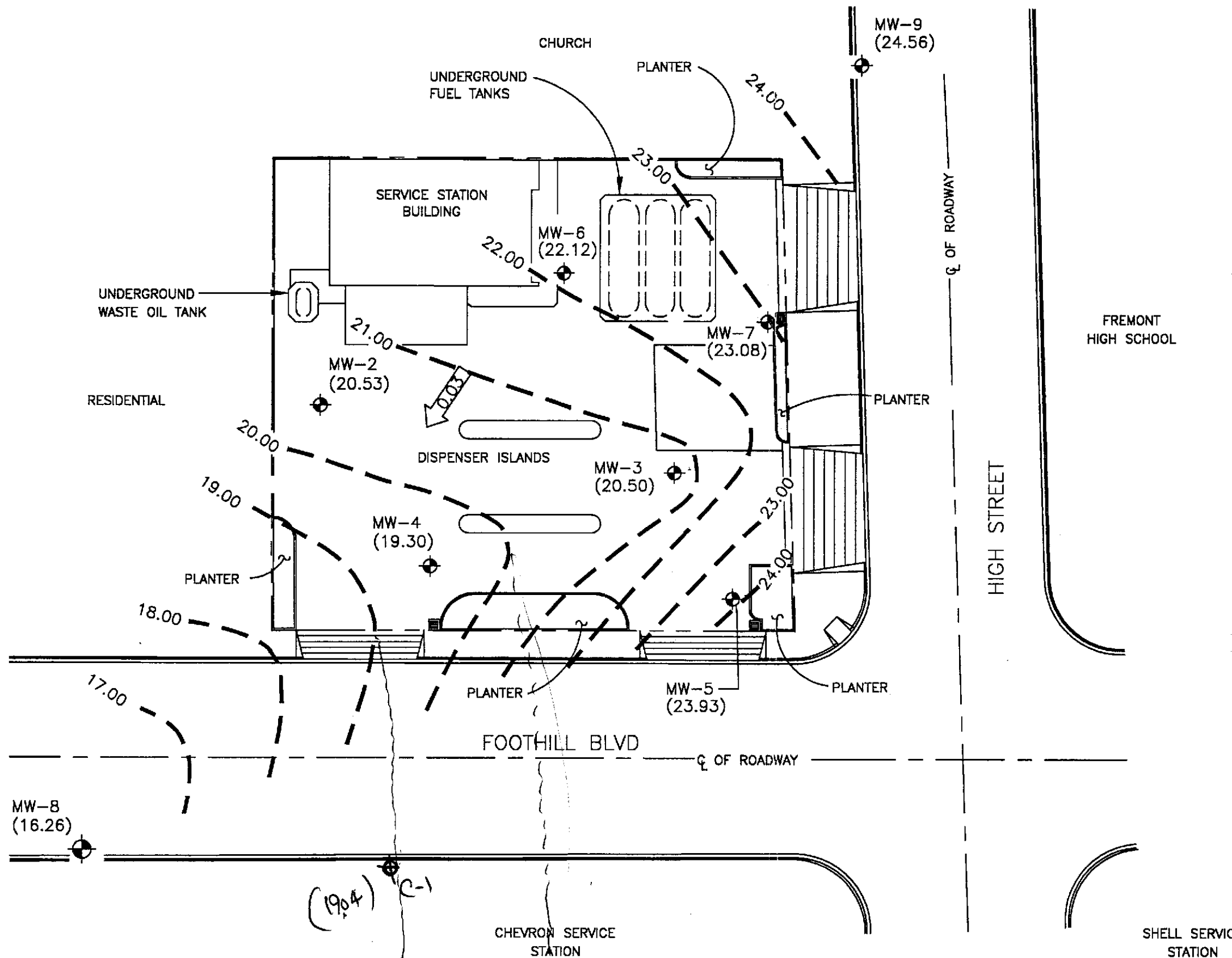


FIGURE 1
SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11109
 4280 FOOTHILL BOULEVARD
 OAKLAND, CALIFORNIA
 PROJECT NO. 10-014



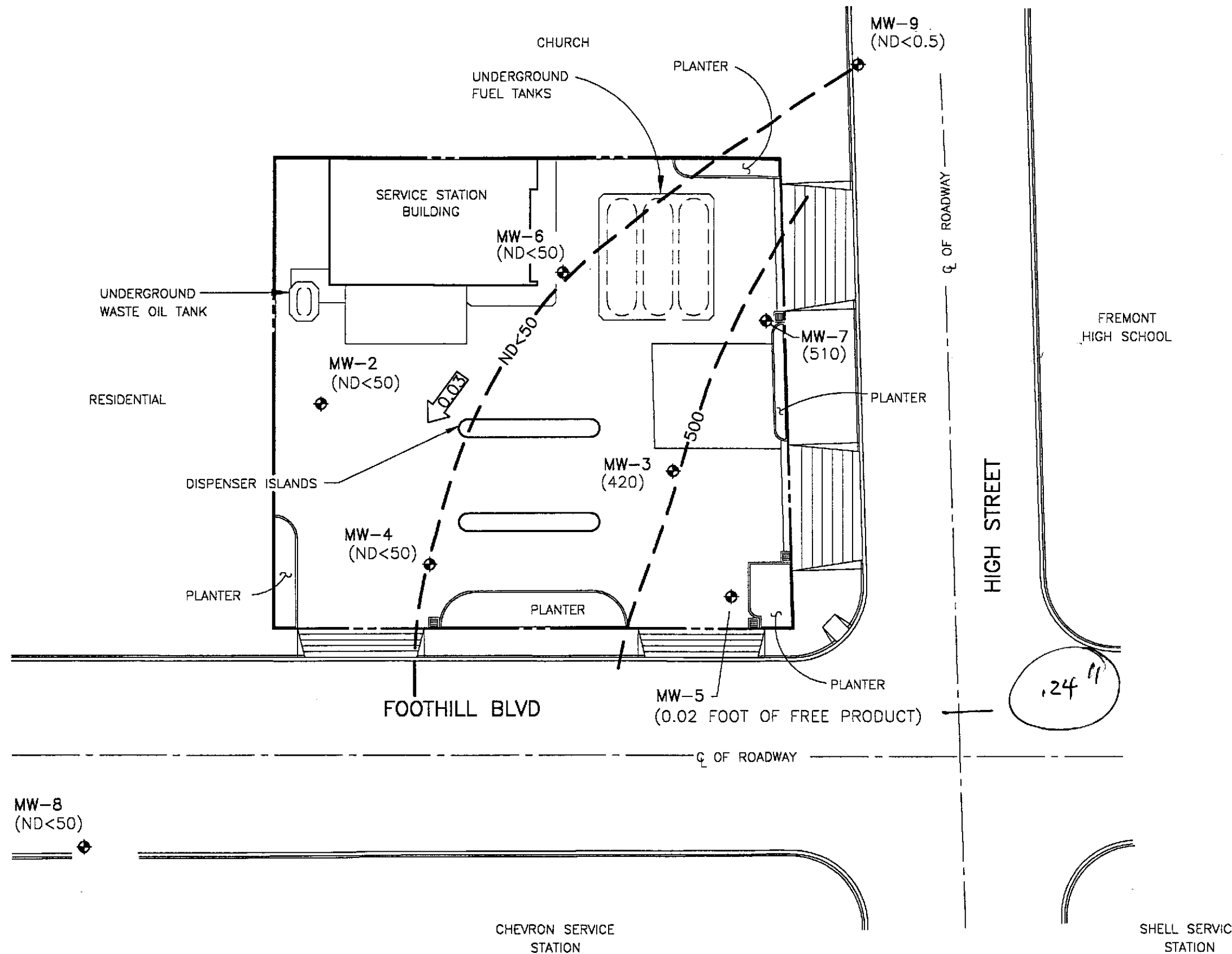
ALISTO ENGINEERING GROUP
 WALNUT CREEK, CALIFORNIA



- LEGEND**
- ⊕ GROUNDWATER MONITORING WELL
 - (24.56) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
 - 24.00- GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL-1.00 FOOT)
 - ←0.03→ CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 2
 POTENTIOMETRIC GROUNDWATER
 ELEVATION CONTOUR MAP
 APRIL 21, 1993
 BP OIL SERVICE STATION NO. 11109
 4280 FOOTHILL BOULEVARD
 OAKLAND, CALIFORNIA
 PROJECT NO. 10-014

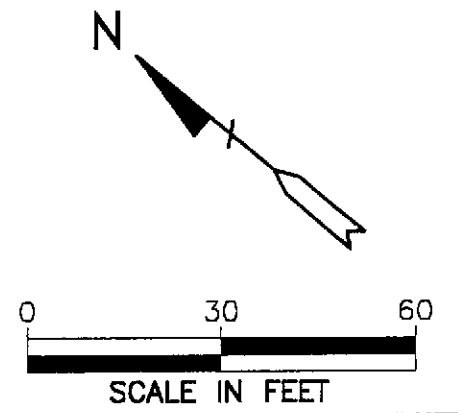
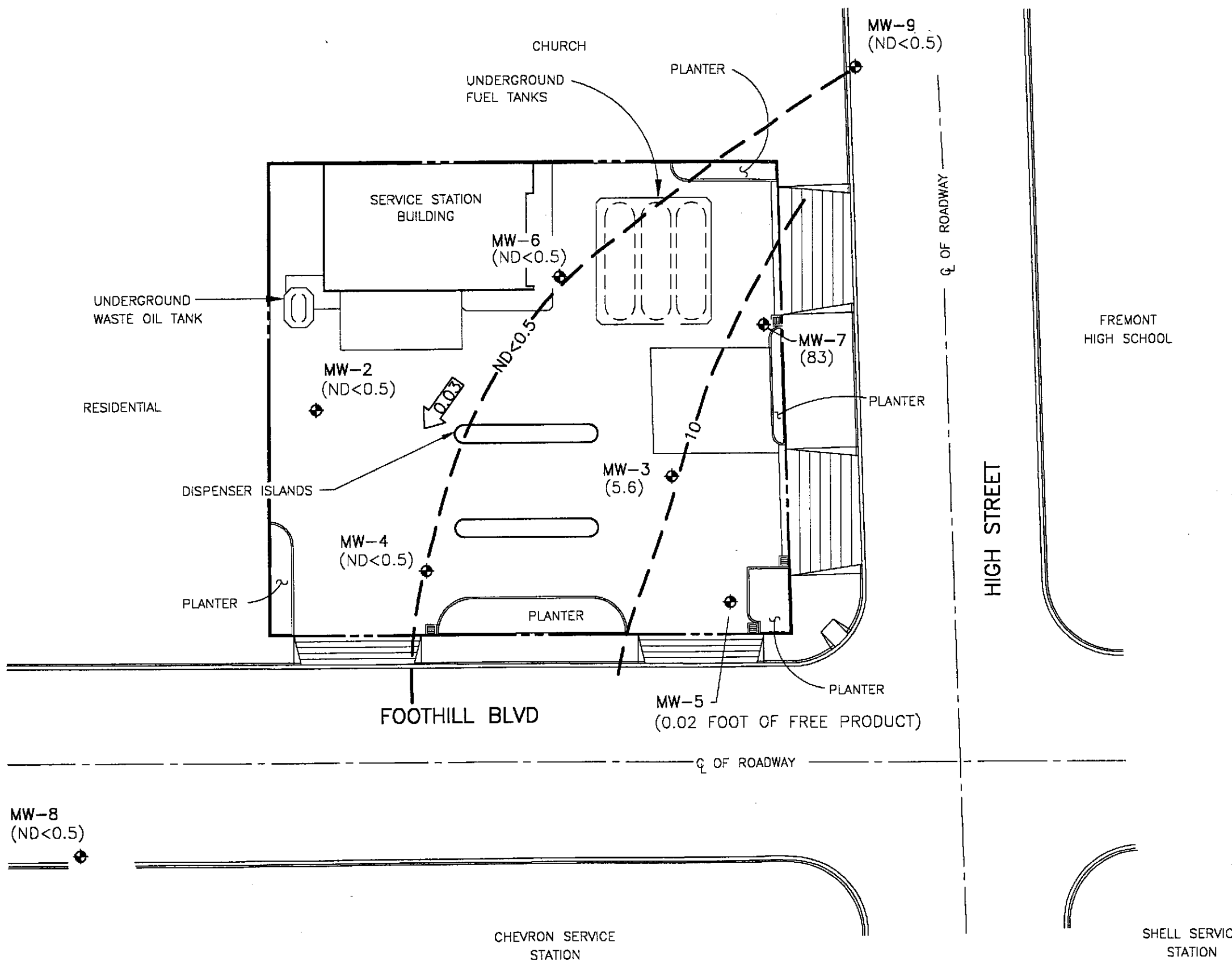
10010-014-01-01-01



LEGEND

- ◆ (510) ^{GASOLINE} GROUNDWATER MONITORING WELL BENZENE CONCENTRATION IN PARTS PER BILLION
- 500 - ^{GASOLINE} BENZENE ISOCONCENTRATION CONTOUR IN PARTS PER BILLION
- ← 0.03 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE

FIGURE 3
TOTAL PETROLEUM HYDROCARBONS AS GASOLINE ISOCONCENTRATION MAP
 APRIL 21, 1993
 BP OIL, SERVICE STATION NO. 11109
 4280 FOOTHILL BOULEVARD
 OAKLAND, CALIFORNIA
 PROJECT NO. 10-014



- LEGEND**
- ◆ GROUNDWATER MONITORING WELL
 - (83) BENZENE CONCENTRATION IN PARTS PER BILLION
 - 10 - BENZENE ISOCONCENTRATION CONTOUR IN PARTS PER BILLION
 - ← 0.03 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE

FIGURE 4
BENZENE ISOCONCENTRATION MAP
 APRIL 21, 1993
 BP OIL SERVICE STATION NO. 11109
 4280 FOOTHILL BOULEVARD
 OAKLAND, CALIFORNIA
 PROJECT NO. 10-014

APPENDIX A
WATER SAMPLING FIELD SURVEY FORMS

Birch
Technical
Services

Field Report / Data Sheet

10-014-01/004

4-21-93

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

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

Firm:
ALISTO
Project Number:
10-014

Date: **4/20/93**
Field Technician:
Dan Birch

Station #: **BP11109**
Address: **4280
Toothill Blvd,
Oakland**

Day: M Tu **W** Th F
Weather: **overcast**
Milage: _____ mi

DT Worder	Well ID	Diam.	Lock	Exp Cap	Total Depth (feet)	1st Depth to Water (feet)	2nd Depth to Water (feet)	Depth to Product Product Thickness (feet)		Comments
	3 MW-2	2	ok	ok	30.1	17.68	17.68			
	6 MW-3	4	ok	ok	31.8	14.24	14.24			System well
	4 MW-4	4	ok	ok	34.28	17.79	17.79			along Toothill-on site
	8 MW-5	4	ok	ok	NM	12.64	12.64	12.62	0.02	NOT SAMPLED
	5 MW-6	4	ok	ok	34.28	16.45	16.45			
	7 MW-7	6	ok	ok	33.42	14.56	14.56			System well
	2 MW-8	2	ok	ok	21.74	18.92	18.92			Toothill Blvd, well.
	1 MW-9	2	ok	ok	29.31	13.68	13.68			High St., well

Notes: Anine open wells, let equilibize, then measure DTW in order listed above. MW-5's PPRS contained 0.45 gal water and 0.05 gal dark product. PPRS was returned down well with no height adjustments necessary. Sampled wells as described. Left 3 labelled drums at site.

Inv#:

Birch Technical Services

GROUNDWATER SAMPLING FORM

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

Well Number: MW-7

Project Number: 10-014
 Station Number: BP11109
 Date: 4/20/93

Sample Type: Groundwater Trip Blank Duplicate of _____
 Sampled by: DAN BIRCH

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 33.42 Initial Water Level: 14.56 PURGE METHOD:
 Honda Pump
 Disposable Poly Tubing (35 ft)
 Speed Winch
 Disposable PVC Bailer(s) (____)
 Other _____
 Total Volume Purged: 84 Time Elapsed: 79
 Calculated Purge Volume: _____

33.42 - 14.56 = 18.86 x 1.47 = 27.72 x 3 = 83.2 (gallons)
 Total Depth Water Level Well Vol. Fac. #of vol. to Purge Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN Depth to Product Product Thickness
 O Yes No None (ft) None (ft)

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1200
 Solution pH 7.00 7 at 71 °F
 Solution pH 4.00 4 at 71 °F
 Solution pH 10.00 10 at 71 °F
 Water Level Meter # 10337

COMMENTS:

SAMPLING METHOD

PVC Disposable Bailer Time Sampled
 Teflon Bailer (24 hour clock)
 Other: _____ 1412

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
10	1328	72.7	6.29	0.76
20	1336	72.3	6.44	0.67
30	1345	70.7	6.48	0.65
40	1400	71.6	6.45	0.69
50	1412	71.7	6.42	0.66
75	1430	73.1	6.58	0.62
84	1442	72.1	6.59	0.61

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
<input checked="" type="checkbox"/> TPH-G/BTEX	<u>3</u>	VOA's	HCl
TPH- Diesel		Amber Liter	
TOG 5520 BF		Amber Liter	H ₂ SO ₄

Birch Technical Services

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

GROUNDWATER SAMPLING FORM

Well Number: MW-9

Project Number: 10-014

Sample Type: Groundwater Trip Blank Duplicate of _____

Station Number: BPI1109

Sampled by: DAN BIRCH

Date: 4/20/93
21

WELL PURGING

PURGE VOLUME

Casing Diameter (inches)
 Volume Factors:

2" 0.1632 3" 0.3672 4" 0.6528 4.5" 0.826 6" 1.469 _____

Total Depth of Well 29.31

Initial Water Level: 13.68

PURGE METHOD:

Total Volume Purged: 8

Time Elapsed: 22

Honda Pump
 Disposable Poly Tubing (30 ft)
 Speed Winch
 Disposable PVC Bailer(s) (____)
 Other _____

Calculated Purge Volume:

$$\underline{29.31} - \underline{13.68} = \underline{15.63} \times \underline{.16} = \underline{2.5} \times \underline{3} = \underline{7.5} \text{ (gallons)}$$

Total Depth Water Level Well Vol. Fac. # of vol. to Purge Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN Depth to Product Product Thickness
 Yes No None (ft) None (ft)

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1200
 Solution pH 7.00 7 at 71 °F
 Solution pH 4.00 4 at 71 °F
 Solution pH 10.00 10 at 71 °F
 Water Level Meter#: 10337

COMMENTS:

SAMPLING METHOD

PVC Disposable Bailer Time Sampled
 Teflon Bailer (24 hour clock)
 Other: _____ 1319

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °F	pH	Cond. (umhos/cm)
3	1300	72.1	6.51	0.71
5	1310	70.4	6.55	0.69
8	1319	70.1	6.56	0.69

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
<input checked="" type="checkbox"/> TPH-G/BTEX	3	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

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

May 10, 1993
PACE Project Number: 430428509

Attn: Mr. Brady Nagle

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059755
Date Collected: 04/21/93
Date Received: 04/28/93
Client Sample ID: MW-2

Parameter	Units	MDL		DATE ANALYZED
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ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):			-	04/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	04/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	04/30/93
Benzene	ug/L	0.5	ND	04/30/93
Toluene	ug/L	0.5	ND	04/30/93
Ethylbenzene	ug/L	0.5	ND	04/30/93
Xylenes, Total	ug/L	0.5	ND	04/30/93

HALOGENATED VOLATILE COMPOUNDS EPA 8010

Dichlorodifluoromethane	ug/L	2.0	ND	05/04/93
Chloromethane	ug/L	2.0	ND	05/04/93
Vinyl Chloride	ug/L	2.0	ND	05/04/93
Bromomethane	ug/L	2.0	ND	05/04/93
Chloroethane	ug/L	2.0	ND	05/04/93
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	05/04/93
1,1-Dichloroethene	ug/L	0.5	ND	05/04/93
Methylene Chloride	ug/L	2.0	ND	05/04/93
trans-1,2-Dichloroethene	ug/L	0.5	ND	05/04/93
cis-1,2-Dichloroethene	ug/L	0.5	ND	05/04/93
1,1-Dichloroethane	ug/L	0.5	ND	05/04/93
Chloroform	ug/L	0.5	ND	05/04/93
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	05/04/93
Carbon Tetrachloride	ug/L	0.5	ND	05/04/93
1,2-Dichloroethane (EDC)	ug/L	0.5	ND	05/04/93
Trichloroethene (TCE)	ug/L	0.5	ND	05/04/93
1,2-Dichloropropane	ug/L	0.5	ND	05/04/93
Bromodichloromethane	ug/L	0.5	ND	05/04/93
2-Chloroethylvinyl ether	ug/L	0.5	ND	05/04/93
cis-1,3-Dichloropropene	ug/L	0.5	ND	05/04/93

Mr. Brady Nagle
 Page 2

May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059755
 Date Collected: 04/21/93
 Date Received: 04/28/93
 Client Sample ID: MW-2

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

HALOGENATED VOLATILE COMPOUNDS EPA 8010

trans-1,3-Dichloropropene	ug/L	0.5	ND	05/04/93
1,1,2-Trichloroethane	ug/L	0.5	ND	05/04/93
Tetrachloroethene	ug/L	0.5	ND	05/04/93
Dibromochloromethane	ug/L	0.5	ND	05/04/93
Chlorobenzene	ug/L	0.5	ND	05/04/93
Bromoform	ug/L	0.5	ND	05/04/93

1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	05/04/93
1,3-Dichlorobenzene	ug/L	0.5	ND	05/04/93
1,4-Dichlorobenzene	ug/L	0.5	ND	05/04/93
1,2-Dichlorobenzene	ug/L	0.5	ND	05/04/93
Bromochloromethane (Surrogate Recovery)			107 %	05/04/93
1,4-Dichlorobutane (Surrogate Recovery)			108 %	05/04/93

EXTRACTABLE FUELS EPA 3510/8015

Extractable Fuels, as Diesel	mg/L	0.05	ND	05/06/93
Date Extracted			05/04/93(H)	

OIL AND GREASE, SILICA GEL (LUFT)

Oil and Grease, Gravimetric (SM5520)	mg/L	5.0	ND	05/04/93
Date Extracted			05/04/93	

Mr. Brady Nagle
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May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059763
 Date Collected: 04/21/93
 Date Received: 04/28/93
 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):			-	04/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	420	04/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	04/30/93
Benzene	ug/L	0.5	5.6	04/30/93
Toluene	ug/L	0.5	ND	04/30/93
Ethylbenzene	ug/L	0.5	3.9	04/30/93
Xylenes, Total	ug/L	0.5	1.4	04/30/93

REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
 Page 4

May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059771
 Date Collected: 04/21/93
 Date Received: 04/28/93
 Client Sample ID: MW-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):			-	04/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	04/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	04/30/93
Benzene	ug/L	0.5	ND	04/30/93
Toluene	ug/L	0.5	ND	04/30/93
Ethylbenzene	ug/L	0.5	ND	04/30/93
Xylenes, Total	ug/L	0.5	ND	04/30/93

Mr. Brady Nagle
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May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059780
 Date Collected: 04/21/93
 Date Received: 04/28/93
 Client Sample ID: MW-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):			-	04/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	04/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	04/30/93
Benzene	ug/L	0.5	ND	04/30/93
Toluene	ug/L	0.5	ND	04/30/93
Ethylbenzene	ug/L	0.5	ND	04/30/93
Xylenes, Total	ug/L	0.5	ND	04/30/93

Mr. Brady Nagle
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May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059798
 Date Collected: 04/21/93
 Date Received: 04/28/93
 Client Sample ID: MW-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):				04/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	510	04/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):				04/30/93
Benzene	ug/L	0.5	83	04/30/93
Toluene	ug/L	0.5	1.2	04/30/93
Ethylbenzene	ug/L	0.5	10	04/30/93
Xylenes, Total	ug/L	0.5	5.8	04/30/93

Mr. Brady Nagle
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May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059801
 Date Collected: 04/21/93
 Date Received: 04/28/93
 Client Sample ID: MW-9

<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):			-	04/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	04/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	04/30/93
Benzene	ug/L	0.5	ND	04/30/93
Toluene	ug/L	0.5	ND	04/30/93
Ethylbenzene	ug/L	0.5	ND	04/30/93
Xylenes, Total	ug/L	0.5	ND	04/30/93

Mr. Brady Nagle
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May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059810
 Date Collected: 04/21/93
 Date Received: 04/28/93
 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):			-	04/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	390	04/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	04/30/93
Benzene	ug/L	0.5	5.0	04/30/93
Toluene	ug/L	0.5	ND	04/30/93
Ethylbenzene	ug/L	0.5	3.7	04/30/93
Xylenes, Total	ug/L	0.5	1.5	04/30/93

Mr. Brady Nagle
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May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059828
 Date Collected: 04/21/93
 Date Received: 04/28/93
 Client Sample ID: QC-2

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

HALOGENATED VOLATILE COMPOUNDS EPA 8010

Dichlorodifluoromethane	ug/L	2.0	ND	05/04/93
Chloromethane	ug/L	2.0	ND	05/04/93
Vinyl Chloride	ug/L	2.0	ND	05/04/93
Bromomethane	ug/L	2.0	ND	05/04/93
Chloroethane	ug/L	2.0	ND	05/04/93
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	05/04/93
1,1-Dichloroethene	ug/L	0.5	ND	05/04/93
Methylene Chloride	ug/L	2.0	ND	05/04/93
trans-1,2-Dichloroethene	ug/L	0.5	ND	05/04/93
cis-1,2-Dichloroethene	ug/L	0.5	ND	05/04/93
1,1-Dichloroethane	ug/L	0.5	ND	05/04/93
Chloroform	ug/L	0.5	ND	05/04/93
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	05/04/93
Carbon Tetrachloride	ug/L	0.5	ND	05/04/93
1,2-Dichloroethane (EDC)	ug/L	0.5	ND	05/04/93
Trichloroethene (TCE)	ug/L	0.5	ND	05/04/93
1,2-Dichloropropane	ug/L	0.5	ND	05/04/93
Bromodichloromethane	ug/L	0.5	ND	05/04/93
2-Chloroethylvinyl ether	ug/L	0.5	ND	05/04/93
cis-1,3-Dichloropropene	ug/L	0.5	ND	05/04/93
trans-1,3-Dichloropropene	ug/L	0.5	ND	05/04/93
1,1,2-Trichloroethane	ug/L	0.5	ND	05/04/93
Tetrachloroethene	ug/L	0.5	ND	05/04/93
Dibromochloromethane	ug/L	0.5	ND	05/04/93
Chlorobenzene	ug/L	0.5	ND	05/04/93
Bromoform	ug/L	0.5	ND	05/04/93
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	05/04/93
1,3-Dichlorobenzene	ug/L	0.5	ND	05/04/93
1,4-Dichlorobenzene	ug/L	0.5	ND	05/04/93
1,2-Dichlorobenzene	ug/L	0.5	ND	05/04/93
Bromochloromethane (Surrogate Recovery)			112%	05/04/93

Mr. Brady Nagle
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May 10, 1993
PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059828
Date Collected: 04/21/93
Date Received: 04/28/93
Client Sample ID: QC-2

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

HALOGENATED VOLATILE COMPOUNDS EPA 8010 1,4-Dichlorobutane (Surrogate Recovery)		105%	05/04/93
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Mr. Brady Nagle
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May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PACE Sample Number: 70 0059836
 Date Collected: 04/21/93
 Date Received: 04/28/93
 Client Sample ID: MW-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):			-	04/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	04/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	04/30/93
Benzene	ug/L	0.5	ND	04/30/93
Toluene	ug/L	0.5	ND	04/30/93
Ethylbenzene	ug/L	0.5	ND	04/30/93
Xylenes, Total	ug/L	0.5	ND	04/30/93

These data have been reviewed and are approved for release.

Darrell C. Cain
 Darrell C. Cain
 Regional Director

Mr. Brady Nagle
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FOOTNOTES
for pages 1 through 11

May 10, 1993
PACE Project Number: 430428509

Client Reference: BP Station # 11109

MDL Method Detection Limit
ND Not detected at or above the MDL.
(H) Sample MW-2 (PACE #70 0059755) was received 7 days after the sample had been collected for TPH diesel, and therefor was received past the EPA recommended holding time for TPH diesel extraction on a water matrix.

REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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QUALITY CONTROL DATA

May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

EXTRACTABLE FUELS EPA 3510/8015
 Batch: 70 20927
 Samples: 70 0059755

METHOD BLANK:

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>Method Blank</u>
Extractable Fuels, as Diesel	mg/L	0.05	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	<u>Reference Value</u>	<u>Recv</u>	<u>Dupl Recv</u>	<u>RPD</u>
Extractable Fuels, as Diesel	mg/L	0.05	1.00	50%	54%	7%

Mr. Brady Nagle
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QUALITY CONTROL DATA

May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

PURGEABLE FUELS AND AROMATICS

Batch: 70 20847

Samples: 70 0059755, 70 0059763, 70 0059771, 70 0059780, 70 0059798
 70 0059801, 70 0059810, 70 0059836

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	95%	99%	4%
Benzene	ug/L	0.5	40.0	103%	104%	0%
Toluene	ug/L	0.5	40.0	97%	100%	3%
Ethylbenzene	ug/L	0.5	40.0	97%	102%	5%
Xylenes, Total	ug/L	0.5	120	100%	106%	5%

Mr. Brady Nagle
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QUALITY CONTROL DATA

May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

VOLATILE HALOCARBONS AND AROMATICS

Batch: 70 20956
 Samples: 70 0059755, 70 0059828

METHOD BLANK:

Parameter	Units	MDL	Method Blank
<u>VOLATILE HALOCARBONS BY EPA 8010</u>			
Dichlorodifluoromethane	ug/L	2.0	ND
Chloromethane	ug/L	2.0	ND
Vinyl Chloride	ug/L	2.0	ND
Bromomethane	ug/L	2.0	ND
Chloroethane	ug/L	2.0	ND
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND
1,1-Dichloroethene	ug/L	0.5	ND
Methylene Chloride	ug/L	2.0	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND
Carbon Tetrachloride	ug/L	0.5	ND
1,2-Dichloroethane (EDC)	ug/L	0.5	ND
Trichloroethene (TCE)	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
2-Chloroethylvinyl ether	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
1,3-Dichlorobenzene	ug/L	0.5	ND
1,4-Dichlorobenzene	ug/L	0.5	ND
1,2-Dichlorobenzene	ug/L	0.5	ND
Bromochloromethane (Surrogate Recovery)			99 %

Mr. Brady Nagle
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QUALITY CONTROL DATA

May 10, 1993
 PACE Project Number: 430428509

Client Reference: BP Station # 11109

VOLATILE HALOCARBONS AND AROMATICS

Batch: 70 20956

Samples: 70 0059755, 70 0059828

METHOD BLANK:

Parameter	Units	MDL	Method Blank
I,4-Dichlorobutane (Surrogate Recovery)			103 %
VOLATILE AROMATICS BY EPA 8020			
Benzene	ug/L	0.3	ND
Toluene	ug/L	0.3	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND
Fluorobenzene (Surrogate Recovery)			99 %

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
I,1-Dichloroethane	ug/L	0.5	10.00	85%	78%	8%
Trichloroethene (TCE)	ug/L	0.5	10.00	95%	88%	7%
1,1,2-Trichloroethane	ug/L	0.5	10.00	90%	92%	2%
Tetrachloroethene	ug/L	0.5	10.00	89%	87%	2%
Benzene	ug/L	0.3	10.00	77%	75%	2%
Toluene	ug/L	0.3	10.00	78%	77%	1%
Xylenes, Total	ug/L	0.5	30.00	101%	98%	3%

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FOOTNOTES
for pages 13 through 17

May 10, 1993
PACE Project Number: 430428509

Client Reference: BP Station # 11109

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

430428.509

No 0967

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 #: 10-014			Page 1 of 1					
Address: 1770 OAKLAND RD., STE 200 WALNUT CREEK											
Project Contact: BRADY NAGLE			Phone #: 510-744-4646 Fax: 426-7915			Consultant Work Order #: 10-014					
Sampled by (print): DAN BIRCH			Sampler's Signature: <i>[Signature]</i>			B.P. Site Location #: BP11109					
Shipment Method:			Airbill #:			Shipment Date:					
TAT: <input type="checkbox"/> 24 hr <input type="checkbox"/> 48 hr <input type="checkbox"/> 72 hr <input checked="" type="checkbox"/> Standard (10 day)			ANALYSIS REQUIRED			Sample Condition as Received Temperature °C: _____ Cooler #: _____ Inbound Seal Yes No Outbound Seal Yes No					
Sample Description	Collection Date/Time	Matrix Soil/Water	Prsv	# of Cont	PACE Sample #	TPH/GAS/BTEX EPA 8015/8020	TPH/Diesel EPA 8015	TRPH EPA 418.1	HVOC 8010	Oil + grease 5520	COMMENTS
MW2	4/21/93	1502	H2O	2	575.5	X	X		X	X	2 vocs rec'd w/ vry. irq. bubbles rec'd today.
MW-3		1545		3	76.3	X					3 vocs rec'd w/ bubbles
MW-4		1630			77.1	X					
MW-6		1712			78.0	X					2 vocs rec'd w/ vry. irq. bubbles
MW-7		1442			79.8	X					2 vocs rec'd w/ bubbles
MW-9		1319			80.1	X					1 voc rec'd w/ vry irq. bubble
QC-1		1548	✓	✓	81.0	X					2 vocs w/ irq. bubbles
QC-2		1600	H2O	1	82.8	X					
MW-8	4-21-93	1419	H2O	3	83.6	X					

g/BTEX cancelled by BNE Alisto 1/29/93 PM
 8010 cancelled on this sample by BNE Alisto 4/29/93 AM

8010 re-requested by BN 4/29/93 @ALISTO

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time	Additional Comments:
<i>[Signature]</i>	4/24/93	1320	<i>[Signature]</i>	4/28	1320	these analytes were added by Brady Nagle on 4/29/93. Advised BN that diesel extraction will be run outside of recommended EPA hold time due to (7)
<i>[Signature]</i>	4/28	1630	<i>[Signature]</i>	4/28	1630	