



BP OIL

BP Oil Marketing Co.  
Aetna Bldg., Suite 360  
2868 Prospect Park Drive  
Rancho Cordova, CA 95670-6020  
(916) 631-0733

August 27, 1992

5710 3878

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

RE: BP OIL FACILITY #11132  
3201 35TH AVENUE  
OAKLAND, CA 94619

Dear Mr. Callaghan,

Attached please find the Quarterly Monitoring and Sampling Report for the above referenced facility. The sampling activity occurred on July 3, 1992.

Please call me at (206) 394-5246 with any questions regarding this submission.

Respectfully,

*Peter J. DeSantis*

Peter J. DeSantis SML  
Environmental Resources Management

PJD:sml

cc: Rafat Shahid - Alameda County Dept. of Environmental Health  
Services  
Brady Nagle - Alisto Engineering  
David Baker - Mobil Oil  
Site File

**QUARTERLY GROUNDWATER MONITORING  
AND SAMPLING REPORT**

**Prepared for**

**BP Oil Company Service Station No. 11132  
3201 35th Avenue  
Oakland, California**

**Project No. 10-024**

**Prepared by**

**Alisto Engineering Group  
1000 Burnett Avenue, Suite 150  
Concord, California**

**July 29, 1992**

*Brady Nagle (for)*

**Brady Nagle  
Project Manager**

*Al Sevilla*

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



# QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11132  
3201 35th Avenue  
Oakland, California

Project No. 10-024

July 29, 1992

## INTRODUCTION

This report presents the results and findings of the July 3, 1992 quarterly groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Service Station No. 11132, located at 3201 35th Avenue, Oakland, California. A site vicinity map is shown in Figure 1.

## FIELD PROCEDURES

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

Prior to purging and sampling, the ground water 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 ground water and the top of casing elevation data were used to calculate the ground water elevation within each well in reference to mean sea level. The survey data and ground water elevation measurements collected to date are presented in Table 1.

Prior to sample collection, each well was purged of three casing volumes, while recording field readings of pH, temperature, and electrical conductivity. Ground water samples for laboratory analysis were collected by lowering a bottom-fill, disposable bailer to just below the water level in the well. The samples were carefully transferred from the bailer into the appropriate clean glass containers. The water sampling field survey forms are presented in Appendix A.

## SAMPLING AND ANALYTICAL RESULTS

The results of the monitoring and laboratory analyses 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 quarterly monitoring event are depicted in Figure 2. Isoconcentration maps of total petroleum hydrocarbons as gasoline (TPH-G) and



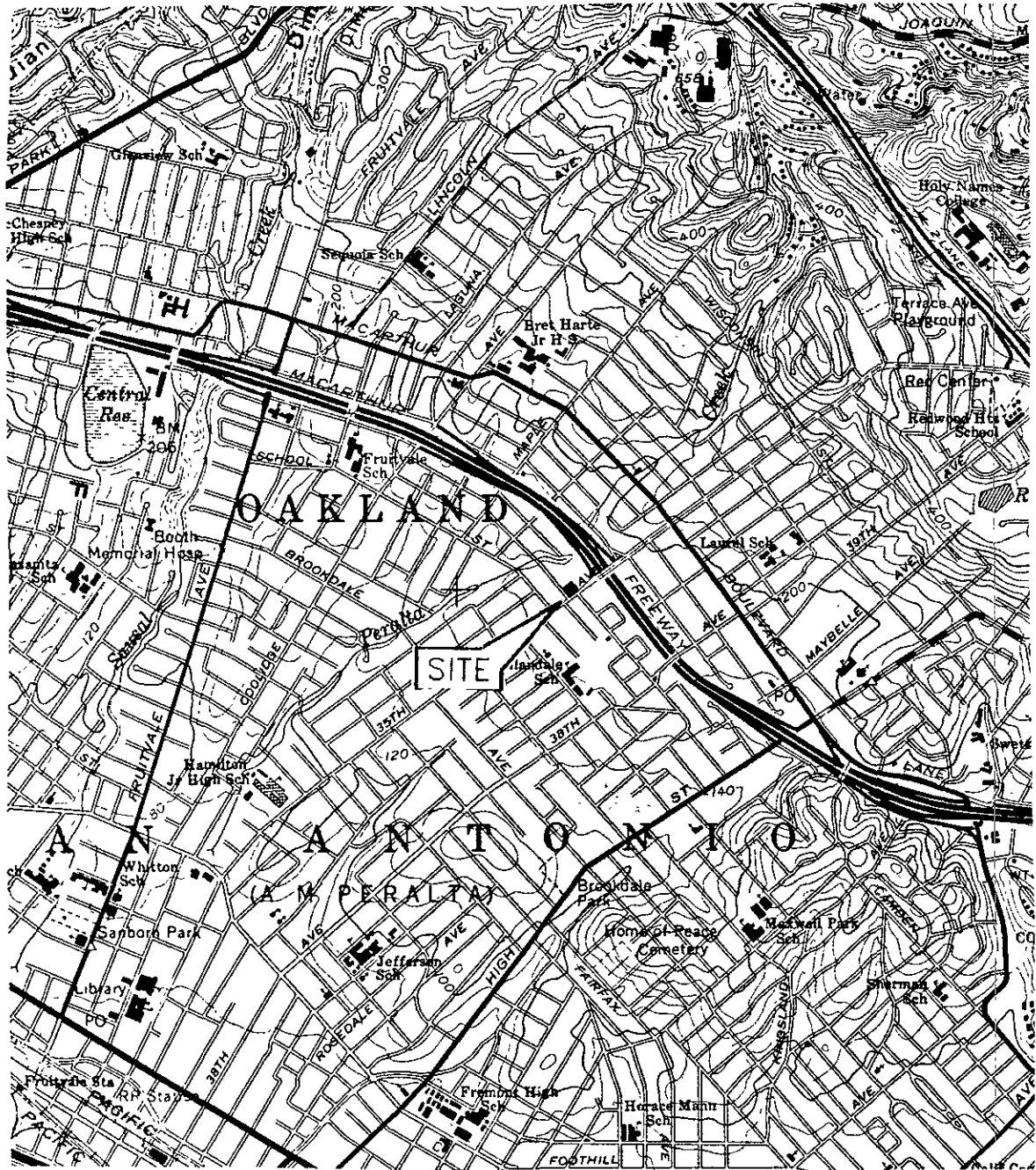
benzene are shown in Figures 3 and 4. Laboratory reports and the chain of custody record are presented in Appendix B.

## SUMMARY OF FINDINGS

The findings of the July 3, 1992 ground water monitoring and sampling event are summarized below:

- Free product of up to a thickness of 0.27 foot was detected in wells MW-1, MW-2, and RW-1.
- Groundwater elevation data indicate a gradient of approximately 0.007 ft./ft. in a general southwest direction across the site.
- Dissolved-phase TPH-G and benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituents were detected in Monitoring Wells MW-3, MW-5, MW-8, MW-9, and MW-10 at concentrations of up to 72,000 parts per billion (ppb) TPH-G and 19,000 ppb benzene.
- TPH-G and BTEX constituents were not detected above reported detection limits in samples collected from Monitoring Wells MW-4, MW-6, and MW-7.





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



FIGURE 1

SITE VICINITY MAP

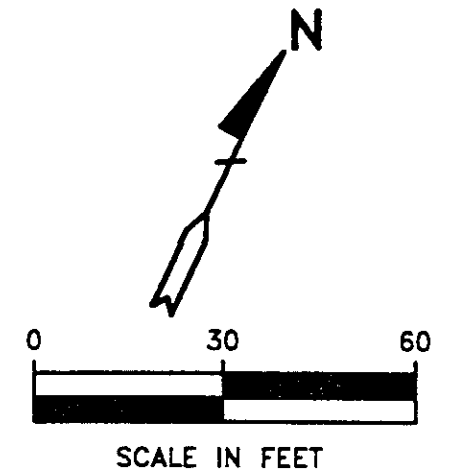
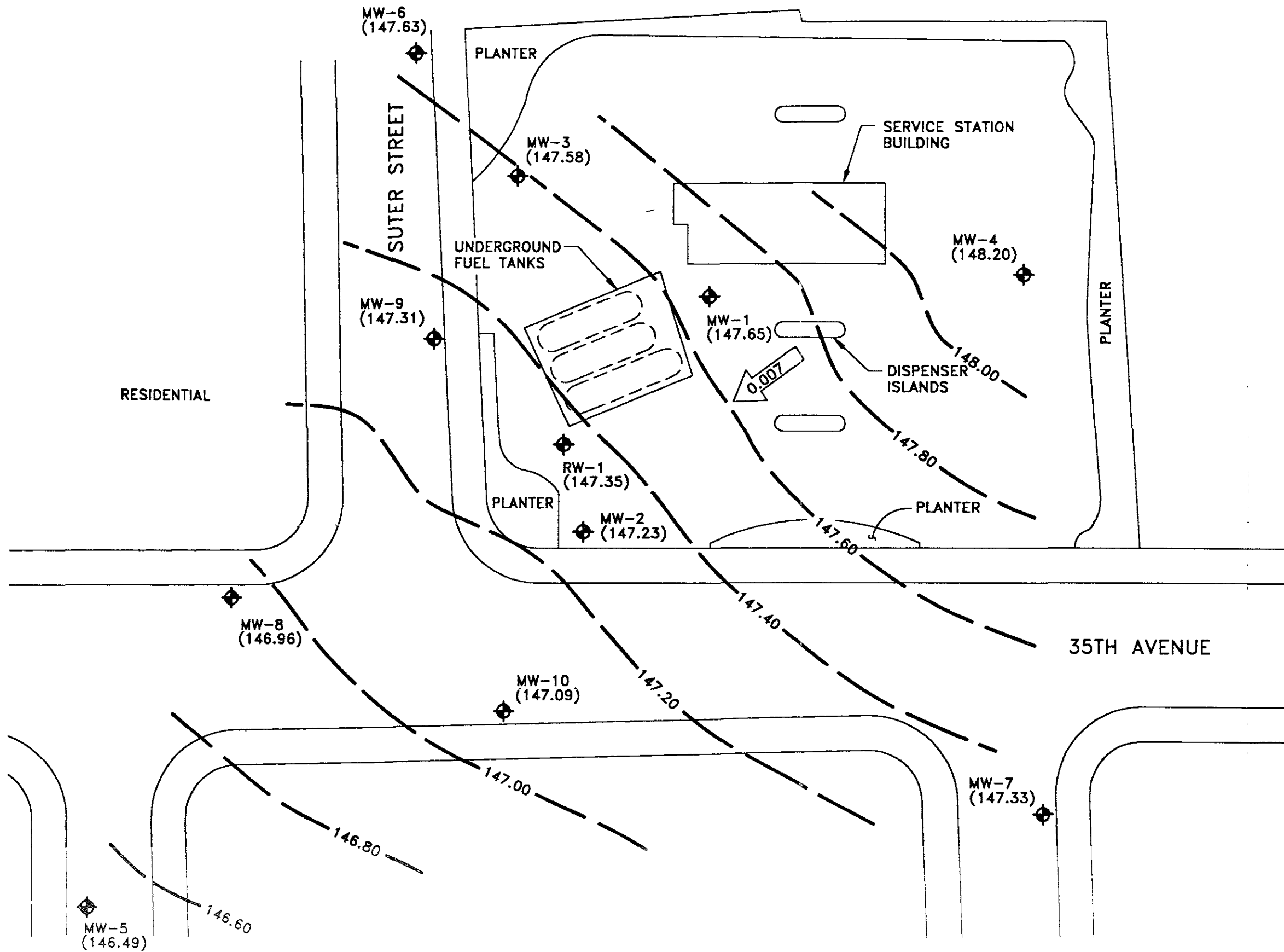
BP OIL SERVICE STATION NO. 11132  
 3201 35TH AVENUE  
 OAKLAND, CALIFORNIA



ALISTO PROJECT NO. 10-024



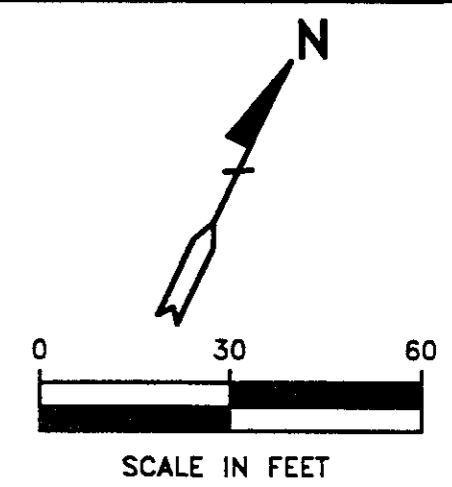
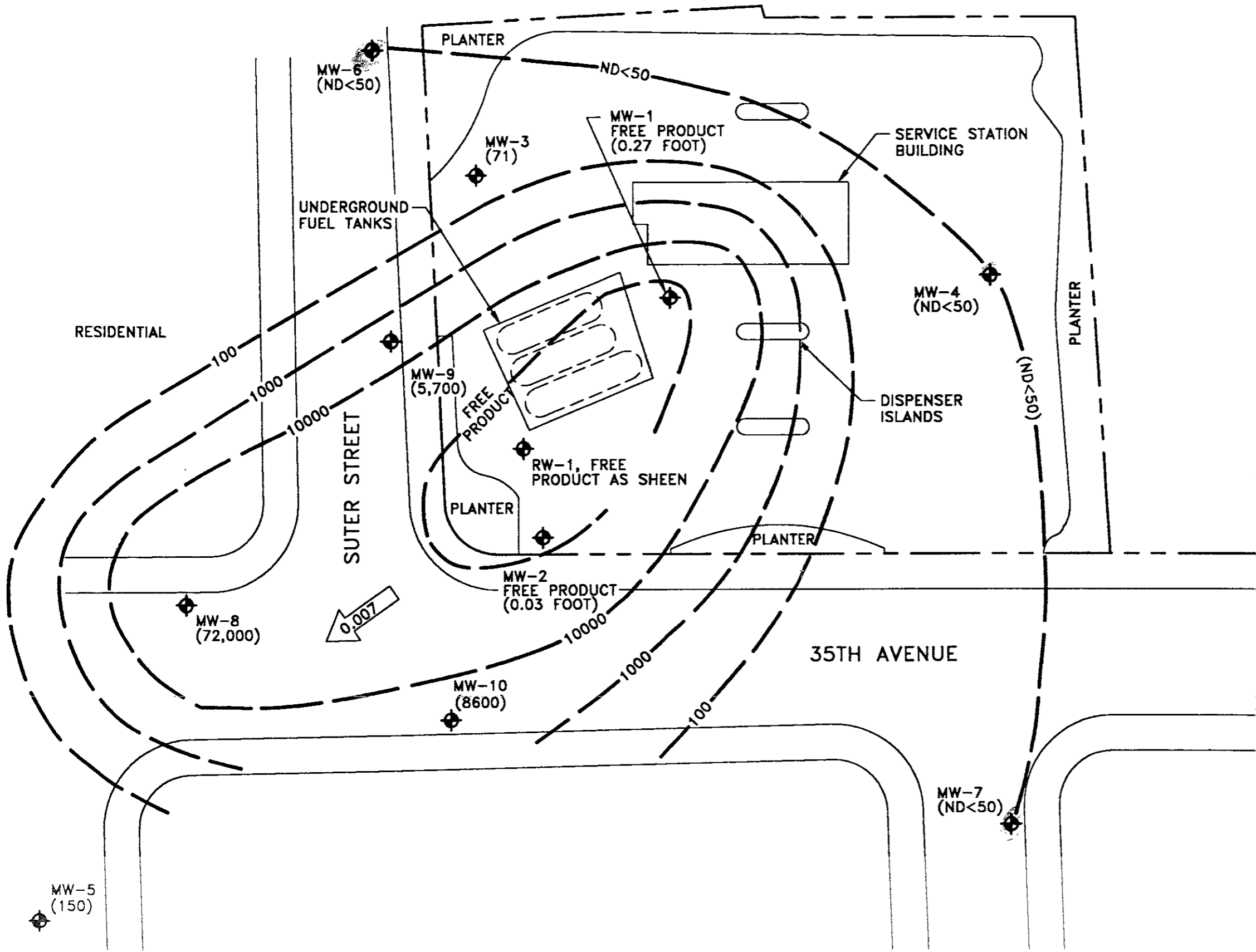
ALISTO ENGINEERING GROUP  
 CONCORD, CALIFORNIA



- LEGEND:**
- ◆ GROUNDWATER MONITORING WELLS
  - (148.20) GROUNDWATER ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL
  - 148.00 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL - 0.2 FOOT)
  - 0.007 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

**FIGURE 2**  
**POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP**  
 (JULY 3, 1992)

BP OIL SERVICE STATION NO. 11132  
 3201 35TH STREET  
 OAKLAND, CALIFORNIA  
 PROJECT NO. 10-024



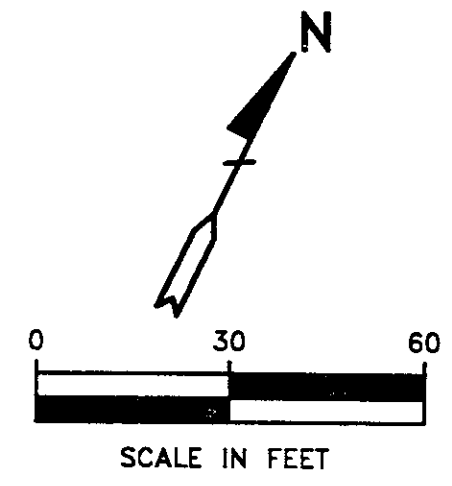
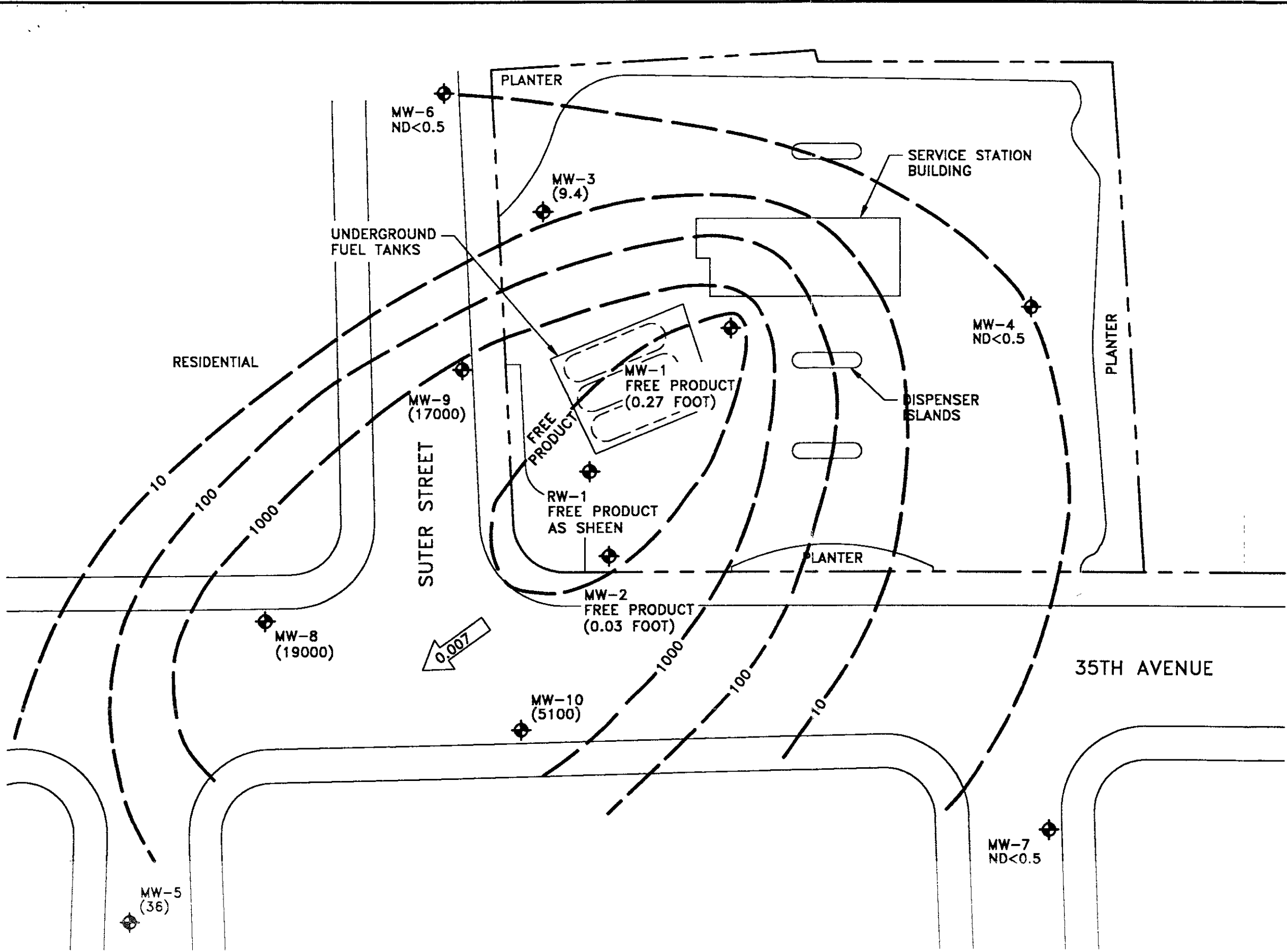
- LEGEND:**
- ◆ GROUNDWATER MONITORING WELLS
  - (150) TOTAL PETROLEUM HYDROCARBONS AS GASOLINE CONCENTRATION IN PARTS PER BILLION
  - 1000 TOTAL PETROLEUM HYDROCARBONS AS GASOLINE ISOCONCENTRATION CONTOUR IN PARTS PER BILLION
  - 0.007 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT





ND

**FIGURE 3**  
**TOTAL PETROLEUM HYDROCARBONS AS GASOLINE ISOCONCENTRATION MAP (JULY 3, 1992)**

BP OIL SERVICE STATION NO. 11132  
 3201 35TH STREET  
 OAKLAND, CALIFORNIA

PROJECT NO. 10-024



- LEGEND:**
-  GROUNDWATER MONITORING WELLS
  -  (36) BENZENE CONCENTRATION IN PARTS PER BILLION
  -  100 BENZENE ISOCONCENTRATION CONTOUR IN PARTS PER BILLION
  -  0.007 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

**FIGURE 4**  
**BENZENE ISOCONCENTRATION**  
**CONTOUR MAP**  
 (JUNE 3, 1992)

BP OIL SERVICE STATION NO. 11132  
 3201 35TH STREET  
 OAKLAND, CALIFORNIA  
 PROJECT NO. 10-024

81132-4.DWG 7-27-92 JWB 1-380



TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11132  
 3201 35th AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-024

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER	PRODUCT THICKNESS	GROUNDWATER ELEVATION (b)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
RW-1	07/09/90	168.01	--	1.21	--	FP	FP	FP	FP	FP	--
RW-1	12/21/90	168.01	--	0.01	--	FP	FP	FP	FP	FP	--
RW-1	03/07/91	168.01	17.62	SHEEN	150.39	FP	FP	FP	FP	FP	--
RW-1	06/27/91	168.01	--	0.04	--	FP	FP	FP	FP	FP	--
RW-1	09/27/91	168.01	--	0.02	--	FP	FP	FP	FP	FP	--
RW-1	12/18/91	168.01	--	0.02	--	FP	FP	FP	FP	FP	--
RW-1	04/01/91	168.01	14.40	0.11	153.69	FP	FP	FP	FP	FP	--
RW-1	07/03/92	168.01	20.66	SHEEN	147.35	FP	FP	FP	FP	FP	--
MW-1	07/09/90	169.75	--	0.22	--	FP	FP	FP	FP	FP	--
MW-1	12/21/90	169.75	--	0.58	--	FP	FP	FP	FP	FP	--
MW-1	03/07/91	169.75	20.59	--	--	FP	FP	FP	FP	FP	--
MW-1	06/27/91	169.75	--	0.18	--	FP	FP	FP	FP	FP	--
MW-1	09/27/91	169.75	--	0.27	--	FP	FP	FP	FP	FP	--
MW-1	12/18/91	169.75	--	0.28	--	FP	FP	FP	FP	FP	--
MW-1	04/01/91	169.75	16.51	0.15	153.35	FP	FP	FP	FP	FP	--
MW-1	07/03/92	169.75	22.30	0.27	147.65	FP	FP	FP	FP	FP	--
MW-2	07/09/90	168.14	--	0.10	--	FP	FP	FP	FP	FP	--
MW-2	12/21/90	168.14	--	0.48	--	FP	FP	FP	FP	FP	--
MW-2	03/07/91	168.14	19.18	--	--	FP	FP	FP	FP	FP	--
MW-2	06/27/91	168.14	--	0.19	--	FP	FP	FP	FP	FP	--
MW-2	09/27/91	168.14	--	0.15	--	FP	FP	FP	FP	FP	--
MW-2	12/18/91	168.14	--	0.36	--	FP	FP	FP	FP	FP	--
MW-2	04/01/91	168.14	15.21	0.10	153.00	FP	FP	FP	FP	FP	--
MW-2	07/03/92	168.14	20.93	0.03	147.23	FP	FP	FP	FP	FP	--
MW-3	07/09/90	167.17	--	0.00	--	140	5.3	4.6	2.0	3.8	--
MW-3	12/21/90	167.17	--	0.00	--	0.19	100	6.0	0.9	27	--
MW-3	03/07/91	167.17	17.40	0.00	149.77	0.4	69	22	6.1	57	--
MW-3	06/27/91	167.17	--	0.00	--	380	28	26	13	46	--
MW-3	09/27/91	167.17	--	0.00	--	0.07	7.9	ND	0.4	1.1	--
MW-3	12/18/91	167.17	--	0.00	--	0.26	34	24	0.8	28	--
MW-3	04/01/91	167.17	13.69	0.00	153.48	ND	ND	ND	ND	ND	--
MW-3	07/03/92	167.17	19.59	0.00	147.58	71	9.4	0.9	5.0	13	ANA

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11132  
 3201 35th AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO 10-024

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER	PRODUCT THICKNESS	GROUNDWATER ELEVATION (b)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
MW-4	07/09/90	170.36	---	0.00	---	ND	ND	ND	ND	ND	---
MW-4	12/21/90	170.36	---	0.00	---	ND	ND	ND	ND	0.8	---
MW-4	03/07/91	170.36	20.72	0.00	149.64	ND	2.2	3.8	1.5	2.8	---
MW-4	06/27/91	170.36	---	0.00	---	ND	6.3	1.8	0.4	1.0	---
MW-4	09/27/91	170.36	---	0.00	---	ND	ND	ND	ND	ND	---
MW-4	12/18/91	170.36	---	0.00	---	ND	ND	ND	ND	ND	---
MW-4	04/01/91	170.36	17.49	0.00	152.87	ND	ND	ND	ND	ND	---
MW-4	07/03/92	170.36	22.16	0.00	148.20	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-5	07/09/90	165.14	---	0.00	---	280	200	210	46	290	---
MW-5	12/21/90	165.14	---	0.00	---	0.69	300	34	8.4	39	---
MW-5	03/07/91	165.14	16.60	0.00	148.54	ND	17	0.9	0.7	1.6	---
MW-5	06/27/91	165.14	---	0.00	---	330	120	10	12	8	---
MW-5	09/27/91	165.14	---	0.00	---	0.73	230	16	20	22	---
MW-5	12/18/91	165.14	---	0.00	---	ND	ND	ND	ND	ND	---
MW-5	04/01/91	165.14	11.99	0.00	153.15	800	250	54	11	60	---
MW-5	07/03/92	165.14	18.65	0.00	146.49	150	36	ND<0.5	ND<0.5	1.1	ANA
MW-6	07/09/90	165.40	---	0.00	---	ND	ND	ND	ND	ND	---
MW-6	12/21/90	165.40	---	0.00	---	0.17	2.6	7.0	4.9	26	---
MW-6 (c)	03/07/91	165.40	---	0.00	---	---	---	---	---	---	---
MW-6 (c)	06/27/91	165.40	---	0.00	---	---	---	---	---	---	---
MW-6 (c)	09/27/91	165.40	---	0.00	---	---	---	---	---	---	---
MW-6	12/18/91	165.40	---	0.00	---	ND	1.3	22	ND	2.7	---
MW-6	04/01/91	165.40	11.79	0.00	153.61	ND	ND	ND	ND	ND	---
MW-6	07/03/92	165.40	17.77	0.00	147.63	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-7	07/09/90	167.61	---	0.00	---	ND	ND	ND	ND	ND	---
MW-7	12/21/90	167.61	---	0.00	---	ND	ND	ND	ND	ND	---
MW-7	03/07/91	167.61	19.04	0.00	148.57	ND	ND	0.4	0.3	2.4	---
MW-7	06/27/91	167.61	---	0.00	---	70	17	4	0.8	2.2	---
MW-7	09/27/91	167.61	---	0.00	---	ND	0.4	ND	ND	0.4	---
MW-7	12/18/91	167.61	---	0.00	---	ND	0.7	2.9	0.8	3.3	---
MW-7	04/01/91	167.61	15.18	0.00	152.43	ND	ND	ND	ND	ND	---
MW-7	07/03/92	167.61	20.28	0.00	147.33	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11132  
 3201 35th AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-024

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER	PRODUCT THICKNESS	GROUNDWATER ELEVATION (b)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
MW-8	03/07/91	165.74	16.72	0.00	149.02	2.7	780	450	64	310	---
MW-8	06/27/91	165.74	---	0.00	---	12000	3400	1100	240	750	---
MW-8	09/27/91	165.74	---	0.00	---	41	5700	5200	1100	4300	---
MW-8	12/18/91	165.74	---	0.00	---	3.2	990	150	120	250	---
MW-8	04/01/91	165.74	12.54	0.00	153.20	15000	3600	2600	410	1900	---
MW-8	07/03/92	165.74	18.78	0.00	146.96	72000	19000	32000	3000	15000	ANA
MW-9	03/07/91	166.20	16.79	0.00	149.41	7.1	220	4	2.4	2400	---
MW-9	06/27/91	166.20	---	0.00	---	3600	520	400	85	310	---
MW-9	09/27/91	166.20	---	0.00	---	3.2	720	150	50	180	---
MW-9	12/18/91	166.20	---	0.00	---	ND	2.5	1.1	0.3	5.8	---
MW-9	04/01/91	166.20	12.89	0.00	153.31	12000	2000	2600	360	1600	---
MW-9	07/03/92	166.20	18.89	0.00	147.31	5700	17000	840	230	800	ANA
MW-10	03/07/91	167.01	18.09	0.00	148.92	1.6	120	190	32	230	---
MW-10	06/27/91	167.01	---	0.00	---	12000	7300	500	150	300	---
MW-10	09/27/91	167.01	---	0.00	---	57	12000	7200	1400	4600	---
MW-10	12/18/91	167.01	---	0.00	---	5.3	2500	120	36	79	---
MW-10	04/01/91	167.01	13.92	0.00	153.09	ND	ND	ND	ND	ND	---
MW-10	07/03/92	167.01	19.92	0.00	147.09	8600	5100	1300	180	690	ANA

ABBREVIATIONS:

TPH-G	Total Petroleum Hydrocarbons as Gasoline
B	Benzene
T	Toluene
E	Ethylbenzene
X	Xylenes
ND	Not detected above reported detection limits
(ppb)	Parts per billion
---	Not analyzed / not available
ANA	Anametrix, Inc.

NOTES:

- (a) Casing elevations were surveyed to the nearest 0.01 foot relative to Mean Sea Level.
- (b) Groundwater elevations adjusted assuming a specific gravity of 0.75 for free product.
- (c) MW-6 could not be accessed due abandoned vehicle parked over the well.

**APPENDIX A**  
**WATER SAMPLING FORMS**

# Field Report / Data Sheet

Groundwater Sampling  Groundwater Monitoring  Well Development  Drill Support  Stockpile Sampling

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

Firm: Alisto  
Project Number: 10-024

Date: 7/3/92  
Field Technician: Dan Birch

Station #: BP 11132 Day: M Tu W Th  
Address: 35<sup>th</sup> Ave  
Oakland  
Weather: Clear  
Milage: 72 mi

**Equipment List:**  
 Water Guage (1/2) day  
 Parameter Kit (1/2) day  
 Disposable Bailers (9)  
 Plug(s) (2) (2 in)  
 Honda Pump (1) day  
 Poly Tubing (273 ft)  
 Dolphin Lock(s) (3)  
 Nitrile Gloves (1 pair)  
 Travel Time: 2 hrs  
 Time at Site: 4.5 hrs  
 Total Time: 6.5 hrs

DT/Order	Well ID	Diam	Lock	Exp Cap	Total Depth (feet)	1st Depth to Water (feet)	2nd Depth to Water (feet)	Depth to Product (feet)	Product Thickness	Comments
9	MW-1	2"	No	OK	44.08'	<del>22.30</del> 22.30	<del>22.30</del> 22.30	22.03'	0.27'	
10	MW-2	2"	Yes	OK	34.31'	20.93	20.93	20.90'	0.03'	
2	MW-3	2"	No	OK	34.58'	19.59'	19.59'			Replace lock
3	MW-4	2"	No	No	38.74'	22.16'	22.16'			Replace plug
6	MW-5	2"	No	OK	30.88'	18.65'	18.65'			
1	MW-6	2"	No	OK	34.56'	17.77'	17.77'			Replace Lock
4	MW-7	2"	No	OK	34.49'	20.28'	20.28'			
7	MW-8	2"	No	OK	38.72'	<del>20.28</del> 18.78'	<del>20.28</del> 18.78'			
8	MW-9	2"	No	OK	29.49'	18.89'	18.89'			odor of hydrogen sulfide / test for product none found
5	MW-10	2"	No	OK	34.00'	19.92'	19.92'			

Notes: 11 RW-16" No No 38.41' 20.66' 20.66' Subjective analysis w/ bailer water clear - bailer coated w/ oily sludge <sup>replace</sup>

10:15 am in office 8 am open wells at both sites to breath plug/lock  
10:15 am measure MW-6 DTW as shown above. Sample wells  
 leave site at ~ 2:45.





# Birch Technical Services

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

# GROUND-WATER SAMPLING FORM

Well Number: MW-5

Project Number: 10-026

Well Type:  Monitor     Extraction     \_\_\_\_\_

Station Number: BP11132

Date: 7/3/92

Sampled by: \_\_\_\_\_

## 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 (BOW) 30.88'    Initial Water Level: 18.65'

Total Volume Purged: 6 gal    Time Elapsed: 4 min

### PURGE METHOD:

- Honda Pump
- Disposable Poly Tubing (20 ft)
- Disposable PVC Bailer(s) (\_\_\_\_)
- Other \_\_\_\_\_

### Calculated Purge Volume:

$$\begin{matrix} \text{Total Depth} & \text{Water Level} & & \text{Well Vol. Fac.} & \text{\#of vol. to Purge} & \text{Calculated Purge Volume} \\ 30.88 & - 18.65 & = & 12.23 & \times 0.1632 & = 1.99 & \times 3 & = 6 & \text{(gallons)} \end{matrix}$$

### Subjective Analysis Prior to Purging

### PARAMETER EQUIPMENT CALIBRATION

SHEEN    Depth of Product    Emulsion  
O Yes  No    \_\_\_\_\_ (ft)    O Yes  No

pH Meter #: 9112    Time: 1024  
Solution    pH 4.00 4    at 70.6 °C  
Solution    pH 10.00 10    at 70.6 °C  
Solution    pH 7.00 7    at 70.6 °C  
Water Level Meter#: 10337

### COMMENTS:

### SAMPLING METHOD

OPVC Disposable Bailer    Time Sampled  
 OTeflon Bailer    (24 hr)  
 Other: \_\_\_\_\_    ~~1237~~

1227

### WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)
<u>2</u>	<u>1223</u>	<u>71.7</u>	<u>7.04</u>	<u>1.11</u>
<u>4</u>	<u>1224</u>	<u>71.8</u>	<u>7.03</u>	<u>1.02</u>
<u>6</u>	<u>1225</u>	<u>71.5</u>	<u>7.00</u>	<u>1.06</u>

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
TPH-G/BTEX	<u>3</u>	VOA's	HCl
TPH- Diesel		Amber Liter	
TOG 5520 BF		Amber Liter	H <sub>2</sub> NO <sub>3</sub>





# Birch Technical Services

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

# GROUND-WATER SAMPLING FORM

Well Number: MW-7

Project Number: 10-025<sup>024</sup>  
 Station Number: BP 11132  
 Date: 7/3/92

Well Type:  Monitor  Extraction  \_\_\_\_\_

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 (BOW) 34.44' Initial Water Level: 20.28'  
 Total Volume Purged: 7 Time Elapsed: 14

**PURGE METHOD:**  
 Honda Pump  
 Disposable Poly Tubing (36 ft)  
 Disposable PVC Bailer(s) (\_\_\_\_)  
 Other \_\_\_\_\_

**Calculated Purge Volume:**  

$$\frac{34.44 - 20.28}{1} = 14.21 \times 0.1632 = 2.32 \times 3 = 6.9 \text{ (gallons)}$$
 Total Depth Water Level Well Vol. Fac. #of vol. to Purge Calculated Purge Volume

### Subjective Analysis Prior to Purging

SHEEN Depth of Product Emulsion  
 O Yes  No \_\_\_\_\_ (ft) O Yes  No \_\_\_\_\_

COMMENTS:

### PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 10:24  
 Solution pH 4.00 4 at 70.6 °C  
 Solution pH 10.00 10 at 70.6 °C  
 Solution pH 7.00 7 at 70.6 °C  
 Water Level Meter#: 10337

### SAMPLING METHOD

PVC Disposable Bailer Time Sampled  
 Teflon Bailer (24 hr)  
 Other: \_\_\_\_\_ 12:20

### WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)
1	1206	75.4	7.05	1.23
3	1208	73.6	7.16	1.28
5	1211	72.9	7.15	1.26
7	1215	72.7	7.14	1.26

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
X TPH-G/BTEX	3	VOA's	HCl
TPH- Diesel		Amber Liter	
TOG 5520 BF		Amber Liter	H <sub>2</sub> NO <sub>3</sub>





# Birch Technical Services

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

# GROUND-WATER SAMPLING FORM

Well Number: MW-10

Project Number: 10-024

Well Type:  Monitor     Extraction     \_\_\_\_\_

Station Number: BP11132

Date: 7/3/92

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 (BOW) 34.00'    Initial Water Level: 19.92'

Total Volume Purged: 8 gal    Time Elapsed: 5 min

### PURGE METHOD:

Honda Pump  
 Disposable Poly Tubing (35 ft)  
 Disposable PVC Bailer(s) (\_\_\_\_)  
 Other \_\_\_\_\_

### Calculated Purge Volume:

$$\frac{34.00}{\text{Total Depth}} - \frac{19.92}{\text{Water Level}} = \frac{14.08}{\text{Well Vol. Fac.}} \times 0.1632 = \frac{2.29}{\text{#of vol. to Purge}} \times 3 = \frac{6.9}{\text{Calculated Purge Volume}} \text{ (gallons)}$$

### Subjective Analysis Prior to Purging

### PARAMETER EQUIPMENT CALIBRATION

SHEEN    Depth of Product    Emulsion  
 Yes  No    \_\_\_\_\_ (ft)     Yes  No

pH Meter #: 9112    Time: 1024

Solution    pH 4.00 4 at 70.6 °C

Solution    pH 10.00 10 at 70.6 °C

Solution    pH 7.00 7 at 70.6 °C

Water Level Meter#: 10337

### COMMENTS:

### SAMPLING METHOD

PVC Disposable Bailer    Time Sampled  
 Teflon Bailer    \_\_\_\_\_  
 Other: \_\_\_\_\_    1250 <sup>(24 hr)</sup>

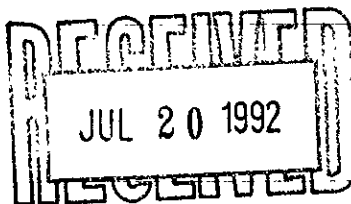
### WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp °C	pH	Cond. (umhos/cm)
<del>X</del> 1	1245	75.4	6.84	1.47
<del>H</del> 2	1246	73.2	6.72	1.71
4	1247	72.7	6.74	1.70
6	1248	71.9	6.67	1.61
8	1249	72.1	6.67	1.56

Analysis Required	No. of	Container Type	Preservatives
EPA 601		VOA's	
<del>X</del> TPH-G/BTEX	3	VOA's	HCl
TPH- Diesel		Amber Liter	
TOG 5520 BF		Amber Liter	H <sub>2</sub> NO <sub>3</sub>

**APPENDIX B**

**LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS**



MR. BRADY NAGLE  
 ALISTO ENGINEERING GROUP  
 1000 BURNETT AVENUE, SUITE 150  
 CONCORD, CA 94520

Workorder # : 9207049  
 Date Received : 07/06/92  
 Project ID : 10-024  
 Purchase Order: N/A

The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9207049- 1	MW-3
9207049- 2	MW-4
9207049- 3	MW-5
9207049- 4	MW-6
9207049- 5	MW-7
9207049- 6	MW-8
9207049- 7	MW-9
9207049- 8	MW-10

This report consists of 5 pages not including the cover letter, and is organized in sections according to the specific Anamatrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anamatrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

Anamatrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234. A detailed list of the approved fields of testing can be obtained by calling our office, or the DHS Environmental Laboratory Accreditation Program at (415)540-2800.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.

*Larry Test for*  
 \_\_\_\_\_  
 Sarah Schoen, Ph.D.  
 Laboratory Director

07-17-92  
 Date

REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. BRADY NAGLE  
ALISTO ENGINEERING GROUP  
1000 BURNETT AVENUE, SUITE 150  
CONCORD, CA 94520

Workorder # : 9207049  
Date Received : 07/06/92  
Project ID : 10-024  
Purchase Order: N/A  
Department : GC  
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9207049- 1	MW-3	WATER	07/03/92	TPHg/BTEX
9207049- 2	MW-4	WATER	07/03/92	TPHg/BTEX
9207049- 3	MW-5	WATER	07/03/92	TPHg/BTEX
9207049- 4	MW-6	WATER	07/03/92	TPHg/BTEX
9207049- 5	MW-7	WATER	07/03/92	TPHg/BTEX
9207049- 6	MW-8	WATER	07/03/92	TPHg/BTEX
9207049- 7	MW-9	WATER	07/03/92	TPHg/BTEX
9207049- 8	MW-10	WATER	07/03/92	TPHg/BTEX



REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. BRADY NAGLE  
ALISTO ENGINEERING GROUP  
1000 BURNETT AVENUE, SUITE 150  
CONCORD, CA 94520

Workorder # : 9207049  
Date Received : 07/06/92  
Project ID : 10-024  
Purchase Order: N/A  
Department : GC  
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for these samples.

Clifford P. ... 7/17/92  
Department Supervisor Date

Lucea Shor 7/17/92  
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9207049  
Matrix : WATER  
Date Sampled : 07/03/92

Project Number : 10-024  
Date Released : 07/16/92

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW-3	Sample I.D.# MW-4	Sample I.D.# MW-5	Sample I.D.# MW6	Sample I.D.# MW-7
Benzene	0.5	9.4	ND	36	ND	ND
Toluene	0.5	0.9	ND	ND	ND	ND
Ethylbenzene	0.5	5.0	ND	ND	ND	ND
Total Xylenes	0.5	13	ND	1.1	ND	ND
TPH as Gasoline	50	71	ND	150	ND	ND
% Surrogate Recovery		98%	99%	105%	109%	125%
Instrument I.D.		HP4	HP4	HP4	HP4	HP4
Date Analyzed		07/10/92	07/10/92	07/10/92	07/10/92	07/13/92
RLMF		1	1	1	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Laura Shor 7/17/92  
Analyst Date

Cheryl Balmer 7/16/92  
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9207049  
Matrix : WATER  
Date Sampled : 07/03/92

Project Number : 10-024  
Date Released : 07/16/92

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW-8	Sample I.D.# MW-9	Sample I.D.# MW10	Sample I.D.# BL1001E2	Sample I.D.# BL1301E2
Benzene	0.5	19000	1700	5100	ND	ND
Toluene	0.5	32000	840	1300	ND	ND
Ethylbenzene	0.5	3000	230	180	ND	ND
Total Xylenes	0.5	15000	800	690	ND	ND
TPH as Gasoline	50	72000	5700	8600	ND	ND
% Surrogate Recovery		103%	104%	103%	113%	107%
Instrument I.D.		HP4	HP4	HP4	HP4	HP4
Date Analyzed		07/13/92	07/10/92	07/10/92	07/10/92	07/13/92
RLMF		500	100	100	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Anam Shor 7/17/92  
Analyst Date

Cheryl Bolman 7/16/92  
Supervisor Date

BTEX MATRIX SPIKE REPORT  
 EPA METHOD 5030 WITH GC/PID  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 10-024 MW-6  
 Matrix : WATER  
 Date Sampled : 07/03/92  
 Date Analyzed : 07/10/92

Anamatrix I.D.: 9207049-04  
 Analyst : IS  
 Supervisor : CP  
 Date Released : 07/16/92  
 Instrument ID : HP4

COMPOUND	SPIKE AMT. (ug/L)	MS (ug/L)	REC MS	MSD (ug/L)	REC MSD	RPD	%REC LIMITS
Benzene	20	22.0	110%	20.0	100%	-10%	49-159
Toluene	20	19.0	95%	18.0	90%	-5%	53-156
Ethylbenzene	20	19.0	95%	18.0	90%	-5%	54-151
M+P-Xylenes	13.3	11.4	86%	10.8	81%	-5%	56-157
O-Xylene	6.7	7.3	109%	6.6	99%	-10%	58-154
P-BFB			93%		109%		53-147%

\* Limits established by Anamatrix, Inc.



9207049

(8)

20:20 MA  
**CHAIN-OF-CUSTODY RECORD**

PROJECT NUMBER		PROJECT NAME				Number of Cntrns	Type of Containers	Type of Analysis						Condition of Samples	Initial
10-024		BP11132						PH66BTEX							
Send Report Attention of:			Report Due		Verbal Due										
BRADY NAGLE			7/20/92		7/20/92										
Sample Number	Date	Time	Comp	Matrix	Station Location										
① MW-3	7/3/92	1122		W		3	VOA'S	X							
② MW-4	"	1145		W		3	"	X							
③ MW-5	"	1227		W		3	"	X							
④ MW-6		1050		W		3	"	X							
⑤ MW-7		1220		W		3	"	X							
⑥ MW-8		1335		W		3	"	X							
⑦ MW-9		1315		W		3	"	X							
⑧ MW-10		1250		W		3	"	X							
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Remarks: Please fax a copy of this chain of custody to Brady @ 510 798 4099							
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time									
Relinquished by: (Signature)		Date/Time		Received by Lab:		Date/Time									
[Signature]		7/6/92		[Signature]		7/6/92		COMPANY: ALISTO ENGINEERING GROUP							
		2000				2000		ADDRESS: 510 798 4070 FAX: 510 798 4099							