BP OIL

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

February 26, 1992

Mr. Rafat Sahid
Alameda County Department of Health Services
80 Swan Way, #200
Oakland, California 94621

2220 98th Ave. 94603

RE: BP FACILITY #11133
~~3201 35th AVENUE~~
~~OAKLAND, CALIFORNIA~~

Dear Mr. Shahid,

Attached please find the results of the Quarterly Ground Watering and Sampling Report for the above referenced facility.

Please call me at 916/631-6919 with any questions regarding this submission.

Respectfully,

Peter J. DeSantis

Peter J. DeSantis
Environmental Resources Management

PJD:lk

Attachment

cc: CONSULTANT
Tom Callaghan-Regional Water Quality Control Board
Dave Baker-Mobil Oil Corporation
Site file

QUARTERLY GROUND WATER MONITORING AND SAMPLING REPORT

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

Project No. 30-0080-01

Prepared for:

BP Oil Company
Aetna Building, Suite 360
Rancho Cordova, California 95670-6020

Prepared by:

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, California 94588

February 21, 1992

QUARTERLY GROUND WATER MONITORING AND SAMPLING REPORT

BP Oil Service Station No. 11133
3201 35th Avenue
Oakland, California

2220 98th Ave. Oakland

INTRODUCTION

This report presents a summary of the December 1991 quarterly ground water monitoring and sampling activities performed by Alton Geoscience at BP Oil Service Station No. 11133, 2220 98th Avenue, Oakland, California. A site vicinity map is presented in Figure 1 and a site plan is presented in Figure 2.

PROJECT BACKGROUND

In June 1987, three underground gasoline storage tanks were removed from the site. Soil samples were collected from the soil below the tank excavation. Analysis of the soil samples indicated total petroleum hydrocarbons (TPH) at levels ranging from 12 to 420 parts per million (ppm). In May 1988, a consultant was retained by Mobil Oil Corporation to install three monitoring wells (MW-1, MW-2, and MW-3) to assess ground water quality.

BP Oil Company subsequently retained Alton Geoscience to conduct a supplemental site investigation. Between May and June 1990, Alton Geoscience supervised the drilling of five soil borings which were converted into four monitoring wells (AW-1 through AW-4) and one recovery well (RW-1).

Free-floating product was encountered in two of the wells (RW-1 and MW-1), while dissolved-phase petroleum hydrocarbon constituents were detected in ground water samples collected from three of the wells (AW-1, AW-3, and AW-4).

The extent of the hydrocarbon plume in the ground water beneath the site was not adequately defined at that time. It was therefore proposed that an additional site investigation be conducted to define the extent of hydrocarbons in the ground water and develop appropriate remedial measures.

On February 27 and 28, 1991, Alton Geoscience supervised the drilling of two onsite and two offsite soil borings. The soil borings were converted into Monitoring Wells AW-5, AW-6, AW-7, and AW-8. Free-floating product was encountered in MW-1, while dissolved-phase petroleum hydrocarbon constituents were detected in ground water samples from eight of the wells (MW-2, AW-1, AW-3, AW-4, AW-5, AW-6, AW-7, and AW-8).

In March 1991, a quarterly ground water monitoring and sampling program was implemented by Alton Geoscience along with manual pumpout of free product.

FIELD PROCEDURES

On December 11, 1991, Alton Geoscience performed quarterly ground water monitoring of all wells at the site and sampled Monitoring Wells MW-2, MW-3, and AW-1 through AW-8. The wells were monitored and sampled in accordance with Alton Geoscience's procedures and the requirements and guidelines of the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) and Alameda County Department of Health Services (ACDHS). Ground water sampling field procedures are presented in Appendix A. Locations of monitoring wells are shown in Figure 2.

Ground water samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G), and benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituents at Superior Precision Analytical, Inc., Martinez, California. Official laboratory reports and chain of custody records are presented in Appendix B.

DISCUSSION OF RESULTS

The laboratory results for this and previous quarterly ground water monitoring and sampling events are summarized in Tables 1 and 2. A ground water elevation map, based on the depth to ground water measurements collected on December 11, 1991, is shown in Figure 3. Concentrations of petroleum hydrocarbon constituents detected in the ground water samples are presented in Figure 4.

Results of this ground water monitoring and laboratory analysis indicate the following:

- Based on water level measurements recorded on December 11, 1991, the ground water gradient was estimated to be approximately 0.015 foot per foot to the southwest.
- Ground water measurements obtained from MW-1, MW-2, AW-1, AW-2, and RW-1 were not used in developing the ground water elevation contour map due to anomalous water level readings.
- Free-floating product was encountered in MW-1 (approximately 0.12 foot) and RW-1 (approximately 0.68 foot).* The product was pumped out to trace concentrations following monitoring.
- The equivalent ground water surface elevation for RW-1 was calculated assuming a specific gravity of 0.75 for free product.
- TPH-G was not detected in ground water samples collected from AW-2, AW-5, AW-6, AW-7, AW-8, and MW-3 above reported detection limits.

- The highest concentrations of TPH-G and benzene were detected in the water samples collected from offsite Monitoring Well AW-4 (190,000 ppb and 50,000 ppb, respectively).

- Analysis of ground water samples over the last two quarters suggests that TPH-G and benzene concentrations detected in Monitoring Well AW-3, which is upgradient from the suspected tank cavity release source, may be reflective of an offsite source of dissolved-phase hydrocarbons.

ALTON GEOSCIENCE

Mamdouh Awwad
Project Civil Engineer

Robert E. Logan, R.G. 5088
Manager Northern California Operations

Source: U.S.G.S. Map, San Leandro, California
Quadrangle 7.5 minute Series.

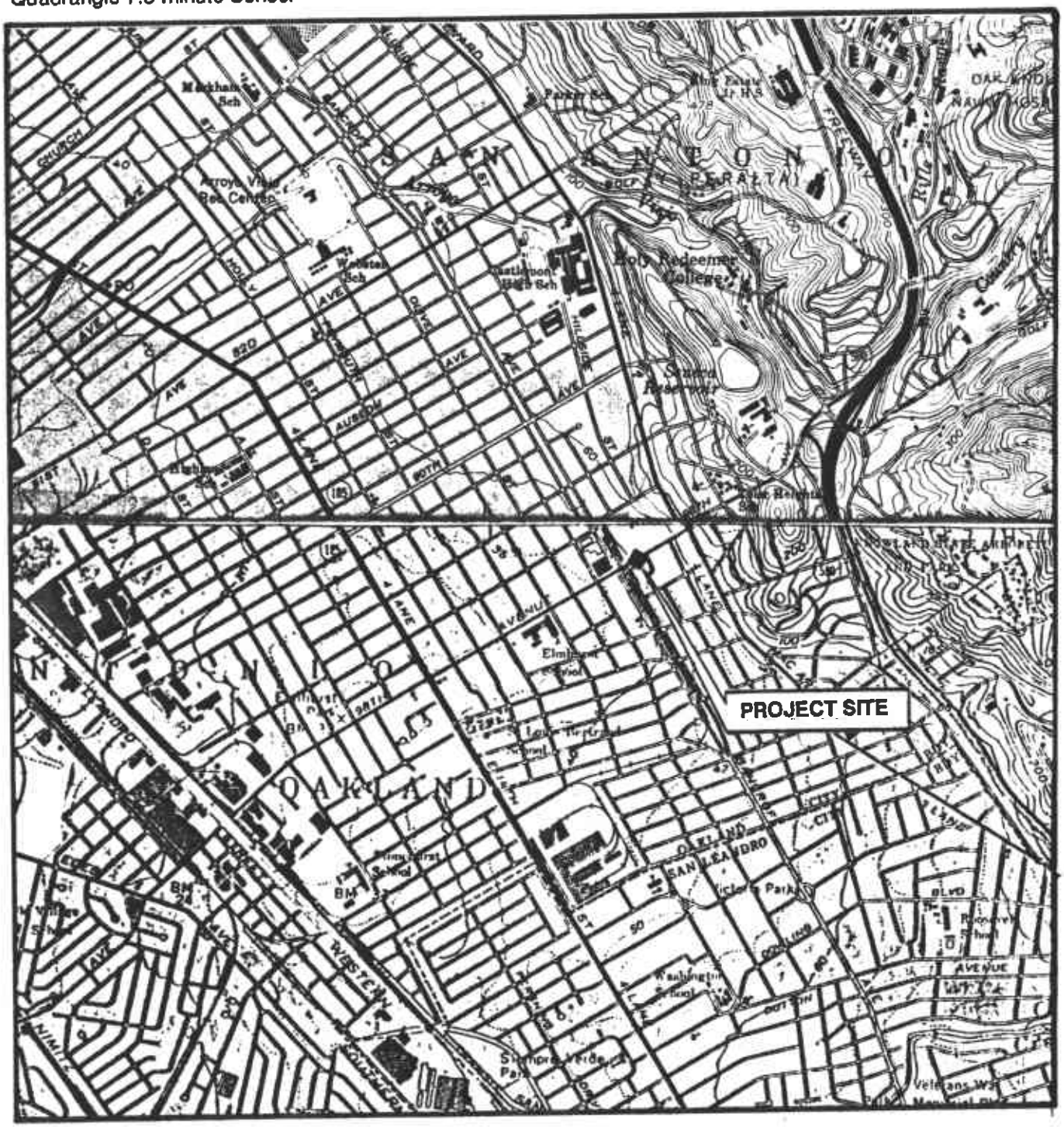


FIGURE 1

SITE VICINITY MAP

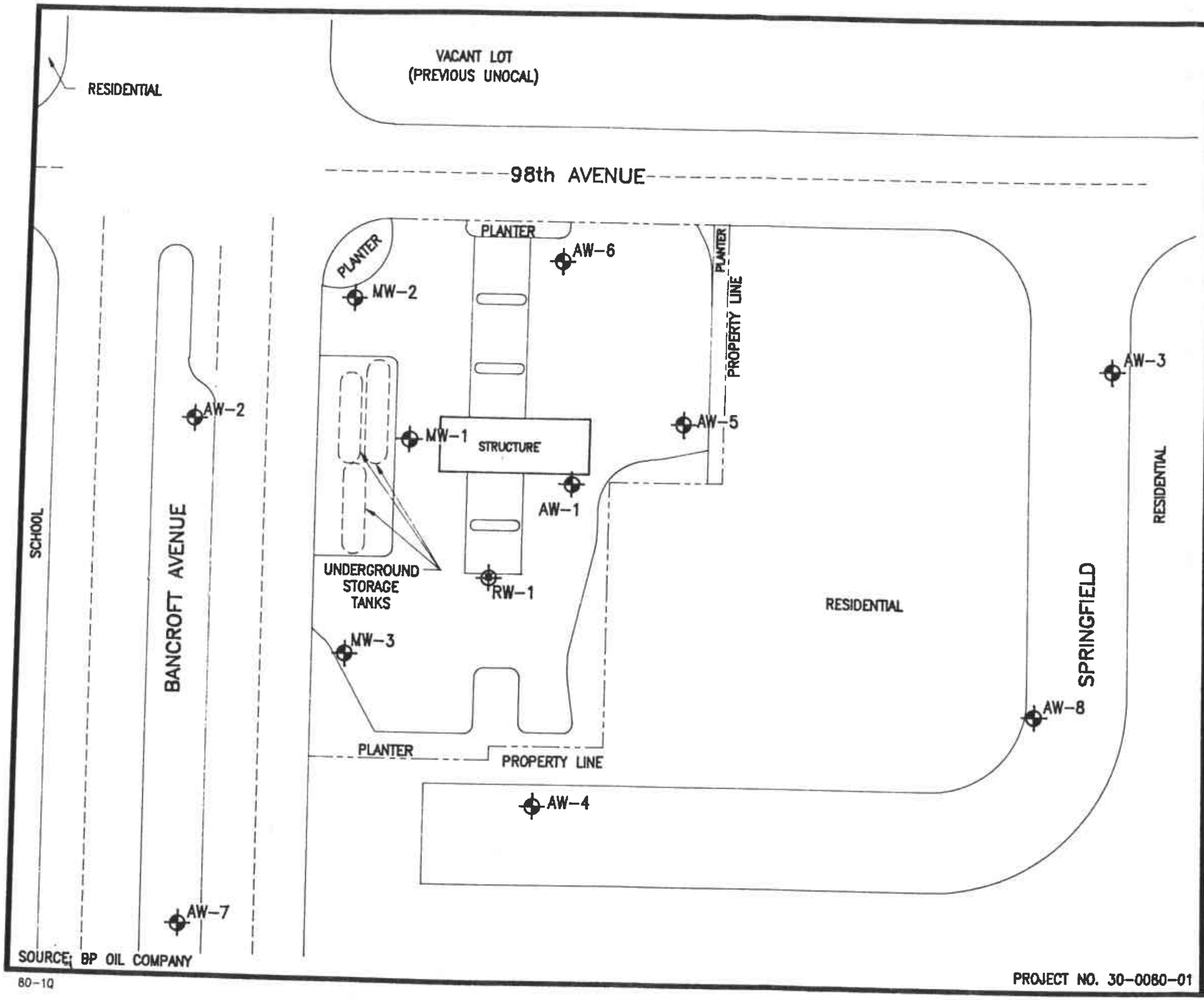
0 1000 2000

SCALE IN FEET

B P SERVICE STATION NO. 11133
2220 98TH AVENUE
OAKLAND, CALIFORNIA

PROJECT NO. 30-080-01

ALTON GEOSCIENCE
1000 Burnett Ave., Ste 140
Concord, CA 94520



N

0 15 30

APPROXIMATE SCALE IN FEET

LEGEND:

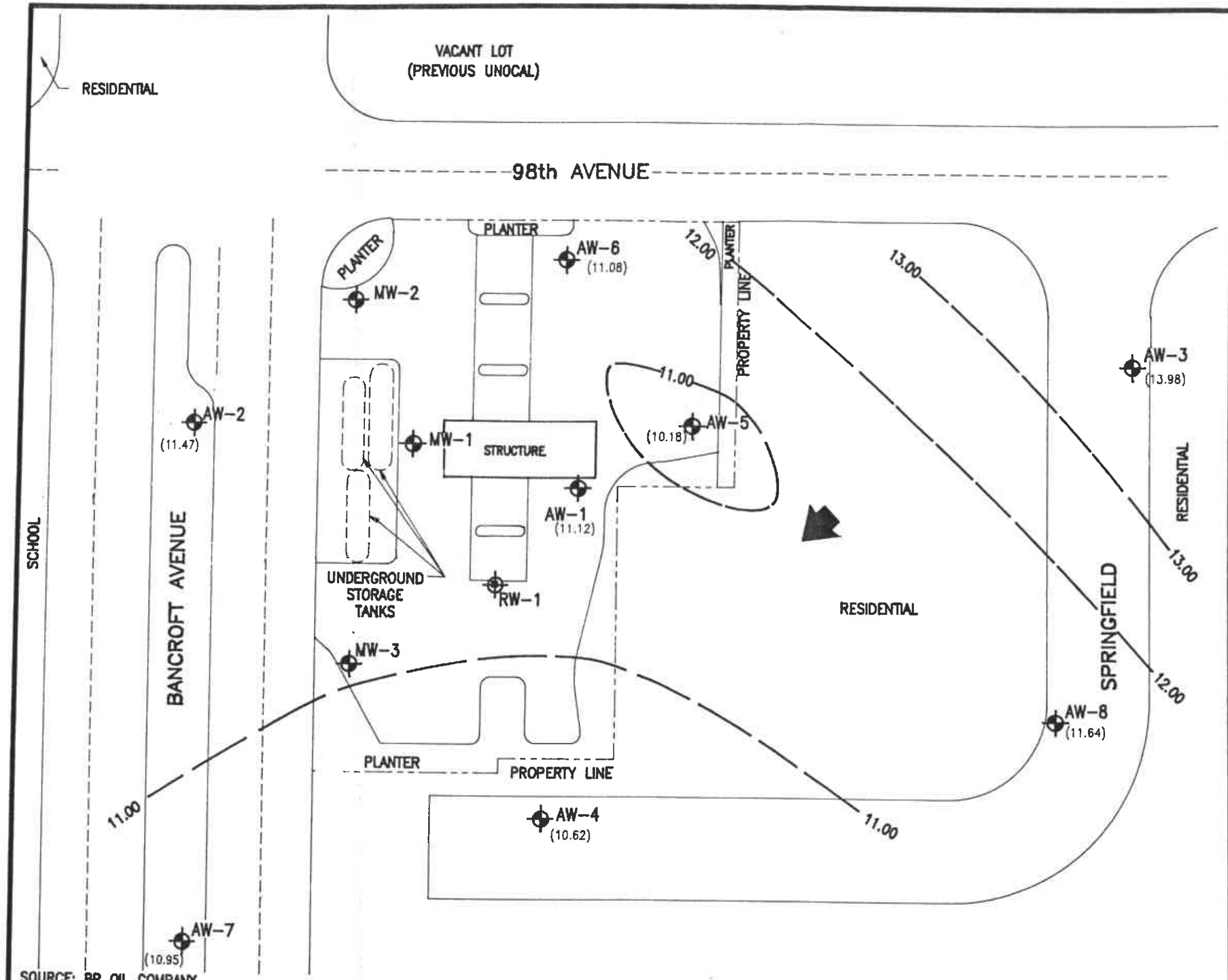
- MONITORING WELL
- RECOVERY WELL

FIGURE 2: SITE PLAN

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

ALTON GEOSCIENCE
1000 Burnett Ave. Ste. 140
Concord, California

2/92



N

0 15 30

APPROXIMATE SCALE IN FEET

LEGEND:

- MONITORING WELL
- RECOVERY WELL
- (12.51) GROUND WATER ELEVATION
- 13.50 GROUND WATER ELEVATION CONTOUR LINE
- GENERAL DIRECTION OF GROUND WATER GRADIENT

NOTE:
1. CONTOUR LINES ARE INTERPRETIVE BASED ON WATER LEVELS IN MONITORING WELLS MEASURED ON DECEMBER 11, 1991.
2. CONTOUR INTERVAL = 1.0 FOOT.
3. APPROXIMATE GROUND WATER GRADIENT IS 0.015 FOOT/FOOT.
4. GROUND WATER ELEVATION FOR MW-1, MW-2 & MW-3 WERE NOT USED DUE TO ANOMALOUS WATER LEVEL READINGS.
5. GROUND WATER ELEVATION FOR RW-1 WAS NOT USED DUE TO THE PRESENCE OF MORE THAN 0.25 FOOT OF FREE FLOATING PRODUCT.

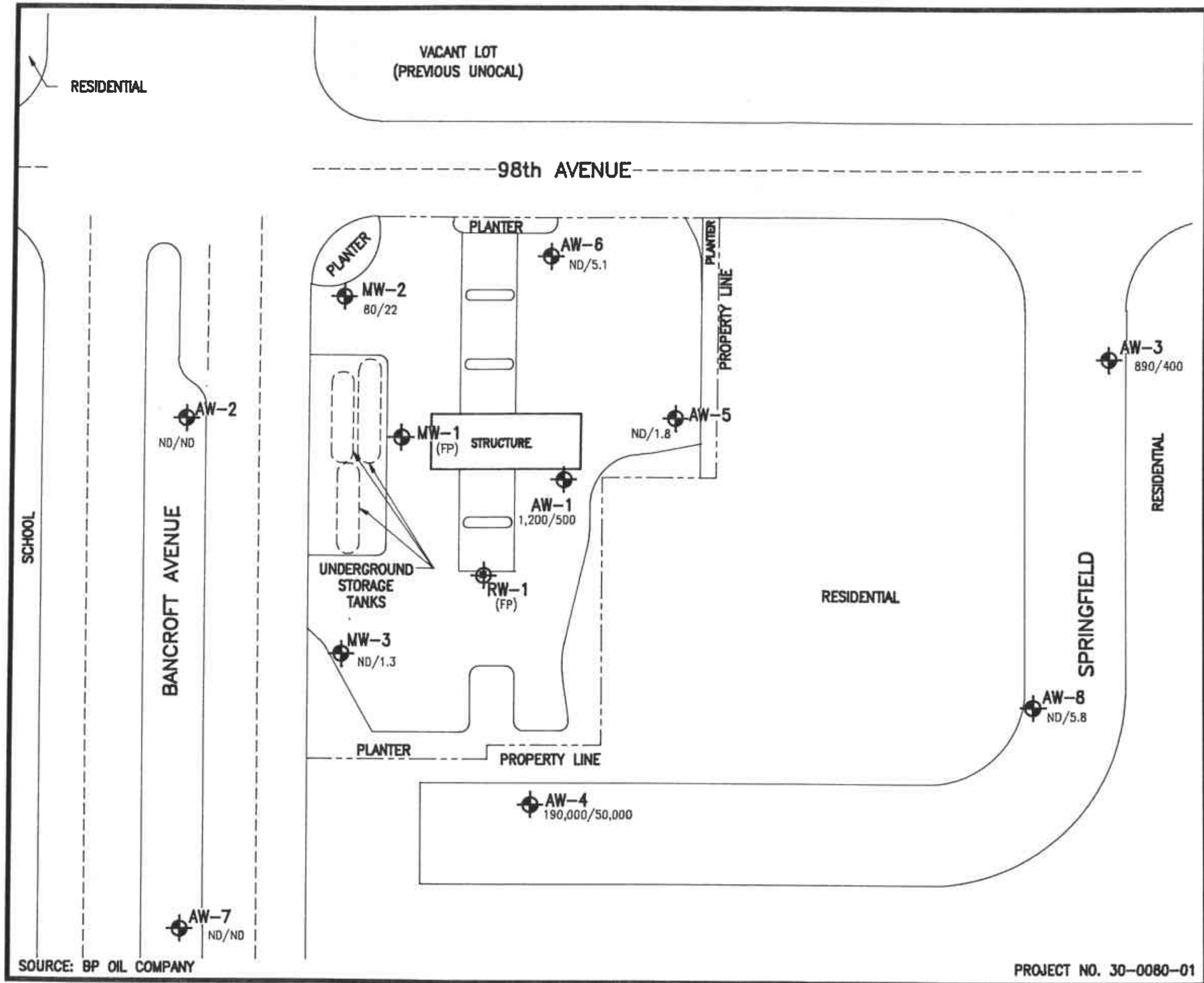
FIGURE 3: GROUND WATER ELEVATION CONTOUR MAP

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

ALTON GEOSCIENCE
1000 Burnett Ave. Ste. 140
Concord, California

80-10

2/92



0 15 30

APPROXIMATE SCALE IN FEET

LEGEND:

⊕	MONITORING WELL
⊕	RECOVERY WELL
ND	NOT DETECTED AT OR ABOVE METHOD DETECTION LIMITS
FP	FREE PRODUCT
TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
80/22	TPH-G/BENZENE CONCENTRATIONS IN PARTS PER BILLION (ppb)

FIGURE 4: ANALYTICAL RESULTS OF GROUND WATER SAMPLES

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

ALTON GEOSCIENCE
1000 Burnett Ave. Ste. 140
Concord, California

TABLE 1

SURVEY AND WATER LEVEL MONITORING DATA
December 1991

Well ID	Well Elevation (Feet)*	Date	Depth to Water (Feet)	Free Product Thickness (Feet)	Ground Water Elevation (Feet)*
MW-1	37.33	01-90	18.07	0.2	18.22**
MW-1	37.33	07-90	13.31	0.22	13.48**
MW-1	37.33	03-91	N.M.	N.M.	N.C.
MW-1	37.33	06-91	14.76	globules	22.57
MW-1	37.33	09-91	14.79	0.15	22.54**
MW-1	37.33	12-91	15.98	0.12	21.44**
MW-2	36.36	01-90	25.65	----	10.71
MW-2	36.36	07-90	23.15	----	13.21
M2-2	36.36	03-91	16.62	----	19.74
MW-2	36.36	06-91	17.87	----	18.49
MW-2	36.36	09-91	18.05	----	18.31
MW-2	36.36	12-91	18.62	----	17.74
MW-3	37.40	01-90	24.16	----	13.24
MW-3	37.40	07-90	23.06	----	14.34
MW-3	37.40	03-91	17.84	----	19.56
MW-3	37.40	06-91	21.05	----	16.35
MW-3	37.40	09-91	21.88	----	15.52
MW-3	37.40	12-91	22.21	----	15.19

Note:

* Elevation in feet relative to a common datum (AW-3) with an assumed elevation of 40.00 feet above mean sea level, as measured on July 5, 1990 by Alton Geoscience. Monitoring Wells AW-1, AW-2, and AW-4 were used as reference bench marks for survey performed April 5, 1991.

** Equivalent ground water surface elevation for MW-1 was calculated assuming a specific gravity of 0.75 for free product

N.M. Not Measured

N.C. Not Calculated

---- No Free Product Encountered

TABLE 1
(cont'd)

SURVEY AND WATER LEVEL MONITORING DATA
December 1991

Well ID	Well Elevation (Feet)*	Date	Depth to Water (Feet)	Free Product Thickness (Feet)	Ground Water Elevation (Feet)*
AW-1	38.99	07-90	26.87	----	12.12
AW-1	38.99	03-91	25.44	----	13.55
AW-1	38.99	06-91	25.73	----	13.26
AW-1	38.99	09-91	27.37	----	11.62
AW-1	38.99	12-91	27.87	----	11.12
AW-2	37.69	07-90	24.88	----	12.81
AW-2	37.69	03-91	22.36	----	15.33
AW-2	37.69	06-91	24.27	----	13.42
AW-2	37.69	09-91	25.72	----	11.97
AW-2	37.69	12-91	26.22	----	11.47
AW-3	40.00	07-90	24.75	----	15.25
AW-3	40.00	03-91	23.90	----	16.10
AW-3	40.00	06-91	24.00	----	16.00
AW-3	40.00	09-91	25.42	----	14.58
AW-3	40.00	12-91	26.02	----	13.98
AW-4	39.36	07-90	27.29	----	12.07
AW-4	39.36	03-91	25.12	----	14.88
AW-4	39.96	06-91	26.57	----	13.39
AW-4	39.36	09-91	28.19	----	11.81
AW-4	39.36	12-91	28.74	----	10.62
AW-5	39.35	03-91	25.48	----	13.87
AW-5	39.35	06-91	27.24	----	12.11
AW-5	39.35	09-91	28.69	----	10.66
AW-5	39.35	12-91	29.17	----	10.18

Note:

* Elevation in feet relative to a common datum (AW-3) with an assumed elevation of 40.00 feet above mean sea level, as measured on July 5, 1990 by Alton Geoscience. Monitoring Wells AW-1, AW-2, and AW-4 were used as reference bench marks for survey performed April 5, 1991.

---- No Free Product Encountered

TABLE 1
(cont'd)

SURVEY AND WATER LEVEL MONITORING DATA
December 1991

Well ID	Well Elevation (Feet)*	Date	Depth to Water (Feet)	Free Product Thickness (Feet)	Ground Water Elevation (Feet)*
AW-6	37.93	03-91	22.48	----	15.45
AW-6	37.95	06-91	23.39	----	14.56
AW-6	37.95	09-91	25.40	----	12.53
AW-6	37.95	12-91	26.87	----	11.08
AW-7	38.17	03-91	23.38	----	14.79
AW-7	38.17	06-91	25.23	----	12.94
AW-7	38.17	09-91	26.70	----	11.47
AW-7	38.17	12-91	27.22	----	10.95
AW-8	41.74	03-91	26.68	----	15.06
AW-8	41.74	06-91	27.29	----	13.95
AW-8	41.74	09-91	29.23	----	12.51
AW-8	41.74	12-91	30.10	----	11.64
RW-1	38.60	03-91	N.M.	N.M.	N.C.
RW-1	38.60	06-91	28.46	0.40	10.44**
RW-1	38.60	09-91	28.69	1.19	9.91**
RW-1	38.60	12-91	30.32	0.68	8.79**

Note:

* Elevation in feet relative to a common datum (AW-3) with an assumed elevation of 40.00 feet above mean sea level, as measured on July 5, 1990 by Alton Geoscience. Monitoring Wells AW-1, AW-2, and AW-4 were used as reference bench marks for survey performed April 5, 1991.

** Equivalent ground water surface elevation for RW-1 was calculated assuming a specific gravity of 0.75 for free product.

N.M. Not Measured

N.C. Not Calculated

---- No Free Product Encountered

TABLE 2

RESULTS OF
LABORATORY ANALYSIS OF GROUND WATER SAMPLES
December 1991

Well ID	Date	TPH-G	B	T	E	X
		(Concentrations in Parts per Billion)				
MW-1	1-24-90	---	---	---	---	---
MW-1	7-09-90	---	---	---	---	---
MW-1	3-08-91	---	---	---	---	---
MW-1	6-28-91	---	---	---	---	---
MW-1	9-26-91	---	---	---	---	---
MW-1	12-11-91	---	---	---	---	---
MW-2	1-24-90	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-2	7-09-90	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-2	3-08-91	ND<50	0.6	0.9	ND<0.3	ND<0.3
MW-2	6-28-91	ND<50	1.2	0.7	ND<0.3	0.5
MW-2	9-26-91	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
MW-2	12-11-91	80	22	12	4.1	9.5
MW-3	1-24-90	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-3	7-09-90	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-3	3-08-91	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
MW-3	6-28-91	ND<50	2.1	1.1	ND<0.3	0.7
MW-3	9-26-91	ND<50	0.4	1.3	0.4	1.6
MW-3	12-11-91	ND<50	1.3	ND<0.3	ND<0.3	ND<0.3
AW-1	7-09-90	66	1	ND<0.5	ND<0.5	ND<0.5
AW-1	3-08-91	ND<50	1,500	69	100	83
AW-1	6-28-91	1,700	860	53	38	51
AW-1	9-26-91	3,500	1,500	120	100	170
AW-1	12-11-91	1,200	500	16	43	26

Notes:

TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
ND = Not Detected at Method Detection Limit
--- = No sample collected from MW-1 due to the presence of free product

TABLE 2
(cont'd)

RESULTS OF
LABORATORY ANALYSIS OF GROUND WATER SAMPLES
December 1991

Well ID	Date	TPH-G	B	T	E	X
		(Concentrations in Parts per Billion)				
AW-2	7-09-90	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
AW-2	3-08-91	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
AW-2	6-28-91	ND<50	0.8	0.4	ND<0.3	0.5
AW-2	9-26-91	ND<50	0.3	0.8	0.4	1.3
AW-2	12-11-91	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
AW-3	7-09-90	88	1.9	ND<0.5	ND<0.5	42
AW-3	3-08-91	5,200	980	450	95	310
AW-3	6-28-91	5,100	2,900	110	110	220
AW-3	9-26-91	890	340	18	26	33
AW-3	12-11-91	890	400	21	32	47
AW-4	7-09-90	38,000	18,000	2,300	1,500	2,000
AW-4	3-08-91	10,000	40,000	13,000	2,000	5,500
AW-4	6-28-91	130,000	56,000	12,000	2,500	5,800
AW-4	9-26-91	120,000	49,000	13,000	2,900	6,800
AW-4	12-11-91	190,000	50,000	20,000	4,400	14,000
AW-5	3-08-91	420	31	7.5	20	68
AW-5	6-28-91	840	83	4.2	71	70
AW-5	9-26-91	ND<50	15	ND<0.3	4.1	0.5
AW-5	12-11-91	ND<50	1.8	ND<0.3	0.6	0.3
AW-6	3-08-91	1,100	80	19	1.4	230
AW-6	6-28-91	54	11	2.4	0.8	2.1
AW-6	9-26-91	ND<50	0.4	ND<0.3	ND<0.3	ND<0.3
AW-6	12-11-91	ND<50	5.1	2.1	1.3	2.9

Notes:

TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
ND = Not Detected at Method Detection Limit

TABLE 2
(cont'd)

RESULTS OF
LABORATORY ANALYSIS OF GROUND WATER SAMPLES
December 1991

Well ID	Date	TPH-G	B	T	E	X
		(Concentrations in Parts per Billion)				
AW-7	3-08-91	ND<50	0.4	0.7	ND<0.3	ND<0.3
AW-7	6-28-91	ND<50	0.4	ND<0.3	ND<0.3	ND<0.3
AW-7	9-26-91	ND<50	ND<0.3	1.0	0.5	2.1
AW-7	12-11-91	ND<50	ND<0.3	ND<0.3	ND<0.3	0.6
AW-8	3-08-91	80	1.9	2.2	0.5	1.3
AW-8	6-28-91	ND<50	0.7	0.4	ND<0.3	0.4
AW-8	9-26-91	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
AW-8	12-11-91	ND<50	5.8	ND<0.3	1.0	1.6
RW-1	3-08-91	---	---	---	---	---
RW-1	6-28-91	---	---	---	---	---
RW-1	9-26-91	---	---	---	---	---
RW-1	12-11-91	---	---	---	---	---

Notes:

TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
ND = Not Detected at Method Detection Limit
--- = No sample collected from RW-1 due to the presence of free product

APPENDIX A

GROUND WATER SAMPLING FIELD PROCEDURES
AND
GROUND WATER SAMPLING FIELD SURVEY FORMS

APPENDIX A

GROUND WATER SAMPLING FIELD PROCEDURES

Prior to purging and sampling, total well depth and depth to ground water were measured from a reference mark at the top of each well casing to the nearest 0.01 foot using an electronic sounder. Ground water was examined, using a hand bailer, for the presence of free-floating product or sheen. Prior to sample collection, each well was purged of the required well casing volumes and until stabilization of pH, temperature, and conductivity was achieved. Each sample was collected using a clean bailer and transferred to the appropriate clean sample containers for delivery to a California certified laboratory following proper preservation and chain of custody procedures. Purged ground water was stored onsite in DOT-approved, 55-gallon drums pending analytical results and proper offsite disposal.

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # AW-1 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 27.77 ft

TOTAL DEPTH 38.52 ft

HT. WATER COL 10.65 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 1.70 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 5.10 gal

Begin 1357

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
46.2	5.68	8.07	1400	Clear	1
48.1	5.53	7.81	1403	"	2
45.4	5.41	7.69	1406	Lt Grey	3
45.7	5.44	7.57	1408	"	4
45.5	5.47	7.53	1410	"	5

Sampled 1413 ACTUAL VOLUME PURGED 5.25 /gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # AW-2 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 26.22 ft

TOTAL DEPTH 35.46 ft

HT. WATER COL 9.24 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 1.48 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 4.44 gal

Begin 1205

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
55.4	4.49	9.18	1213	Lt Brown, silty	.80
55.2	3.65	9.18	1217	" "	1.60
54.7	3.49	9.05	1220	" "	2.40
54.2	3.74	8.98	1222	" "	3.20
54.0	3.69	8.94	1224	" "	4.00

Sampled 1229 ACTUAL VOLUME PURGED 4.50 /gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # AW-3 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 26.02 ft

TOTAL DEPTH 35.69 ft

HT. WATER COL 9.67 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 1.55 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 4.65 gal

Begin 1250

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
40.7	9.58	8.36	1253	Clear	.90
41.2	9.48	8.24	1256	" "	1.80
41.6	9.41	8.19	1259	" "	2.70
41.7	9.65	8.18	1300	" "	3.60
41.6	9.59	8.16	1301	" "	4.50

Sampled 1306

ACTUAL VOLUME PURGED 4.75 /gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # AW-4 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 28.74 ft

TOTAL DEPTH 32.88 ft

HT. WATER COL 4.14 ft

CONVERSION	
~~diam~~	~~gal/ft~~
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column .66 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 1.98 gal

Begin 1323

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
37.5	7.38	8.06	1326	Cloudy	.40
41.6	7.73	7.81	1329	"	.80
43.0	7.76	7.72	1332	Clear	1.20
46.1	7.65	7.79	1334	"	1.60
45.7	7.62	7.83	1337	"	2.00

Sampled 1339 ACTUAL VOLUME PURGED 2.00/gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # AW-5 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 29.17 ft

TOTAL DEPTH 42.81 ft

HT. WATER COL 13.64 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 8.87 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 26.61 gal

Begun 1439

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
43.74	2.92	8.42	1443	Clear	5
42.4	3.02	8.23	1448	"	10
43.1	3.10	8.18	1450	"	15
43.6	3.07	8.20	1455	Lt Brown	20
43.4	3.08	8.16	1500		25

Sampled 1505 ACTUAL VOLUME PURGED 26.75/gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # AW-6 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 26.87 ft

TOTAL DEPTH 34.17 ft

HT. WATER COL 7.30 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 4.75 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 14.25 gal

Begin 1414

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
40.8	3.22	8.05	1418	clear	2.50
42.2	3.07	8.02	1421	"	5.00
43.5	3.16	8.07	1424	"	7.50
44.1	3.28	8.09	1427	Lt Brown	10.00
44.4	3.20	8.06	1431	"	12.50

Sampled 1438 ACTUAL VOLUME PURGED 14.25/gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # AW-1 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 27.22 ft

TOTAL DEPTH 32.37 ft

HT. WATER COL 5.15 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column .82 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 2.46 gal

Bgn 1230

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
50.9	4.25	8.89	1234	Lt. Brown, Silty	.40
51.7	4.18	8.88	1237	"	.80
51.3	4.23	8.80	1239	" "	1.20
50.7	4.15	8.75	1241	" "	1.60
50.2	4.12	8.71	1243	" "	2.00

Sampled 1245 ACTUAL VOLUME PURGED 2.50 /gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # AW-8 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 30.10 ft

TOTAL DEPTH 39.19 ft

HT. WATER COL 9.09 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 1.45 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 4.35 gal

Begin 1307

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
35.7	7.73	8.33	1309	Lt Brown	.80
38.3	7.20	8.31	1311	Dark Brown, silty	1.60
42.2	7.85	8.29	1313	" "	2.40
42.5	7.77	8.32	1315	" "	3.20
42.7	7.74	8.30	1317	" "	4.00

Sampled 1322 ACTUAL VOLUME PURGED 4.50 /gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # MW-2 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 17.62 ft

TOTAL DEPTH 31.58 ft

HT. WATER COL 12.96 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 2.07 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 6.21 gal

Begin ~~1323~~ LCB 1341

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
47.0	1.31	8.95	1344	Lt Brown	1
51.1	1.28	9.04	1347	"	2
53.3	1.30	8.97	1349	"	3
53.7	1.40	8.91	1351	"	4
53.5	1.37	8.93	1352	"	5

Sampled 1356 ACTUAL VOLUME PURGED 6.25 /gal

COMMENTS:

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # MW-3 PROJECT# 30-0080-01 LOCATION Oakland DATE 12/11/91

SAMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

DECONTAMINATION METHOD: TRIPLE RINSE W/~~TSP~~ Alconox AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 22.21 ft

TOTAL DEPTH 34.17 ft

HT. WATER COL 11.96 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 1.91 gal

Volumes to Purge X 3 Vol

Total Volume to Purge 5.73 gal

Begin 1508

CHEMICAL DATA:

T (F)	SC/umhos X100	pH	Time	Comments	Volume (gal)
48.7	~~8.32~~ 8.37	8.32	1510	Clear	1
52.2	1.67	8.36	1513	"	2
52.2	1.70	8.40	1515	Lt Brown	3
52.4	1.69	8.43	1517	"	4
52.8	1.72	8.47	1519	"	5

Sampled 1523 ACTUAL VOLUME PURGED 5.75/gal

COMMENTS:

APPENDIX B

OFFICIAL LABORATORY REPORTS
AND
CHAIN OF CUSTODY RECORD

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

DEC 26 1991

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 84611
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-0080-01

DATE RECEIVED: 12/12/91
DATE REPORTED: 12/20/91
DATE SAMPLED : 12/11/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by MODIFIED EPA SW-846 METHOD 5030 and 8015

LAB #	Sample Identification	Concentration (ug/L) Gasoline Range
1	AW-2	ND<50
2	AW-7	ND<50
3	AW-3	890
4	AW-8	ND<50
5	MW-2	80
6	AW-1	1200
7	AW-6	ND<50
8	AW-5	ND<50
9	MW-3	ND<50
10	AW-4	190000

ug/L - parts per million (ppm)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery = 85% : Duplicate RPD = 7%

Richard Srna, Ph.D.
Laboratory Director

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

DEC 26 1991

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 84611
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-0080-01

DATE RECEIVED: 12/12/91
DATE REPORTED: 12/20/91
DATE SAMPLED : 12/11/91

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration (ug/L) Benzene	Toluene	Ethyl Benzene	Xylenes
1	AW-2	ND<0.3	ND<0.3	ND<0.3	ND<0.3
2	AW-7	ND<0.3	ND<0.3	ND<0.3	0.6
3	AW-3	400	21	32	47
4	AW-8	5.8	ND<0.3	1.0	1.6
5	MW-2	22	12	4.1	9.5
6	AW-1	500	16	43	26
7	AW-6	5.1	2.1	1.3	2.9
8	AW-5	1.8	ND<0.3	0.6	0.3
9	MW-3	1.3	ND<0.3	ND<0.3	ND<0.3
10	AW-4	50000	20000	4400	14000

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15%
MS/MSD Average Recovery = 98% : Duplicate RPD = <2%

Richard Srna, Ph.D.

Laboratory Director

84611

ALTON GEOSCIENCE
1170 BURNETT AVE., STE. S
CONCORD, CA. 94520 (415) 682-1582

CHAIN of CUSTODY RECORD

PAGE 1 of 1

DATE: 12/11/91 DUE BY: STAT
LABORATORY: SAL

PROJECT NUMBER / MANAGER: 30-0080-01 Matt Taylor
SAMPLERS SIGNATURE:
PROJECT NAME / ADDRESS: BP 2220 98th Ave, Oakland
REMARKS OR SPECIAL INSTRUCTIONS: Run TPH-G + BTXE in Series!

	SAMPLE NUMBER	SAMPLE DATE/TIME	LOCATION/ DESCRIPTION	SAMPLE MATRIX	SAMPLE TYPE: GRAB	SAMPLE TYPE: COMP.	TYPE & NUMBER OF CONTAINERS	ANALYSIS: TPH-G + BTXE 8015 + 8020	ANALYSIS
1	AW-2	12/11/91/1229		W	X		HCL VOA 2	X	
2	AW-7	12/11/91/1245							
3	AW-3	12/11/91/1306							
4	AW-8	12/11/91/1322							
5	MW-2	12/11/91/1356							
6	AW-1	12/11/91/1413							
7	AW-6	12/11/91/1438							
8	AW-5	12/11/91/1505							
9	MW-3	12/11/91/1523							
10	AW-4	12/11/91/1339							

CHAIN OF CUSTODY

	SIGNATURE	INCLUSIVE DATES/TIMES	SIGNATURE	INCLUSIVE DATES/TIMES
1.	Jay Buenviaje	12/12/91 1038	4. Brenda LOL	12/12/91 10:38 a.m.
2.			5.	
3.			6.	