BP OIL

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

February 10, 1992

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

RE: BP FACILITY #11132
3201 35th AVENUE
OAKLAND, CALIFORNIA

94 689

Dear Mr. Shahid,

Attached please find the results of the Quarterly Ground Water Monitoring 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
Dave Baker - Mobil Oil Corporation
J.R. Rocco - BP Oil, Cleveland
Site file

QUARTERLY GROUND WATER MONITORING AND SAMPLING REPORT

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

Project No. 30-0081-01

Prepared for:

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

Prepared by:

Alton Geoscience
1000 Burnett Avenue, Suite 140
Concord, California

January 31, 1992

QUARTERLY GROUND WATER
MONITORING AND SAMPLING REPORT

for

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

INTRODUCTION

This report presents the results and findings of the quarterly ground water monitoring and sampling performed by Alton Geoscience at BP Oil Service Station No. 11132, 3201 35th Avenue, Oakland, California. A site vicinity map is presented in Figure 1.

PROJECT BACKGROUND

On July 30, 1986, Kaprealian Engineering, Inc. (KEI) was retained by Mobil Oil Corporation to install three 2-inch-diameter monitoring wells (MW-1, MW-2, and MW-3) at this former Mobil Oil service station. Monitoring and sampling of the wells, performed by KEI, indicated detectable levels of total petroleum hydrocarbons (TPH) in MW-1 and MW-2 at concentrations of up to 210 parts per million (ppm).

In May 1990, BP Oil Company retained Alton Geoscience to conduct a supplemental site investigation. Between May and June 1990, Alton Geoscience supervised the installation of ground water Monitoring Wells MW-4, MW-5, MW-6, and MW-7 and Recovery Well RW-1. Free-floating product was observed in MW-1 and MW-2, while dissolved-phase petroleum hydrocarbon constituents were detected in ground water samples collected from MW-3 and MW-5.

The supplemental site investigation was completed in August 1990, however, the extent of the free-floating product and dissolved-phase hydrocarbon plume in the ground water beneath the site was not adequately assessed at that time. It was therefore proposed that an additional investigation be conducted to assess the extent of hydrocarbon-impacted ground water and develop appropriate remedial measures.

On February 25 and 26, 1991, Alton Geoscience supervised the installation of ground water Monitoring Wells MW-8, MW-9, and MW-10. Free-floating product was detected in MW-1, MW-2, and

RW-1. Dissolved-phase petroleum hydrocarbon constituents were detected in ground water samples collected from MW-3, MW-10, MW-8, and MW-9.

FIELD PROCEDURES

Alton Geoscience monitored MW-1 through MW-10, and RW-1, and sampled MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, and MW-10. 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). Locations of monitoring wells are shown on Figure 2. Ground water sampling field procedures and ground water sampling field survey forms are presented in Appendix A. Ground water samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G), and benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituents. The 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 contour map based on the depth to ground water measurements collected on September 27, 1991, is shown in Figure 3. The equivalent ground water surface elevation for MW-1, MW-2, and RW-1 was calculated assuming a specific gravity of 0.75 for free product. Concentrations of petroleum hydrocarbon constituents detected in ground water samples are presented in Figure 4.

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

- Free-floating product was encountered in MW-1 (0.~~18~~ 0.27 feet), MW-2 (0.~~19~~ 0.15 feet), and RW-1 (0.~~04~~ 0.01 feet). 10/27/91
- Monitoring Wells MW-1, MW-2, and Recovery Well RW-1 were not sampled due to the presence of free-floating product.
- Based on the water level measurements recorded on September 27, 1991, ground water gradient and direction was estimated to be approximately 0.01 foot/foot and to the south-southwest.

- o TPH-G was not detected in the ground water sample collected from MW-4 above reported detection limits.

- o The highest concentrations of TPH-G and benzene were detected in water samples collected from two offsite, downgradient monitoring wells, MW-8 and MW-10.

- o Water samples collected from Monitoring Wells MW-8 and MW-10 revealed concentrations of TPH-G at 12,000 ppb for each sample, and of benzene at 3,400 ppb and 7,300 ppb, respectively.

↓ received during 6/29/91

ALTON GEOSCIENCE

Matthew A. Taylor
Civil Engineer

FIGURES

Source: U.S.G.S. Map, East Oakland, California Quadrangle
7.5 minute series. 1959. Photorvised 1980.

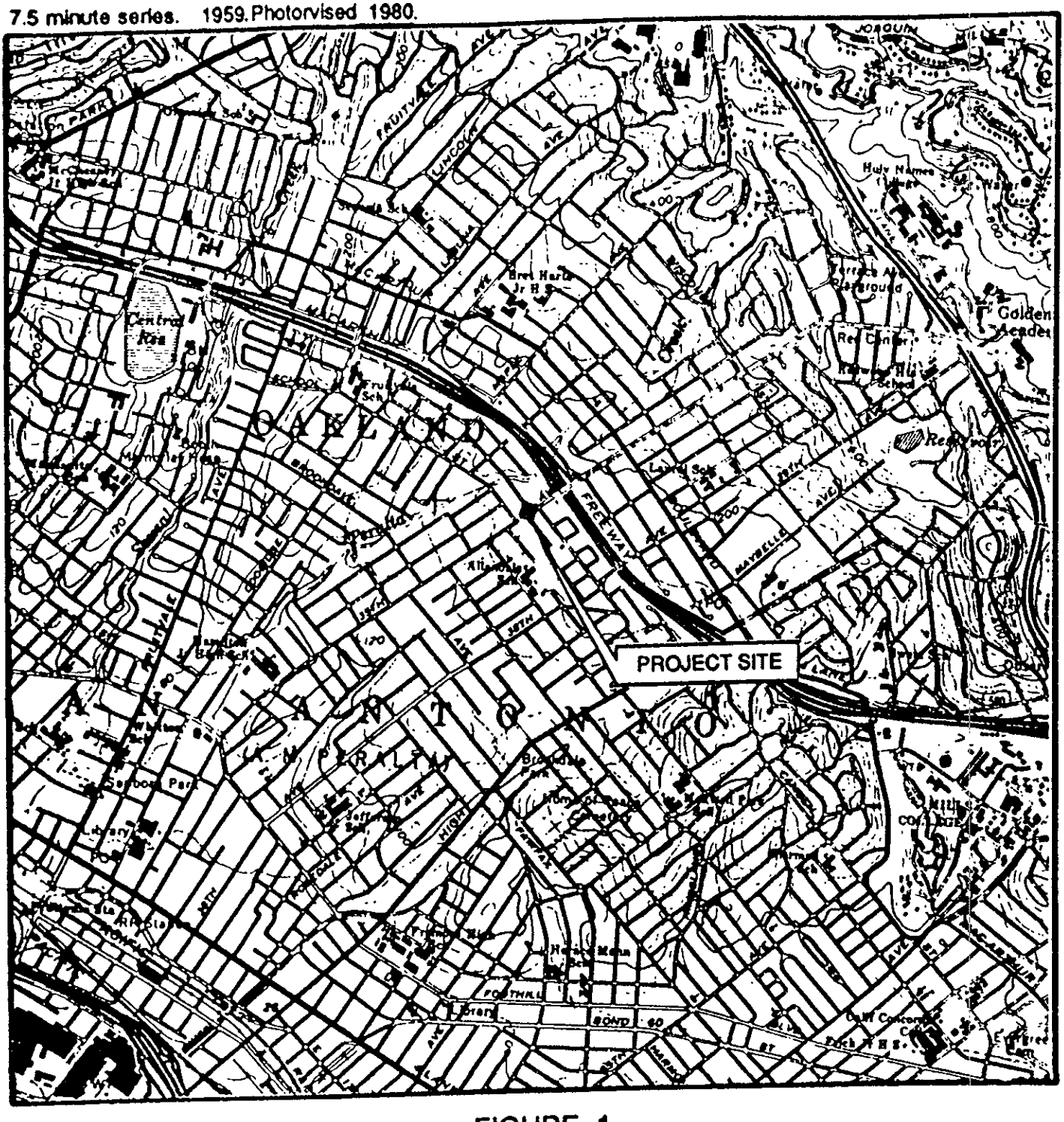


FIGURE 1

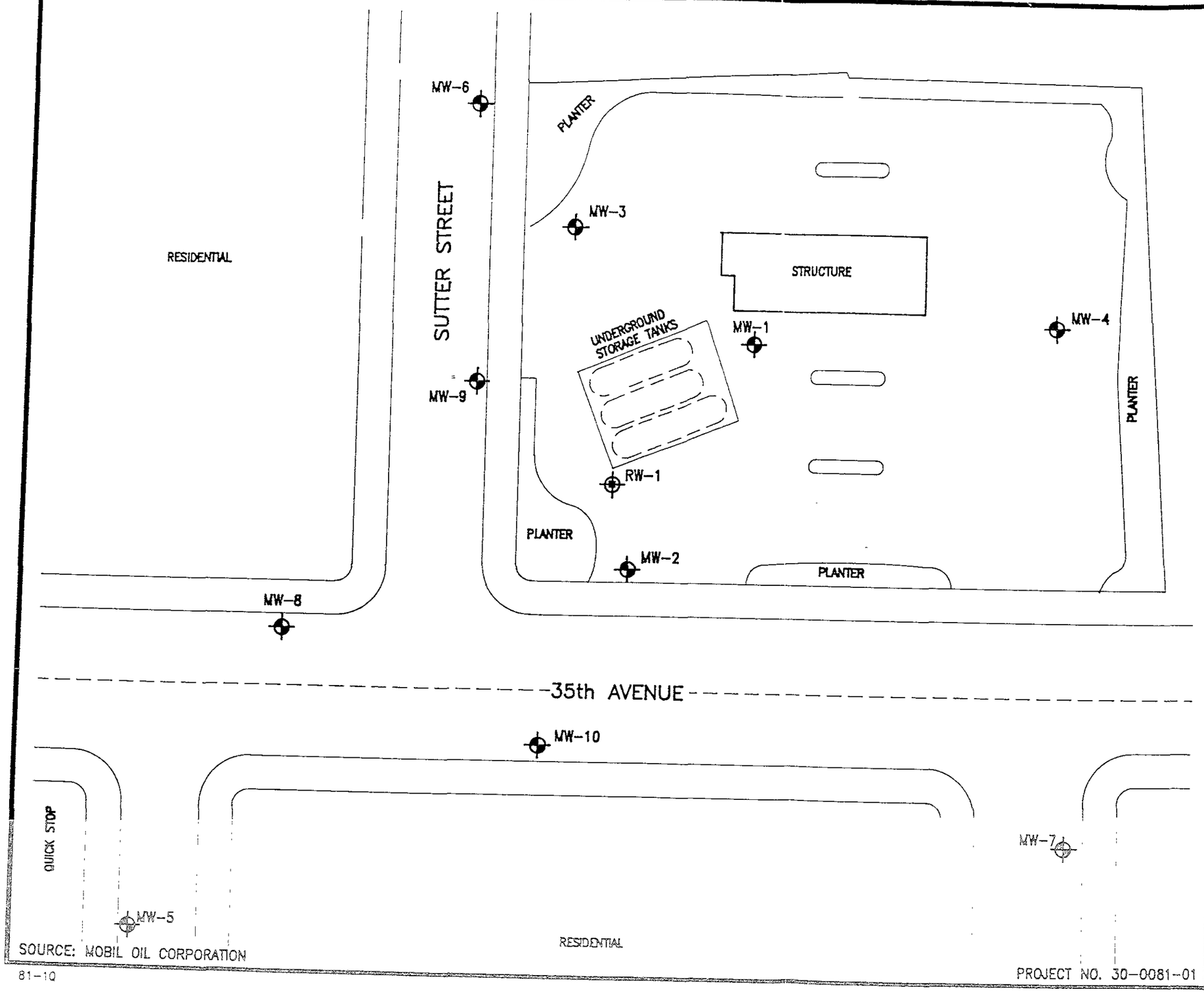
SITE VICINITY MAP

0 1000 2000
SCALE IN FEET

B P SERVICE STATION NO. 11132
3201 35TH AVENUE
OAKLAND, CALIFORNIA

PROJECT NO. 30-081-01

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



0 15 30

APPROXIMATE SCALE IN FEET

LEGEND:

MONITORING WELL

RECOVERY WELL

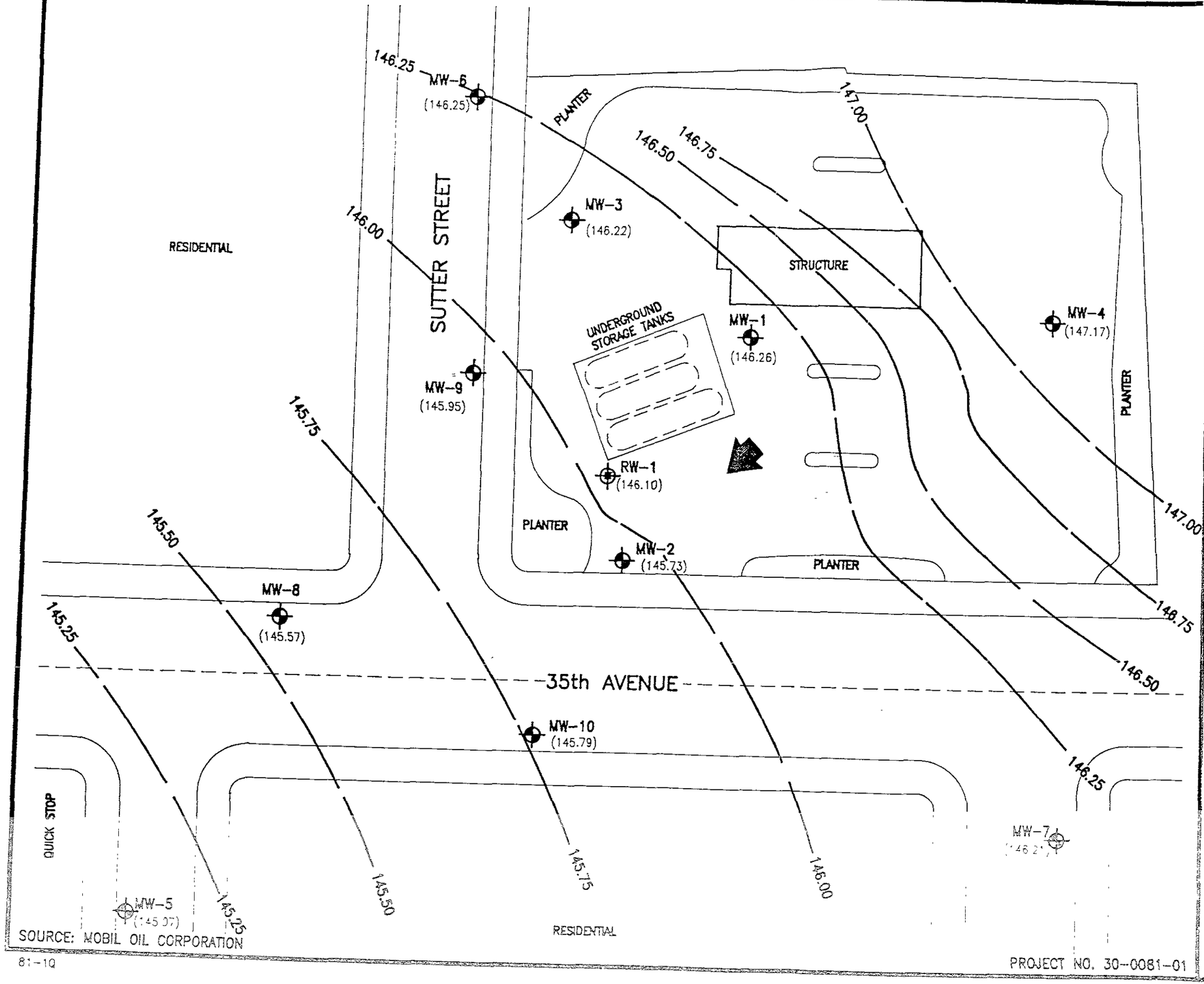
FIGURE 2: SITE PLAN

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

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

81-10

2/91



0 15 30

APPROXIMATE SCALE IN FEET

LEGEND:

- MONITORING WELL
- RECOVERY WELL
- (146.10) GROUND WATER ELEVATION
- —147.00— GROUND WATER ELEVATION CONTOUR LINE
- GENERAL DIRECTION OF GROUND WATER GRADIENT

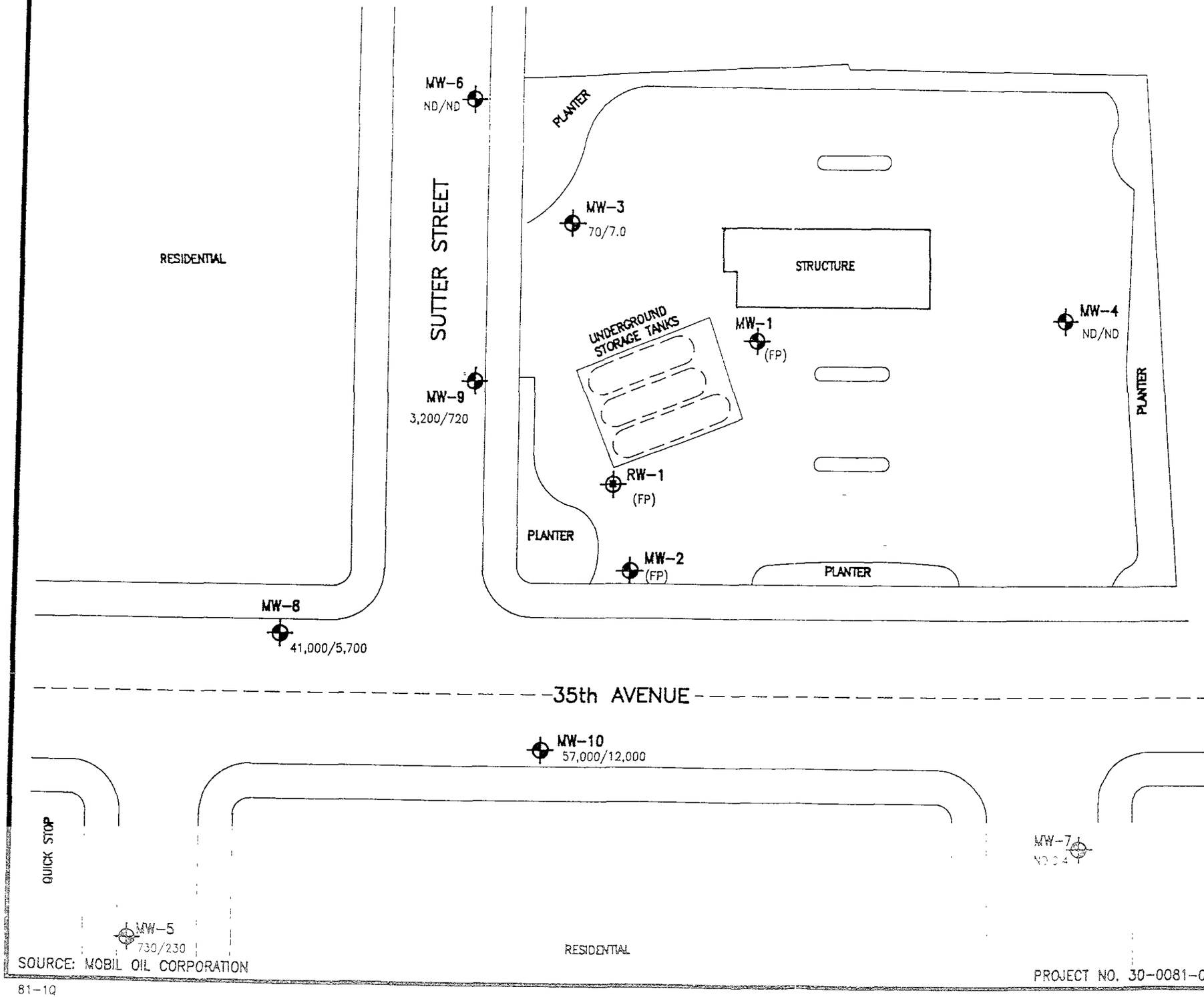
NOTE:
1. CONTOUR LINES ARE INTERPRETIVE BESED ON WATER LEVELS IN MONITORING WELLS MEASURED ON SEPTEMBER 27, 1991.
2. EQUIVALENT GROUND WATER SURFACE ELEVATION CALCULATED ASSUMING 0.75 SPECIFIC GRAVITY FOR FREE PRODUCT.
3. CONTOUR INTERVAL = 0.25 FOOT.
4. GROUND WATER GRADIENT = 0.01 FOOT/FOOT

FIGURE 3: GROUND WATER ELEVATION CONTUOR MAP

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

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

12/91



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
70/7.0	TPH-G/BENZENE CONCENTRATIONS IN PARTS PER BILLION (ppb)

FIGURE 4: ANALYTICAL RESULTS OF GROUND WATER SAMPLES

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

PROJECT NO. 30-0081-01

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

81-10

12/91

TABLES

TABLE 1

SURVEY AND WATER LEVEL MONITORING DATA
September 1991

Well ID	Well Elevation (Feet)*	Date	Depth to Water (Feet)	Free Product Thickness (Feet)	Ground Water Elevation (Feet)*
MW-1	169.75	01-90			
MW-1	169.75	07-90	21.46	0.22	148.29
MW-1	169.75	03-91	17.18	----	******
MW-1	169.75	06-91	22.70	0.18	147.18**
MW-1	169.75	09-91	23.69	0.27	146.26**
MW-2	168.14	01-90		----	
MW-2	168.14	07-90	20.24	0.10	147.90
MW-2	168.14	03-91	15.64	----	******
MW-2	168.14	06-91	21.50	0.19	146.78**
MW-2	168.14	09-91	22.52	0.15	145.73**
MW-3	167.17	01-90		----	
MW-3	167.17	07-90	18.96	----	148.21
MW-3	167.17	03-91	14.06	----	153.11
MW-3	167.17	06-91	19.92	----	147.25
MW-3	167.17	09-91	20.95	----	146.22
MW-4	170.36	01-90		----	
MW-4	170.36	07-90	21.30	----	149.06
MW-4	170.36	03-91	18.28	----	152.08
MW-4	170.36	06-91	22.34	----	148.02
MW-4	170.36	09-91	23.19	----	147.17

Note:

* Elevation in feet relative to a common datum (MW-2) with an elevation of 168.14 feet above mean sea level, as measured on July 5, 1990 by Alton Geoscience.

** Equivalent ground water surface elevation for MW-1, MW-2, and RW-1 were calculated assuming a specific gravity of 0.75 for free product.

*** Depth to water not recorded.

N.A. Monitoring well was not accessible.

TABLE 1
(cont'd)

SURVEY AND WATER LEVEL MONITORING DATA
September 1991

Well ID	Well Elevation (Feet)*	Date	Depth to Water (Feet)	Free Product Thickness (Feet)	Ground Water Elevation (Feet)*
MW-5	165.14	01-90			
MW-5	165.14	07-90	17.97	----	147.17
MW-5	165.14	03-91	12.62	----	152.52
MW-5	165.14	06-91	18.94	----	146.20
MW-5	165.14	09-91	20.07	----	145.07
MW-6	165.40	01-90			
MW-6	165.40	07-90	17.20	----	148.20
MW-6	165.40	03-91	N.A.	----	******
MW-6	165.40	06-91	18.10	----	147.30
MW-6	165.40	10-91	19.15	----	146.25
MW-7	167.61	01-90			
MW-7	167.61	07-90	19.70	----	147.91
MW-7	167.61	03-91	17.82	----	149.79
MW-7	167.61	06-91	20.48	----	147.13
MW-7	167.61	09-91	21.40	----	146.21
MW-8	165.74	03-91	12.98	----	152.76
MW-8	165.74	06-91	19.10	----	146.64
MW-8	165.74	09-91	20.17	----	145.57

Note:

* Elevation in feet relative to a common datum (MW-2) with an elevation of 168.14 feet above mean sea level, as measured on July 5, 1990 by Alton Geoscience.

** Equivalent ground water surface elevation for MW-1, MW-2, and RW-1 were calculated assuming a specific gravity of 0.75 for free product.

*** Depth to water not recorded.

N.A. Monitoring well was not accessible.

TABLE 1
(cont'd)

SURVEY AND WATER LEVEL MONITORING DATA
September 1991

Well ID	Well Elevation (Feet)*	Date	Depth to Water (Feet)	Free Product Thickness (Feet)	Ground Water Elevation (Feet)*
MW-9	166.20	03-91	13.42	----	152.78
MW-9	166.20	06-91	19.22	----	146.98
MW-9	166.20	09-91	20.25	----	145.95
MW-10	167.01	03-91	14.32	----	152.69
MW-10	167.01	06-91	20.21	----	146.80
MW-10	167.01	09-91	21.22	----	145.79
RW-1	168.01	07-90	27.93	1.21	140.08
RW-1	168.01	03-91	***	***	******
RW-1	168.01	06-91	20.90	0.04	147.14**
RW-1	168.01	09-91	21.92	0.01	146.10**

Note:

* Elevation in feet relative to a common datum (MW-2) with an elevation of 168.14 feet above mean sea level, as measured on July 5, 1990 by Alton Geoscience.

** Equivalent ground water surface elevation for MW-1, MW-2, and RW-1 were calculated assuming a specific gravity of 0.75 for free product.

*** Depth to water not recorded.

N.A. Monitoring well was not accessible.

TABLE 2

RESULTS OF
LABORATORY ANALYSIS OF GROUND WATER SAMPLES
September 1991

Well ID	Date	TPH-G	B	T	E	X
		(Concentrations in Parts per Billion)				
MW-1	1-29-90	---	---	---	---	---
MW-1	7-09-90	---	---	---	---	---
MW-1	3-07-91	---	---	---	---	---
MW-1	6-27-91	---	---	---	---	---
MW-1	9-27-91	---	---	---	---	---
MW-2	1-29-90	14	580	1,300	460	2,300
MW-2	7-09-90	---	---	---	---	---
MW-2	3-07-91	---	---	---	---	---
MW-2	6-27-91	---	---	---	---	---
MW-2	9-27-91	---	---	---	---	---
MW-3	1-29-90	0.5	20	30	24	35
MW-3	7-09-90	140	5.3	4.6	2.0	3.8
MW-3	3-07-91	400	69	22	6.1	57
MW-3	6-27-91	380	28	26	13	46
MW-3	9-27-91	70	7.9	ND<0.3	0.4	1.1
MW-4	7-09-90	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
MW-4	3-07-91	ND<50	2.2	3.8	1.5	2.8
MW-4	6-27-91	ND<50	6.3	1.8	0.4	1.0
MW-4	9-27-91	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
MW-5	7-09-90	280	200	210	46	290
MW-5	3-07-91	ND<50	17	0.9	0.7	1.6
MW-5	6-27-91	330	120	10	12	8
MW-5	9-27-91	730	230	16	20	22

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 and RW-1 due to the presence of free product

TABLE 2
(cont'd)

RESULTS OF
LABORATORY ANALYSIS OF GROUND WATER SAMPLES
September 1991

Well ID	Date	TPH-G	B	T	E	X
		(Concentrations in Parts per Billion)				
MW-6	7-09-90	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
MW-6	3-07-91	N.A.	N.A.	N.A.	N.A.	N.A.
MW-6	6-27-91	N.A.	N.A.	N.A.	N.A.	N.A.
MW-6	9-27-91	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
MW-7	7-09-90	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
MW-7	3-07-91	ND<50	ND<0.3	0.4	0.3	2.4
MW-7	6-27-91	70	17	4	0.8	2.2
MW-7	9-27-91	ND<50	0.4	ND<0.3	ND<0.3	0.4
MW-8	3-07-91	2,700	780	450	64	310
MW-8	6-27-91	12,000	3,400	1,100	240	750
MW-8	9-27-91	41,000	5,700	5,200	1,100	4,300
MW-9	3-07-91	7,100	220	4	2.4	2,400
MW-9	6-27-91	3,600	520	400	85	310
MW-9	9-27-91	3,200	720	150	50	180
MW-10	3-07-91	1,600	120	190	32	230
MW-10	6-27-91	12,000	7,300	500	150	300
MW-10	9-27-91	57,000	12,000	7,200	1,400	4,600
RW-1	3-07-91	---	---	---	---	---
RW-1	6-27-91	---	---	---	---	---
RW-1	9-27-91	---	---	---	---	---

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 MW-1 and RW-1 due to the presence of free product
N.A. = Monitoring well was not accessible.

APPENDIX A

GROUND WATER MONITORING AND SAMPLING PROCEDURES

ALTON GEOSCIENCE FIELD PROCEDURES
FOR
GROUND WATER SAMPLING

Prior to purging and sampling, the depth to ground water in each well was measured from a reference mark at the top of each well casing. The depth to ground water was measured to the nearest 0.01 foot using an electronic sounder. Ground water samples were then collected using a hand bailer and observed for the presence of free product.

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 disposable bailer and then transferred to glass 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. Ground water samples collected from all eight ground water wells were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 5030 and EPA Method 8020 for benzene, toluene, ethylbenzene, and xylenes (BTEX) constituents.

APPENDIX B

WATER SAMPLING FIELD SURVEY FORMS, FIELD MEASUREMENTS AND OBSERVATIONS

ALTON GEOSCIENCE, INC
1170 Burnett Ave., Ste. S
Concord, CA 94520

JOB NUMBER 30-0081-01 TECHNICIAN Chris Reichheimer

JOB LOCATION BP Oil 55th Ave Oak DATE 9-27-91

PUMPOUT ☐ YES ☐ NO	DATE OF LAST PUMPOUT:			WEATHER: clear TIME:		COMMENTS (Notes, conditions, etc.)
	HOLD	CUT	LEVEL			
WELL #	DEPTH TO WATER	DEPTH TO PRODUCT	PROD. THICKNESS (FT)	TOTAL DEPTH	DEPTH TO PUMP	
MW-1	23.69			44.08		3.25" FP
MW-2	22.52			34.31		1.8" FP
MW-3	20.95			34.39		
MW-4	23.19			38.68		
MW-5	20.07			30.88		
MW-6	19.15			34.34		obstructed !! (15' fbg)
MW-7	21.40			34.49		cap damaged; no lock
MW-8	20.17			38.72		
MW-9	20.25			29.49		
MW-10	21.22			34.00		
RW-1	21.92			38.41		0.125" FP

ALTON GEOSCIENCE, INC
1170 Burnett Ave., Ste. S
Concord, CA 94520

JOB NUMBER 30-0081-01 TECHNICIAN Patricia Gigante

JOB LOCATION 3201 35th Ave Oakland DATE 10-03-91

PUMPOUT ☒ YES ☐ NO	DATE OF LAST PUMPOUT:			WEATHER: Sunny TIME:		COMMENTS (Notes, conditions, etc.)
	HOLD	CUT	LEVEL			
WELL #	DEPTH TO WATER	DEPTH TO PRODUCT	PROD. THICKNESS (FT)	TOTAL DEPTH	DEPTH TO PUMP	
MW 6	19.22			34.60		lt brown to muddy

ALTON GEOSCIENCE

Ground Water Monitoring Well Development
or Sampling Field Survey Forms

Well # MW-1 Project # 30.0081-01 Location BP 35th Oak Date 9-27-91

Sampling Team Chas Reinheimer Sampling Method: Bailer X Pump ____
Type of Pump or Bailer Used PVC Disp

Decon Method:
Triple rinsed w/~~TSP~~ Alconox and Deionized Water X or Steam Cleaned ____

Well Data:
Depth to Water 23.69 ft
Total Well Depth 44.08 ft
Water Col. Height 20.39 ft

Conversion diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column ____
Purge Factor ____
Total Vol. to Purge ____

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
				Actual Volume Purged	10

Comments:

Free Product x 3.25" Thick as measured with an FP bailer & marking paste
bailed ~ 2 pints of F.P. (+) ~ 10gal of water

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

---

Well # MW-2 Project # 30-0081-01 Location BP 35th Oak Date 8-27-91

Sampling Team Chris R Sampling Method: Bailer X Pump ____
Type of Pump or Bailer Used PVC Disp

Decon Method: Alconox
Triple rinsed w/TSP and Deionized Water X or Steam Cleaned ____

Well Data:
Depth to Water 22.52 ft
Total Well Depth 34.31 ft
Water Col. Height ____ ft

Conversion	
diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column ____
Purge Factor ____
Total Vol. to Purge ____

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
				Actual Volume Purged	10

Comments:

Free Product ≈ 1.8" Thick
as measured with a FP bailer
& marking paste
bailed approx 1 pint FP +
~10 gals H2O

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

---

Well # MW-3 **Project #** 30-0058-01 **Location** BP Oil 35th Oak **Date** 9-27-91

Sampling Team Chris R **Sampling Method: Bailer** X **Pump** ____

Type of Pump or Bailer Used PVC

Decon Method: Alconox
Triple rinsed w/TSP and Deionized Water ____ **or Steam Cleaned** ____

Well Data:
Depth to Water 20.95 ft
Total Well Depth 34.39 ft
Water Col. Height 13.44 ft

Conversion diam.	gal/ft
2 in.	x (0.16)
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 2.15
Purge Factor 3
Total Vol. to Purge 6.45

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
67.9	1.00	7.89	1:47	clear	4.5
68.0	0.93	7.92	1:58	"	5.0
67.9	0.90	8.01	1:59	"	5.5
67.9	0.90	7.88	2:01	slightly cldy	6.0
67.8	0.92	7.84	2:03	slightly cloudy	6.5
	0.91				

Actual Volume Purged

Comments:

sampled 2:11

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

---

Well # MW-4 Project # 30-0081-01 Location BP 04 35th Ave Oak Date 9-27-91

Sampling Team Chris R Sampling Method: Bailer X Pump ___

Type of Pump or Bailer Used PVC disp.

Decon Method: Alconox

Triple rinsed w/~~TSP~~ and Deionized Water X or Steam Cleaned ___

Well Data:

Depth to Water 23.19 ft

Total Well Depth 39.68 ft

Water Col. Height 15.49 ft

Conversion diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 2.47

Purge Factor 3

Total Vol. to Purge 7.43

Chemical Data:

T (F)	SC/umhos (41000)	pH	Time	Comments	Volume (gal)
68.6	0.79	8.66	2:28	Cloudy	5.5
68.9	0.81	8.69	2:30		6.0
68.2	0.70	8.30	2:32		6.5
68.1	0.72	8.20	2:34		7.0
68.0	0.71	8.01	2:37		7.5
				Actual Volume Purged	

Comments: Box full of H_2O!

sampled 2:46

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

---

Well # MW-5 Project # 30-008I-01 Location SP 35th Oak Date 9-27-91

Sampling Team Chris R Sampling Method: Bailer X Pump ___

Type of Pump or Bailer Used PVC Disp.

Decon Method: Alconox

Triple rinsed w/TSP and Deionized Water X or Steam Cleaned ___

Well Data:

Depth to Water 20.07 ft

Total Well Depth 30.88 ft

Water Col. Height 10.81 ft

Conversion	
diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 1.72

Purge Factor 3

Total Vol. to Purge 5.18

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
69.5	1.03	8.44	11:15	Cloudy	3.0
69.0	0.92	8.31	11:17		3.5
69.0	0.91	8.23	11:19		4.0
68.8	0.90	8.11	11:22		4.5
68.5	0.88	8.11	11:24		5.0
				Actual Volume Purged	

Comments:

Sampled 11:41

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

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Well # MW-6 **Project #** 30-0081-01 **Location** BP 35th Oak **Date** 9-27-91

Sampling Team Chris R **Sampling Method: Bailer** X **Pump** ___

Type of Pump or Bailer Used PVC Disp

Decon Method: Alconox
Triple rinsed w/TSP and Deionized Water X **or Steam Cleaned** ___

Well Data:
Depth to Water 19.15 ft
Total Well Depth 34.34 ft
Water Col. Height 15.19 ft

Conversion diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 2.43
Purge Factor 3
Total Vol. to Purge 7.29

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
			12:45		
				Actual Volume Purged	

Comments: Unknown Obstruction in well @ ~15'!

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Ground Water Monitoring Well Development or Sampling Field Survey Forms

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Well # MW6 **Project #** 30-0081 **Location** SS# 11132 **Date** 10-03-91

Sampling Team Patricia Gigante **Sampling Method: Bailer** X **Pump** ____
Type of Pump or Bailer Used Diapram

Decon Method:
Triple rinsed w/TSP and Deionized Water X **or Steam Cleaned** ____

Well Data:
Depth to Water 19.22 ft
Total Well Depth 34.60 ft
Water Col. Height 15.38 ft

Conversion diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 2.46
Purge Factor X 3
Total Vol. to Purge 7.38

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
					10.00
				Actual Volume Purged	10.00

Comments:

Lt brown to dk brown (muddy)

Sampled 2:50

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

Well # MW-7 Project # 30-0081-01 Location BP 35th Ock Date 9-27-91

Sampling Team Chris R Sampling Method: Bailer X Pump ____

Type of Pump or Bailer Used PVC Disp

Decon Method: Alconox

Triple rinsed w/TSP and Deionized Water ____X____ or Steam Cleaned ____

Well Data:

Depth to Water 21.40 ft

Total Well Depth 34.49 ft

Water Col. Height 13.09 ft

Conversion	
diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 2.09

Purge Factor 3

Total Vol. to Purge 6.28

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
70.0	1.33	8.33	11:51	Cloudy	4.0
68.4	1.04	8.29	11:52		4.5
68.4	1.06	8.01	11:53		5.0
68.2	1.03	8.00	11:56		5.5
68.0	1.01	7.99	11:58		6.0
				Actual Volume Purged	

Comments: Cap damaged; no lock

Sampled 12:08

ALTON GEOSCIENCE

Ground Water Monitoring Well Development
or Sampling Field Survey Forms

Well # MW-8 Project # 30-0081-01 Location BP 35th & K Date 9-27-91

Sampling Team Chris R. Sampling Method: Bailer K Pump ___
Type of Pump or Bailer Used PVC Disp

Decon Method: Alconox
Triple rinsed w/TSP and Deionized Water X or Steam Cleaned ___

Well Data:
Depth to Water 20.17 ft
Total Well Depth 38.72 ft
Water Col. Height 18.55 ft

Conversion diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 2.96
Purge Factor 3
Total Vol. to Purge 8.90

Chemical Data:

T (F)	SC/umhos X1000	pH	Time	Comments	Volume (gal)
70.2	2.09	8.28	10:52		6.5
69.5	2.11	8.39	10:52		7.0
69.3	1.99	7.99	10:54		7.5
68.0	1.90	7.91	10:57		8.0
68.8	1.96	7.90	10:58		8.5
				Actual Volume Purged	8.5

Comments:

Sampled 11:04

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

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Well # MW-9 Project # 30-0081-01 Location BP 35th Ock Date 9-27-91

Sampling Team Chris R Sampling Method: Bailer X Pump ____

Type of Pump or Bailer Used PVC Disp

Decon Method: Alconox

Triple rinsed w/~~TSP~~ and Deionized Water X or Steam Cleaned ____

Well Data:

Depth to Water 20.25 ft

Total Well Depth 29.49 ft

Water Col. Height 9.24 ft

Conversion diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 1.47

Purge Factor 3

Total Vol. to Purge 4.43

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
68.3	0.98	9.23	1:23	Cloudy	2.5
67.9	0.96	8.70	1:24		3.0
67.8	0.99	8.34	1:24		3.5
67.7	0.97	8.22	1:26		4.0
67.7	0.96	8.11	1:27		4.5
				Actual Volume Purged	

Comments:

Sampled 1:39

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

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Well # MW-10 Project # 30-0081-01 Location BP Old 35th Oak Date 9-27-91

Sampling Team Chris R Sampling Method: Bailer X Pump ___

Type of Pump or Bailer Used PVC DSP

Decon Method: Alconox

Triple rinsed w/TSP and Deionized Water X or Steam Cleaned ___

Well Data:

Depth to Water 21.22 ft

Total Well Depth 34.00 ft

Water Col. Height 12.78 ft

Conversion	
diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
6 in.	x 1.44

Vol. of Water Column 2.04

Purge Factor 3.0

Total Vol. to Purge 6.12

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
68.2	1.39	8.00	12:19	clear	4.0
68.0	1.26	7.88	12:22	cloudy	4.5
68.0	1.24	7.91	12:23	"	5.0
67.8	1.26	7.90	12:26	"	5.5
67.9	1.22	7.93	12:27	"	6.0
				Actual Volume Purged	

Comments:

Sampled 12:36

ALTON GEOSCIENCE

Ground Water Monitoring Well Development or Sampling Field Survey Forms

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Well # RW-1 Project # 30-0081.01 Location BP 35th Oak Date 9-27-91

Sampling Team Chris R Sampling Method: Bailer X Pump ____

Type of Pump or Bailer Used PVC Disp

Decon Method: Alconox

Triple rinsed w/TSP and Deionized Water X or Steam Cleaned ____

Well Data:

Depth to Water 21.92 ft

Total Well Depth ____ ft

Water Col. Height ____ ft

Conversion	
diam.	gal/ft
2 in.	x 0.16
3 in.	x 0.36
4 in.	x 0.65
(6 in.)	x 1.44

Vol. of Water Column ____

Purge Factor ____

Total Vol. to Purge ____

Chemical Data:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
				Actual Volume Purged	5gals

Comments:

Free Product ≈ 0.125' = 1½" thick as measured by FP bailer & marking paste

Bailed ≈ 0.5 pint of FP(+) & gal water

APPENDIX C

OFFICIAL LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS

Superior Precision Analytical, Inc.
PO Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229 0916

OCT 10 1991

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 84037
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-0081-01

DATE RECEIVED: 09/30/91
DATE REPORTED: 10/07/91
DATE SAMPLED : 09/27/91

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

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	MW-3	0.07
2	MW-4	ND<0.05
3	MW-5	0.73
4	MW-7	ND<0.05
5	MW-8	41
6	MW-9	3.2
7	MW-10	57

mg/L - parts per million (ppm)

Method Detection Limit for Gasoline in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery = 93/97%: Duplicate RPD = 4

Richard Srna, Ph.D.
Laboratory Director

Superior Precision Analytical, Inc.
PO Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-0916

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 84037
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-0081-01

DATE RECEIVED: 09/30/91
DATE REPORTED: 10/07/91
DATE SAMPLED : 09/27/91

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	MW-3	7.9	ND<0.3	0.4	1.1
2	MW-4	ND<0.3	ND<0.3	ND<0.3	ND<0.3
3	MW-5	230	16	20	22
4	MW-7	0.4	ND<0.3	ND<0.3	0.4
5	MW-8	5700	5200	1100	4300
6	MW-9	720	150	50	180
7	MW-10	12000	7200	1400	4600

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 = 97%: Duplicate RPD = <2

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

OCT 16 1991

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 84074
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-0081-01

DATE RECEIVED: 10/04/91
DATE REPORTED: 10/10/91
DATE SAMPLED : 10/03/91

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

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	MW-6	ND<0.05

mg/L - parts per million (ppm)

Method Detection Limit for Gasoline in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery = 108/95% Replicate RPD = 13

Richard Srna, Ph.D.
(for)
Laboratory Director

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

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 84074
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-0081-01

DATE RECEIVED: 10/04/91
DATE REPORTED: 10/10/91
DATE SAMPLED : 10/03/91

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	MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3

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 =97%: Duplicate RPD = <4

Richard Srna, Ph.D.

(for)
Laboratory Director

ALTON GEOSCIENCE
1000 BURNETT ST., #140
CONCORD, CA 94520 (415) 682-1582

CHAIN of CUSTODY RECORD

PAGE of 841037

DATE: 9-30-91

RESULTS DUE BY:

PROJECT NUMBER: 30-0081-01

PROJECT NAME AND ADDRESS: BP Oil 35th Ave Oakland

PROJECT MANAGER: Matt Taylor

SAMPLER'S SIGNATURE:

LABORATORY: Superior

REMARKS OR SPECIAL INSTRUCTIONS:

STD T/A time
#412044

NOTE: PLEASE INDICATE VERBAL REQUESTS FOR ADDITIONAL ANALYSES IN THIS BOX.

	SAMPLE NUMBER	SAMPLE DATE/TIME	LOCATION/ DESCRIPTION	SAMPLE MATERIAL	SAMPLE TYPE: GRAB	SAMPLE TYPE: COMP.	NUMBER OF CONTAINERS
1	MW-3	9-27-91	Water	water	X		3
2	MW-4						3
3	MW-5						3
4	MW-7						3
5	MW-8						3
6	MW-9						3
7	MW-10	9-27-91		water	X		3
					TOTAL NO. OF CONTAINERS:		21

	SAMPLE PREP.				SOIL ANALYSIS						WATER ANALYSIS					
	3510: SOLV. EXTR.	3810: HEAD SPACE	5030: PURGE & TRAP		418.1: TPHC (IR)	8010: HALOCARBONS	8020: BTXE	DHS METHOD: TPHC (GC)	7420: TOTAL Pb		418.1: TPHC (IR)	601: HALOCARBONS	602: BTXE	DHS METHOD: TPHC (GC)	7421: TOTAL Pb	TPH G/BTEX
1																X
2																
3																
4																
5																
6																
7																X

Please Initial:
Samples Stored in ice.
Appropriate containers
Samples preserved
VOA's without headspace
Comments:

RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	METHOD OF SHIPMENT:
	Erma Walter x672	9/30 1315	
RELINQUISHED BY: Erma Walter x672	RECEIVED BY:	DATE/TIME:	SHIPPED BY:
RELINQUISHED BY:	RECEIVED BY: TPL TPL	DATE/TIME: 9/30/91 1315	COURIER:

ALTON GEOSCIENCE
1000 BURNETT ST., #140
CONCORD, CA 94520 (415) 682-1582

CHAIN of CUSTODY RECORD

PAGE 1 of 1

DATE: 10-03-91

RESULTS DUE BY: 5 DAY Normal T.A.T.

PROJECT NUMBER: 30-0081-01

PROJECT NAME AND ADDRESS: B.P. Oil 3201 35th Ave. Oakland CA

PROJECT MANAGER: Matt Taylor

SAMPLER'S SIGNATURE: Patricia Gigante

LABORATORY: Superior

REMARKS OR SPECIAL INSTRUCTIONS:
P.O. # 412044 84074

NOTE: PLEASE INDICATE VERBAL REQUESTS FOR ADDITIONAL ANALYSES IN THIS BOX.

SAMPLE NUMBER	SAMPLE DATE/TIME	LOCATION/ DESCRIPTION	SAMPLE MATERIAL	SAMPLE TYPE: GRAB	SAMPLE TYPE: COMP.	NUMBER OF CONTAINERS	SAMPLE PREP. 3510: SOLV. EXTR.	SAMPLE PREP. 3810: HEAD SPACE	SAMPLE PREP. 5030: PURGE & TRAP	SAMPLE PREP. TPH-G & BTEX	SOIL ANALYSIS 418.1: TPHC (IR)	SOIL ANALYSIS 8010: HALOCARBONS	SOIL ANALYSIS 8020: BTXE	SOIL ANALYSIS DHS METHOD: TPHC (GC)	SOIL ANALYSIS 7420: TOTAL Pb	WATER ANALYSIS 418.1: TPHC (IR)	WATER ANALYSIS 601: HALOCARBONS	WATER ANALYSIS 602: BTXE	WATER ANALYSIS DHS METHOD: TPHC (GC)	WATER ANALYSIS 7421: TOTAL Pb
MW 6	10-03-91	B.P. S.S.# 11132	ground Water	X		3				X										
						TOTAL NO. OF CONTAINERS:	3													

Please Initial:
Samples Stored in ice.
Appropriate containers
Samples preserved
VOA's without headspace

RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	METHOD OF SHIPMENT:
Patricia Gigante	[illegible]	10-4-91/0900	
RELINQUISHED BY: [illegible]	RECEIVED BY:	DATE/TIME: 10-4-91/0918	SHIPPED BY:
RELINQUISHED BY:	RECEIVED BY: [illegible]	DATE/TIME: 10-4-91 0418	COURIER: EXAMS 53-1