BP OIL

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

October 16, 1991

Ms. Cynthia Chapman
Alameda County Health Agency
80 Swan Way, Room 200
Oakland, California, 94621

RE: **BP OIL FACILITY #11109**
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

Dear Ms. Chapman,

Attached please find results of the quarterly sampling and analysis performed at the above referenced facility.

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

Respectfully,

Peter J. DeSantis
Environmental Resources Management

PJD:lk

cc: Richard Hiett - RWQCB, San Francisco Bay Region
Dave Baker - Mobil Oil Corporation
J.R. Rocco - BP Oil, Cleveland
Site file

ALTON GEOSCIENCE
THE RESULTS TEAM

October 14, 1991

Mr. Peter DeSantis
BP Oil Company
Aetna Building, Suite 360
2868 Prospect Park Drive
Rancho Cordova, California 95670-6020

30-0248

Subject: Quarterly Ground Water Monitoring
and Sampling Report
BP Oil Service Station No. 11109
4280 Foothill Boulevard
Oakland, California

Dear Mr. DeSantis,

The enclosed report presents the results and findings of the May 1991 quarterly ground water monitoring and sampling performed by Alton Geoscience at BP Oil Service Station No. 11109, located at 4280 Foothill Boulevard, Oakland, California.

The enclosed report should be submitted to the following regulatory agencies:

1. Ms. Cynthia Chapman
Alameda County Health Agency
80 Swan Way, Room 200
Oakland, California 94621

2. Mr. Richard Hiett
Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, California 94612

If there are any questions or comments regarding this report, please call the undersigned at (415) 682-1582.

Sincerely,

ALTON GEOSCIENCE

Brady Nagle
Project Manager

Enclosure

1000 Burnett Avenue, Suite 140
Concord, California 94520
(415) 682-1582 • FAX (415) 682-8921

QUARTERLY GROUND WATER

MONITORING AND SAMPLING REPORT

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

Project No. 30-0248

Prepared by:

Alton Geoscience
1000 Burnett Avenue, Suite 140
Concord, California

October 14, 1991

QUARTERLY GROUND WATER MONITORING AND SAMPLING REPORT

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

October 14, 1991

INTRODUCTION

This report presents the results and findings of the May 1991 quarterly ground water monitoring and sampling activities performed by Alton Geoscience at BP Oil Service Station No. 11109, 4280 Foothill Boulevard, Oakland, California. The site vicinity map is shown in Figure 1, and a site plan is shown in Figure 2.

PROJECT BACKGROUND

Mobil Oil Corporation contracted Target Environmental Services to conduct a soil-gas survey at the site, as part of a property transfer program to investigate the extent of hydrocarbons in the subsurface at the site (Target 1989). The survey was conducted on March 10, 1989, and revealed the presence of detectable concentrations of petroleum hydrocarbon constituents in soil vapor samples.

Isoconcentration maps and chromatogram data generated during the soil gas survey suggested two areas of potential hydrocarbons in the subsurface soil: (1) west of the main building; and (2) between the eastern pump island and the tank field. The migration of hydrocarbon vapors in the soil to the southwest appeared to be limited. The southeastern extent of the hydrocarbon vapors in the soil was not defined since it extended beyond the limits of the survey.

In April 1989, two 2-inch-diameter ground water monitoring wells, MW-1 and MW-2, were installed by Rittenhouse-Zeman and Associates (RZA) of Bellevue, Washington. Soil samples collected from unspecified depths during well construction were analyzed for total petroleum hydrocarbons with benzene, toluene, ethylbenzene, and total xylenes (BTEX) distinction. The results of the analysis showed 15 parts per million (ppm) total petroleum hydrocarbon in the soil sample from Boring B-1. Borings B-1 and B-2 were converted into Monitoring Wells MW-1 and MW-2. Ground water was encountered in the borings at a depth of approximately 26 feet and stabilized at approximately 14 and 20 feet below grade. The ground water sample from MW-1 was analyzed for BTEX constituents and revealed detectable concentrations of BTEX

constituents in the ground water sample with 860 ppb benzene (RZA 1989).

Mobil Oil Corporation authorized Alton Geoscience to conduct a site investigation at the site in January 1990, after submittal and regulatory approval of a work plan (Alton 1990a). Two additional 4-inch-diameter ground water monitoring wells, MW-3 and MW-4, were installed onsite to assess the extent of hydrocarbons in the subsurface. The results of soil analysis detected up to 16,000 ppm total petroleum hydrocarbons as gasoline in one sample at a depth of 25 feet and no detectable concentrations of TPH-G or BTEX constituents in the other samples. Ground water stabilized at approximately 17 to 20 feet below grade in MW-3 and MW-4. Free-floating product was observed in MW-1, and analysis of ground water samples collected from the other three onsite wells detected up to 1,400 ppb TPH-G and 15 ppb benzene (Alton 1990b).

A work plan for a supplemental site investigation was subsequently prepared by Alton Geoscience for BP Oil Company (Alton 1990c). In accordance with this work plan, BP Oil Company has initiated a quarterly monitoring and sampling program which has indicated a northwestern ground water gradient direction and detectable concentrations of TPH-G and BTEX constituents in Monitoring Wells MW-3 and MW-4. Additionally, methylene chloride was detected in MW-2 at a concentration of 51 ppb (Alton 1991).

On September 14, 1990, BP Oil Company retained Kaprealian Engineering, Inc. to conduct soil sampling during the removal of three underground gasoline storage tanks, dispenser islands, and associated piping from the site. Approximately 2,000 cubic yards of soil was excavated in the vicinity of the former tanks and dispenser islands. The results of the laboratory analysis of soil samples revealed the presence of up to 910 ppm total petroleum hydrocarbons as gasoline (TPH-G) in a soil sample collected from the southeast sidewall sample from the fuel tank cavity. Up to 140 ppm TPH-G was detected in a soil sample collected from the southwest sidewall at the extent of excavation (Kaprealian 1990a and 1990b). During tank removal activities, Monitoring Well MW-1 was destroyed.

FIELD PROCEDURES

On May 13, 1991 and July 24, 1991, ground water elevation monitoring was performed on MW-2, MW-3, and MW-4. The three onsite wells were sampled on May 14, 1991, in accordance with the guidelines of the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) (RWQCB 1989). Prior to purging and sampling, the ground water level in each well was measured from a permanent mark on the top of casing to the nearest 0.01 foot using an electronic sounder. The ground water

from each well was inspected at this time using a hand bailer and observed for the presence of free product or sheen. Survey data and relative ground water elevation measurements are presented in Table 1, while the ground water elevation contour map is shown in Figure 3.

Prior to sample collection, each well was purged of four casing volumes or until pH, temperature, and conductivity of the ground water stabilized. Ground water samples for laboratory analysis were collected by lowering a clean, 2 or 4-inch-diameter, bottom-fill, polyvinyl chloride (PVC) bailer to just below the air-water interface in the well. The samples were carefully transferred from the bailer to the appropriate containers. Each sample was labeled with sample number, well number, sample date, and sampler's initials. The samples were stored in an iced cooler for delivery to a California-certified laboratory for analysis following proper sample preservation and chain of custody procedures. The water sampling field survey forms are presented in Appendix A.

ANALYTICAL METHODS

Ground water samples collected from all three wells at the site were analyzed for TPH-G using EPA Methods 5030/8015 and benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituents using EPA Methods 5030/8020. In addition, the ground water sample from Monitoring Well MW-2 was analyzed for total oil and grease (TOG) using EPA Method 5520F, total petroleum hydrocarbons as diesel (TPH-D) using EPA Method 8015, and halogenated volatile organic compounds (HVOC) using EPA Method 8010. The official laboratory reports and chain of custody forms are presented in Appendix B, and a summary of analytical results of the ground water samples are presented in Table 1.

DISCUSSION OF RESULTS

The results of the May 1991 ground water monitoring and sampling event, performed by Alton Geoscience, are summarized below.

- No free product was observed in any of the three existing onsite monitoring wells during the May 1991 monitoring/sampling or July 1991 monitoring events.
- The general ground water gradient direction, as calculated from the July 1991 data, is to the northwest with a value of approximately 0.04 foot per foot across the site.
- Ground water samples collected from MW-2 contained no detectable TPH-G, BTEX constituents, or TPH-D. However,

TOG and 1,2-Dichloroethane were detected at concentrations of 6,000 and 0.5 ppb, respectively.

- TPH-G and BTEX constituents were detected in MW-3 and MW-4 at concentrations up to 640 ppb TPH-G and 13 ppb benzene.

ALTON GEOSCIENCE

Brady Nagle
Project Manager

Peter Lange, R.G. 5089
Associate, Concord Operations

REFERENCES

Alton Geoscience, 1990a. Work Plan for Site Investigation, January 9, 1990.

Alton Geoscience, 1990b. Site Investigation Report, February 16, 1990.

Alton Geoscience, 1990c. Work Plan for Supplemental Site Investigation, August 6, 1990.

Alton Geoscience, 1991. Quarterly Monitoring Report, March 21, 1991.

California Regional Water Quality Control Board, 1989. Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, July 1, 1988 and revised April 3, 1989.

Kaprealian Engineering, Inc., Soil Sampling Report BP Service Station, November 1, 1990a.

Kaprealian Engineering, Inc., Soil Sampling Report for BP Service Station, November 1, 1990b.

Rittenhouse-Zeman & Associates, Limited Subsurface Petroleum Hydrocarbon Evaluation, April 24, 1989.

Target Environmental Services, Soil Gas Survey Mobil Service Station #10-H69, March 1989.

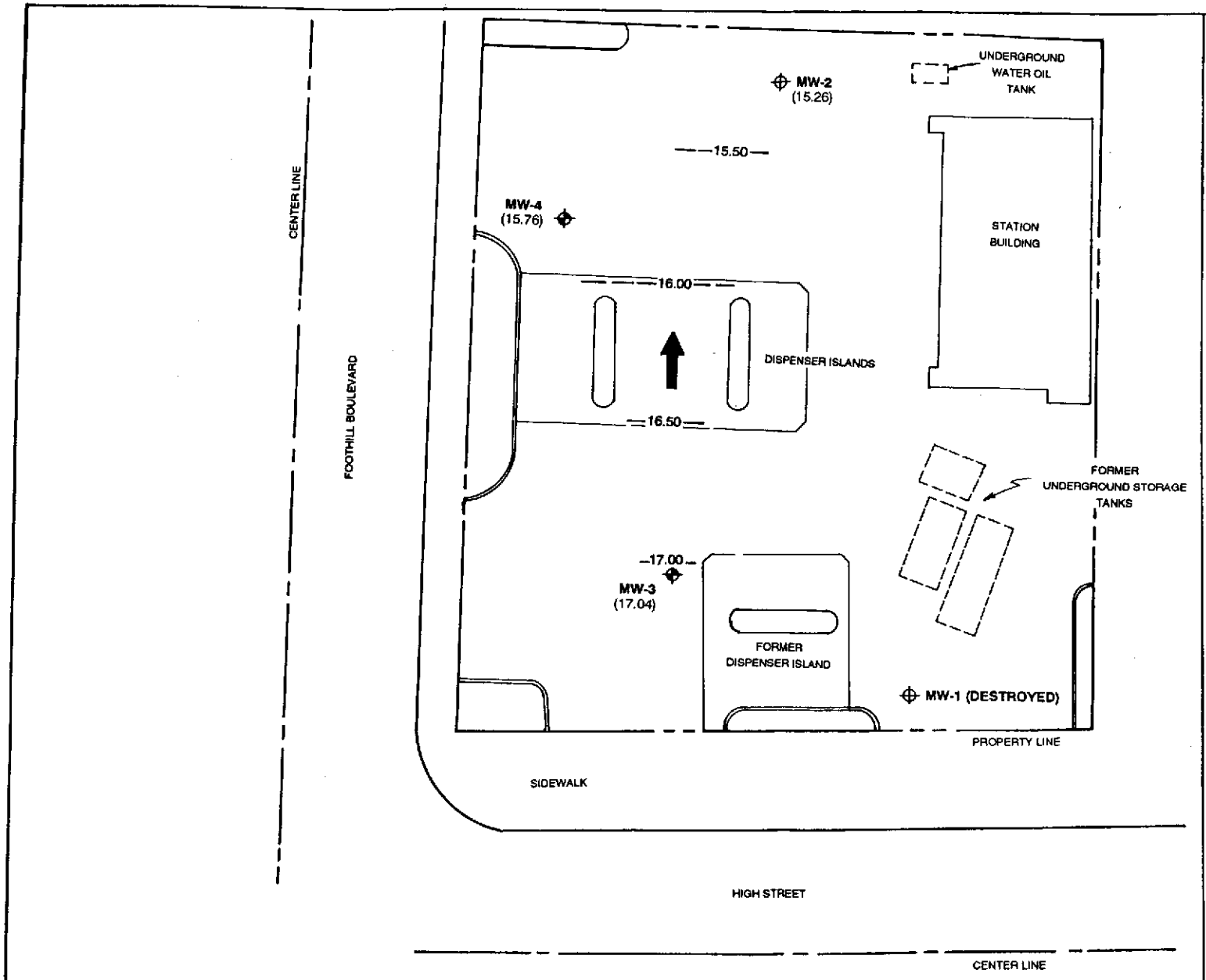
SOURCE: U.S. GEOLOGICAL MAP, OAKLAND EAST QUADRANGLE, CLAIFORNIA 7.5 MINUTE SERIES, 1959, PHOTOREVISED 1980.

FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11109
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

ALTON GEOSCIENCE PROJECT NO. 30-0248



N

0 10 20

SCALE IN FEET

LEGEND

- GROUND WATER MONITORING WELL BY ALTON GEOSCIENCE
- GROUND WATER MONITORING WELL BY OTHERS
- (15.26) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- — 17.00 — GROUND WATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL 0.5 FOOT)
- GENERAL GROUND WATER FLOW DIRECTION

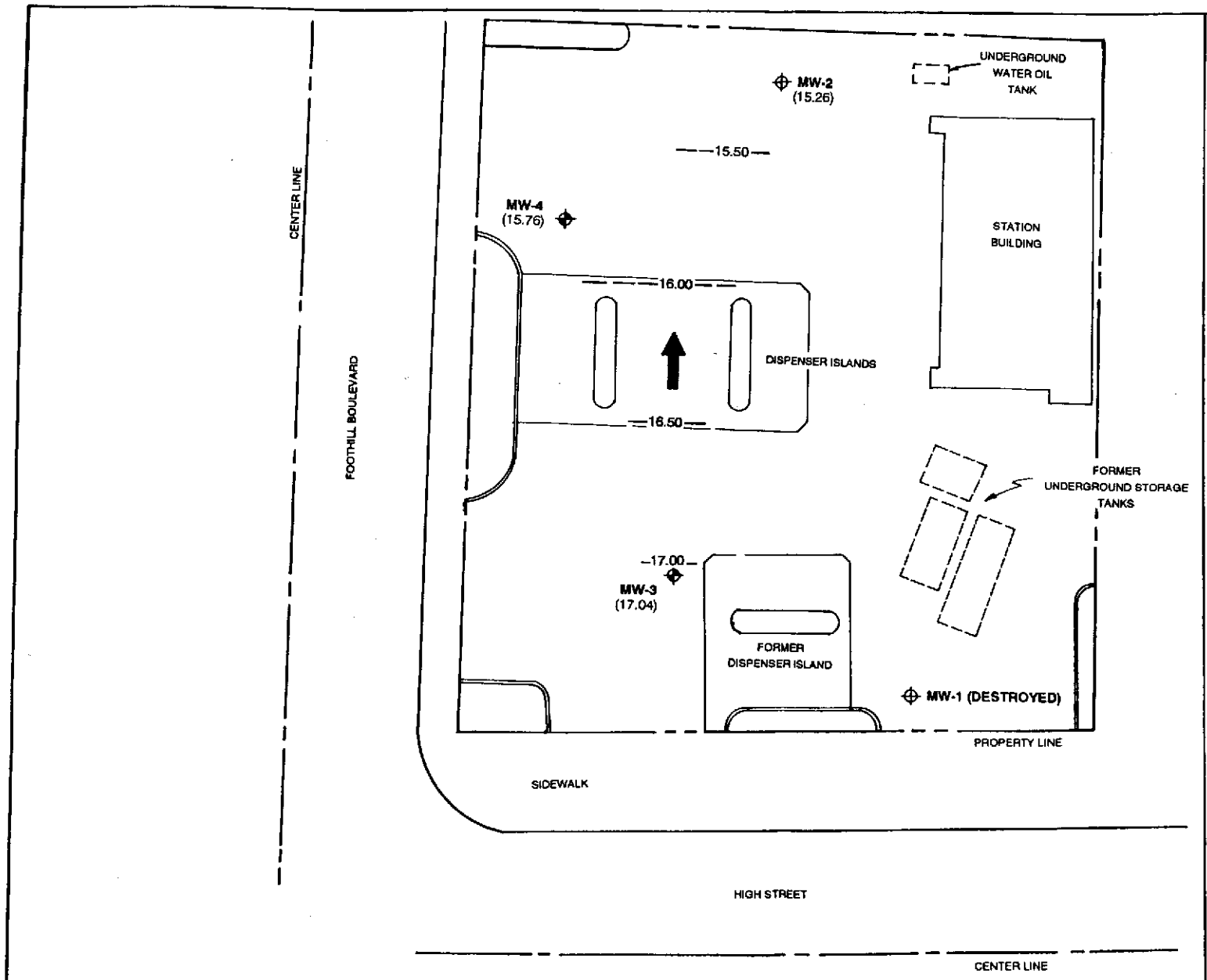
FIGURE 3

GROUND WATER ELEVATION CONTOUR MAP (JULY 24, 1991)

BP OIL SERVICE STATION NO. 11109
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

ALTON GEOSCIENCE PROJECT NO. 30-0248

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



N

0 10 20

SCALE IN FEET

LEGEND

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- GROUND WATER MONITORING WELL BY OTHERS
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- GENERAL GROUND WATER FLOW DIRECTION

FIGURE 3

GROUND WATER ELEVATION CONTOUR MAP (JULY 24, 1991)

BP OIL SERVICE STATION NO. 11109
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

ALTON GEOSCIENCE PROJECT NO. 30-0248

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

Table 1
Survey and Water Level Monitoring Data and
Summary of Analytical Results of Ground Water Samples
BP Oil Company Service Station No. 11109
4280 Foothill Boulevard, Oakland, California
Elevation and Depth Measurements in feet above sea level

Concentrations in parts per billion (ppb)

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION	DEPTH TO WATER	GROUND WATER ELEVATION	TPH-G	TPH-D	B	T	E	X	HVOC	TOG
MW-1	01/31/90	38.19	15.41	22.78	---	---	---	---	---	---	---	---
MW-1	02/05/90	---	---	---	---	---	---	---	---	---	---	---
MW-2	02/05/90	38.18	21.91	16.27	1300	---	14	ND<1.0	9	13	---	---
MW-2	02/14/91	38.18	21.16	17.02	ND<50	ND<10000	ND<0.3	ND<0.3	ND<0.3	ND<0.3	51*	ND<500
MW-2	05/13/91	38.18	21.32	16.86	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	0.5**	6000
MW-2	07/24/91	38.18	22.92	15.26	---	---	---	---	---	---	---	---
MW-3	02/05/90	37.73	17.45	20.28	1400	---	15	ND<2.5	11	8	---	---
MW-3	02/14/91	37.73	18.52	19.21	320	---	8	ND<0.3	8	1	---	---
MW-3	05/13/91	37.73	19.32	18.41	640	---	13	ND<0.3	18	1	---	---
MW-3	07/24/91	37.73	20.69	17.04	---	---	---	---	---	---	---	---
MW-4	02/05/90	37.07	20.75	16.32	620	---	ND<0.5	9	ND<0.5	10	---	---
MW-4	02/14/91	37.07	21.73	15.34	180	---	ND<0.3	ND<0.3	0.4	2	---	---
MW-4	05/13/91	37.07	18.55	18.52	72	---	0.7	ND<0.3	ND<0.3	ND<0.3	---	---
MW-4	07/24/91	37.07	21.31	15.76	---	---	---	---	---	---	---	---

EXPLANATION OF ABBREVIATIONS:

TPH-G :Total Petroleum Hydrocarbons as Gasoline (EPA method 8015 modified)
TPH-D :Total Petroleum Hydrocarbons as Diesel (EPA method 8015 modified)
B :Benzene (EPA method 8020 or 8240)
T :Toluene (EPA method 8020 or 8240)
E :Ethylbenzene (EPA method 8020 or 8240)
X :Xylenes (EPA method 8020 or 8240)

TOG :Total Oil & Grease (EPA method 503D & 503E)
HVOC :Halogenated Volatile Organic Compounds
--- :No analysis conducted. Monitoring Well MW-1 was not analyzed due to the presence of free-floating product
ND :Not detected above reported detection limits
51* :Methylene Chloride
0.5** :1,2-Dichloroethane

Note: :To of casing elevations for all wells are surveyed relative to the City of Oakland survey station, with an elevation of 42.19 feet above mean sea level.

APPENDIX A
WATER SAMPLING FORMS

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

JOB NUMBER 30-248 TECHNICIAN Larry

JOB LOCATION Oakland DATE 5/13/91

PUMPOUT ☐ YES ☒ NO	DATE OF LAST PUMPOUT: 2/14/91			WEATHER: Rain TIME: 1105		COMMENTS (Notes, conditions, etc.)
	HOLD	CUT	LEVEL			
WELL #	DEPTH TO WATER	DEPTH TO PRODUCT	PROD. THICKNESS (FT)	TOTAL DEPTH	DEPTH TO PUMP	
2" MW-2	21.32	Ø	Ø	30.08	Ø	
4" MW-4	19.32	Ø	Ø	26.74	Ø	
4" MW-3	18.55	Ø	Ø	32.01	Ø	

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

ELL # MW2 PROJECT# 30-248 LOCATION Oakland DATE 5/13/91

AMPLING TEAM Larry SAMPLING METHOD: BAILER X PUMP ___

ECONTAMINATION METHOD: TRIPLE RINSE Alconox AND DEIONISED WATER X
STEAM CLEAN ___

ELL DATA:

EPTH TO WATER 21.32 ft

OTAL DEPTH 30.08 ft

T. WATER COL 8.76 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 1.40 gal

Volume: to Purge X 4 Vol

Total Volume to Purge 5.60 gal

Begin 1149

HEMICAL DATA:

T (F)	SC/umhos X1000	pH	Time	Comments	Volume (gal)
55.3	115	8.38	1153	Cloudy	1
56.7	.81	8.08	1157	" "	2
57.5	.75	7.89	1202	Clear	3
57.9	.79	7.77	1206	" "	4
57.8	.75	7.72	1211	" "	5

Sampled 1218

ACTUAL VOLUME PURGED 5.60 gal

OMMENTS: meter X 1000

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # MW-3 PROJECT# 30-248 LOCATION Oakland DATE 5/13/91

SAMPLING TEAM Lamy SAMPLING METHOD: BAILER X PUMP ___
Alconox

DECONTAMINATION METHOD: TRIPLE RINSE WASH AND DEIONIZED WATER X
STEAM CLEAN ___

WELL DATA:

DEPTH TO WATER 18.55 ft
TOTAL DEPTH 32.01 ft
FT. WATER COL. 13.46 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 8.75 gal
Volume to Purge x 4 Vol
Total Volume to Purge 35.00 gal

Begin 1340

CHEMICAL DATA:

T (F)	SC/umhos X1000	pH	Time	Comments	Volume (gal)
57.9	.81	8.37	1346	Clear	7.00
59.3	.86	8.10	1352	"	14.00
60.5	.91	8.25	1357	"	21.00
59.0	.95	8.34	1416	"	28.00
60.2	.92	8.27	1430	"	35.00

Sampled 1445

ACTUAL VOLUME PURGED 350 /gal

COMMENTS: meter X 1000, Slow Producer!

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

ELL # MW-4 PROJECT# 30-248 LOCATION Oakland DATE 5/13/91

AMPLING TEAM Lamy SAMPLING METHOD: BAILER X PUMP ___

ECONTAMINATION METHOD: TRIPLE RINSE ~~WATER~~ Alconox AND DEIONISED WATER X
STEAM CLEAN ___

ELL DATA:

EPTH TO WATER 9.32 ft

OTAL DEPTH 26.74 ft

T. WATER COL 7.42 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 4.82 gal

Volume to Purge x 4 Vol

Total Volume to Purge 19.28 gal

Begin 1230

HEMICAL DATA:

T (F)	EC/umhos X 1000	pH	Time	Comments	Volume (gal)
57.2	.46	8.21	1235	Clear	3.75
58.2	.45	7.99	1240	"	7.50
58.8	.48	7.76	1255	"	11.25
57.0	.48	8.05	1307	"	15.00
55.0	.43	8.58	1320	"	18.75

Sampled 1330 ACTUAL VOLUME PURGED 19.3 gal

OMMENTS: meter X 1000, Slow Producer!

APPENDIX B

LABORATORY REPORTS AND CHAIN OF CUSTODY

MAY 28 1991

SUPERIOR ANALYTICAL LABORATORY, INC.

1555 BURKE UNIT I • SAN FRANCISCO CA 94124 • PHONE (415) 647-2081 DHS #1332

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 53632
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-248

DATE RECEIVED: 05/14/91
DATE REPORTED: 05/23/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (ug/L) Gasoline Range
1	MW-2	ND<50
2	MW-3	640
3	MW-4	72

ug/L - parts per billion (ppb)

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

QAQC Summary:
Daily Standard run at 2mg/L: %DIFF Gasoline = <15%
MS/MSD Average Recovery = 95%: Duplicate RPD = 3%

Richard Srna, Ph.D.

Amy A Worgan (for)
Laboratory Director

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE. UNIT I • SAN FRANCISCO. CA 94124 • PHONE (415) 647-2081 DHS #1332

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

LABORATORY NO.: 53632
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-248

DATE RECEIVED: 05/14/91
DATE REPORTED: 05/23/91

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-2	ND<0.3	ND<0.3	ND<0.3	ND<0.3
2	MW-3	13	ND<0.3	18	1
3	MW-4	0.7	ND<0.3	ND<0.3	ND<0.3

ug/L - parts per billion (ppb)

Minimum Detection Limit in Water:0.3ug/L

QAQC Summary:
Daily Standard run at 20ug/L: %DIFF 8020 = <15%
MS/MSD Average Recovery = 93% : Duplicate RPD = 4%

Richard Srna, Ph.D.

Onyx A Onuoha

Laboratory Director

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE UNIT I · SAN FRANCISCO CA 94124 · PHONE (415) 647-2081 DHS #1332

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 53632-1
CLIENT: Alton Geoscience
JOB NO.: 30-248

DATE SAMPLED: 05/13/91
DATE RECEIVED: 05/14/91
DATE ANALYZED: 05/20/91

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-2

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	0.5
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit
ug/l = parts per billion (ppb)
QA/QC Summary: Daily Standard %DIFF = <15
MS/MSD average recovery = 86 % :MS/MSD RPD =< 1 %

Richard Srna, Ph.D.

Laboratory Director

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081 DHS #1332

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 53632
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-248

DATE RECEIVED: 05/14/91
DATE REPORTED: 05/23/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 8015

LAB #	Sample Identification	Concentration (ug/L) Diesel Range
1	MW-2	ND<50

ug/L - parts per billion (ppb)

Minimum Detection Limit for Diesel in Water: 50ug/L

QAQC Summary:

Daily Standard run at 200mg/L: %DIFF Diesel = <15%
MS/MSD Average Recovery = 76%; Duplicate RPD = 3%

Richard Srna, Ph.D.

Laboratory Director

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE UNIT I • SAN FRANCISCO CA 94124 • PHONE (415) 647-2081 DHS #1332

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 53632
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-248

DATE RECEIVED: 05/14/91
DATE REPORTED: 05/23/91

ANALYSIS FOR TOTAL PETROLEUM OIL AND GREASE
by Method 5520F (formerly 503E)

LAB #	Sample Identification	Concentration (mg/L) Total oil & grease
1	MW-2	6

mg/L - parts per million (ppm)

Minimum Detection Limit for oil & grease in Water: 5mg/L

QAQC Summary:
MS/MSD average recovery = 93%
Duplicate RPD = 1%

Richard Srna, Ph.D.

Laboratory Director

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

CHAIN of CUSTODY RECORD

PAGE 1 of 1

53632 DATE: 5/14/91

RESULTS DUE BY:

PROJECT NUMBER: 30-248

PROJECT NAME AND ADDRESS: B.P., Oakland

PROJECT MANAGER: Brady Wagle

SAMPLER'S SIGNATURE: Tony Buenvenida

LABORATORY: Superior

REMARKS OR SPECIAL INSTRUCTIONS: Please Run TPH-G + BTXE in Series!!

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

SAMPLE NUMBER	SAMPLE DATE/TIME	~~LOCATION~~ DESCRIPTION Preserve	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	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 + TPH-G	WATER ANALYSIS DHS METHOD: TPHC (GC)	WATER ANALYSIS 7421: TOTAL Pb
MW-2	5/13/91/1330	HCl Pres	2x1 Liter 6x1 Voa	X		8								X TPH-D		X	X		X TOG
MW-3	5/13/91/1445	↓	3x1 Voa			3													
MW-4	5/13/91/1218	↓	3x1 Voa	↓		3											↓	↓	

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

TOTAL NO. OF CONTAINERS: 14

RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	METHOD OF SHIPMENT:
Tony Buenvenida	Erma Walker x672	5/14/91 1340	
Erma Walker x672	M. Gildenberg	5/14/91 1500	SHIPPED BY:
RELINQUISHED BY:	RECEIVED BY:		