BP OIL

110 days to receive GW?

94 MAR 17 PM 2:44 ALCO HAZMAT

March 15, 1994

California Regional Water Quality Control Board
Mr. Eddy So
San Francisco Bay Region
2101 Webster St., Ste. 500
Oakland, CA 94612

RE: BP OIL FACILITY #11120
6400 Dublin Blvd.
Dublin, CA

Attached please find our **GROUNDWATER MONITORING AND SAMPLING DATED JAN 19, 1994** for the above referenced facility.

Please call me at (206) 251-0689 with questions regarding this submission.

Respectfully,

Scott T. Hooton
Group Leader

STH:jc ERM11120

cc: Ms. Eva Chu, Alameda County Health Care Services Agency, 80 Swan Way, Room 200, Oakland, CA 94621

Mr.Brady Nagle, Alisto Engineering Group, 1777 Oakland, Blvd., Suite 200, Walnut Creek, CA 94596

Site file

GROUNDWATER MONITORING AND SAMPLING REPORT

Lee
3/18/94

BP Oil Company Service Station No. 11120
6400 Dublin Boulevard
Dublin, California

Project No. 10-170-01-002

Prepared for:

BP Oil Company
Environmental Resources Management
295 S.W. 41st Street
Building 13, Suite N
Renton, Washington

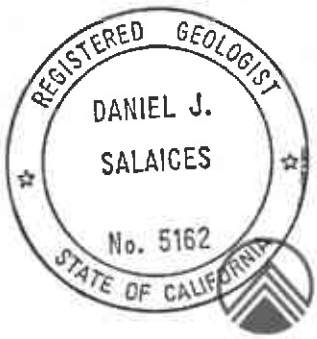
Prepared by:

Alisto Engineering Group
1777 Oakland Boulevard, Suite 200
Walnut Creek, California

January 19, 1994

William Howell
Project Manager

Dan Salaices
Registered Geologist



GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11120
6400 Dublin Boulevard
Dublin, California

Project No. 10-170-01-002

January 19, 1994

INTRODUCTION

This report presents the results and findings of the November 22, 1993 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11120, 6400 Dublin Boulevard, Dublin, California. A site vicinity map is shown in Figure 1.

FIELD PROCEDURES

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

Before purging and sampling, the groundwater level in each well was measured from a permanent mark on top of the casing to the nearest 0.01 foot using an electronic sounder. The depth to groundwater and top of casing elevation data were used to calculate the groundwater elevation in each well in reference to mean sea level. The survey data and groundwater elevation measurements collected to date are presented in Table 1.

Before sample collection, each well was purged of 3 casing volumes, while recording field readings of pH, temperature, and electrical conductivity. Groundwater samples were collected for laboratory analysis by lowering a bottom-fill, disposable bailer to just below the water level in the well. The samples were transferred from the bailer into laboratory-supplied containers. The water sampling field survey forms are presented in Appendix A.

SAMPLING AND ANALYTICAL RESULTS

The results of monitoring and laboratory analysis of the groundwater samples for this and previous quarters are summarized in Table 1. The potentiometric groundwater elevations as interpreted from the results of this monitoring event are shown in Figure 2. The results of groundwater analysis are shown in Figure 3. The laboratory report and chain of custody record are presented in Appendix B.

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER
BP OIL COMPANY SERVICE STATION NO. 11120
6400 DUBLIN BOULEVARD, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-170

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-1	10/27/92	328.96	8.19	320.77	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	ND	PACE
MW-1	04/09/93	328.96	4.79	324.17	ND<50	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-1	08/25/93	328.96	6.85	322.11	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-1	11/22/93	328.96	7.38	321.58	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-2	10/27/92	328.50	7.64	320.86	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-2	04/09/93	328.50	4.12	324.38	ND<50	80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-2	08/25/93	328.50	6.31	322.19	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-2	11/22/93	328.50	7.12	321.38	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-3	10/27/92	329.36	8.43	320.93	210	ND<50	3	0.7	0.9	30	---	---	PACE
MW-3	04/09/93	329.36	4.90	324.46	400	260	6.1	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-3	08/25/93	329.36	7.13	322.23	2000	440	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
[redacted]	11/22/93	329.36	7.60	321.76	1800	[redacted]	ND<2.5	ND<2.5	ND<2.5	ND<2.5	---	---	PACE
MW-4	10/27/92	329.45	8.61	320.84	2300	190	23	54	50	320	---	---	PACE
MW-4	04/09/93	329.45	5.25	324.20	1600	500	78	3.5	68	1.0	---	---	PACE
MW-4	08/25/88	329.45	7.32	322.13	1800	380	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-1 (c)	08/25/93	---	---	---	1600	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-4	11/22/93	329.45	7.83	321.62	610	[redacted]	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-1 (c)	11/22/93	---	---	---	1700	---	ND<2.5	ND<2.5	ND<2.5	ND<2.5	---	---	PACE
MW-5	04/09/93	329.60	5.18	324.42	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-5	08/25/93	329.60	7.28	322.32	ND<50	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-5	11/22/93	329.60	7.82	321.78	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-6	04/09/93	329.55	5.37	324.18	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-6	08/25/93	329.55	7.42	322.13	ND<50	170	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-6	11/22/93	329.55	7.93	321.62	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER
BP OIL COMPANY SERVICE STATION NO. 11120
6400 DUBLIN BOULEVARD, DUBLIN, CALIFORNIA

ALISTO PROJECT NO. 10-170

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	TOG (ppb)	HVOC (ppb)	LAB
MW-7	04/09/93	329.49	5.36	324.13	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-7	08/25/93	329.49	7.44	322.05	ND<50	150	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
MW-7	11/22/93	329.49	7.92	321.57	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (d)	08/25/93	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (d)	11/22/93	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
TOG	Total oil and grease
HVOC	Halogenated volatile organic compounds
ppb	Parts per billion
ND	Not detected above reported detection limit
---	Not analyzed/available
PACE	Pace, Inc.

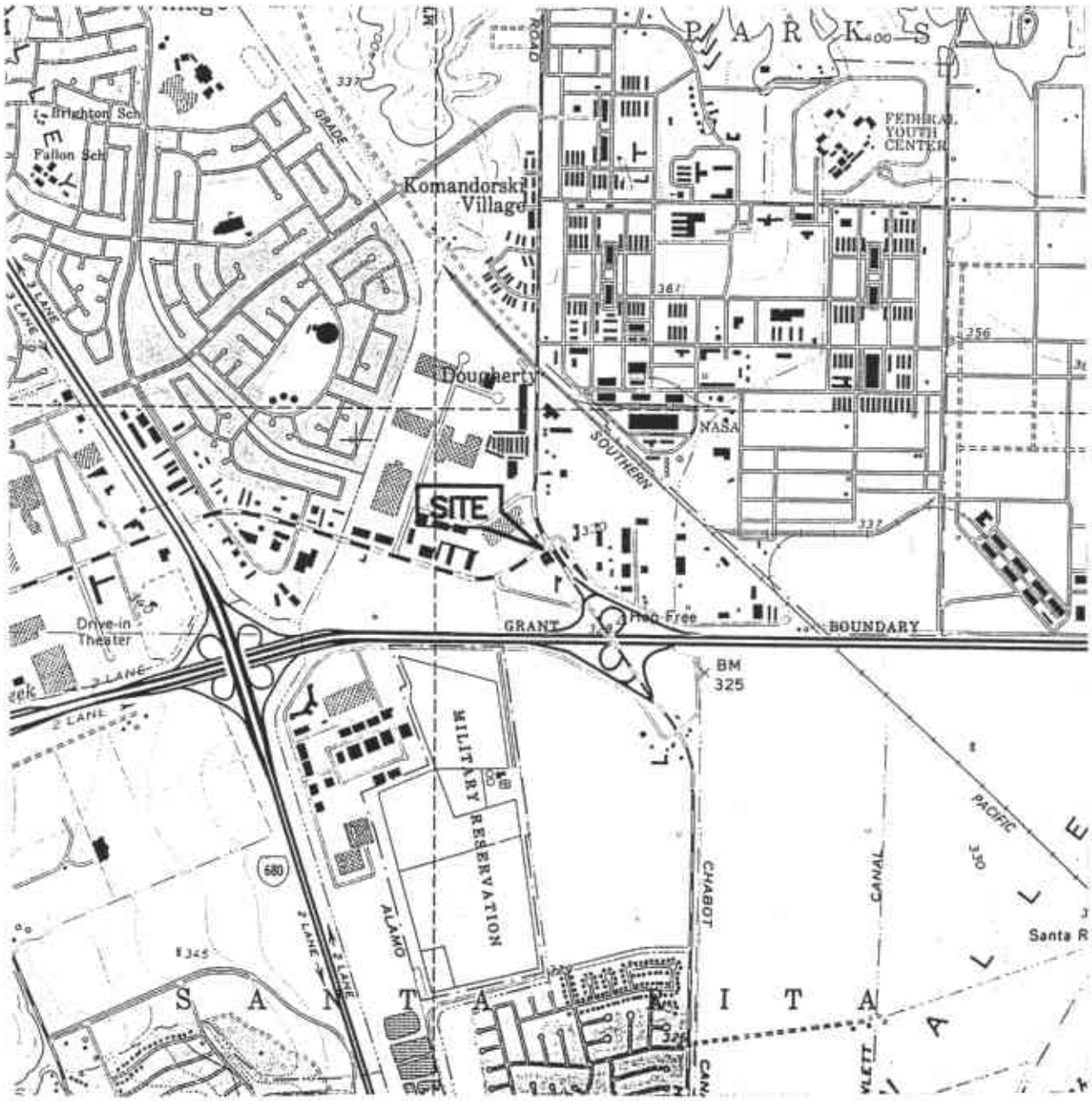
NOTES:

(a) Top of casing elevations surveyed to an arbitrary datum.

(b) Groundwater elevations relative to an arbitrary datum.

(c) Blind duplicate.

(d) Travel blank.



SOURCE:
USGS MAP, DUBLIN QUADRANGLE, CALIFORNIA, 7.5 MINUTE SERIES, 1961, PHOTOREVISED 1980.

N

0 1000' 2000'

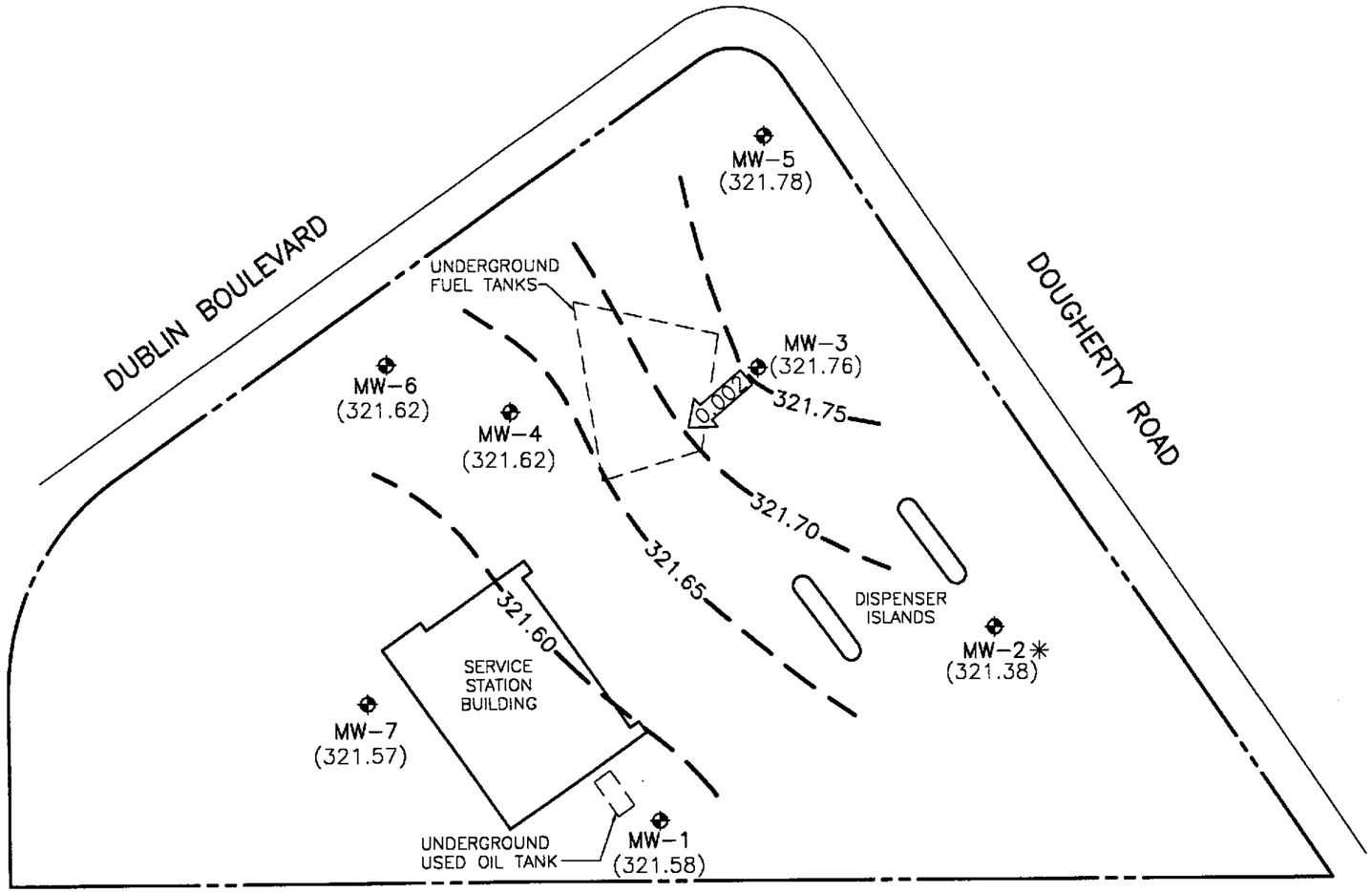
FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11120
6400 DUBLIN BOULEVARD
DUBLIN, CALIFORNIA

PROJECT NO. 10-170

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA



N

0 30 60

SCALE IN FEET

LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (321.76) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 321.75 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL–0.05 FOOT)
- 0.002 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT
- * ANOMALOUS DATA NOT USED IN PREPARING CONTOURS

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

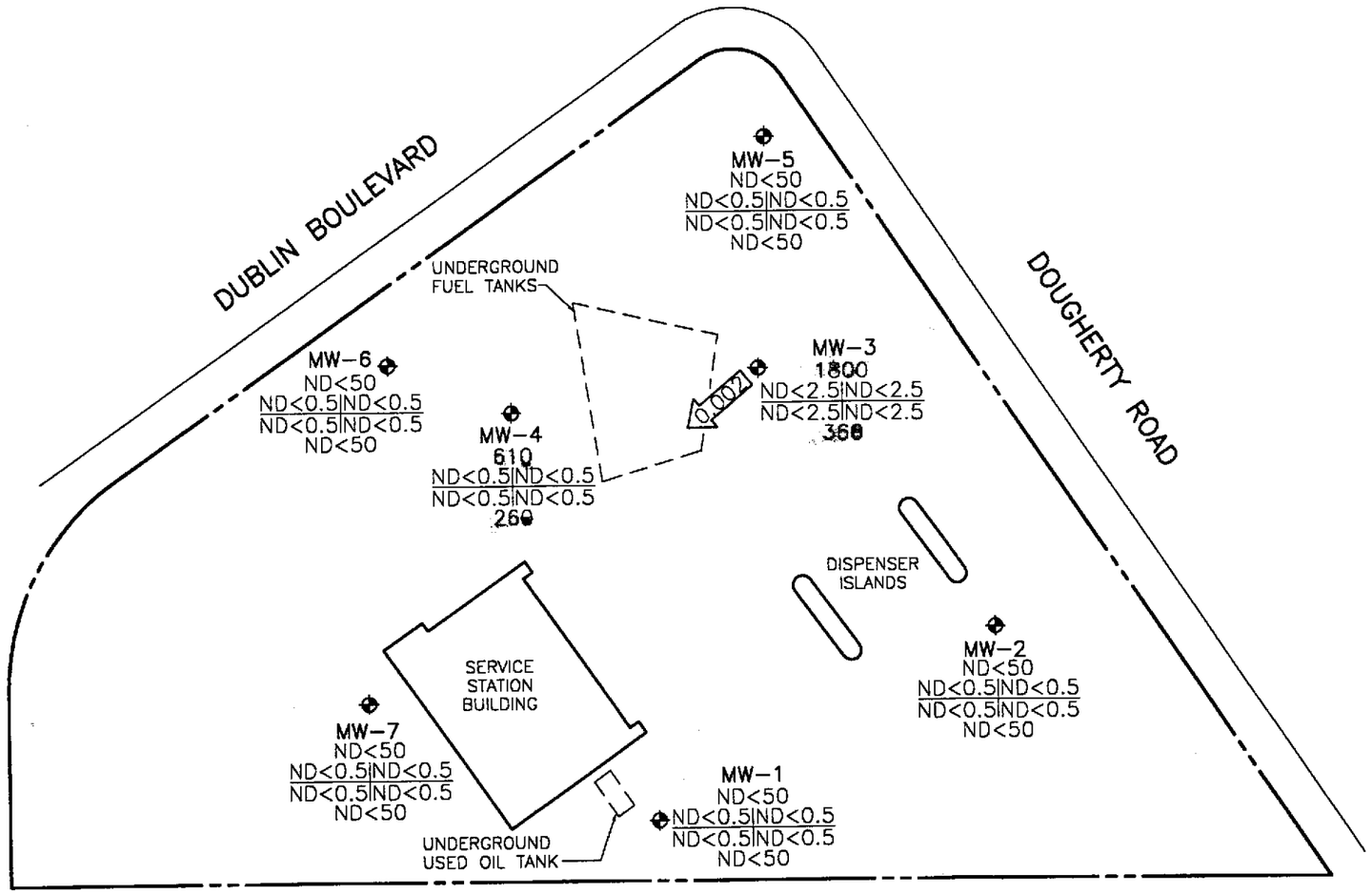
NOVEMBER 22, 1993

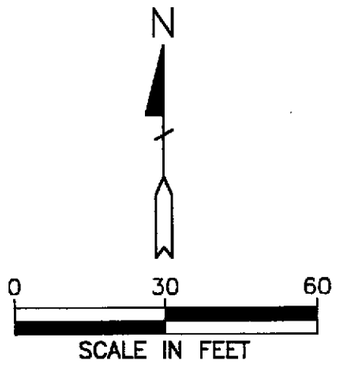
BP OIL SERVICE STATION NO. 11120
6400 DUBLIN BOULEVARD
DUBLIN, CALIFORNIA

PROJECT NO. 10–170

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10170-4.DWG 1-20-94 RNW 1=30





LEGEND

◆	GROUNDWATER MONITORING WELL
TPH–G / B | T / E | X	CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION
TPH–G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
ND	NOT DETECTED ABOVE REPORTED DETECTION LIMIT
⇦ 0.002	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

NOVEMBER 22, 1993

BP OIL SERVICE STATION NO. 11120
6400 DUBLIN BOULEVARD
DUBLIN, CALIFORNIA

PROJECT NO. 10–170

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10170Z-4.DWG 1-12-94 RKW 1-30

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

ALISTO ENGINEERING GROUP
GROUNDWATER MONITORING

Client: BP
Alisto Project No: 10-170-01/002
Service Station No: 11120

Date: 11/22/93
Field Personnel: LC
Site Address: Dublin, CA

FIELD ACTIVITY:

X Groundwater Monitoring
X Groundwater Sampling
___ Well Development

QUALITY CONTROL SAMPLES:

MW-4 QC-1 Sample Duplicate (Well ID)
X QC-2 Trip Blank
___ QC-3 Rinsate Blank

	Well ID	Well Diam	Order Measured/ Sampled	Total Depth	Depth to Water	Depth to Product	Product Thick-ness	Comments
X	MW-1	2"	5	18.20	7.38	Ø	Ø	
X	MW-2		4	18.25	7.12			
X	MW-3		6	18.61	7.60			
X	MW-4		7	18.15	7.83			
X	MW-5	↓	1	21.35	7.82			
X	MW-6	4"	3	19.25	7.93			
X	MW-7	2"	2	20.25	7.92	↓	↓	

Notes:

FORM: FS2/121592

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-170
Service Station No: 11120

Date: 11/22/93
Field Personnel: LCB
Address: Dublin, Ca

Well ID: MW-1 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
- X 2 Inch (0.16 Gal/foot)
- ___3 Inch (0.37 Gal/foot)
- ___4 Inch (0.65 Gal/Foot)
- ___4.5 Inch (0.83 Gal/foot)
- ___6 Inch (1.47 Gal/foot)

Purge Method:
- X Pump (dispos. Poly Tubing)
- ___Disposable Bailers
- ___Other
- ___1.66 PVC Standard Bailer
- ___3.50 PVC Standard Bailer

Well Data:
- Ø Depth to Product
- Ø Product Thickness
- 7.38 Depth to Water

Sampling Method:
- X Disposable Bailer
- ___Pump

Decontamination Method:
- X Triple Rinse (Liquinox)
- ___ Steam Cleaned

Calculated Purge Volume

18.20 (Total Depth of Well) - 7.38 (Depth to Water) = 10.82 ft (Water Column) X .16 (Conversion Factor) Gal/Ft = 1.73 Gal (Casing Vol) X 3 (Vols to Purge) = 5.19 (Total Volume)

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm) X1000	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv
1356	66.4	8.36	1.26	1	Lt. Brown	X TPH-G/BTEX	VOA	HCL
1359	67.2	8.39	1.02	2		X TPH-Diesel	Amber Liter	Solvent Rinsed
1401	67.8	8.33	.98	3		EPA 601	VOA	
1403	67.3	8.26	.97	4		TOG 5520BF	Amber Liter	H_2SO_4
1405	67.0	8.22	.95	5.25				

Begin 1353 Stop 1405 Sampled 1410

FORM: FS3/121592

Dissolved O2
Begin 7.3 PPM
End 3.4 PPM

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-170
Service Station No: 11120

Date: 11/22/93
Field Personnel: LCB
Address: Dublin, CA

Well ID: MW-2 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
X 2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
___4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
X Pump (dispos. Poly Tubing)
___Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
0 Depth to Product
0 Product Thickness
7.12 Depth to Water

Sampling Method:
X Disposable Bailer
___Pump

Decontamination Method:
X Triple Rinse (Liquinox)
___ Steam Cleaned

Calculated Purge Volume

18.25	-	7.12	=	11.13 ft	X	.16 Gal/Ft	=	1.78 → 1.70 Gal	X	3	=	5.34 → 5.10
Total Depth of Well		Depth to Water		Water Column		Conversion Factor		Casing Vol		Vols to Purge		Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm) X1000	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required		Container Type	Preserv
1335	68.5	8.56	1.00	1	Lt. Brown	X	TPH-G/BTEX	VOA	HCL
1337	69.0	8.21	1.29	2		X	TPH-Diesel	Amber Liter	Solvent Rinsed
1340	69	8.03	1.56	3			EPA 601	VOA	
1342	68.4	7.96	1.58	4			TOG 5520BF	Amber Liter	H_2SO_4
1344	68.2	7.92	1.57	550	↓				

Begin 1333 Stop 1344 Sampled 1349

FORM: FS3/121592

Dissolved O2
Begin 4.4 ppm
End 2.9 ppm

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-170
Service Station No: 11120

Date: 11/22/93
Field Personnel: LCB
Address: Dublin, Ca

Well ID: MW-3 Field Activity: __Well Development X Well Sampling __Product Bailing

Casing Diameter:
X 2 Inch (0.16 Gal/foot)
__3 Inch (0.37 Gal/foot)
__4 Inch (0.65 Gal/Foot)
__4.5 Inch (0.83 Gal/foot)
__6 Inch (1.47 Gal/foot)

Purge Method:
X Pump (dispos. Poly Tubing)
__Disposable Bailers
__Other
__1.66 PVC Standard Bailer
__3.50 PVC Standard Bailer

Well Data:
0 Depth to Product
0 Product Thickness
7.60 Depth to Water

Sampling Method:
X Disposable Bailer
__Pump

Decontamination Method:
X Triple Rinse (Liquinox)
__ Steam Cleaned

Calculated Purge Volume

18.61 - 7.60 = 11.01 ft X .16 Gal/Ft = ~~1.84~~ 1.76 Gal X 3 = ~~5.52~~ 5.28

Total Depth of Well | Depth to Water | Water Column | Conversion Factor | Casing Vol | Vols to Purge | Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm) X1000	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required		Container Type	Preserv
1418	65.3	8.68	.63	1	Lt Brown	X	TPH-G/BTEX	VOA	HCL
1420	67.7	8.23	.70	2		X	TPH-Diesel	Amber Liter	Solvent Rinsed
1422	68.4	8.15	.73	3			EPA 601	VOA	
1424	68.1	8.06	.75	4.50			TOG 5520BF	Amber Liter	H_2SO_4
1426	67.7	8.00	.73	5.75	↓				

Begin 1415 Stop 1426 Sampled 1431

FORM: FS3/121592

Dissolved O_2
Begin 4.0 PPM
End 3.2 PPM

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-170
Service Station No: 11120

Date: 11/22/93
Field Personnel: LCB
Address: Dublin, Ca

Well ID: MW-4 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
X 2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
___4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
X Pump (dispos. Poly Tubing)
___Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
Ø Depth to Product
Ø Product Thickness
7.83 Depth to Water

Sampling Method:
X Disposable Bailer
___Pump

Decontamination Method:
X Triple Rinse (Liquinox)
___ Steam Cleaned

Calculated Purge Volume

18.15 (Total Depth of Well) - 7.83 (Depth to Water) = 10.32 Ft (Water Column) X .16 Gal/Ft (Conversion Factor) = 1.65 Gal (Casing Vol) X 3 (Vols to Purge) = 4.95 (Total Volume)

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required		Container Type	Preserv
1450	69.1	834	.84	1	Lt. Brown	X	TPH-G/BTEX	VOA	HCL
1455	70.3	8.22	.79	2		X	TPH-Diesel	Amber Liter	Solvent Rinsed
1500	70.5	8.16	.79	3			EPA 601	VOA	
1505	70.0	8.07	.76	4			TOG 5520BF	Amber Liter	H_2SO_4
1505	69.7	8.01	.73	5	↓				

Begin 1445 Stop 1505 Sampled 1510

QC-1 Taken From this well

Dissolved O2
Begin 3.6 PPM
End 2.8 PPM

FORM: FS3/121592

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-170
Service Station No: 11120

Date: 11/22/93
Field Personnel: LCB
Address: Dublin, CA

Well ID: MW-5 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
X 2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
___4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
X Pump (dispos. Poly Tubing)
___Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
0 Depth to Product
0 Product Thickness
7.82 Depth to Water

Sampling Method:
X Disposable Bailer
___Pump

Decontamination Method:
X Triple Rinse (Liquinox)
___ Steam Cleaned

Calculated Purge Volume

21.35 (Total Depth of Well) - 7.82 (Depth to Water) = 13.53 ft (Water Column) X .16 Gal/Ft (Conversion Factor) = 2.16 Gal (Casing Vol) X 3 (Vols to Purge) = 6.48 (Total Volume)

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv
1250	69.2	8.17	.81	1.50	Lt. Brown	X TPH-G/BTEX	VOA	HCL
1252	69.9	8.11	.66	2.75		X TPH-Diesel	Amber Liter	Solvent Rinsed
1254	70.1	8.06	.63	4.00		EPA 601	VOA	
1256	70.0	8.01	.62	5.25		TOG 5520BF	Amber Liter	H_2SO_4
1258	69.9	7.98	.62	6.50				

Begin 1248 Stop 1258 Sampled 1303

Dissolved O2
Begin 3.5 PPM
End 2.5 PPM

FORM: FS3/121592

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-170
Service Station No: 11120

Date: 11/22/93
Field Personnel: LCB
Address: Dublin, CA

Well ID: MW-6 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
___2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
X 4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
X Pump (dispos. Poly Tubing)
___Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
0 Depth to Product
0 Product Thickness
7.93 Depth to Water

Sampling Method:
X Disposable Bailer
___Pump

Decontamination Method:
X Triple Rinse (Liquinox)
___ Steam Cleaned

Calculated Purge Volume

19.25 (Total Depth of Well) - 7.93 (Depth to Water) = 11.32 ft (Water Column) X .65 Gal/Ft (Conversion Factor) = 7.36 Gal (Casing Vol) X 3 (Vols to Purge) = 22.08 (Total Volume)

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm) X1000	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv
1311	71.0	8.44	.85	4	clear	X TPH-G/BTEX	VOA	HCL
1315	71.3	8.28	.81	9		X TPH-Diesel	Amber Liter	Solvent Rinsed
1318	70.9	8.17	.80	13		EPA 601	VOA	
1321	70.6	8.12	.78	17		TOG 5520BF	Amber Liter	H_2SO_4
1324	70.4	8.09	.78	22.25				

Begin 1307 Stop 1324 Sampled 1329

Dissolved O2
Begin 6.6 PPM
End 3.1 PPM

FORM: FS3/121592

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-170
Service Station No: 11120

Date: 11/22/93
Field Personnel: LB
Address: Dublin, Ca

Well ID: MW-7 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
X 2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
___4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
X Pump (dispos. Poly Tubing)
___Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
Ø Depth to Product
Ø Product Thickness
7.92 Depth to Water

Sampling Method:
X Disposable Bailer
___Pump

Decontamination Method:
X Triple Rinse (Liquinox)
___ Steam Cleaned

Calculated Purge Volume

20.25	- 7.92	= 12.33 ft X	.16 Gal/Ft	= 1.97 Gal X	3	= 5.91
Total Depth of Well	Depth to Water	Water Column	Conversion Factor	Casing Vol	Vols to Purge	Total Volume

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos/cm) X1000	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv
1230	69.5	7.85	.99	1.50	clear	X TPH-G/BTEX	VOA	HCL
1232	69.2	7.80	.92	2.50		X TPH-Diesel	Amber Liter	Solvent Rinsed
1234	69.2	7.76	.91	3.50		EPA 601	VOA	
1236	69.0	7.72	.90	4.50		TOG 5520BF	Amber Liter	H_2SO_4
1238	68.9	7.69	.89	6.00				

Begin 1228 Stop 1238 Sampled 1243

FORM: FS3/121592

Dissolved O2
Begin 3.3 PPM
End 2.3 PPM

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

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REPORT OF LABORATORY ANALYSIS

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

December 02, 1993
PACE Project Number: 431123505

Attn: Mr. Bill Howell

Client Reference: BP Station # 11120

PACE Sample Number:			70 0198437	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			QC-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/30/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/30/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/30/93
Benzene	ug/L	0.5	ND	11/30/93
Toluene	ug/L	0.5	ND	11/30/93
Ethylbenzene	ug/L	0.5	ND	11/30/93
Xylenes, Total	ug/L	0.5	ND	11/30/93

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FAX: 415-883-2673

REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
Page 2

December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

PACE Sample Number:			70 0198445	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			QC-1	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	250	1700	11/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/28/93
Benzene	ug/L	2.5	ND	11/28/93
Toluene	ug/L	2.5	ND	11/28/93
Ethylbenzene	ug/L	2.5	ND	11/28/93
Xylenes, Total	ug/L	2.5	ND	11/28/93

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REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
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December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

PACE Sample Number:			70 0198453	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			MW-7	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/28/93
Benzene	ug/L	0.5	ND	11/28/93
Toluene	ug/L	0.5	ND	11/28/93
Ethylbenzene	ug/L	0.5	ND	11/28/93
Xylenes, Total	ug/L	0.5	ND	11/28/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	ND	11/30/93
Date Extracted			11/24/93	

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REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
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December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

PACE Sample Number:			70 0198461	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			MW-5	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/28/93
Benzene	ug/L	0.5	ND	11/28/93
Toluene	ug/L	0.5	ND	11/28/93
Ethylbenzene	ug/L	0.5	ND	11/28/93
Xylenes, Total	ug/L	0.5	ND	11/28/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	0.05	11/30/93
Date Extracted			11/24/93	

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REPORT OF LABORATORY ANALYSIS

December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

PACE Sample Number:			70 0198470	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			MW-6	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/28/93
Benzene	ug/L	0.5	ND	11/28/93
Toluene	ug/L	0.5	ND	11/28/93
Ethylbenzene	ug/L	0.5	ND	11/28/93
Xylenes, Total	ug/L	0.5	ND	11/28/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	ND	11/30/93
Date Extracted			11/24/93	

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REPORT OF LABORATORY ANALYSIS

December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

PACE Sample Number:			70 0198488	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			MW-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/28/93
Benzene	ug/L	0.5	ND	11/28/93
Toluene	ug/L	0.5	ND	11/28/93
Ethylbenzene	ug/L	0.5	ND	11/28/93
Xylenes, Total	ug/L	0.5	ND	11/28/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	ND	11/30/93
Date Extracted			11/24/93	

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REPORT OF LABORATORY ANALYSIS

December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0198496	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			MW-1	
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/28/93
Benzene	ug/L	0.5	ND	11/28/93
Toluene	ug/L	0.5	ND	11/28/93
Ethylbenzene	ug/L	0.5	ND	11/28/93
Xylenes, Total	ug/L	0.5	ND	11/28/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	ND	11/30/93
Date Extracted			11/24/93	

REPORT OF LABORATORY ANALYSIS

December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0198500	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			MW-3	
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS			-	11/28/93
TOTAL FUEL HYDROCARBONS, (LIGHT):				
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	250	1800	11/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/28/93
Benzene	ug/L	2.5	ND	11/28/93
Toluene	ug/L	2.5	ND	11/28/93
Ethylbenzene	ug/L	2.5	ND	11/28/93
Xylenes, Total	ug/L	2.5	ND	11/28/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	0.36	11/30/93
Date Extracted			11/24/93	

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REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
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December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

PACE Sample Number:			70 0198518	
Date Collected:			11/22/93	
Date Received:			11/23/93	
Client Sample ID:			MW-4	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/28/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	610	11/28/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/28/93
Benzene	ug/L	0.5	ND	11/28/93
Toluene	ug/L	0.5	ND	11/28/93
Ethylbenzene	ug/L	0.5	ND	11/28/93
Xylenes, Total	ug/L	0.5	ND	11/28/93
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	0.26	11/30/93
Date Extracted			11/24/93	

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

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Novato, CA 94949
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Mr. Bill Howell
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FOOTNOTES
for pages 1 through 9

December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

MDL	Method Detection Limit
ND	Not detected at or above the MDL.

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REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
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QUALITY CONTROL DATA

December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

EXTRACTABLE FUELS EPA 3510/8015
Batch: 70 26689
Samples: 70 0198453, 70 0198461, 70 0198470, 70 0198488, 70 0198496
70 0198500, 70 0198518

METHOD BLANK:

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

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Extractable Fuels, as Diesel	mg/L	0.05	1.00	76%	81%	6%

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Client Reference: BP Station # 11120

PURGEABLE FUELS AND AROMATICS
Batch: 70 26668
Samples: 70 0198445, 70 0198453, 70 0198461, 70 0198470, 70 0198488
70 0198496, 70 0198500, 70 0198518

METHOD BLANK:

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

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	1000	98%	97%	1%
Benzene	ug/L	0.5	100	101%	101%	0%
Toluene	ug/L	0.5	100	102%	101%	0%
Ethylbenzene	ug/L	0.5	100	102%	101%	0%
Xylenes, Total	ug/L	0.5	300	99%	99%	0%

Mr. Bill Howell
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QUALITY CONTROL DATA

December 02, 1993
PACE Project Number: 431123505

Client Reference: BP Station # 11120

PURGEABLE FUELS AND AROMATICS
Batch: 70 26692
Samples: 70 0198437

METHOD BLANK:

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

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	1000	101%	99%	2%
Benzene	ug/L	0.5	40.0	78%	82%	5%
Toluene	ug/L	0.5	40.0	87%	89%	2%
Ethylbenzene	ug/L	0.5	40.0	90%	88%	2%
Xylenes, Total	ug/L	0.5	120	94%	90%	4%

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Client Reference: BP Station # 11120

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

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B.P. OIL COMPANY

16400 Southcenter Parkway, Suite 301, Tukwila, WA 98188

CHAIN OF CUSTODY

4/31123.505

№ 0350

☒ Novato, CA, 11 Digital Drive, 94949
Phone: (415) 883-6100 Fax: (415) 883-2673

☐ Huntington Beach, CA, 5702 Bolsa Avenue, 92649
Phone: (714) 892-2565 Fax: (714) 890-4032

Consultant's Name: Alisto Engineering	Consultant Project #: 10-170-01/002		Page 1 of 1
Address: 1777 Oakland Blvd #200, Walnut Creek, CA 94596			
Project Contact: Bill Howell	Phone #: (510) 295-1650 Fax #: 295-1823		Consultant Work Order #: 6047650
Sampled by (print): Larry Buenvenida	Sampler's Signature: Larry Buenvenida		B.P. Site Location #: 11120
Shipment Method: Courier / Airbill #:	Shipment Date:	B.P. Site Location: Dublin, CA	
TAT: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☒ Standard (10 day)	ANALYSIS REQUIRED		Sample Condition as Received Temperature ° C: _____ Cooler #: _____ Inbound Seal Yes No Outbound Seal Yes No

Sample Description	Collection Date/Time	Matrix Soil/Water	Prsv	# of Cont	PACE Sample #	TPH/GAS/BTEX EPA 8015/8020	TPH/Diesel EPA 8015	TRPH EPA 418.1	HVOC 8010									COMMENTS
QC-2	11/22/93	W	HCl 1093	2	19843.7	X												
QC-1				3	19844.5													
MW-7				4	19845.3		X											
MW-5					19846.1													
MW-6					19847.0													
MW-2					19848.8													
MW-1					19849.6													
MW-3					19850.0													
MW-4	↓	↓	↓	↓	19851.8	↓	↓											

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time	Additional Comments:
Larry Buenvenida	11/23/93	1600	Ed Fatkin / Pace	11/23	1600	9/1
Ed Fatkin - Pace	11/23	1745	Sandra Briones Pace	11/23/93	1745	I/1

Distribution: White - Original Yellow - B.P. Oil Pink - Lab Goldenrod - Consultant Field Staff