QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

Prepared for

BP Oil Company Service Station No. 11266
1541 Park Street
Alameda, California

Prepared by

Alisto Engineering Group
1000 Burnett Avenue, Suite 420
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Project No. 10-050

November 9, 1992

Brady Nagle
Project Manager

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Principal

QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11266
1541 Park Street
Alameda, California

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INTRODUCTION

This report presents the results and findings of the October 2, 1992 quarterly groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Service Station No. 11266, 1541 Park Street, Alameda, 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 Regional Water Quality Control Board, San Francisco Bay Region, and the Alameda County Health Care Services Agency.

Before purging and sampling, the groundwater level in each well was measured from a permanent mark on the top of the casing to the nearest 0.01 foot using an electronic sounder. The depth to ground water and the top of casing elevation data were used to calculate the ground water elevation in each well in reference to mean sea level. The survey data and ground water 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 carefully transferred from the bailer into the appropriate clean glass containers. The water sampling field survey forms are presented in Appendix A.

SAMPLING AND ANALYTICAL RESULTS

The results of 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 quarterly monitoring event are depicted in Figure 2. A map showing the results of groundwater analysis is presented as Figure 3. The laboratory report and chain of custody record are presented in Appendix B.

SUMMARY OF FINDINGS

The findings of the groundwater monitoring and sampling event for this quarter are summarized below:

- No free product or sheen was observed in any of the groundwater monitoring wells.
- Groundwater elevation data collected on October 2, 1992, indicate a gradient of approximately 0.006 foot/foot in a general eastern direction across the site.
- Dissolved-phase total petroleum hydrocarbons as gasoline (TPH-G) and benzene, toluene, ethylbenzene, and total xylenes constituents were detected in the groundwater samples from Monitoring Wells MW-1 and MW-2 at concentrations up to 4,000 and 89 parts per billion TPH-G and benzene.

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11266
1541 PARK STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-050

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUND WATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
MW-1	03/04/88	22.63	---	---	95000	2000	5900	1100	10000	---
MW-1	03/29/89	22.63	---	---	25000	930	2600	24	3100	---
MW-1	11/28/89	22.63	---	---	15000	280	880	340	1200	---
MW-1	02/13/91	22.63	---	---	25000	680	2700	1100	3200	---
MW-1	01/08/92	22.63	---	---	10000	260	1100	570	2000	---
MW-1	03/30/92	22.63	8.15	14.48	5800	290	570	500	1100	PACE
MW-1	07/02/92	22.63	9.38	13.25	2500	170	60	310	300	ANA
MW-1	07/22/92	22.63	9.62	13.01	---	---	---	---	---	---
MW-1	10/02/92	22.63	9.98	12.65	4000	86	190	270	350	ANA
QC-1 (c)	10/02/92	22.63	9.98	12.65	3600	89	180	270	340	ANA
MW-2	03/04/88	22.75	---	---	ND	ND	ND	ND	ND	---
MW-2	03/29/89	22.75	---	---	ND	1.1	0.78	ND	1.7	---
MW-2	11/28/89	22.75	---	---	170	ND	ND	ND	ND	---
MW-2	02/13/91	22.75	---	---	150	1.4	ND	ND	0.9	---
MW-2	01/08/92	22.75	---	---	ND	1.4	ND	ND	1.1	---
MW-2	03/30/92	22.75	9.03	13.72	91	0.7	ND	ND	ND	PACE
MW-2	07/02/92	22.75	9.96	12.79	150	3.1	0.6	0.6	1.1	ANA
MW-2	07/22/92	22.75	10.12	12.63	---	---	---	---	---	---
MW-2	10/02/92	22.75	10.42	12.33	56	ND<0.5	0.8	0.8	1.2	ANA

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11266
1541 PARK STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-050

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUND WATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
MW-3	03/04/88	23.45	---	---	ND	ND	ND	ND	ND	---
MW-3	03/29/89	23.45	---	---	ND	ND	ND	ND	ND	---
MW-3	11/28/89	23.45	---	---	ND	ND	ND	ND	ND	---
MW-3	02/13/91	23.45	---	---	ND	ND	ND	ND	ND	---
MW-3	01/08/92	23.45	---	---	ND	ND	ND	ND	ND	---
MW-3	03/30/92	23.45	9.71	13.74	ND	ND	ND	ND	ND	PACE
MW-3	07/02/92	23.45	10.52	12.93	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-3	07/22/92	23.45	10.62	12.83	---	---	---	---	---	---
MW-3	10/02/92	23.45	10.86	12.59	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-4	03/04/88	23.63	---	---	ND	ND	ND	ND	ND	---
MW-4	03/29/89	23.63	---	---	ND	ND	ND	ND	ND	---
MW-4	11/28/89	23.63	---	---	430	6.2	0.6	12	3.3	---
MW-4	02/13/91	23.63	---	---	ND	ND	ND	ND	ND	---
MW-4	01/08/92	23.63	---	---	ND	ND	ND	ND	ND	---
MW-4	03/30/92	23.63	8.73	14.90	ND	ND	ND	ND	ND	PACE
MW-4	07/02/92	23.63	10.04	13.59	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-4	07/22/92	23.63	10.26	13.37	---	---	---	---	---	---
MW-4	10/02/92	23.63	10.63	13.00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11266
1541 PARK STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-050

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUND WATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
MW-5	03/04/88	22.87	---	---	ND	ND	ND	ND	ND	---
MW-5	03/29/89	22.87	---	---	ND	ND	ND	ND	ND	---
MW-5	11/28/89	22.87	---	---	ND	ND	ND	ND	ND	---
MW-5	02/13/91	22.87	---	---	ND	ND	ND	ND	ND	---
MW-5	01/08/92	22.87	---	---	ND	ND	ND	ND	ND	---
MW-5	03/30/92	22.87	7.85	15.02	ND	ND	ND	ND	ND	PACE
MW-5	07/02/92	22.87	9.27	13.60	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-5	07/22/92	22.87	9.55	13.32	---	---	---	---	---	---
MW-5	10/02/92	22.87	9.97	12.90	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-6	03/04/88	22.85	---	---	ND	ND	ND	ND	ND	---
MW-6	03/29/89	22.85	---	---	ND	ND	ND	ND	ND	---
MW-6	11/28/89	22.85	---	---	ND	ND	ND	ND	ND	---
MW-6	02/13/91	22.85	---	---	ND	ND	ND	ND	ND	---
MW-6	01/08/92	22.85	---	---	ND	ND	ND	ND	ND	---
MW-6	03/30/92	22.85	8.86	13.99	ND	ND	ND	ND	ND	PACE
MW-6	07/02/92	22.85	9.94	12.91	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-6	07/22/92	22.85	10.10	12.75	---	---	---	---	---	---
MW-6	10/02/92	22.85	10.48	12.37	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11266
1541 PARK STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-050

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUND WATER ELEVATION (b) (Feet)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	LAB
RW-1	07/22/92	---	9.66	---	13000	1000	3400	380	2800	ANA
RW-1	10/02/92	---	10.28	---	---	---	---	---	---	---
QC-2 (d)	10/02/92	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
ND	Not detected above reported detection limits
ANA	Anametrix, Inc.
PACE	Pace Inc. (Novato)
(ppb)	Parts per billion
---	Not analyzed/not available

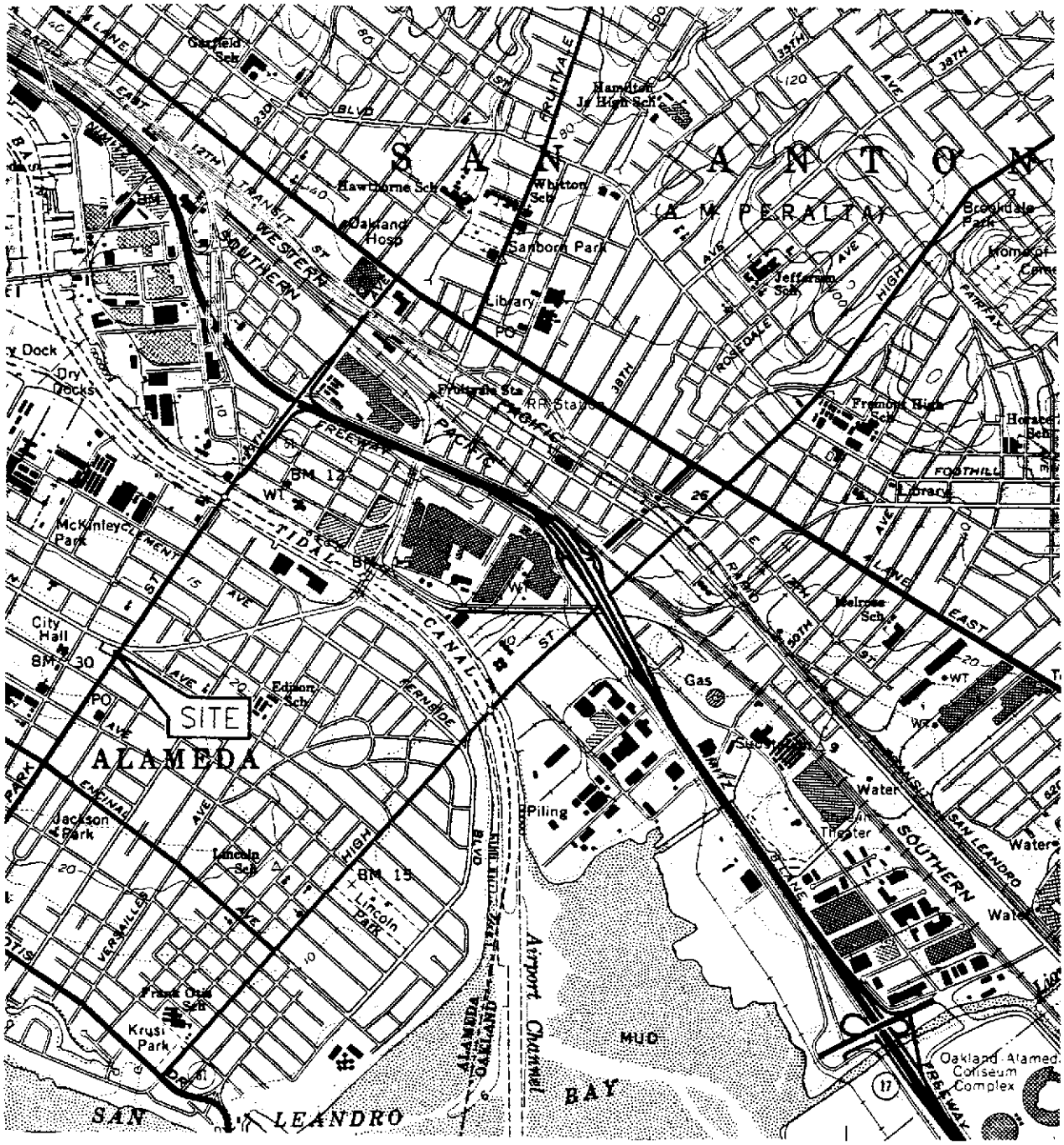
NOTES:

(a) Casing elevations surveyed to nearest 0.01 foot above mean sea level.

(b) Ground water elevation in feet above mean sea level.

(c) Blind duplicate of MW-1.

(d) Travel blank.



N

0 1000' 2000'

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

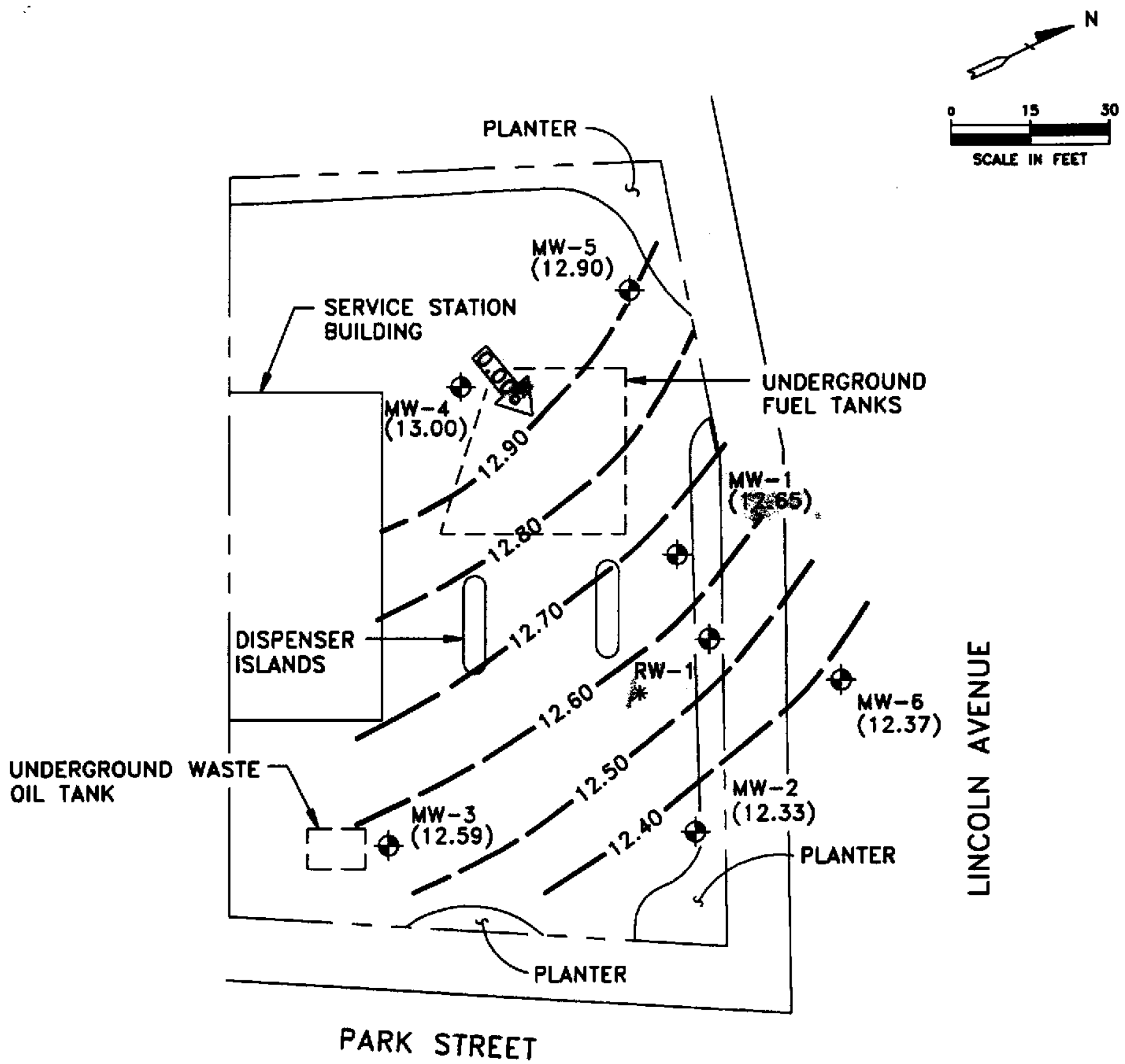
FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11266
1541 PARK STREET
ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-050

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA



LEGEND:

⊕	GROUNDWATER MONITORING WELL
✳	INACCESSABLE
(12.65)	GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
12.90	GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL - 0.1 FOOT)
0.006 ⇨	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

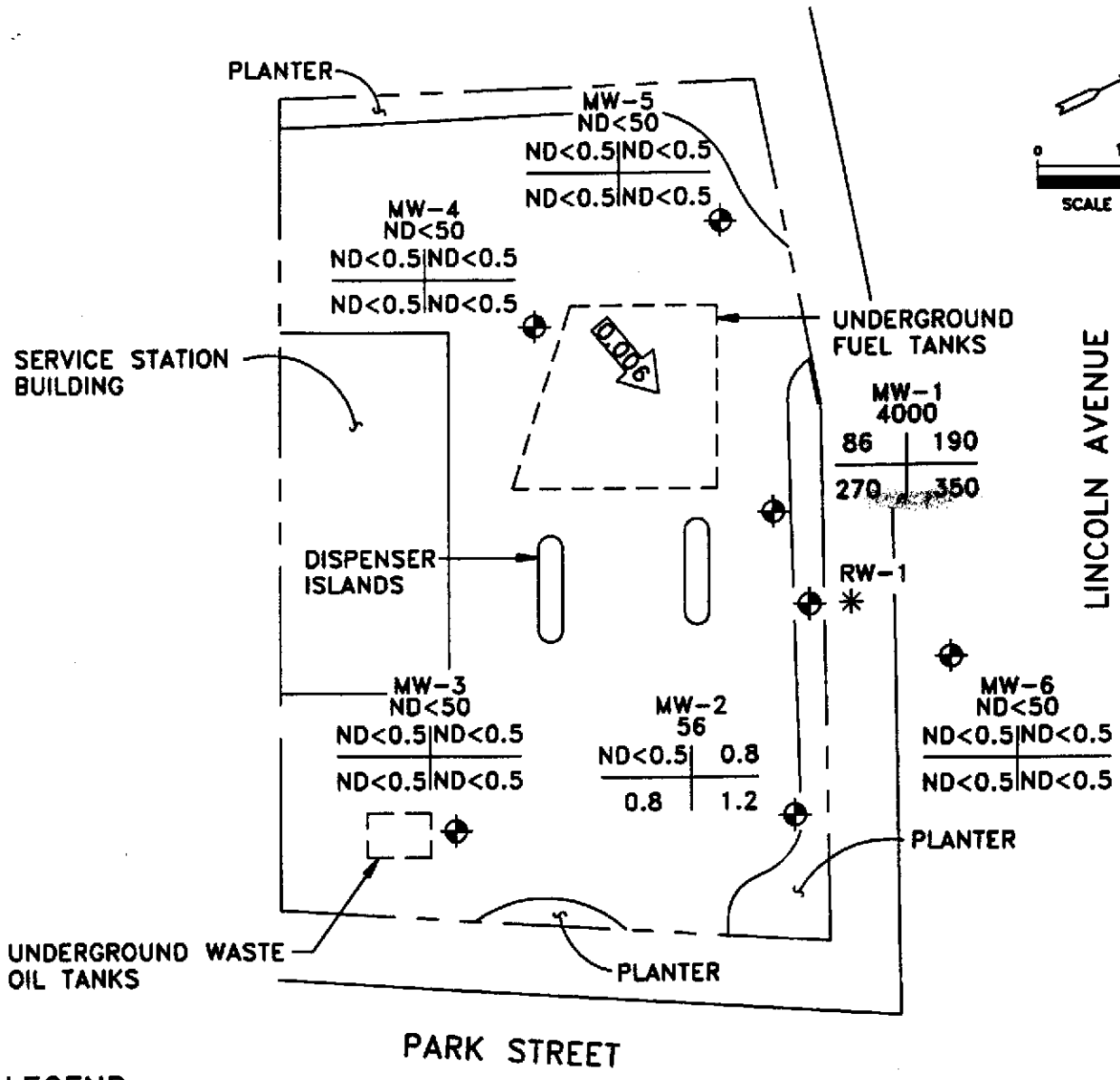
FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP (OCTOBER 2, 1992)

BP OIL SERVICE STATION NO. 11266
1541 PARK STREET
ALAMEDA, CALIFORNIA

PROJECT NO. 10-050

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA



LEGEND:

- ⊕ GROUNDWATER MONITORING WELL
- ✳ INACCESSABLE
- TPH-G / B T / E X — CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION (PPB)
- TPH-G — TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- B — BENZENE
- T — TOLUENE
- E — ETHYLBENZENE
- X — TOTAL XYLENES
- ND — NOT DETECTED ABOVE REPORTED DETECTION LIMIT
- 0.006 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATION OF PETROLEUM HYDROCARBONS IN GROUNDWATER (OCTOBER 2, 1992)

BP OIL SERVICE STATION NO. 11266
1541 PARK STREET
ALAMEDA, CALIFORNIA

PROJECT NO. 10-050

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

Birch Technical Services

Field Report / Data Sheet

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

☒ Groundwater Sampling ○ Groundwater Monitoring ○ Well Development ○ Drill Support ○ Stockpile Sampling

Firm: ALISTO	Date: 10/2/92	Station #: BP11266	Day: M Tu W Th F
Project Number: 10-050	Field Technician: DAN BIRCH	Address: 1541 Park Street, ALAMEDA	Weather: High Clouds
			Milage: ____ mi

Equipment List:

- ☒ Water Guage (1) day
- ☒ Parameter Kit (1) day
- ☒ Disposable Bailers (6)
- ○ ____ (____)
- ○ ____ (____)
- ○ Plug(s) (____) (____ in)
- ☒ Honda Pump (1) day
- ☒ Poly Tubing (154 ft)
- ☒ Dolphin Lock(s) (____)
- ☒ Nitrile Gloves (1 pair)

Travel Time: 2.5 hrs
Time at Site: 5.5 hrs
Total Time: 8 hrs

Notes:

DTW Order	WELL ID	DIA	LOCK	CAP	TOTAL DEPTH	1st DTW	2nd DTW	Depth to Product	Product thickness	comments
0	RW-1	6	ok	ok	NM	10.28	10.28	NM	NM	Well NOT Sampled.
6	MW-1	2	ok	ok	21.88	9.98	9.98	—	—	
5	MW-2	2	OK	OK	23.01	10.42	10.42	—	—	
1	MW-3	2	ok	ok	19.59	10.86	10.86	—	—	
2	MW-4	2	ok	ok	19.92	10.63	10.63	—	—	
3	MW-5	2	OK	OK	24.24	9.97	9.97	—	—	
4	MW-6	2	OK	OK	16.95	10.48	10.48	—	—	

Travel 11-12. Arrive, open wells then measure DTW. Sample wells as outlined on "Ground-water sampling forms!" Leave site @ 4:30 then arrive at lab at 5:00. Travel until 6:00.

Page ___ of ___ Inv#: ____

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

GROUND-WATER SAMPLING FORM

Well Number: RW-1

Project Number: 10-050
Station Number: BP11266
Date: 10/21/92

Well Type: OMonitor ⊗Extraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

O 2"	O3"	O4"	O4.5"	⊗6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) _____ Initial Water Level: 10.28

Total Volume Purged: _____ Time Elapsed: _____

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
ODisposable PVC Bailer(s)(____)
OOther_____

Calculated Purge Volume:

_____ - 10.28 = _____ x _____ = _____ x _____ = _____(gallons)

Total Depth | Water Level | Well Vol. Fac. | #of vol. to Purge | Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN	Depth of Product	Emulsion
OYes ONo	_____(ft)	OYes ONo

COMMENTS: Remediation system down well. Unable to remove well cap due to dedicated system. Well NOT sampled

PARAMETER EQUIPMENT CALIBRATION

pH Meter #:_____ Time:_____
Solution pH 4.00 _____at _____
Solution pH 10.00_____at _____
Solution pH 7.00 _____ at _____
Water Level Meter#:_____

SAMPLING METHOD

OPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr): NOT

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
	TPH-G/BTEX		VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

Birch Technical Services

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

GROUND-WATER SAMPLING FORM

Well Number: MW-1

Project Number: 10-050
Station Number: BP11266
Date: 10/2/92

Well Type: XMonitor OExtraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

X2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 21.88 Initial Water Level: 9.98

Total Volume Purged: 6 Time Elapsed: 6

PURGE METHOD:
XHonda Pump
XDisposable PolyTubing (21.8' ft)
ODisposable PVC Bailer(s)(____)
OOther_____

Calculated Purge Volume:

21.88 (Total Depth) - 9.98 (Water Level) = 11.9 x .16 (Well Vol. Fac.) = 1.9 x 3 (#of vol. to Purge) = 5.7 (gallons) (Calculated Purge Volume)

Subjective Analysis Prior to Purging

SHEEN OYes XNo | Depth of Product _____(ft) | Emulsion OYes XNo

COMMENTS: Sample duplicate "QC-1; 1433" was collected from this well.

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1100
Solution pH 4.00 4 at 66.9
Solution pH 10.00 10 at 66.9
Solution pH 7.00 7 at 66.9
Water Level Meter#: 10337

SAMPLING METHOD

XPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr): 1427

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
2	1420	72.3	6.27	0.70
4	1423	72.9	6.34	0.74
6	1425	72.8	6.36	0.74

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

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Santa Cruz, Ca 95060
(408) 459-0718

GROUND-WATER SAMPLING FORM

Well Number: MW-2

Project Number: 10-050
Station Number: BP11266
Date: 10/21/92

Well Type: ⊗Monitor OExtraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

⊗2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 23.01 Initial Water Level: 10.42

Total Volume Purged: 6 Time Elapsed: 6

PURGE METHOD:
⊗Honda Pump
⊗Disposable PolyTubing(25 ft)
ODisposable PVC Bailer(s)(____)
OOther_____

Calculated Purge Volume:

23.01 (Total Depth) - 10.42 (Water Level) = 12.6 x .16 (Well Vol. Fac.) = 2.0 x 3 (#of vol. to Purge) = 6 (gallons) (Calculated Purge Volume)

Subjective Analysis Prior to Purging

SHEEN OYes ⊗No | Depth of Product _____(ft) | Emulsion OYes ⊗No

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1100
Solution pH 4.00 4 at 66.9
Solution pH 10.00 10 at 66.9
Solution pH 7.00 7 at 66.9
Water Level Meter#: 10337

SAMPLING METHOD

⊗PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr): 1510

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
2	1500	72.4	6.49	0.72
4	1503	71.9	6.47	0.72
6	1505	71.7	6.46	0.71

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

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

GROUND-WATER SAMPLING FORM

Well Number: MW-3

Project Number: 10-050
Station Number: BP11266
Date: 10/21/92

Well Type: XMonitor OExtraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) Volume Factors:

X2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 19.59 Initial Water Level: 10.86

Total Volume Purged: 5 Time Elapsed: 10

PURGE METHOD:
X Honda Pump
XDisposable PolyTubing(22 ft)
ODisposable PVC Bailer(s)(____)
OOther_____

Calculated Purge Volume:

19.59 (Total Depth) - 10.86 (Water Level) = 8.73 x .16 (Well Vol. Fac.) = 1.4 x 3 (#of vol. to Purge) = 4.2 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes XNo Depth of Product _____(ft) Emulsion OYes XNo

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1100
Solution pH 4.00 4 at 66.9
Solution pH 10.00 10 at 66.9
Solution pH 7.00 7 at 66.9
Water Level Meter#: 10337

SAMPLING METHOD

XPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr) 1530

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
1	1519	73.1	6.79	0.82
3	1522	72.2	6.72	0.82
5	1527	72.3	6.72	0.82

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

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

GROUND-WATER SAMPLING FORM

Well Number: MW-4

Project Number: 10-050
Station Number: BP11266
Date: 10/2/92

Well Type: ⊗Monitor OExtraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

⊗2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 19.92 Initial Water Level: 10.63

Total Volume Purged: 5 Time Elapsed: 5

PURGE METHOD:
⊗Honda Pump
⊗Disposable PolyTubing(20 ft)
ODisposable PVC Bailer(s)(____)
OOther_____

Calculated Purge Volume:

19.92 - 10.63 = 9.3 x .16 = 1.4 x 3 = 4.5 (gallons)

Total Depth − Water Level = Well Vol. Fac. = #of vol. to Purge = Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes ⊗No Depth of Product _____(ft) Emulsion OYes ⊗No

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1100
Solution pH 4.00 4 at 66.9
Solution pH 10.00 10 at 66.9
Solution pH 7.00 7 at 66.9
Water Level Meter#: 10337

SAMPLING METHOD

⊗PVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr): 1415

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
1	1406	73.4	6.90	0.66
3	1408	73.1	6.87	0.66
5	1410	72.7	6.86	0.66

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

Birch Technical Services

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

GROUND-WATER SAMPLING FORM

Well Number: MW-5

Project Number: 10-050
Station Number: BP11266
Date: 10/21/92

Well Type: XMonitor OExtraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) Volume Factors:

X2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 24.24 Initial Water Level: 9.97

Total Volume Purged: 7 Time Elapsed: 8

PURGE METHOD:
XHonda Pump
XDisposable PolyTubing(26 ft)
ODisposable PVC Bailer(s)(____)
OOther_____

Calculated Purge Volume:

24.24 - 9.97 = 14.3 x .16 = 2.3 x 3 = 6.9 (gallons)

Total Depth | Water Level | Well Vol. Fac. | #of vol. to Purge | Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes XNo | Depth of Product _____(ft) | Emulsion OYes XNo

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1100
Solution pH 4.00 4 at 66.9
Solution pH 10.00 10 at 66.9
Solution pH 7.00 7 at 66.9
Water Level Meter#: 10337

SAMPLING METHOD

XPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr) 1350

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
2	1346	71.3	7.09	0.87
4	1343	72.1	7.00	0.85
7	1341	72.1	6.96	0.84

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

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

GROUND-WATER SAMPLING FORM

Well Number: MW-6

Project Number: 10-050
Station Number: BP11266
Date: 10/21/92

Well Type: X Monitor O Extraction O_____

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

X 2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) 16.95 Initial Water Level: 10.48

Total Volume Purged: 4 Time Elapsed: 4

PURGE METHOD:
X Honda Pump
X Disposable PolyTubing(18 ft)
O Disposable PVC Bailer(s)(____)
O Other_____

Calculated Purge Volume:

16.95 (Total Depth) - 10.48 (Water Level) = 6.47 x .16 (Well Vol. Fac.) = 1.0 x 3 (#of vol. to Purge) = 3 (gallons) Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes X No | Depth of Product _____(ft) | Emulsion OYes X No

COMMENTS:

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1100
Solution pH 4.00 4 at 66.9
Solution pH 10.00 10 at 66.9
Solution pH 7.00 7 at 66.9
Water Level Meter#: 10337

SAMPLING METHOD

X PVC Disposable Bailer
O Teflon Bailer
O Other:_____

Time Sampled (24 hr): 1450

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)
1	1446	74.1	6.70	0.80
2	1447	73.1	6.66	0.81
4	1450	73.1	6.65	0.81

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

Birch Technical Services

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

GROUND-WATER SAMPLING FORM

~~Well~~ Number: QC-1

SAMPLE
~~Well~~ Type: OMonitor OExtraction X Duplicate

Project Number: 10-050
Station Number: BP11266
Date: 10/21/92

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

O 2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	____

Total Depth of Well (BOW) _____ Initial Water Level: _____

Total Volume Purged: 6 Time Elapsed: 6

PURGE METHOD:
X Honda Pump
O Disposable PolyTubing(21 ft)
O Disposable PVC Bailer(s)(____)
O Other _____

Calculated Purge Volume:

_____ - _____ = _____ x _____ = _____ x _____ = _____(gallons)
Total Depth | Water Level | Well Vol. Fac. | #of vol. to Purge | Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN OYes ONo | Depth of Product _____(ft) | Emulsion OYes ONo

PARAMETER EQUIPMENT CALIBRATION

pH Meter #: 9112 Time: 1100
Solution pH 4.00 4 at 66.9
Solution pH 10.00 10 at 66.9
Solution pH 7.00 7 at 66.9
Water Level Meter#: 10337

COMMENTS: Duplicate sample taken from MW-1. Purging, subjective and parameter data from MW-1 applies to this sample.

SAMPLING METHOD

X PVC Disposable Bailer
O Teflon Bailer
O Other: _____

Time Sampled (24 hr): 1433

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

Birch Technical Services

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

GROUND-WATER SAMPLING FORM

~~Well~~ Number: QC-2
SAMPLE
~~Well~~ Type: OMonitor OExtraction X TRIP BLANK

Project Number: 10-050
Station Number: BP11266
Date: 10/2/92

Sampled by: DAN BIRCH

WELL PURGING

PURGE VOLUME

Casing Diameter (inches)	O 2"	O3"	O4"	O4.5"	O6"	O____
Volume Factors:	0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well (BOW) _____ Initial Water Level:_____

Total Volume Purged:_____ Time Elapsed:_____

PURGE METHOD:
O Honda Pump
ODisposable PolyTubing(____ft)
ODisposable PVC Bailer(s)(____)
OOther_____

Calculated Purge Volume:

_____ - _____ = _____ x _____ = _____ x _____ = _____(gallons)
Total Depth | Water Level | Well Vol. Fac. | #of vol. to Purge | Calculated Purge Volume

Subjective Analysis Prior to Purging

SHEEN	Depth of Product	Emulsion
OYes ONo	_____(ft)	OYes ONo

COMMENTS: Trip blank supplied by Anametrix. Relabelled QC-2; 1115.

PARAMETER EQUIPMENT CALIBRATION

pH Meter #:_____ Time:_____
Solution pH 4.00 _____at _____
Solution pH 10.00_____at _____
Solution pH 7.00 _____ at _____
Water Level Meter#:_____

SAMPLING METHOD

OPVC Disposable Bailer
OTeflon Bailer
OOther:_____

Time Sampled (24 hr)
1115

WELL SAMPLING PARAMETERS

Gallons Removed	Time	Temp	pH	Cond. (umhos/cm)

	Analysis Required	No. of	Container Type	Preservatives
	EPA 601		VOA's	
X	TPH-G/BTEX	3	VOA's	HCl
	TPH- Diesel		Amber Liter	
	TOG 5520 BF		Amber Liter	H_2NO_3

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

ANAMETRIX INC
Environmental & Analytical Chemistry

Part of INCHCAPE ENVIRONMENTAL

RECEIVED
OCT 19 1992

REPORT

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

Workorder # : 9210038
Date Received : 10/02/92
Project ID : 10-050
Purchase Order: N/A

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

ANAMETRIX ID	CLIENT SAMPLE ID
9210038- 1	MW-1
9210038- 2	MW-2
9210038- 3	MW-3
9210038- 4	MW-4
9210038- 5	MW-5
9210038- 6	MW-6
9210038- 7	QC-1
9210038- 8	QC-2

This report consists of 6 pages not including the cover letter, and is organized in sections according to the specific Anametrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anametrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

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

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

Sarah Schoen, Ph.D.
Laboratory Director

10-16-92
Date

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

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

Workorder # : 9210038
Date Received : 10/02/92
Project ID : 10-050
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9210038- 1	MW-1	WATER	10/02/92	TPHg/BTEX
9210038- 2	MW-2	WATER	10/02/92	TPHg/BTEX
9210038- 3	MW-3	WATER	10/02/92	TPHg/BTEX
9210038- 4	MW-4	WATER	10/02/92	TPHg/BTEX
9210038- 5	MW-5	WATER	10/02/92	TPHg/BTEX
9210038- 6	MW-6	WATER	10/02/92	TPHg/BTEX
9210038- 7	QC-1	WATER	10/02/92	TPHg/BTEX
9210038- 8	QC-2	WATER	10/02/92	TPHg/BTEX

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

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

Workorder # : 9210038
Date Received : 10/02/92
Project ID : 10-050
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for these samples.

Department Supervisor — Date: 10/15/92

Chemist — Date: 10-15-92

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

Anametrix W.O.: 9210038
Matrix : WATER
Date Sampled : 10/02/92

Project Number : 10-050
Date Released : 10/15/92

	Reporting Limit	Sample I.D.# MW-1	Sample I.D.# MW-2	Sample I.D.# MW-3	Sample I.D.# MW-4	Sample I.D.# MW-5
COMPOUNDS	(ug/L)	-01	-02	-03	-04	-05
Benzene	0.5	86	ND	ND	ND	ND
Toluene	0.5	190	0.8	ND	ND	ND
Ethylbenzene	0.5	270	0.8	ND	ND	ND
Total Xylenes	0.5	350	1.2	ND	ND	ND
TPH as Gasoline	50	4000	56	ND	ND	ND
% Surrogate Recovery		94%	101%	101%	99%	93%
Instrument I.D.		HP21	HP21	HP21	HP21	HP21
Date Analyzed		10/08/92	10/08/92	10/08/92	10/07/92	10/07/92
RLMF		50	1	1	1	1

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

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

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

Charles Hunt 10-15-92
Analyst Date

Lucia Shor 10/15/92
Supervisor Date

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

Anametrix W.O.: 9210038
Matrix : WATER
Date Sampled : 10/02/92

Project Number : 10-050
Date Released : 10/15/92

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW-6 -06	Sample I.D.# QC-1 -07	Sample I.D.# QC-2 -08	Sample I.D.# BO0703E3 BLANK
Benzene	0.5	ND	89	ND	ND
Toluene	0.5	ND	180	ND	ND
Ethylbenzene	0.5	ND	270	ND	ND
Total Xylenes	0.5	ND	340	ND	ND
TPH as Gasoline	50	ND	3600	ND	ND
% Surrogate Recovery		96%	93%	86%	86%
Instrument I.D.		HP21	HP21	HP21	HP21
Date Analyzed		10/07/92	10/08/92	10/07/92	10/07/92
RLMF		1	50	1	1

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

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

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

Charles Burch 10.15.92
Analyst Date

Lucia Shor 10/15/92
Supervisor Date

TOTAL VOLATILE HYDROCARBON MATRIX SPIKE REPORT
EPA METHOD 5030 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 10-050 MW-3
Matrix : WATER
Date Sampled : 10/02/92
Date Analyzed : 10/08/92

Anametrix I.D. : 9210038-03
Analyst : CMB
Supervisor : [illegible]
Date Released : 10/15/92
Instrument I.D.: HP21

COMPOUND	SPIKE AMT (ug/L)	SAMPLE CONC (ug/L)	REC MS	%REC MS	REC MD (ug/L)	%REC MD	RPD	%REC LIMITS
BENZENE	10.0	0.0	8.7	87%	8.4	84%	-4%	49-159
TOLUENE	10.0	0.0	9.6	96%	9.1	91%	-5%	53-156
ETHYLBENZENE	10.0	0.0	10.0	100%	9.4	94%	-6%	54-151
TOTAL XYLENES	10.0	0.0	10.2	102%	9.9	99%	-3%	56-157
p-BFB				97%		86%		53-147

* Quality control established by Anametrix, Inc.

BTEX LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 5030 WITH GC/PID
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: LAB CONTROL SAMPLE	Anametrix I.D.	: LCSW1007
Matrix	: WATER	Analyst	: CMB
Date Sampled	: N/A	Supervisor	: TS
Date Analyzed	: 10/07/92	Date Released	: 10/15/92
		Instrument ID	: HP21

COMPOUND	SPIKE AMT. (ug/L)	LCS (ug/L)	REC LCS	%REC LIMITS
Benzene	10.0	8.7	87%	49-159
Toluene	10.0	9.6	96%	53-156
Ethylbenzene	10.0	9.9	99%	54-151
TOTAL Xylenes	10.0	10.6	106%	56-157
P-BFB			89%	53-147

* Limits established by Anametrix, Inc.

ANAMETRIX INC
Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

9210038 (18) 18.10 MB

CHAIN-OF-CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
10-050	BP 11266

Send Report Attention of:	Report Due	Verbal Due
BRADY NAGLE	10/16/92	/ /

	Sample Number	Date	Time	Comp	Matrix	Station Location	Number of Cntnrs	Type of Containers	Type of Analysis: TPH/BTEX	Condition of Samples	Initial
(1)	MW-1	10/2/92	1427		W		3	VOA's	X		
(2)	MW-2	↓	1510		↓		↓	↓	X		
(3)	MW-3		1530						X		
(4)	MW-4		1415						X		
(5)	MW-5		1350						X		
(6)	MW-6	↓	1450						X		
(7)	QC-1		1433						X		
(8)	QC-2	↓	1115		↓		↓	↓	X		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Date/Time	Received by Lab:	Date/Time
D J Buck	10/2/92 1707	Michele D Aguilar	10/2/92 1707

Remarks: NORMAL TURNAROUND

COMPANY: ALISTO ENGINEERING
ADDRESS:
PHONE : 510 798 4070 FAX : 510 798-4099