

NTBE in MW-7 workshop
hand previous event. Cont.
to do QMR for MW-7

- TSA in MW-1. Breakdown
of NTBE?
- TAME also found in
MW-1, 6, and 7

**GROUNDWATER MONITORING REPORT
FIRST QUARTER, 2000
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA**

Mar 2000

prepared for

ALAMEDA COUNTY GENERAL SERVICES AGENCY
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prepared by

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March 6, 2000
575-9G028

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STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATION

Information provided in this report, prepared by Professional Service Industries, Inc. (PSI), is intended exclusively for the use of Alameda County General Services Agency (AGSA), for the evaluation of subsurface conditions as it pertains to the subject site. The professional services provided have been performed in accordance with practices generally accepted by other geologists, hydrologists, hydrogeologists, engineers, and environmental scientists practicing in this field. No other warranty, either expressed or implied, is made. As with all subsurface investigations, there is no guarantee that the work conducted will identify any or all sources or locations of contamination.

This report is issued with the understanding that AGSA is responsible for ensuring that the information contained herein is brought to the attention of the appropriate regulatory agency.



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1. INTRODUCTION

Professional Service Industries, Inc. (PSI) was retained by the Alameda County General Services Agency (ACGSA) to perform groundwater monitoring at the ACGSA Alcopark Fueling Facility-Site No. 2 located at 165 13th Street, Oakland, California. The site location is presented on Figure 1.

The groundwater monitoring was prompted by a request by the Alameda County Health Care Services Agency (HCSA), which requested additional information on petroleum hydrocarbon impacted groundwater (HCSA, 1997a).

1.1 SCOPE OF WORK

The scope of work consisted of the following tasks:

- Measure the depth to water in the site wells and prepare a groundwater elevation map.
- Determine the groundwater flow direction and gradient.
- Collect and chemically analyze groundwater samples from the wells.
- Prepare a report documenting the field procedures, analytical results, and conclusions regarding the site condition.

1.2 SITE BACKGROUND

GSA operates two 10,000-gallon USTs to fuel County vehicles. Three groundwater monitoring wells were installed at the Alcopark fueling station in March, 1989 to assess environmental conditions subsequent to the repair of a line leak at Dispenser No. 1. Initial sample results indicated the presence of BTEX in the groundwater. Subsequent sample results indicated the presence of TPH-G. Based on the analytical data, it was surmised that contaminants detected on-site were emanating from a source area located upgradient of the site. Sampling activities were halted in 1992 pending investigation of an upgradient source (GSA, 1997).

By letter dated May 30, 1997, the Alameda County Health Care Services Agency (HCSA) instructed GSA to resume groundwater monitoring at Alcopark (HCSA, 1997b). Sampling resumed in July, 1997. Analytical data from that sampling event indicated elevated TPH-G and BTEX concentrations in the downgradient well. MTBE was also detected. Additional samples collected in October, 1997 provided similar results (GSA,

1997). By a letter dated September 11, 1997, the HCSA directed GSA to investigate the extent and stability of the plume.

To better define groundwater conditions downgradient of the UST, two borings were drilled on March 23, 1998. A grab groundwater sample was collected from one of the borings, and Well MW-6 was installed in the other boring. One more small diameter groundwater monitoring well was installed by PSI in September, 1999 and the analytical results are presented in the PSI's report dated October 14, 1999

1.2.1 Storage Tank System Upgrades

In September of 1992, overfill protection, spill containment, and automatic tank gauging were installed on the two underground tanks. In July and August of 1996, additional upgrade work was done to comply with Title 23 of the California Code of Regulations. This included replacement of underground single-walled steel piping with double-wall fiberglass piping, and installation of dispenser sumps, piping sumps, and sump leak sensors (GSA, 1997).

2. GROUNDWATER MONITORING ACTIVITIES

Groundwater monitoring activities were performed by a PSI representative on January 18, 2000. The activities were performed in accordance with PSI standard procedures presented in Appendix A, and procedures described in a HCSA letter describing collection of samples without purging the wells (HCSA, 1997a).

2.1 Groundwater Elevation and Flow Direction

Prior to groundwater sampling, depth to groundwater was measured from the top of the well casings in each monitoring well. The groundwater measurements were converted to groundwater elevation and the data plotted on a groundwater elevation map. A groundwater elevation map was prepared for January 18, 2000. The map is presented as Figure 2. Chart 1, Appendix C presents groundwater elevation over time. The groundwater elevation data are presented in Table 1.

Interpretation of the groundwater elevation map indicates the groundwater is flowing to the north east under a hydraulic gradient of 0.01 foot per foot. Interpretation of Chart 1, Appendix C reveals the groundwater elevation is lower than previous quarter.

2.2 Groundwater Sampling

The monitoring wells were sampled without purging as requested in the HCSA letter dated September 11, 1997. Groundwater samples were collected with disposable Teflon bailers or disposable polyethylene tubing equipped with a check valve. Groundwater samples were collected according to PSI's standard protocol, included in Appendix A and were stored in an ice cooler at 4 degrees Celsius and maintained under Chain-of-Custody protocol.

To minimize the possibility of cross-contamination between sampling locations, most of the sampling equipment used is disposable. To further minimize the possibility of cross-contamination, the water sounder and all other reusable sampling equipment were cleaned with a non-phosphate detergent and rinsed twice with deionized water prior to use in the next well.

3. LABORATORY ANALYSIS PROGRAM

The groundwater samples collected during this investigation were submitted to McCampbell Analytical, Inc. of Pacheco, California. McCampbell Analytical is a State of California Department of Health Services certified hazardous waste laboratory (Environmental Laboratory Accreditation Program [ELAP] #1644). A summary of the analytical methods is presented below.

All groundwater samples collected at the site were analyzed for the following constituents by the indicated methods:

- Total Petroleum Hydrocarbons as Gasoline (TPH-G) in accordance with Environmental Protection Agency (EPA) Method 8015-Modified.
- BTEX and MTBE by EPA Method 8020.
- MTBE and Oxygenates by EPA Method 8260.

The samples were transported to the laboratory under Chain-of-Custody protocol. Copies of the chain of custody forms are included in Appendix B.

3.1 ANALYTICAL RESULTS

Groundwater samples were collected and chemically analyzed in accordance with the analytical method requirements. The analytical data is summarized in Table 1. Laboratory reports are presented in Appendix B.

Analytical results reported measurable concentrations of TPH-G, BTEX, MTBE, and TAME in groundwater samples from Wells MW-1, MW-6, and MW-7. BTEX levels are generally lower and MTBE levels are generally higher than the levels indicated by the analytical results from the previous sampling event performed in September, 1999 (PSI, 1999).

3.1.1 Analytical Results Discussion

Groundwater samples were collected and chemically analyzed in accordance with the HCSA guidelines for groundwater sampling (HCSA, 1997b).

TPH-G, BTEX, MTBE, and TAME were detected in groundwater samples from all groundwater monitoring wells sampled for this monitoring event.

- TPH-G was detected only in Wells MW-1 (4,100 ug/l) and MW-6 (3,500 ug/l). The concentration of TPH-G over time is presented on Chart 2, Appendix C.

- Benzene was detected in Wells MW-1 (420 ug/l) and MW-6 (800 ug/l). The concentration of benzene over time is presented on Chart 3, Appendix C.
- MTBE was detected in all tested wells, with the exception of MW-1, at higher levels than during the previous sampling event as follows: Well MW-1 (180 ug/l), Well MW-6 (4,600 ug/l), and Well MW-7 (2,100ug/l) by the analytical method EPA 8020. Confirmation of the MTBE concentration was performed using EPA Method 8260. The EPA Method 8260 analysis reported concentrations of 140 ug/l, 5,800 ug/l, and 2,400 ug/l, respectively. The EPA Method 8260 is considered a more reliable analysis method of MTBE concentrations when gasoline interferences are present in the sample (LLNL, 1998). The EPA Method 8260 analysis results over time are presented on Chart 4, Appendix C.
- The oxygenate Tert-Amyl Methyl Ether (TAME) was detected by the EPA Method 8260 analysis of samples from Well MW-1 (11 ug/l), MW-6 (320 ug/l), and MW-7 (160 ug/l).
- Tert-Butanol was detected only in Well MW-1 (110 ug/l).

4. CONCLUSIONS

Based on the information presented in this report, the following conclusions have been reached:

- Groundwater exists at approximately 14.5 feet below the ground surface.
- Groundwater flow direction is to the north east.
- Groundwater samples collected at the site contained measurable concentrations of TPH-G, BTEX, MTBE, and TAME in Wells MW-1, MW-6, and MW-7.
- Tert-Butanol was detected only in a sample from Well MW-1.

Based on the results presented in this report, PSI recommends additional groundwater monitoring be performed to determine contaminant trends. Evaluation of the trends will assist in differentiating between a one time leak event (such as might have happened during piping upgrade work) and an on-going source.

TABLE 1
GROUNDWATER ELEVATION AND ANALYTICAL DATA, SITE NO. 2
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA

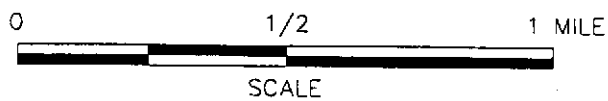
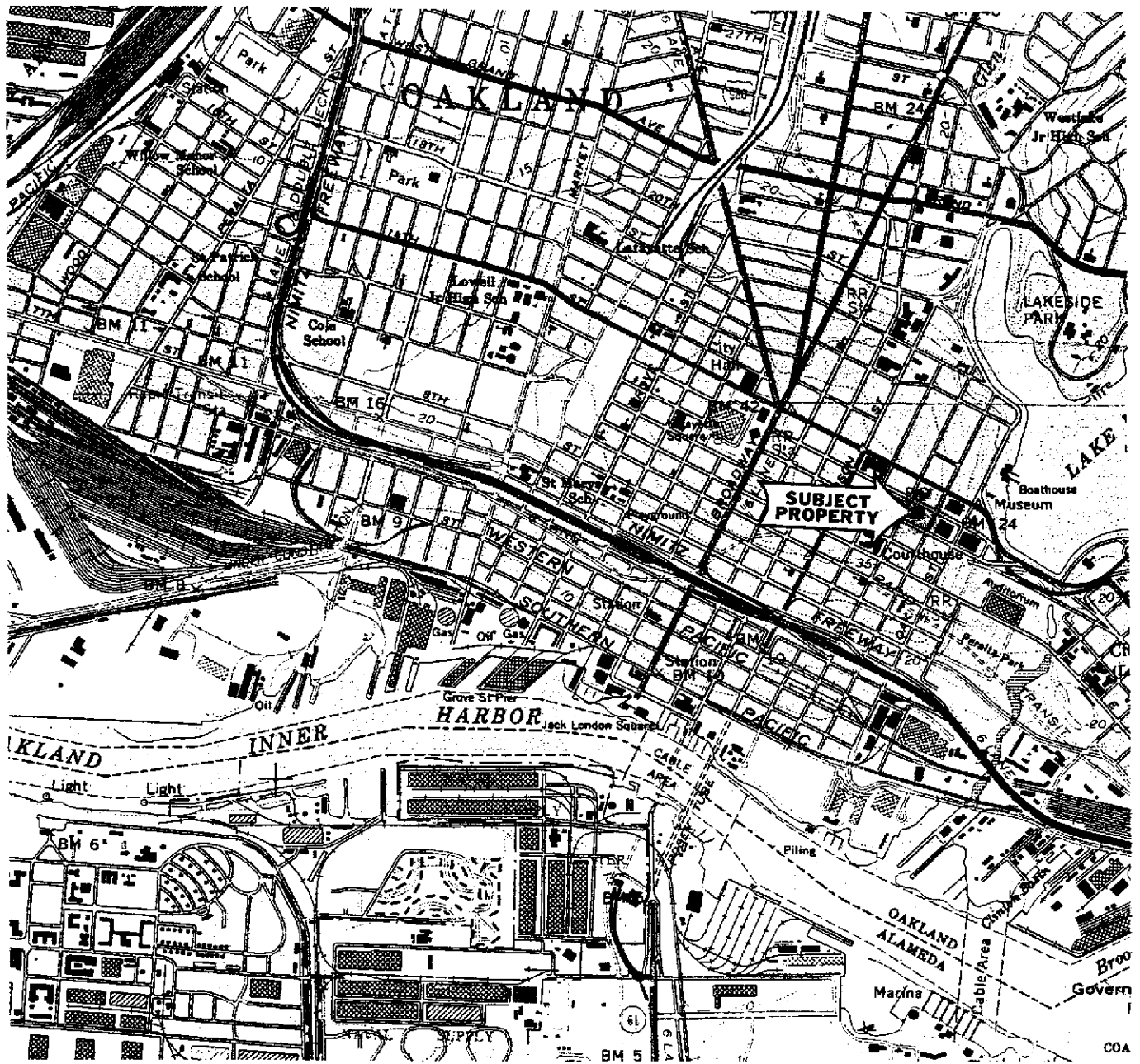
<i>All concentrations in ug/l (PPB).</i>								
Well	Date	Groundwater Elevation	TPH-G	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
W-MW1	3/21/89	12.2	ND	NA	21	3.9	0.4	4.5
W-MW1	7/26/90	12.3	1,400	NA	200	45	ND	53
W-MW1	10/25/90	12.1	1,200	NA	ND	7.3	2.2	46
W-MW1	1/25/91	11.9	270	NA	23	1.5	ND	3.1
W-MW1	4/25/91	11.8	230	NA	ND	ND	ND	ND
W-MW1	8/27/91	11.8	8,300	NA	370	64	ND	120
W-MW1	11/25/91	11.7	810	NA	9.3	ND	7.8	32
W-MW1	6/11/92	12.85	2,600	NA	810	16	21	42
W-MW1	7/16/97	14.36	19,000	ND (150)	1,400	2,800	500	2,600
W-MW1	10/21/97	13.92	14,000	29	1,200	1,000	590	2,800
W-MW1	3/11/98	17.14	NS	NS	NS	NS	NS	NS
W-MW1	4/1/98	17.14	ND (50)	6.3	5.4	ND (0.5)	ND (0.5)	0.82
W-MW1	7/15/98	16.41	71	57	31	ND (0.5)	ND (0.5)	3.1
W-MW1	10/22/98	15.62	5,100	360	520	140	250	950
W-MW1	9/9/99	15.42	2,400	400	680	140	130	370
W-MW1	1/18/00	14.49	4,100	180(140)	420	11	210	350
W-MW4	3/21/89	12.4	ND	NA	13	1.4	1.0	ND
W-MW4	7/26/90	12.5	NA	NA	0.8	ND	ND	ND
W-MW4	10/25/90	12.2	NA	NA	120	1.2	1.1	0.9
W-MW4	1/25/91	12.0	NA	NA	230	2.8	1.2	2.0
W-MW4	4/25/91	13.0	170	NA	12	ND	ND	2.3
W-MW4	8/27/91	11.8	ND	NA	87	1.3	0.8	0.8
W-MW4	11/25/91	11.8	1,400	NA	ND	1.7	8.6	3.6
W-MW4	6/11/92	12.93	560	NA	150	1.8	1.8	1.1
W-MW4	7/16/97	14.46	50	ND	ND	ND	ND	ND
W-MW4	10/21/97	14.10	ND	ND	ND	ND	ND	ND
W-MW4	3/11/98	17.39	NS	NS	NS	NS	NS	NS
W-MW4	4/1/98	17.40	ND (50)	ND (5.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
W-MW4	7/15/98	16.92	ND (50)	ND (5.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
W-MW4	10/22/98	15.75	ND (50)	ND (5.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
W-MW4	9/9/99	15.57	NS	NS	NS	NS	NS	NS
W-MW4	1/18/00	14.82	NS	NS	NS	NS	NS	NS
W-MW5	3/21/89	12.2	ND	NA	ND	ND	ND	ND
W-MW5	7/26/90	12.4	670	NA	0.8	ND	ND	ND
W-MW5	10/25/90	12.1	120	NA	13	ND	ND	ND
W-MW5	1/25/91	11.9	120	NA	3.2	ND	ND	ND
W-MW5	4/25/91	12.3	ND	NA	ND	ND	ND	ND
W-MW5	8/27/91	11.5	ND	NA	20	ND	0.5	ND
W-MW5	11/25/91	11.7	190	NA	2.7	ND	0.8	2.5
W-MW5	6/11/92	12.85	150	NA	37	ND	ND	ND
W-MW5	7/16/97	14.33	ND	22	ND	ND	ND	ND
W-MW5	10/21/97	13.88	ND	14	ND	ND	ND	ND
W-MW5	3/11/98	17.14	NS	NS	NS	NS	NS	NS
W-MW5	4/1/98	17.14	ND (50)	11	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
W-MW5	7/15/98	16.43	ND (50)	ND (5.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)

TABLE 1
GROUNDWATER ELEVATION AND ANALYTICAL DATA, SITE NO. 2
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA


<i>All concentrations in ug/l (PPB).</i>								
Well	Date	Groundwater Elevation	TPH-G	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
W-MW5	10/22/98	15.60	ND (50)	ND (5.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
W-MW5	9/9/99	15.44	NS	NS	NS	NS	NS	NS
W-MW-5	1/18/00	14.67	NS	NS	NS	NS	NS	NS
W-MW6	4/1/98	NA	740	4,600	9.8	3.2	3.0	15
W-MW6	7/15/98	NA	6,200	11,000	280	43	180	350
W-MW6	7/15/98	NA	NA	13,000	ND (500)	ND (500)	ND (500)	ND (500)
W-MW6	10/22/98	NA	4,700	9,600	450	13	200	200
W-MW6	10/22/98	NA	NA	9,100	470	ND (250)	ND (250)	ND (250)
W-MW6	9/9/99	NA	6,600	3,700	2,500	43	310	250
W-MW6	1/18/00	NA	3,500	4,600 (5800)	800	ND (5.0)	40	13
W-MW7	9/9/99	NA	92	1,200	1.6	ND (0.5)	ND (0.5)	ND (0.5)
W-MW7	1/18/00	NA	ND	2,100 (2400)	ND(0.5)	ND(0.5)	ND(0.5)	ND(O.5)
W-B1	3/23/98	NA	3,100	4,200	250	18	160	290

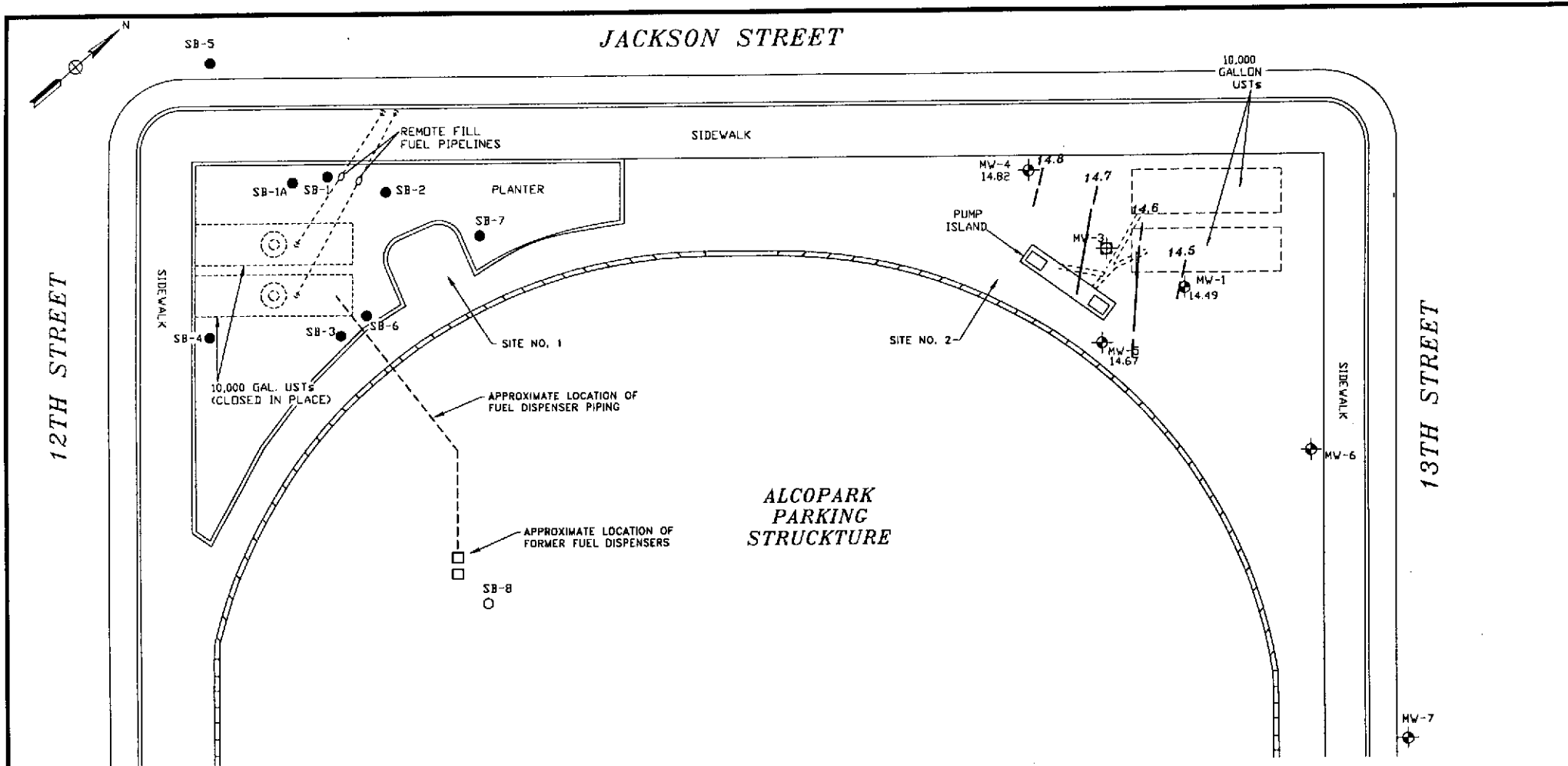
Notes:

TPH-G denotes Total Petroleum Hydrocarbons as Gasoline. MTBE denotes Methyl tert-Butyl Ether.
 NA denotes Not Analyzed. NS denotes Not Sampled. ND denotes Not Detected. () denotes detection limit.
 Data collected prior to 1998 was reported in Alameda County Request for Proposal dated December 2, 1997.
 Duplicate results presented in italics performed by EPA method 8260.



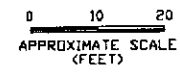
REFERENCE:
 U.S.G.S. OAKLAND WEST, CALIFORNIA, 1959
 PHOTOREVISED 1980

 ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION CONSULTING • ENGINEERING • TESTING		
SITE LOCATION ALCOPARK FUELING STATION 165 13TH STREET OAKLAND, CALIFORNIA PROJECT NUMBER: 575-9G028		
DATE:	CKD BY:	FIGURE NO: 1
FILE NO: 9G028 -1	DRAWN BY: A. CONSTANTINESCU	



LEGEND

- MW-1 GROUNDWATER MONITORING WELL
- MW-3 VADOSE MONITORING WELL LOCATION
- UNDERGROUND PIPING
- GROUNDWATER ELEVATION CONTOUR



ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION CONSULTING • ENGINEERING • TESTING		
GROUNDWATER ELEVATION MAP - 01/18/2000 ALCOPARK PARKING FACILITY INTERSECTION OF JACKSON AND 13TH STREETS OAKLAND, CALIFORNIA PROPOSAL NUMBER: 575-9G028		
DATE: 2/11/00	CKD BY:	FIGURE NO.: 2
FILE NO.: OGD28-2		DRAWN BY: A. CONSTANTINESCU

APPENDIX A

GROUNDWATER SAMPLING FIELD PROCEDURES

APPENDIX A

GROUND-WATER SAMPLING

The following procedures will be used for ground water sampling:

1. All equipment shall be washed prior to entering the well with an Alconox solution, followed by two tap water rinses and a deionized water rinse.
2. Prior to purging wells, depth-to-water will be measured using an electronic sounder with an accuracy of approximately 0.01 foot. The measurements will be made to the top of the well casing on the north side.
4. Free floating product thickness and depth-to-ground water will be measured in wells containing free floating product using a Solinst oil-water interface probe to an accuracy of approximately 0.003 meters (0.01 foot). The measurements will be made to the top of the well casing on the north side.
5. Water samples will be collected with a Teflon disposable bailer. In the case of grab groundwater sampling, samples will be collected with a disposable Teflon lined plastic tube equipped with a check valve. The water collected will be immediately decanted into laboratory-supplied vials and bottles. The containers will be overfilled, capped, labeled, and placed in a chilled cooler, prior to delivery to the laboratory for analysis.
6. Chain of custody procedures, including chain of custody forms, will be used to document water sample handling and transport from collection to delivery to the laboratory for analysis.
7. Ground-water samples will be delivered to a State-certified hazardous waste laboratory within approximately 24 hours of collection.

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Professional Service Industries 1320 West Winton Avenue Hayward, CA 94545	Client Project ID: #575-9G028; Alcopark	Date Sampled: 01/18/00
	Client Contact: Chris Merrit	Date Received: 01/19/00
	Client P.O:	Date Extracted: 01/20-01/27/00
		Date Analyzed: 01/20-01/27/00

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*
 EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)*	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	% Recovery Surrogate
29324	MW-1	W	4100,a	180	420	11	210	350	106
29325	MW-6	W	3500,a	4600	800	ND<5.0	40	13	93
29326	MW-7	W	ND	2100	ND	ND	ND	ND	104
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W		50 ug/L	5.0	0.5	0.5	0.5	0.5	
	S		1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

* cluttered chromatogram; sample peak coelutes with surrogate peak

The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than -5 vol. % sediment; j) no recognizable pattern.



McCAMPBELL ANALYTICAL INC.

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<http://www.mccampbell.com> E-mail: main@mccampbell.com

Professional Service Industries 1320 West Winton Avenue Hayward, CA 94545	Client Project ID: #575-9G028; Alcopark	Date Sampled: 01/18/00
	Client Contact: Chris Merrit	Date Received: 01/19/00
	Client P.O:	Date Extracted: 01/26/00
		Date Analyzed: 01/26/00

Oxygenated Volatile Organics By GC/MS

EPA method 8260 modified

Lab ID	29324	29325	29326	Reporting Limit	
Client ID	MW-1	MW-6	MW-7		
Matrix	W	W	W	S	W
Compound	Concentration*			ug/kg	ug/L
Di-isopropyl Ether (DIPE)	ND<5.0	ND<125	ND<50	5.0	1.0
Ethyl tert-Butyl Ether (ETBE)	ND<5.0	ND<125	ND<50	5.0	1.0
Methyl-tert Butyl Ether (MTBE)	140	5800	2400	5.0	1.0
tert-Amyl Methyl Ether (TAME)	11	320	160	5.0	1.0
tert-Butanol	110	ND<625	ND<250	25	5.0

Surrogate Recoveries (%)

Dibromofluoromethane	117	123	124	
Comments:				

* water samples are reported in ug/L, soil and sludge samples in ug/kg, wipes in ug/wipe and all TCLP / STLC / SPLP extracts in ug/L
 ND means not detected above the reporting limit; N/A means surrogate not applicable to this analysis
 (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~5 vol. % sediment; (j) sample diluted due to high organic content

DHS Certification No. 1644

 Edward Hamilton, Lab Director



QC REPORT

Date: 01/20/00 Matrix: Water

Extraction: N/A

Compound	Concentration: ug/L			%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	

SampleID: 12000

Instrument: GC-3

Surrogate1	0.000	102.0	102.0	100.00	102	102	0.0
Xylenes	0.000	299.0	316.0	300.00	100	105	5.5
Ethyl Benzene	0.000	99.0	104.0	100.00	99	104	4.9
Toluene	0.000	102.0	105.0	100.00	102	105	2.9
Benzene	0.000	107.0	108.0	100.00	107	108	0.9
MTBE	0.000	95.0	94.0	100.00	95	94	1.1
GAS	0.000	923.3	906.1	1000.00	92	91	1.9

SampleID: 12000

Instrument: GC-2 A

Surrogate1	0.000	108.0	110.0	100.00	108	110	1.8
TPH (diesel)	0.000	309.0	314.0	300.00	103	105	1.6

SampleID: 12000

Instrument: IR-1

Surrogate1	0.000	95.7	92.5	100.00	96	93	3.4
TRPH	0.000	27.7	27.4	23.70	117	116	1.1

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 100$$

RPD means Relative Percent Deviation



QC REPORT

VOCs (EPA 8240/8260)

Date: 01/25/00-01/26/00 Matrix: Water

Extraction: N/A

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 2800		Instrument: GC-4					
tert-Amyl Methyl Ether	0.000	86.0	88.0	100.00	86	88	2.3
Methyl tert-Butyl Ether	0.000	86.0	91.0	100.00	86	91	5.6
Ethyl tert-Butyl Ether	0.000	87.0	95.0	100.00	87	95	8.8
Di-isopropyl Ether	0.000	80.0	90.0	100.00	80	90	11.8
Toluene	0.000	114.0	109.0	100.00	114	109	4.5
Benzene	0.000	109.0	105.0	100.00	109	105	3.7
Chlorobenzene	0.000	117.0	113.0	100.00	117	113	3.5
Trichloroethane	0.000	96.0	93.0	100.00	96	93	3.2
1,1-Dichloroethene	0.000	108.0	104.0	100.00	108	104	3.8

$$\% \text{ Recovery} = \frac{(MS - \text{Sample})}{\text{Amount Spiked}} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2 \cdot 100$$

RPD means Relative Percent Deviation

APPENDIX C

ANALYTICAL DATA CHARTS

CHART 1
GROUNDWATER ELEVATION
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA

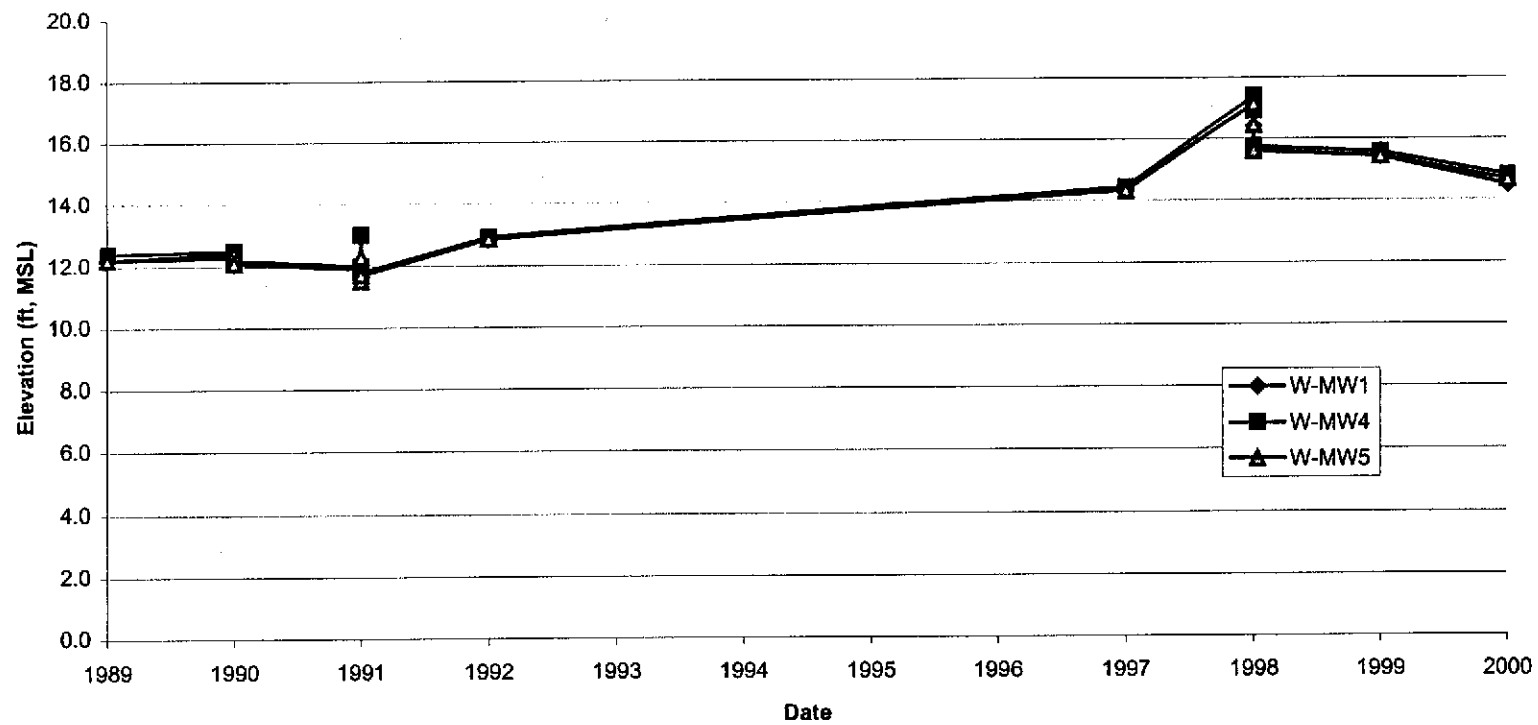


CHART 2
TOTAL PETROLEUM HYDROCARBON AS GASOLINE (TPH-G) CONCENTRATIONS
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA

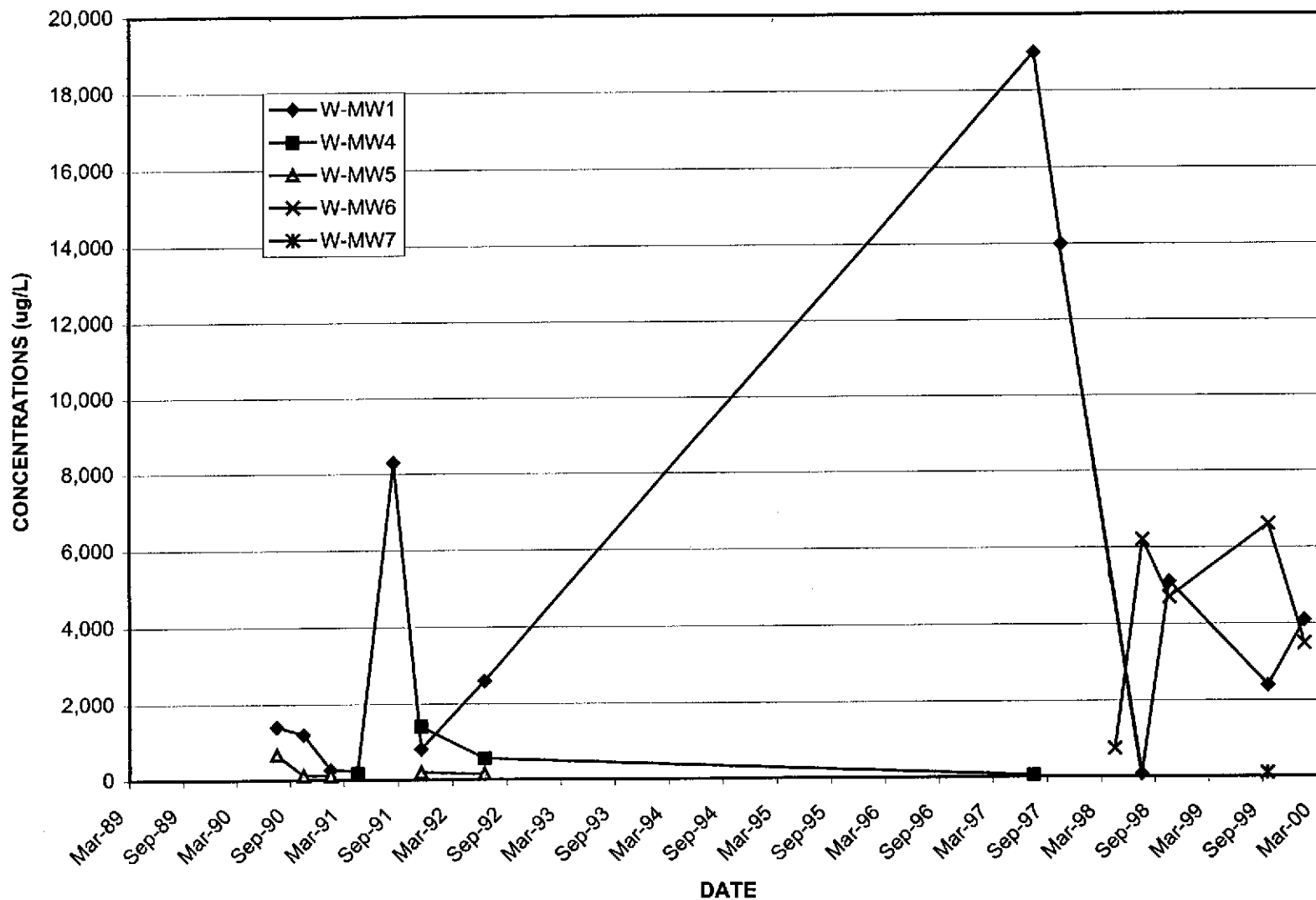


CHART 3
BENZENE CONCENTRATIONS
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA

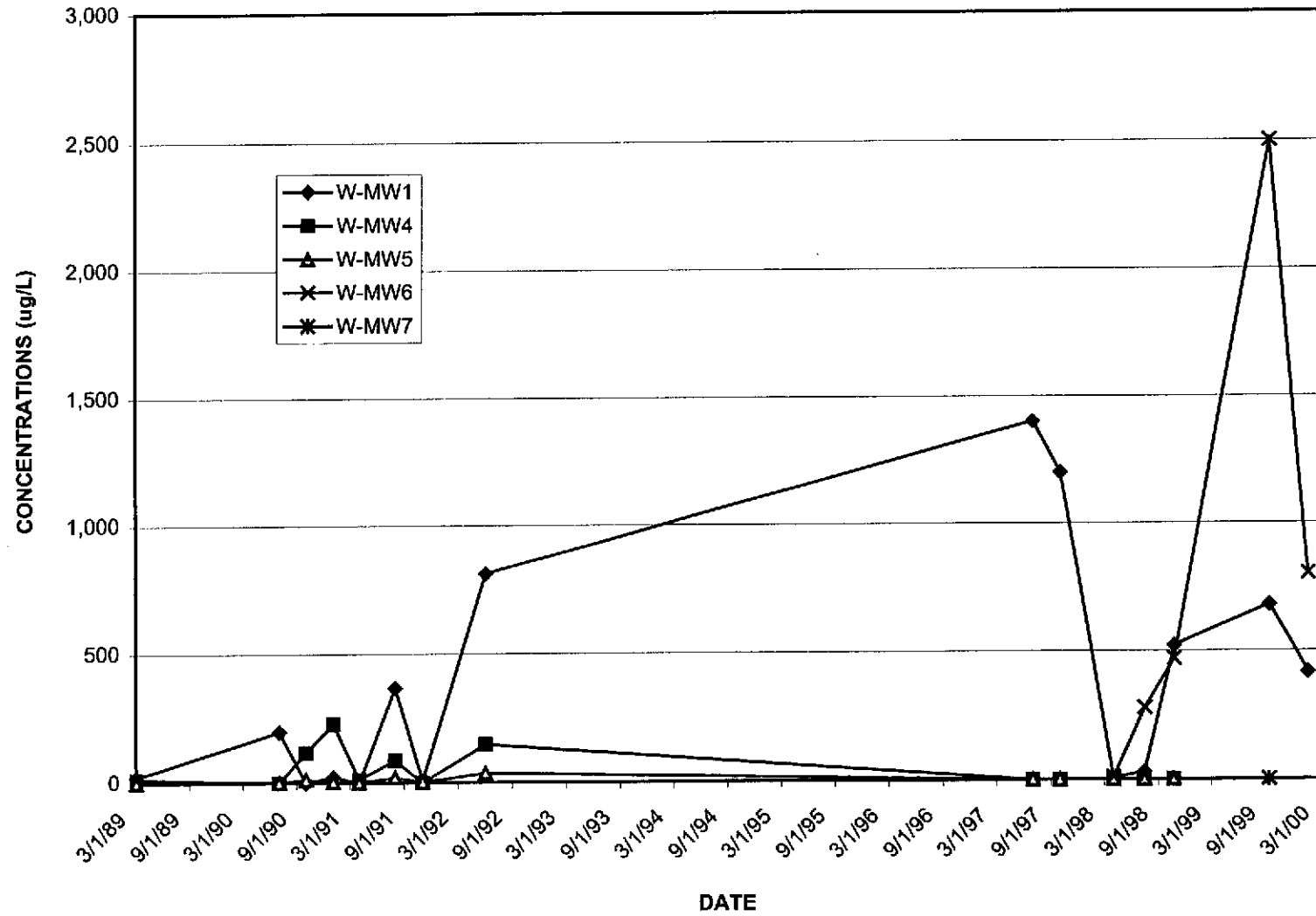


CHART 4
MTBE CONCENTRATIONS
ALCOPARK FUELING FACILITY
OAKLAND, CALIFORNIA

