aqua science engineers inc.

September 30, 1999

QUARTERLY GROUNDWATER MONITORING REPORT
AUGUST 27, 1999 GROUNDWATER SAMPLING
ASE JOB NO. 3412

at
Former Chan's Shell Station
726 Harrison Street
Oakland, CA 94602

Prepared by:
AQUA SCIENCE ENGINEERS, INC.
208 W. El Pintado
Danville, CA 94526
(925) 820-9391

1.0 INTRODUCTION

Site Location (Site), See Figure 1
Former Chan's Shell Station
726 Harrison Street
Oakland, CA 94602
(510) 444-6583

Responsible Party
Kin Chan
4328 Edgewood Avenue
Oakland, CA 94602

Environmental Consulting Firm
Aqua Science Engineers, Inc. (ASE)
208 W. El Pintado
Danville, CA 94526
Contact: Robert Kitay, Senior Geologist
(925) 820-9391

Agency Review
Larry Seto
Alameda County Health Care Services Agency (ACHCSA)
1131 Harbor Bay Pkwy., Suite 250
Alameda, CA 94502
(510) 567-6700

California Regional Water Quality Control Board (RWQCB)
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612
Contact: Mr. Chuck Headlee
(510) 622-2433

The following is a report detailing the results of the August 27, 1999 quarterly groundwater sampling at the above-referenced site. This sampling was conducted as required by the ACHCSA and RWQCB. ASE has prepared this report on behalf of Kin Chan, property owner. This report is intended to supplement the ASE report: "Report of Soil and Groundwater Assesment" dated January 8, 1999.

2.0 GROUNDWATER FLOW DIRECTION AND GRADIENT

On August 27, 1999, ASE associate geologist Ian Reed measured the depth to groundwater in monitoring wells MW-1, MW-3, and MW-4 using an electric water level sounder. The surface of the groundwater was also checked for the presence of free-floating hydrocarbons or sheen. No free-floating hydrocarbons or sheen were observed in any site monitoring well. Monitoring well MW-2 was inaccessable due to car parked over the well. Groundwater elevation data is presented in Table One.

TABLE ONE
Groundwater Elevation Data
Chan's Former Shell Station

Well I.D.	Date of Measurement	Top of Casing Elevation (relative to project datum)	Depth to Water (feet)	Groundwater Elevation (project data)
MW-1	12-15-98	31.95	17.32	14.63
	03-04-99		15.52	16.43
	06-17-99		16.90	15.05
	08-27-99		**17.39**	**14.56**
MW-2	12-15-98	32.40	18.03	14.37
	03-04-99		16.11	16.29
	06-17-99		17.72	14.68
	08-27-99	**Inaccessable**		
MW-3	12-15-98	31.61	17.26	14.35
	03-04-99		15.47	16.14
	06-17-99		16.92	14.69
	08-27-99		**17.40**	**14.21**
MW-4	12-15-98	32.53	17.59	14.94
	03-04-99		15.88	16.65
	06-17-99		17.14	15.39
	08-27-99		**17.65**	**14.88**

A groundwater potentiometric surface map is presented as Figure 2. The groundwater flow direction is to the southwest with a gradient of approximately 0.011-feet/foot. This gradient and flow direction are consistant with previous results and neighboring sites. The water table has dropped approximately 0.5-feet this quarter.

3.0 GROUNDWATER SAMPLE COLLECTION AND ANALYSIS

Prior to sampling, monitoring wells MW-1, MW-3, and MW-4 were purged of four well casing volumes of groundwater using dedicated polyethylene bailers. Monitoring well MW-2 was inaccessable due to a car parked over the well, and therefore was not sampled. Petroleum hydrocarbon odors were present during the purging and sampling of all three groundwater monitoring wells sampled. The parameters pH, temperature and conductivity were monitored during the well purging, and samples were not collected until these parameters stabilized. Groundwater samples were collected from each well using dedicated polyethylene bailers. The samples were decanted from the bailers into 40-ml volatile organic analysis (VOA) vials, pre-preserved with hydrochloric acid. The samples were capped without headspace, labeled and placed in coolers with wet ice for transport to McCambell Analytical, Inc. of Pacheco California (DHS #1644) under appropriate chain-of-custody documentation. Well sampling field logs are presented in Appendix A.

The well purge water was placed in 55-gallon steel drums, labeled, and left on-site for temporary storage.

The groundwater samples were analyzed by McCambell Analytcal, Inc. for total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 5030/8015M, benzene, toluene, ethylbenzene and total xylenes (collectively known as BTEX) by EPA Method 8020 and methyl tertiary butyl ether (MTBE) by EPA Method 8020. A MTBE confirmation was performed by EPA Method 8260 on detections only. The analytical results for this sampling period are presented in Table Two. The certified analytical report and chain-of-custody documentation are included as Appendix B.

TABLE TWO

Certified Analytical Results for GROUNDWATER Samples
Chan's Former Shell Station
All results are in parts per billion (ppb)

Well ID & Dates Sampled	TPH-G	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-1						
07/03/97	18,000	2,700	350	450	900	7,400
12/05/98	18,000	1,500	270	260	560	14,000
03/04/99	44,000	2,800	400	440	960	43,000
06/17/99	33,000	2,200	250	460	660	25,000
08/27/99	**6,000**	**1,000**	**97**	**190**	**230**	**14,000/ 16,000***
MW-2						
12/05/98	<50	<0.5	<0.5	<0.5	<0.5	<5
03/04/99	Inaccessable due to car parked over well					
06/17/99	<50	<0.5	<0.5	<0.5	<0.5	<5
08/27/99	**Inaccessable due to car parked over well**					
MW-3						
12/05/98	6,500	<50	50	60	50	3,900
03/04/99	2,800	<25	<25	<25	<25	1,600
06/17/99	1,000	<10	<10	<10	<10	1,400
08/27/99	**230**	**< 0.5**	**0.51**	**0.5**	**1.0**	**1,500/ 1,600***
MW-4						
12/05/98	880	3	<0.5	<0.5	<0.5	950
03/04/99	3,800	<25	<25	<25	<25	3,700
06/17/99	2,700	<25	<25	<25	<25	2,700
08/27/99	**440**	**4.7**	**1.1**	**0.58**	**1.3**	**1,600/ 1,700***
DHS MCL	NE	1	150	700	1,750	13

Notes:

* EPA Method 8020/EPA Method 8260 (MTBE confirmation)

DHS MCL = California Department of Health Services maximum contaminant level for drinking water.

NE = DHS MCL not established

Non-detectable concentrations noted by the less than sign (<) followed by the laboratory detection limit.

4.0 CONCLUSIONS

TPH-G and BTEX concentrations decreased in groundwater samples collected from all three monitoring wells sampled this quarter. Most of the concentrations this quarter are, in fact, historic lows. MTBE concentrations decreased from last quarter's results in groundwater samples collected from monitoring well MW-1 and MW-4. The MTBE results for groundwater samples collected from monitoring well MW-3 are very similiar to last quarter's results.

The benzene and MTBE concentrations detected in groundwater samples collected from monitoring wells MW-1 and MW-4 exceeded California Department of Health Services (DHS) maximum contaminant levels (MCLs) for drinking water. The MTBE concentration in groundwater samples collected from monitoring well MW-4 also exceeded the DHS MCL for drinking water.

5.0 RECOMMENDATIONS

ASE recommends continued monitoring of the site on a quarterly basis. The next groundwater sampling is scheduled for December 1999.

6.0 REPORT LIMITATIONS

The results of this report represent the conditions at the time of the groundwater sampling, at the specific locations where the groundwater samples were collected, and for the specific parameters analyzed by the laboratory. It does not fully characterize the site for contamination resulting from sources other than the former underground storage tanks and associated plumbing at the site, or for parameters not analyzed by the laboratory. All of the laboratory work cited in this report was prepared under the direction of independent CAL-EPA certified laboratory. The independent laboratory is solely responsible for the contents and conclusions of the chemical analysis data.

Aqua Science Engineers appreciates the opportunity to provide environmental consulting services for this project, and trust that this report meets your needs. Please feel free to call us at (925) 820-9391 if you have any questions or comments.

Respectfully submitted,

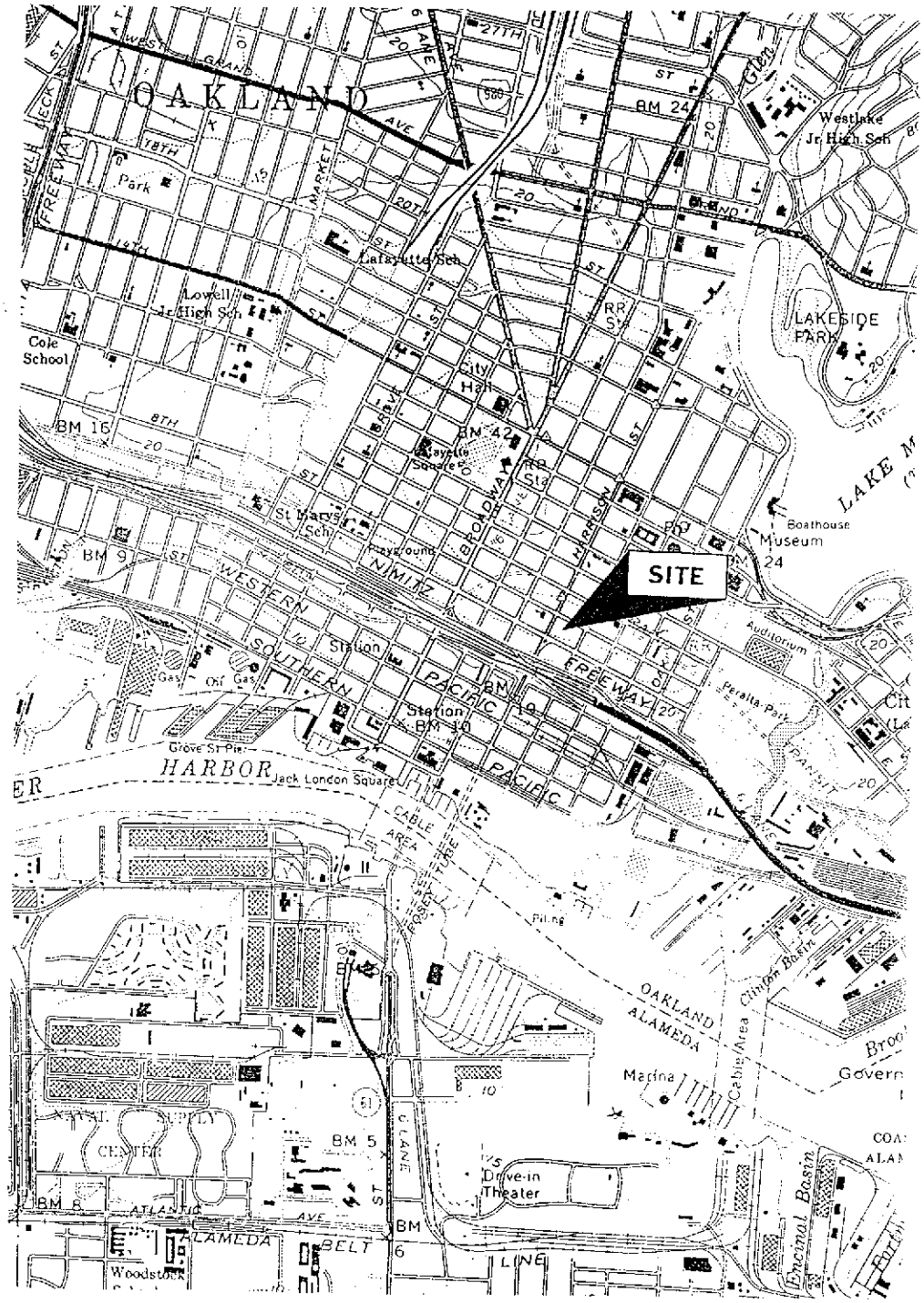
AQUA SCIENCE ENGINEERS, INC.

Ian T. Reed
Associate Geologist

Robert E. Kitay, R.G., R.E.A.
Senior Geologist

Attachments: Figures 1 and 2
Appendices A and B

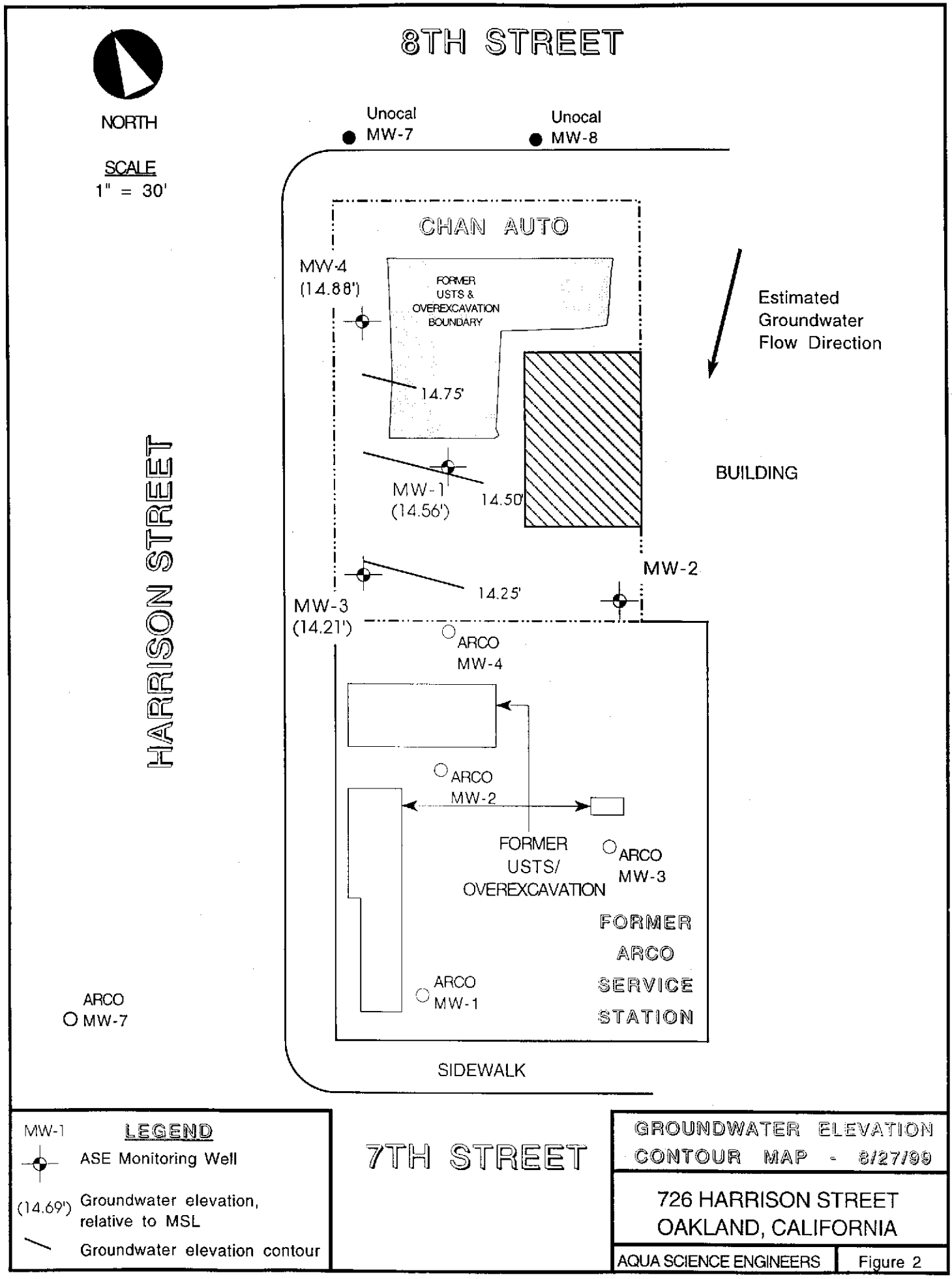
cc: Mr. Larry Seto, Alameda County Health Care Services
Mr. Chuck Headlee, RWQCB, San Francisco Bay Region



SITE LOCATION MAP

FORMER CHAN'S SHELL STATION
726 HARRISION STREET
OAKLAND, CALIFORNIA

Aqua Science Engineers | Figure 1


8TH STREET
NORTH
SCALE
1" = 30'
Unocal
MW-7
Unocal
MW-8
CHAN AUTO
MW-4
(14.88')
FORMER
USTS &
OVEREXCAVATION
BOUNDARY
14.75'
Estimated
Groundwater
Flow Direction
BUILDING
MW-1
(14.56')
14.50'
MW-2
14.25'
MW-3
(14.21')
ARCO
MW-4
ARCO
MW-2
FORMER
USTS/
OVEREXCAVATION
ARCO
MW-3
FORMER
ARCO
SERVICE
STATION
ARCO
MW-1
HARRISON STREET
ARCO
MW-7
SIDEWALK
7TH STREET
MW-1
LEGEND
ASE Monitoring Well
(14.69')
Groundwater elevation,
relative to MSL
Groundwater elevation contour
GROUNDWATER ELEVATION
CONTOUR MAP - 8/27/99
726 HARRISON STREET
OAKLAND, CALIFORNIA
AQUA SCIENCE ENGINEERS
Figure 2

APPENDIX A

Well Sampling Field Logs

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WELL SAMPLING FIELD LOG

Project Name and Address: CHAN Former Shell Station
Job #: 3412 Date of sampling: 8-27-99
Well Name: MW-1 Sampled by: ITR
Total depth of well (feet): 27.21 Well diameter (inches): 2"
Depth to water before sampling (feet): 19.39'
Thickness of floating product if any: —
Depth of well casing in water (feet): 9.82
Number of gallons per well casing volume (gallons): 1.7
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 6.7
Equipment used to purge the well: dedicated bailer
Time Evacuation Began: 1015 Time Evacuation Finished: 1030
Approximate volume of groundwater purged: 7.0
Did the well go dry?: NO After how many gallons: —
Time samples were collected: 1035
Depth to water at time of sampling: 17.45
Percent recovery at time of sampling: 90%
Samples collected with: dedicated bailer
Sample color: gray clear Odor: slight HC odor
Description of sediment in sample: —

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	70.1	4.98	581
2	69.8	3.37	537
3	70.2	5.78	501
4	69.9	5.88	509

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-1	3	40 ml VOAs	✓	✓	TPH-G/BTEX/MTBE

2411 Old Crow Canyon Road #4, San Ramon, CA 94583 • 510-820-9391 • Fax 510-837-4853

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WELL SAMPLING FIELD LOG

Project Name and Address: CHAN former Shell Station
Job #: 3412 Date of sampling: 8-27-99
Well Name: MW-3 Sampled by: ITR
Total depth of well (feet): 29.66 Well diameter (inches): 2"
Depth to water before sampling (feet): 17.40'
Thickness of floating product if any: _____
Depth of well casing in water (feet): 7.26
Number of gallons per well casing volume (gallons): 1.2
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 5
Equipment used to purge the well: dedicated bailer
Time Evacuation Began: 0950 Time Evacuation Finished: 1005
Approximate volume of groundwater purged: 5
Did the well go dry?: NO After how many gallons: -
Time samples were collected: 1010
Depth to water at time of sampling: 17.46
Percent recovery at time of sampling: 95%
Samples collected with: dedicated bailer
Sample color: gray/clear Odor: slight HC odor
Description of sediment in sample: _____

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	70.1	5.36	437
2	69.9	5.40	498
3	69.9	5.41	510
4	70.0	5.39	454

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-3	3	40 ml VOAs	✓	✓	TPH-G/BTEX/MTBE

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: CHAN former shell Station
Job #: 3412 Date of sampling: 8-27-99
Well Name: MW-4 Sampled by: ITR
Total depth of well (feet): 29.97 Well diameter (inches): 2"
Depth to water before sampling (feet): 17.65'
Thickness of floating product if any: None
Depth of well casing in water (feet): 12.32
Number of gallons per well casing volume (gallons): 2.
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 8
Equipment used to purge the well: dedicated bailer
Time Evacuation Began: 1040 Time Evacuation Finished: 1047
Approximate volume of groundwater purged: 8
Did the well go dry?: No After how many gallons: -
Time samples were collected: 1050
Depth to water at time of sampling: 17.87
Percent recovery at time of sampling: 95%
Samples collected with: dedicated bailer
Sample color: gray/clear Odor: slight HC odor
Description of sediment in sample: -

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	70.1	4.38	598
2	69.8	5.43	552
3	69.7	5.35	630
4	70.0	5.87	670

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-4	3	40-ml VOAs	✓	✓	TPH-G-/BTEX/MTBE

APPENDIX B

Certified Analytical Report
and
Chain of Custody Documentation

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

Aqua Science Engineers, Inc 2411 Old Crow Canyon Rd, #4 San Ramon, CA 94583	Client Project ID: #3412; Chan, Former Shell Station	Date Sampled: 08/27/99
		Date Received: 08/27/99
	Client Contact: Ian T. Reed	Date Extracted: 08/27/99
	Client P.O:	Date Analyzed: 08/27/99

09/03/99

Dear Ian:

Enclosed are:

1). the results of 3 samples from your #3412; **Chan, Former Shell Station** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

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

Aqua Science Engineers, Inc	Client Project ID: #3412; Chan, Former Shell Station	Date Sampled: 08/27/99
2411 Old Crow Canyon Rd, #4		Date Received: 08/27/99
San Ramon, CA 94583	Client Contact: Ian T. Reed	Date Extracted: 08/27-09/03/99
	Client P.O:	Date Analyzed: 08/27-09/03/99

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	Ethylben-zene	Xylenes	% Recovery Surrogate
18142	MW-1	W	6000,a	14,000	1000	97	190	230	108
18143	MW-3	W	230,j	1500	ND	0.51	ND	1.0	119
18144	MW-4	W	440,a	1600	4.7	1.1	0.58	1.3	108
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.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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

Aqua Science Engineers, Inc 2411 Old Crow Canyon Rd, #4 San Ramon, CA 94583	Client Project ID: #3412; Chan, Former Shell Station	Date Sampled: 08/27/99
		Date Received: 08/27/99
	Client Contact: Ian T. Reed	Date Extracted: 09/01/99
	Client P.O:	Date Analyzed: 09/01/99

Methyl tert-Butyl Ether *

EPA method 8260 modified

Lab ID	Client ID	Matrix	MTBE*	% Recovery Surrogate
18142	MW-1	W	16,000	118
18143	MW-3	W	1600	118
18144	MW-4	W	1700	118
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	1.0 ug/L	
		S	5.0 ug/kg	

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

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 925-798-1620 Fax: 925-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 08/27/99-08/28/99 Matrix: WATER

Analyte	Concentration (ug/L) Sample (#17000)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	100.0	97.9	100.0	100.0	97.9	2.1
Benzene	0.0	9.2	9.2	10.0	92.0	92.0	0.0
Toluene	0.0	9.1	9.1	10.0	91.0	91.0	0.0
Ethyl Benzene	0.0	9.3	9.2	10.0	93.0	92.0	1.1
Xylenes	0.0	27.8	27.5	30.0	92.7	91.7	1.1
TPH(diesel)	0.0	8564	8457	7500	114	113	1.3
TRPH (oil & grease)	0	19400	19100	23700	82	81	1.6

% Rec. = (MS - Sample) / amount spiked x 100

RPD = ((MS - MSD) / (MS + MSD))x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 925-798-1620 Fax: 925-798-1622

QC REPORT FOR VOCs (EPA 8240/8260)

Date: 09/01/99-09/02/99 Matrix: WATER

Analyte	Concentration (ug/kg,u Sample (#18613)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
1,1-Dichloroethe	0	97	101	100	97	101	4.0
Trichloroethene	0	87	115	100	87	115	27.7
EDB	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobenzene	0	106	120	100	106	120	12.4
Benzene	0	102	115	100	102	115	12.0
Toluene	0	103	123	100	103	123	17.7

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

10516 CASE 1

Aqua Science Engineers, Inc.
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Danville, CA 94526
(925) 820-9391
FAX (925) 837-4853

Chain of Custody

PAGE 1 OF 1

SAMPLER (SIGNATURE) Ian T Reed (PHONE NO.) (925)820-9391

PROJECT NAME CITAN, former Shell Station JOB NO. 3412

ADDRESS 726 Harrison Street, OAKLAND, CA DATE 8-27-99

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GAS / MTBE & BTEX (EPA 5030/8015-8020)	TPH-GASOLINE (EPA 5030/8015)	TPH-DIESEL (EPA 3510/8015)	PURGEABLE HALOCARBONS (EPA 601/8010)	PURGEABLE AROMATICS (EPA 602/8020)	VOLATILE ORGANICS (EPA 624/8240)	SEMI-VOLATILE ORGANICS (EPA 625/8270)	OIL & GREASE (EPA 5520)	LUFT METALS (5) (EPA 6010+7000)	CAM 17 METALS (EPA 6010+7000)	PCBs & PESTICIDES (EPA 608/8080)	ORGANOPHOSPHORUS PESTICIDES (EPA 8140) (EPA 608/8080)	ORGANOCHLORINE HERBICIDES (EPA 8150)	FUEL OXYGENATES (EPA 8260)	MTBE (Confirmation 8240 on hits only 8/31/99)			COMPOSITE
MW-1	8-27-99	1035	water	3	X														X			18142
MW-3	↓	1010	↓	3	X														X			18143
MW-4	↓	1052		3	X														X			18144
				VOAS O&G METALS OTHER																		
ICE/T ✓			PRESERVATION ✓																			
GOOD CONDITION ✓			APPROPRIATE																			
HEAD SPACE ABSENT ✓			CONTAINERS ✓																			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
(signature) Ian T Reed (time) 1400	(signature) (time)	(signature) (time)	(signature) Gina Arrieta (time)	
(printed name) Ian T Reed (date) 8-27-99	(printed name) James Green (date) 8/27/99	(printed name) James Green (date) 8/27/99	(printed name) Gina Arrieta (date) 8/27/99	5-day TAT
Company- ASE	Company-	Company-	Company-	