February 3, 2001

* 4241

Mr. Ted Walbey
7402 Hillview Court
Pleasanton, CA 94588

RE: First Quarter 2001 Groundwater Monitoring Event, Former Fiesta Beverage, 966 89th Avenue, Oakland, CA 94621, StID#4241

Dear Mr. Walbey:

Thank you for contracting with ALLCAL Environmental (ALLCAL) to sample groundwater monitoring wells MW-1 through MW-3 at the above referenced property. The sampling event was requested in a January 9, 2001, letter (attached) from the Alameda County Health Care Services Agency (ACHCSA). Groundwater from all wells was analyzed for total petroleum hydrocarbons as gasoline (TPHG); benzene, toluene, ethylbenzene, and xylenes (BTEX); and Methyl tert-Butyl Ether (MTBE).

See Attachments A, B, C, and D for ALLCAL's protocol relative to groundwater sampling, sample handling, quality assurance and quality control, and waste handling and decontamination procedures.

DOCUMENTATION AND RESULTS OF SAMPLING

Methodology

ALLCAL sampled wells MW-1 through MW-3 on January 18, 2001. Prior to sampling, the depth to groundwater and total well depth were measured in each well with an electronic water level meter. The measured depths are recorded on the attached **Records of Water Sampling**. The resultant groundwater elevations, relative to mean sea level, are recorded in attached Table 1. Measured total well depth and well construction information indicate that about 7 feet of sediment has accumulated in the casing of well MW-1. It is recommended that well MW-1 be re-developed (remove sediment from within well) prior to the next sampling event since the sediment may effect the quality of the water sampled from the well.

Before collecting water samples, each well was observed for floating product and purged of about 3 well volumes with a clean, disposable, dedicated, bailer. The purge water was monitored for temperature, pH, and electrical conductivity with a Hydac meter (see attached **Records of Water Sampling**). No floating product was observed in any of the wells. Initially, the purge water in all

27973 HIGH COUNTRY DRIVE • HAYWARD,CA 94542-2530 • (510)581-2320 • FAX (510) 581-8490
e-mail • mrakovich@worldnet.att.net

wells was clear and had a gasoline odor. As each well was purged, the water became cloudy and the gasoline odor persisted. The purge water was stored on site in a labeled, 55-gallon, steel drum.

After purging, a groundwater sample was collected from each well with its dedicated bailer and decanted into two, 40-milliliter, HCL-preserved, VOA bottles having Teflon-lined caps. All bottles were labeled to show site address, sample and sampler name, date and time sampled, and placed in an iced-cooler for delivery, under chain-of-custody (attached), to Department of Health Services certified McCampbell Analytical Inc. (McCampbell) laboratory located in Pacheco, California. A trip blank sample was also stored as above and delivered to McCampbell for analysis as a test for cross-contamination. The samples were analyzed for TPHG, BTEX, and MTBE by EPA methods 5030/8015 modified, 8020, and 8020, respectively.

Results of Groundwater Gradient Determination

For January 18, 2001, groundwater gradient was calculated to be about .0148 ft./ft. in the north-northwest direction (see attached Groundwater Gradient Map); this gradient and direction of groundwater flow is consistent with historical data accumulated for the site.

Results of Chemical Analyses

TPHG was detected in wells MW-1, MW-2, and MW-3 at concentrations of 11,000 parts per billion (ug/l), 300 ug/l, and 1,800 ug/l, respectively. The laboratory noted that the TPH chromatogram indicated that unmodified or weakly modified gasoline was significant in the samples.

Benzene was detected in wells MW-1, MW-2, and MW-3 at concentrations of 2,000 ug/l, 74 ug/l, and 240 ug/l, respectively.

MTBE was detected in well MW-2 at a concentration of 7.3 ug/l. MTBE was not detected in wells MW-1 and MW-3 at elevated Reporting Limits of <120 ug/l and <10 ug/l, respectively.

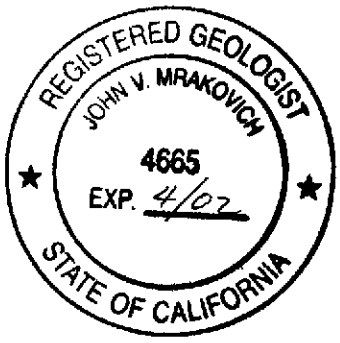
All analytes were non-detectable for the trip blank sample.

The above analytical results are summarized in attached Table 2 and documented in the attached certified analytical report. The reader is referred to attached Table 2 for analytical results of toluene, ethylbenzene, and xylenes.

ALLCAL recommends you provide a copy of this report to the ACHCSA. If you have any questions, please call me at (510) 581-2320.

Sincerely,

John V. Mrakovich, Ph.D.
Registered Geologist No. 4665



cc: Barney M. Chan
Alameda County Health Care Services Agency
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

January 9, 2001
StID # 4241

Mr. Ted Walbey
7402 Hillview Ct.
Pleasanton, CA 94588

Re: Subsurface Investigation at 966 89th Ave., Oakland CA 94621

Dear Mr. Walbey:

Our office has received and reviewed the January 4, 2001 Work Plan for Groundwater Monitoring Well Installation prepared by AllCal Environmental. Upon review of the site history, it appears that groundwater monitoring has not been performed for over two years, since 12/15/98. Since this time, several risk-based documents have been published to help local agencies make site investigation decisions. Both the City of Oakland and the San Francisco Regional Water Quality Control Board (SFRWQCB) have authored such documents. Based upon these documents, at this time, it is not clear whether the previously requested monitoring well is needed. Prior to considering the need to install an additional well, please perform another groundwater sampling event at this site. Based upon this current information, our office can better provide you guidance. **Please provide a groundwater sampling report to our office within 45 days or no later than February 27, 2001.**

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Mr. J. Mrakovich, AllCal Environmental, 27973 High Country Dr., Hayward CA 94542-2530
Ms. S. Knieriem, SWRCB Cleanup Fund, 1001 I St., 17th Floor, Sacramento CA 95814-2828

Addmon966 89th

RECORD OF WATER SAMPLING

PROJECT NO.: 133 DATE: 1/18/01

PROJECT NAME: FIESTA BEVERAGE

PROJECT LOCATION: 966 99th AVE. OAKLAND

SAMPLER: J. MRAKOVICH/ALLCAL

ANALYSES: TPHG, BTEX, MTBE

WELL DEPTH (from construction detail): 25'

WELL DEPTH (measured): 17.8 SOFT BOTTOM?: N

DEPTH TO WATER: 8.49 TIME: 930

PRESSURE (circle one)?: YES OR NO

IF YES, WAS PRESSURE (circle one): POSITIVE OR NEGATIVE?

WATER VOLUME IN WELL: 1.49 G

[2-INCH CASING = 0.16 GAL/FT] [4-INCH CASING = 0.65 GAL/FT]

[6-INCH CASING = 1.47 GAL/FT] [1 GAL = 3.78 L]

WELL NO.: MW-1

WELL DIAMETER: 2"

TOC ELEV: 18.72

LOCK NO.:

LOCATION MAP

CALCULATED PURGE VOL. (GAL): 4.47 (L): ACTUAL PURGE VOL. (GAL): 5 (L):

PURGE METHOD: DISPOSABLE BAILER SAMPLE METHOD: DISPOSABLE BAILER

FIELD MEASUREMENTS

Time	Depth to Water (FT)	Vol (G) (L)	Temp (Deg. F)	pH	EC x 1000	Clarity	Turbidity (NTU)	Remarks
1114		1	57.2	8.57	.93			CLEAR, GAS ODOR
1116		2	59.4	8.48	.97			CLOUDY, " "
1120		3	59.9	8.34	.94			
1123		4	59.7	8.20	.94			
1126		5	60.2	8.11	.93			
1130	Sample							

SIGNATURE: J. Mrakovich

WATER VOL. IN DRUM:

NEED NEW DRUM?: NO

RECORD OF WATER SAMPLING

PROJECT NO.: 133 DATE: 1/18/01

WELL NO.: MW-2

PROJECT NAME: FIESTA BEVERAGE

WELL DIAMETER: 2"

PROJECT LOCATION: 966 99th AVE, OAKLAND

TOC ELEV: 18.44

SAMPLER: J. MRAKOVICH/ALLCAL

LOCK NO.:

ANALYSES: TPHG, BTEX, MTBE

WELL DEPTH (from construction detail): 25'

WELL DEPTH (measured): 24.65 SOFT BOTTOM?: X

DEPTH TO WATER: 8.24 TIME: 926

PRESSURE (circle one)?: (YES) OR NO

IF YES, WAS PRESSURE (circle one): (POSITIVE) OR NEGATIVE?

WATER VOLUME IN WELL: 2.63 G

[2-INCH CASING = 0.16 GAL/FT] [4-INCH CASING = 0.65 GAL/FT]

[6-INCH CASING = 1.47 GAL/FT] [1 GAL = 3.78 L]

LOCATION MAP

CALCULATED PURGE VOL. (GAL): 7.88 (L): ACTUAL PURGE VOL. (GAL): 8 (L):

PURGE METHOD: DISPOSABLE BAKER SAMPLE METHOD: DISPOSABLE BAKER

FIELD MEASUREMENTS

Time	Depth to Water (FT)	Vol (G)	Temp (Deg. F)	pH	EC X1000	Clarity	Turbidity (NTU)	Remarks
952		2	54.5	11.34	.95			CLOUDY, GAS ODOR
955		3	58.3	11.24	1.57			
959		4	59.0	11.11	.65			
1002		5	59.3	10.89	.63			
1005		6	58.8	10.64	.63			
1010		7	59.0	10.33	.61			
1013		8	58.9	10.13	.62			
1020	SAMPLE							

SIGNATURE: J. Mrakovich

WATER VOL. IN DRUM:

NEED NEW DRUM?: NO

RECORD OF WATER SAMPLING

PROJECT NO.: 133 DATE: 1/18/01

WELL NO.: MW-3

PROJECT NAME: FIESTA BEVERAGE

WELL DIAMETER: 2"

PROJECT LOCATION: 966 89th AVE, OAKLAND

TOC ELEV: 19.01

SAMPLER: J. MRAKOVICH

LOCK NO.:

ANALYSES: TPHG, BTEX, MTBE

WELL DEPTH (from construction detail): 25

WELL DEPTH (measured): 25 SOFT BOTTOM?: N

DEPTH TO WATER: 8.57 TIME: 934

PRESSURE (circle one)?: YES OR NO

IF YES, WAS PRESSURE (circle one): POSITIVE OR NEGATIVE?

WATER VOLUME IN WELL: 2.63

[2-INCH CASING = 0.16 GAL/FT] [4-INCH CASING = 0.65 GAL/FT]

[6-INCH CASING = 1.47 GAL/FT] [1 GAL = 3.78 L]

LOCATION MAP

CALCULATED PURGE VOL. (GAL): 7.89 (L): ACTUAL PURGE VOL. (GAL): 8 (L):

PURGE METHOD: DISPOSABLE BAILER SAMPLE METHOD: DISPOSABLE BAILER

FIELD MEASUREMENTS

Time	Depth to Water (FT)	Vol (L) (G)	Temp (Deg. F)	pH	EC (X1000)	Clarity	Turbidity (NTU)	Remarks
1035		2	54.3	9.95	.59			CLOUDY WITH FLOATING MATTER - GAS ODOR
1040		3	56.2	9.68	.64			
1044		4	56.9	9.47	.66			
1047		5	57.6	9.31	.70			
1050		6	58.0	9.09	.70			
1053		7	58.2	9.01	.71			
1056		8	58.2	8.92	.71			
1100	Sample							

SIGNATURE: J. Mrakovich

WATER VOL. IN DRUM:

NEED NEW DRUM?: NO

TABLE I
GROUNDWATER ELEVATION

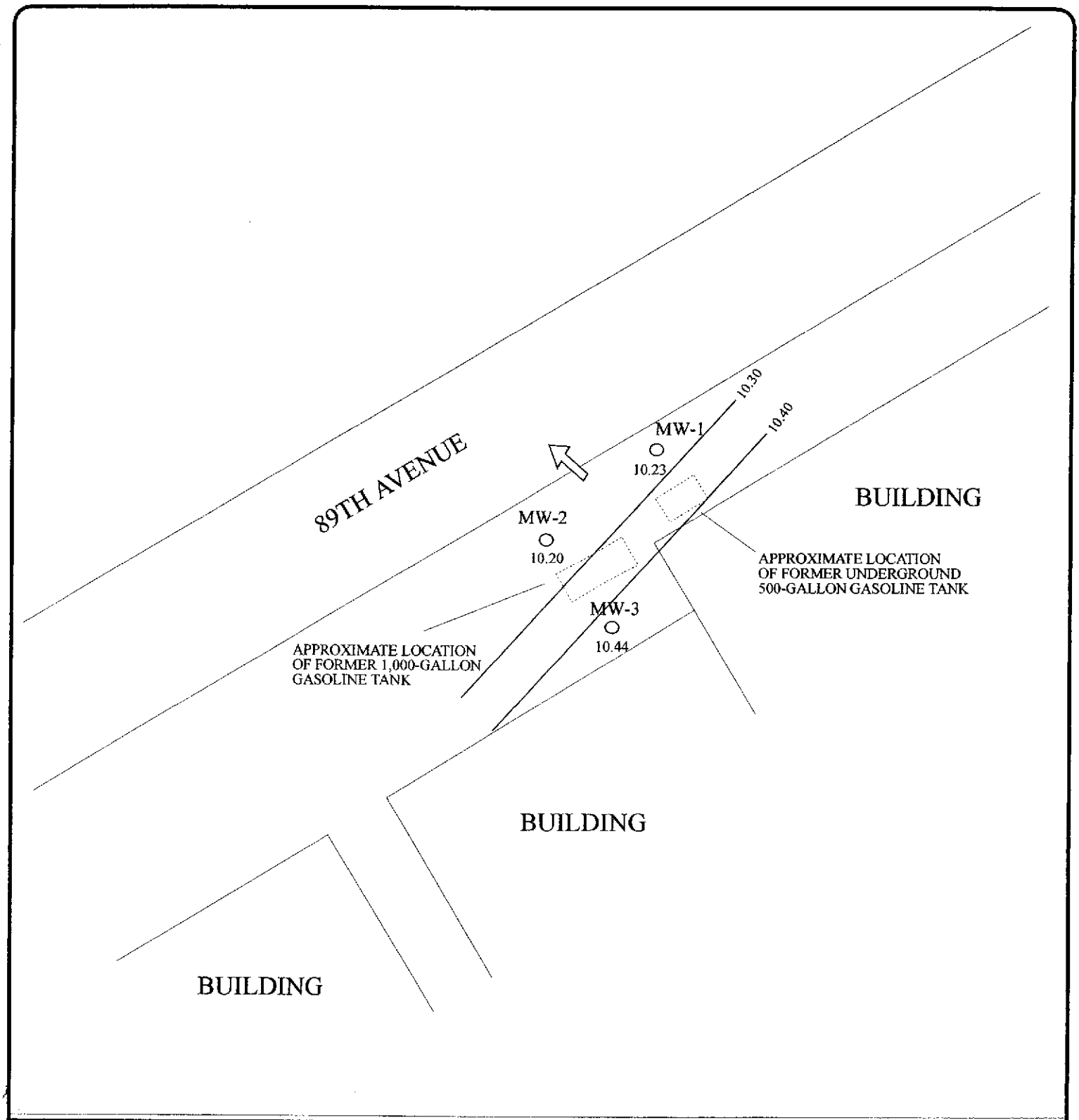
Well Name	Date	Elevation TOC[1] (feet MSL[2])	Depth to Water from TOC (feet)	Groundwater Elevation (feet MSL)
MW-1	12/15/98	18.72	8.38	10.34
	01/18/01		8.49	10.23
MW-2	12/15/98	18.44	8.05	10.39
	01/18/01		8.24	10.20
MW-3	12/15/98	19.01	8.45	10.56
	10/18/01		8.57	10.44

[1] Top of Casing; [2] Mean Sea Level

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
GASOLINE RANGE VOLATILE HYDROCARBONS AS GASOLINE
WITH METHYL TERT-BUTYL ETHER AND BTEX
(all concentrations in ug/l)

Sample ID Name	Date	TPHG[1]	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE[2]
MW-1	08/06/93	17000	7.1	8.4	9.2	53	NA[3]
	01/12/96	12000	1900	840	370	1100	NA
	04/16/96	3500	700	55	100	180	NA
	07/15/96	11000	2300	450	350	910	NA
	10/16/96	21000	4200	2200	650	2600	NA
	12/15/98	10000	1800	520	270	1100	<350
	01/18/01	11000,a	2000	320	320	1100	<120
MW-2	08/06/93	2700	1.3	1.7	2.0	8.1	NA
	01/12/96	2700	600	310	94	220	NA
	04/16/96	190	39	11	10	14	NA
	07/15/96	700	160	33	34	48	NA
	10/16/96	190	48	8.2	10	13	NA
	12/15/98	200	62	17	4.9	14	4.4[4]
	01/18/01	300,a	74	26	7.3	21	7.3
MW-3	08/06/93	5200	2.1	2.9	3.6	17	NA
	01/12/96	4500	280	180	120	470	NA
	04/16/96	5400	370	340	160	580	NA
	07/15/96	1800	200	220	66	250	NA
	10/16/96	2000	340	140	100	300	NA
	12/15/98	1400	200	39	72	150	<22
	01/18/01	1800,a	240	41	86	120	<10

[1] Total Petroleum Hydrocarbons as Gasoline; [2] Methyl tert-Butyl Ether; [3] Not Analyzed; [4] Confirmed by EPA Method 8260 Modified; a=The TPH chromatogram indicates unmodified or weakly modified gasoline is significant.



Legend

MW-1 ○ Name and Location of Groundwater Monitoring Well

10.23 Potentiometric Elevation

10.40 Potentiometric Contour (01/18/01)

Groundwater Flow Direction

0 20

Approximate Scale (ft)

N

ALLCAL ENVIRONMENTAL

FIESTA BEVERAGE
GROUNDWATER GRADIENT MAP
01/18/01
966 89TH AVENUE
OAKLAND, CA 94621

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

ALLCAL Environmental 27973 High Country Drive Hayward, CA 94542-2530	Client Project ID: #133; Fiesta Beverage	Date Sampled: 01/18/2001
		Date Received: 01/18/2001
	Client Contact: John Mrakovich	Date Extracted: 01/18/2001
	Client P.O:	Date Analyzed: 01/18/2001

01/25/2001

Dear John:

Enclosed are:

1). the results of **4** samples from your **#133; Fiesta Beverage** 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

ALLCAL Environmental	Client Project ID: #133; Fiesta Beverage	Date Sampled: 01/18/2001
27973 High Country Drive		Date Received: 01/18/2001
Hayward, CA 94542-2530	Client Contact: John Mrakovich	Date Extracted: 01/18-01/22/2001
	Client P.O:	Date Analyzed: 01/18-01/22/2001

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	Ethyl-benzene	Xylenes	% Recovery Surrogate
58235	Trip Blank	W	ND	ND	ND	ND	ND	ND	102
58236	MW-1	W	11,000,a	ND<120	2000	320	320	1100	---#
58237	MW-2	W	300,a	7.3	74	26	7.3	21	102
58238	MW-3	W	1800,a	ND<10	240	41	86	120	110
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 Ave. South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

QC REPORT

Date: 01/18/01 Matrix: Water

Extraction: TTLC

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 121800					Instrument: GC-3		
Surrogate1	0.000	101.0	104.0	100.00	101	104	2.9
Xylenes	0.000	28.2	27.1	30.00	94	90	4.0
Ethyl Benzene	0.000	9.6	9.2	10.00	96	92	4.3
Toluene	0.000	9.7	10.0	10.00	97	100	3.0
Benzene	0.000	9.8	10.3	10.00	98	103	5.0
MTBE	0.000	9.9	10.3	10.00	99	103	4.0
GAS	0.000	83.9	78.2	100.00	84	78	7.1
SampleID: 11601					Instrument: MB-1		
Oil & Grease	0.000	18.4	18.6	23.70	78	78	1.1
SampleID: 11701					Instrument: GC-11 A		
Surrogate1	0.000	117.0	115.0	100.00	117	115	1.7
TPH (diesel)	0.000	8625.0	8625.0	7500.00	115	115	0.0

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

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

RPD means Relative Percent Deviation

2407 7 79C37 doc

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553
Telephone: (510) 798-1620 Fax: (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY

Report To: JOHN MRAKOVICH Bill To: SAME
Company: ALLCAL ENVIRONMENTAL
27973 HIGH COUNTRY DR.
HAYWARD, CA 94542
Tele: (510) 5812320 Fax: (510) 5818490
Project #: 133 Project Name: FIESTA BEVERAGE
Project Location: 966 89th AVE, OAKLAND, CA
Sampler Signature: J. Mrakovich

SAMPLE ID	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED Ice	METHOD PRESERVED HCl	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602/8020 + 8015)/ MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI	Other	Other	Other	Other	Comments
TRIP BLANK	K	1/18/01	930	2	40 ML	X					X				X																			58235
MW-1	MW-1	↓	1130	↓	↓	↓					↓	X			↓																			58236
MW-2	MW-2	↓	1020	↓	↓	↓					↓	↓			↓																			58237
MW-3	MW-3	↓	1100	↓	↓	↓					↓	↓			↓																			58238

Relinquished By:	Date:	Time:	Received By:
J. Mrakovich	1/18	13:30	B. Butts
B. Butts	1/18	3:30	[illegible]

Remarks:

ICE/t° ✓ GOOD CONDITION ✓ HEAD SPACE ABSENT ✓

	VOAS	O&G	METALS	OTHER
PRESERVATION	✓			

APPROPRIATE CONTAINERS ✓

ATTACHMENT A

GROUNDWATER SAMPLING PROCEDURES

Groundwater monitoring wells will not be sampled until at least 48 hours after well development. Groundwater samples will be obtained using either a bladder pump, clear Teflon bailer, or polyethylene bailer. Prior to sampling, sampling equipment will be thoroughly decontaminated to prevent introduction of contaminants into the well and to avoid cross-contamination. Monitoring wells will be sampled after three to five wetted casing volumes of groundwater have been evacuated and after the Allcal sampling team leader determines that water representative of the formation is being obtained. The well will be purged until conductivity has been stabilized (three consecutive conductivity reading within 15% of one another). If the well is emptied before four to ten well volumes are removed, the sample shall be taken when the water level in the well recovers to 80% of its initial water level or better.

ALLCAL will also measure the thickness of any floating product in the monitoring wells using a probe or clear Teflon bailer. The floating product will be measured after well development but prior to the collection of groundwater samples. If floating product is present in the well, ALLCAL will recommend to the client that product removal be commenced immediately and reported to the appropriate regulatory agency.

Unless specifically waived or changed by the local, prevailing regulatory agency, water samples shall be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No.233, Page 69544, Table ll) for the type of analysis to be performed.

MEASUREMENTS

Purged Water Parameter: During purging, discharged water will be measured for the following parameters.

Parameter	Units of Measurement
pH	Units
Electrical conductivity	Umhos
Temperature	Degrees F or C
Depth to Water	Feet/Tenths
Volume of Water Discharged	Liters

Documentation: All parameter measurements shall be documented in writing on ALLCAL development logs.

ATTACHMENT B

SAMPLE HANDLING PROCEDURES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination and will be delivered to the laboratory in an iced-cooler. Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers.

Samples will be stored in iced-coolers to maintain custody, control temperature, and prevent breakage during transportation to the laboratory. Ice, blue ice, or dry ice (dry ice will be used for preserving soil samples collected for the Alameda County Water District) will be used to cool samples during transport to the laboratory. Water samples will be cooled with crushed ice. In the Alameda County Water District, water samples will be buried in the crushed ice with a thermometer, and the laboratory will be requested to record thermometer temperature at the time of receipt.

Each sample will be identified by affixing a label on the container(s). This label will contain the site identification, sample identification number, date and time of sample collection, and the collector's initials.

Soil samples collected in brass or stainless-steel tubes will be preserved by covering the ends with Teflon tape and capping with plastic end-caps. The tubes will be labeled, sealed in quart-size bags, and placed in an iced-cooler for transport to the laboratory.

All groundwater sample containers will be pre-cleaned and will be obtained from a State Department of Health Services certified analytical laboratory.

A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory. All sample transfers will be documented in the chain-of-custody. All field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician or professional who has been designated as being responsible for sample shipment to the appropriate laboratory. The custody record will include the following information: site identification, name of person collecting the sample(s), date and time sample(s) were collected, type of sampling conducted (composite/grab), location of sampling station, number and type of containers used, and signature of the person relinquishing samples to another person with the date and time of transfer noted.

ATTACHMENT C

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling, and testing methods. Additional sample quality control methods may include the use of background samples, equipment rinsate samples, and trip and field blanks. Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits, and proper sample preservation and holding times also provide assurance of accurate analytical data.

A quality assurance and quality control (QA/QC) program may be conducted in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples may be taken in the field to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples that may be collected are trip blanks, field blanks, and duplicate samples.

Trip blanks are a check for cross-contamination during sample collection, shipment, and laboratory analysis. They are water samples that remain with the collected samples during transportation and are analyzed along with the field samples to check for residual contamination. Analytically confirmed organic-free water will be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blanks will be numbered, packaged, and sealed in the same manner as the other samples. One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is not to be opened by either the sample collectors or the handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water sample is poured into appropriate containers to simulate actual sampling conditions. Contamination due to air exposure can vary considerably from site to site.

The laboratory will not be informed about the presence of trip and field blanks, and false identifying numbers will be put on the labels.

Duplicate samples are identical sample pairs (collected in the same place and at the same time), placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of

the precision of sampling and analytical methods.

The laboratory's precision will be assessed without the laboratory's knowledge by labeling one of the duplicates with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by performing QC tests designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and the United States Environmental Protection Agency-certified standards), duplicates, replicates, and sample spikes. Internal QC also requires adherence to written methods, procedural documentation, and the observance of good laboratory practices.

ATTACHMENT D

WASTE HANDLING AND DECONTAMINATION PROCEDURES

Decontamination: Any drilling, sampling, or field equipment that comes into contact with soil or groundwater will be decontaminated prior to its use at the site and after each incident of contact with the soil or groundwater being investigated. Decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights, the drill bit, and all other soil boring devices will be steam-cleaned between the drilling of each boring.

All sample equipment, including the split-spoon sampler and brass or stainless-steel tubes, will be cleaned by washing with trisodium phosphate or Alconox detergent, followed by rinsing with tap water. Where required by specific regulatory guidelines, a nonphosphate detergent will be used.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include: excavated soil, drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by plastic sheeting, and the appropriate disposal procedure will be determined by the site owner following receipt of the soil sample analytical results. Storage containers will be labeled to show material stored, known or suspected contaminant, date stored, expected removal date, company name, contact, and telephone number.