Woodward-Clyde

Engineering & sciences applied to the earth & its environment

April 15, 1998
941114NA

Ms. Susan Hugo
Hazardous Materials Specialist
Department of Environmental Health
Alameda County Health Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Transmittal of 1st Quarter 1998 Groundwater Monitoring Results at the Former Celi's Alliance Gas Station Site, Emeryville, CA

Dear Ms. Hugo:

On behalf of the City of Emeryville Redevelopment Agency, transmitted herewith is the subject site quarterly groundwater monitoring results for the first quarter 1998. This is the third monitoring event of an one-year quarterly groundwater monitoring program. The monitoring activites were performed in accordance with the Closure Workplan (Woodward-Clyde, September 1996), which was submitted to and approved by the Alameda County Department of Environmental Health.

Please feel free to call me at (510) 874-3060 or Mr. Ignacio Dayrit of the City of Emeryville Redevelopment Agency at (510) 596-4356 for questions and comments.

Sincerely,

Xinggang Tong, P.E.
Project Manager

enclosures.

cc: Ignacio Dayrit, City of Emeryville

Woodward-Clyde International-Americas
500 12th Street, Suite 200 • Oakland, California 94607-4014
(510) 893-3600 • Fax (510) 874-3268

FIRST QUARTER 1998 GROUNDWATER MONITORING RESULTS

THE FORMER CELI'S ALLIANCE GAS STATION AT 4000 SAN PABLO AVENUE EMERYVILLE, CALIFORNIA

Prepared for

City of Emeryville Redevelopment Agency
2200 Powell Street, 12th Floor
Emeryville, California 94608

April 14, 1998

Woodward-Clyde

Woodward-Clyde Consultants
500 12th Street, Suite 200
Oakland, CA 94607-4014
(510) 893-3600
Project 941114NA

FIRST QUARTER 1998 GROUNDWATER MONITORING RESULTS
THE FORMER CELI'S ALLIANCE GAS STATION
4000 SAN PABLO AVENUE,
EMERYVILLE, CALIFORNIA

Groundwater samples were collected from the on-site monitoring well EW-1 and the off-site, downgredient monitoring well LF-4 on March 13, 1998. Samples were delivered to Chromalab of Pleasanton for the analysis of Total Petroleum Hydrocarbons (TPH) as gasoline (TPH-g), diesel (TPH-d), and motor oil (TPH-mo); Benzene, Toluene, Ethylbenzene, & Xylenes (BTEX); Methyl Tertiary Butyl Ether (MTBE); and polyaromatic hydrocarbons (PAHs). Results are summarized in Table 1. Lead was not analyzed this quarter because it was not detected in the previous two quarters.

Consistent with the previous two quarterly monitoring results, motor oil was not detected at or above laboratory reporting limit (0.5 mg/l) for both wells and naphthalene was the only PAH detected in EW-1 (0.17 mg/l) this quarter. Concentrations of petroleum hydrocarbons in LF-4 continued the trend of decreasing. Benzene concentration decreased to 4.1 ug/l this quarter from 26 ug/l of last quarter. Water samples from EW-1 exhibited significant detectable levels of gasoline (TPH-g, 33 mg/l), diesel (TPH-d, 7.7 mg/l), benzene (2.5 mg/l), toluene (1.3 mg/l), ethylbenzene (1.0 mg/l) and total xylenes (3.4 mg/l). Compared with the 4th quarter 97 results, concentrations of gasoline, toluene, ethylbenzene and xylenes decreased, while diesel and benzene concentrations increased slightly. MTBE was measured at 570 ug/l this quarter as compared to 340 ug/l last quarter. Its presence in groundwater was confirmed this time by EPA Method 8260. It will be monitored next quarter again.

Chromalab reported QC failure when performing TPH-g analysis (modified EPA Method 8010/8020) for sample EW-1. The GC instrument was calibrated within acceptable range before the analysis of EW-1. However, post-calibration was performed incorrectly due to electrical power failure. The power failure occurred right after EW-1 analysis was completed and was caused by the shutdown of a PG&E local transformer station due to high wind and storm at that time. By the time the electrical power came on-line, the sample had passed 14-day holding period. Based on our professional judgement, the result may be accepted with the limit of incomplete QC data.

Woodward-Clyde retained Environmental Sampling Services to perform field sampling activities. Prior to purging, the depth from the top of well casing to water surface was measured using a Solinst electronic water level meter. Each of the two wells were then purged by manually bailing out at least 3 well casing volumes of groundwater using a new disposable PVC bailer. Temperature, pH, and conductivity of the purged water were monitored during the well purging. The well monitoring data sheet is included with this

report. After the water level recovered to about 80% of the static water level and water parameters stabilized, a new disposable bailer was gently lowered into a well approximately half its length past the air-water interface. The bailer was retrieved and the water was promptly transferred to appropriate sample containers supplied by the laboratory. Sample containers were promptly capped, labeled, placed in an ice-cooled container, and delivered to Chromalab under chain-of-custody in the same day the samples were collected. For quality control, a trip blank was included in the container and was analyzed for TPH-g and BTEX.

The water level in well MW-2 was also measured for the purpose of estimating groundwater flow direction in the area. Well MW-2 was installed by Levine-Fricke for monitoring other contamination not related to this site. Elevations of the three wells were surveyed by PLS Surveys, Inc. of Oakland on July 10, 1997. Groundwater elevations are summarized in Table 1 and are shown on Figure 2. The water level was at about 6 to 7 feet below ground surface on March 13, 1998, and was approximately the same levels as measured last quarter. Based on this quarter measured groundwater elevations, the groundwater flow direction is generally toward the southwest under a hydraulic gradient of approximately 0.01 ft/ft. The local groundwater flow direction may have been influenced by the groundwater extraction activities near the intersection of Hollis Street and Yerba Buena Street, which is about 3,000 feet Southwest of this site.

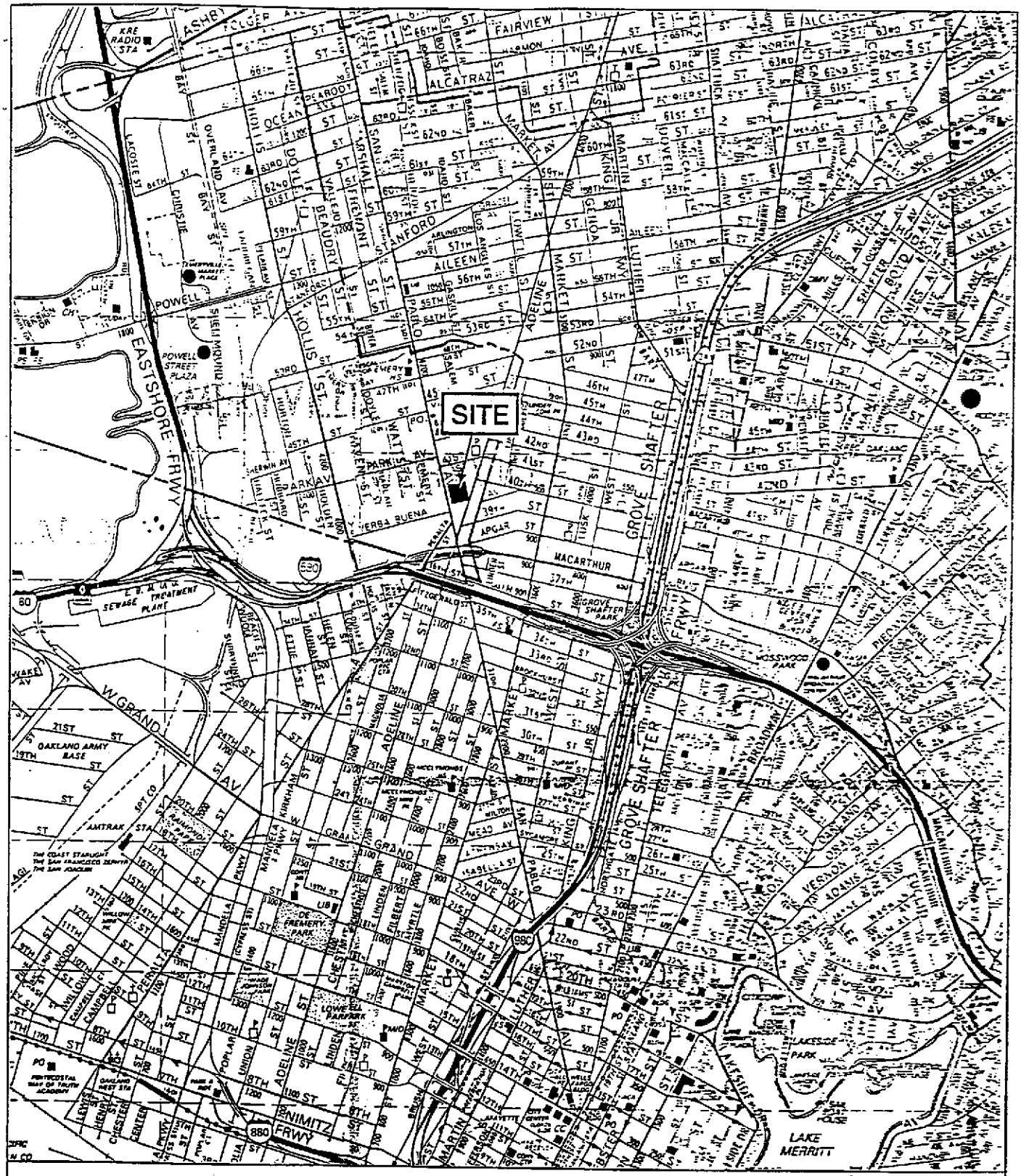
The purged water was placed in a labeled 55-gallon DOT drum for future disposal. For security reasons, the drum was moved to the City's Fire Station No. 2 site for temporary storage there.

TABLE 1
GROUNDWATER MONITORING DATA
THE FORMER CELLI'S ALLIANCE GAS STATION SITE
4000 SAN PABLO AVE., EMERYVILLE, CA

Sample ID	Date Sampled	Water level TOC (ft)	Water level MSL (ft)	TPH as gasoline (mg/l)	TPH as diesel (mg/l)	TPH as motor oil (mg/l)	TRPH (mg/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)	Total Lead (ug/l)	PAHs (ug/l)
EW-1	**3/13/98**	**5.92**	**33.12**	**33**	**7.7**	**ND (0.5)**	**NA**	**2500**	**1300**	**1000**	**3400**	**570**	**NA**	**naphthalene = 170**
EW-1	12/5/97	6.00	33.04	41	4.7	ND (2)	NA	2100	1800	2500	10000	340	ND (40)	naphthalene = 420
EW-1	9/26/97	8.06	30.98	110	180	ND (20)	NA	2800	4900	3100	12000	ND (500)	ND (40)	naphthalene = 1,000
LF-4	**3/13/98**	**6.58**	**31.50**	**0.91**	**0.11**	**ND (0.5)**	**NA**	**4.1**	**ND (0.5)**	**7.1**	**27**	**14**	**NA**	**NA**
LF-4	12/5/97	6.28	31.80	1.4	0.15	ND (0.2)	NA	26	14	30	140	20	ND (40)	ND (10)
LF-4	9/26/97	8.25	29.83	3.2	0.48	ND (0.2)	NA	44	6.6	49	180	ND (5)	ND (40)	naphthalene = 17
LF-4	1/28/94	6.77	31.31	18	1.4	0.16	NA	1000	1900	880	4700	NA	NA	NA
LF-4dup	1/28/94	6.77	31.31	21	2.2	0.21	NA	1100	2000	800	4200	NA	NA	NA
Trip Blan	**3/13/98**			**ND (0.05)**	**NA**	**NA**	**NA**	**ND (0.5)**	**ND (0.5)**	**ND (0.5)**	**ND (0.5)**	**ND (5)**	**NA**	**NA**
Trip Blank	12/5/97			ND (0.05)	NA	NA	NA	ND (0.5)	ND (0.5)	ND (0.5)	ND (2)	ND (5)	NA	NA
Trip blank	9/26/97			ND (0.05)	NA	NA	NA	ND (0.5)	ND (0.5)	ND (0.5)	ND (2)	ND (5)	NA	NA
MW-2	**3/13/98**	**7.09**	**30.18**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
MW-2	12/5/97	6.78	30.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2	9/26/97	8.11	29.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LF-1AG	8/7/93	9.40	29.55	100	41	ND (2.5)	11	13000	9400	3100	14000	NA	NA	NA
LF-2AG	8/7/93	7.97	32.28	13	0.095	ND (0.5)	ND (5)	2400	2900	500	2000	NA	NA	NA
LF-3AG	8/7/93	8.90	30.45	11	0.78	ND (0.25)	ND (5)	1500	170	2900	5100	NA	NA	NA
GWEB1	1/28/94	NA	NA	ND (0.05)	0.081	ND (0.05)	NA	ND (0.5)	0.57	ND (0.5)	2.6	NA	NA	NA

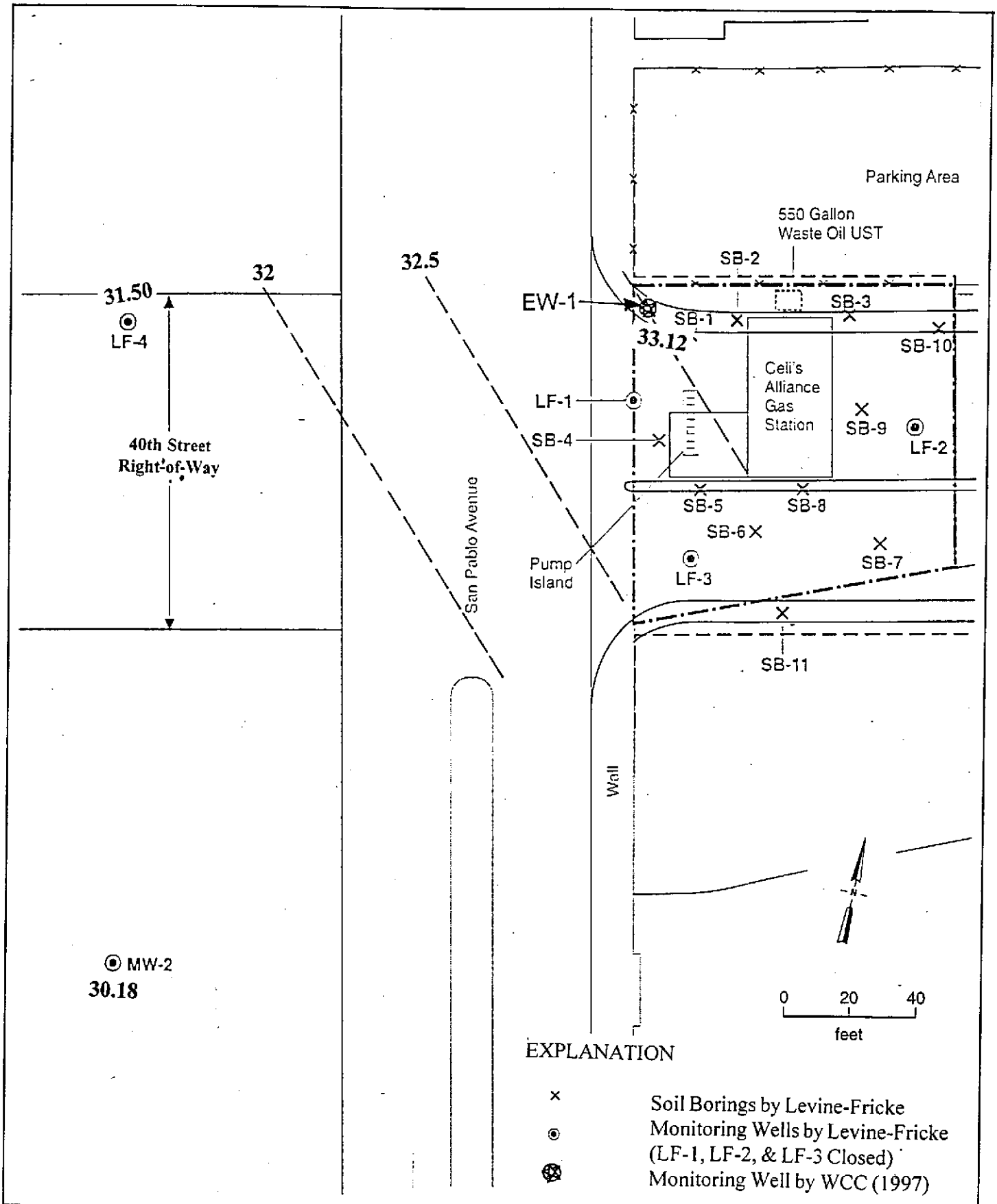
TABLE 1
GROUNDWATER MONITORING DATA
THE FORMER CELLI'S ALLIANCE GAS STATION SITE
4000 SAN PABLO AVE., EMERYVILLE, CA

Notes: NA - not analyzed; ND - not detected at or above the detection limit given in parentheses.
TOC - water level measured to top of well casing; MSL - mean sea level.
TPH gas, diesel, and motor oil are quantified by modified EPA Method 8015.
Benzene, toluene, ethylbenzene, xylenes, and MTBE are quantified by EPA Method 8020.
TRPH - total recoverable petroleum hydrocarbons quantified by Standard Method 5520 E&F.
Lead - quantified by EPA Method 3010/6010.
PAHs - polyaromatic hydrocarbons quantified by EPA Method 3520/8270.



Project No. 941114NA	40th Street UST	SITE LOCATION MAP CELI'S ALLIANCE GAS STATION SITE	Figure 1
Woodward-Clyde Consultants			

941114NA-1000/060994



Project No. 94114NA	40th Street Right-of-Way (Former Celis Gas Station)	SHALLOW GROUNDWATER ELEVATIONA (in feet, MSL) March 13, 1998	Figure 2
Woodward-Clyde Consultants			

Environmental Sampling Services

WATER QUALITY SAMPLE LOG SHEET	WELL IDENTIFICATION: **EW-1** DATE: 3/13/98

Project Name: 40th Street Emeryville UST — Client Project Number: 941114NA

Well Description: 2" 3" (4") 5" 6" Other ____ — Well Type: (PVC) Stainless Steel Other: ____

Is Well Secured? (Yes) No Bolt Size 15/16" — Type of lock / Lock number: Dolphin 1600

Observations / Comments: ____

Purge Method: Teflon (Disposable Bailer) Centrifugal Pump GrundFos Redi-flow Pump Other: ____

Pump Lines: (NA) New / Cleaned / Dedicated — Bailer Line: NA (New) Cleaned / Dedicated

Method of Cleaning Pump: (NA) Alconox Liquidnox Tap Water DI Rinse Other: ____

Method of Cleaning Bailer: NA Alconox Liquidnox Tap Water (DI Rinse) Other: ____

Sampling Method: Disp. Teflon Bailer (Disp. PVC Bailer) GrundFos Redi-flow Pump Other: ____

pH Meter Serial No.: 217254 / (330089) — Spec. Cond. Meter Serial No.: (96H0203AB) / AE

Date/Time Calibrated: 3/12/98: 11:00 (4) (7) (10) @ 25°C — Spec.Cond. Meter Calibration: (Self Test) Other: ____

Method to Measure Water Level: Solinst Serial No.: ESS#2 — P.I.D. Reading: NA

Water Level at Start (DTW): 5.92 — Water Level Prior To Sampling: 12.73

TD = 20.68 - 5.92 (DTW) = 14.76 (ft.of water) x "K" = 9.63 (Gals./CV) x 2.89 (No. of CV) = 3 (Gals.)

"K"= 0.163(2" well) ("K" = 0.653(4" well)) "K" = 1.02(5" well) "K" = 1.46(6" well) "k" = 2.61(8" well)

FIELD WATER QUALITY PARAMETERS

Date	Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance mS (uS)	Turbidity (~~NTU's~~)	Color	Comments
3/12/98	12:03	5	6.31	18.4	1311	clear	none	Slt. Odor
	12:10	10	6.48	17.9	1280	"	"	" " slight sheen
	12:16	15	6.47	18.3	1333	"	"	" " "
	12:23	20	6.48	18.1	1323	"	"	" " "
	12:32	25	6.48	18.5	1346	"	"	" " "
	12:38	29	6.50	18.5	1344	"	"	" " "
3/13/98	1248	After Sampling	6.53	19.1	1378	"	"	" " "

Total Discharge: 29 gallons — Casing Volumes Removed: 3

Method of disposal of discharged water: (55 Gallon Drum(s)) Poly Tank Other: ____

Date/Time Sampled: 3/12/98 @ 12:45 — Analysis/No. of Bottles: TPHg/BTEX, MTBE (3 VOC's w/HCl); TPH(Diesel + Motor Oil): 1-1L N/P Amber; 8270 PAH only: 1-1L N/P Amber

QA/QC: ____ @ ____ as an Equipment Blank Duplicate MS/MSD Lab Split Field Blank

Comments: MW-2 @ 7.09 @ 12:00

Sampled By: S. Penman and J. Lee Initials: [signature]

Environmental Sampling Services
6680 Alhambra Ave. Martinez, CA 94553
Tel/Fax: (510) 372-8108

Environmental Sampling Services

WATER QUALITY SAMPLE LOG SHEET	WELL IDENTIFICATION: LF-4 DATE: 3/13/98

Project Name: 40th Street Emeryville UST — Client Project Number: 941114NA

Well Description: (2") 3" 4" 5" 6" Other ____ — Well Type: (PVC) Stainless Steel Other: ____

Is Well Secured? (Yes) / No Bolt Size 15/16" — Type of lock / Lock number: Master Lock

Observations / Comments: ____

Purge Method: Teflon (Disposable Bailer) Centrifugal Pump GrundFos Redi-flow Pump Other: ____

Pump Lines: (NA) New / Cleaned / Dedicated — Bailer Line: NA (New) / Cleaned / Dedicated

Method of Cleaning Pump: (NA) Alconox Liquidnox Tap Water DI Rinse Other: ____

Method of Cleaning Bailer: NA Alconox Liquidnox Tap Water (DI Rinse) Other: ____

Sampling Method: Disp. Teflon Bailer (Disp. PVC Bailer) GrundFos Redi-flow Pump Other: ____

pH Meter Serial No.: 217254 / (330089) — Spec. Cond. Meter Serial No.: (96H0203AB) / AE

Date/Time Calibrated: 3/12/98 @ 11:00 4 7 10 @ 25°C — Spec.Cond. Meter Calibration: (Self Test) Other: ____

Method to Measure Water Level: Solinst Serial No.: ESS #2 — P.I.D. Reading: NA

Water Level at Start (DTW): 6.58 — Water Level Prior To Sampling: 6.64

TD = 18.16 - 6.58 (DTW) = 11.58 (ft.of water) x "K" = 1.88 (Gals./CV) x 3 (No. of CV) = 5.6 (Gals.)

("K"= 0.163(2" well)) ("K" = 0.653(4" well) "K" = 1.02(5" well) "K" = 1.46(6" well) "k" = 2.61(8" well)

FIELD WATER QUALITY PARAMETERS

Date	Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance mS (uS)	Turbidity (NTU's)	Color	Comments
3/13/98	1304	1	6.63	19.0	647	low	orangish Brown	
	1306	2	6.69	19.5	620	"	"	
	1308	3	6.72	19.2	618	"	orange Tint	
	1310	4	6.73	19.5	619	"	None	
	1312	5	6.74	19.6	617	"	"	
	1314	6	6.75	19.1	621	"	"	
	1321	After Sampling	6.80	19.6	625	low	None	

Total Discharge: 6 gallons — Casing Volumes Removed: 3.2

Method of disposal of discharged water: (55 Gallon Drum(s)) Poly Tank Other: ____

Date/Time Sampled: 3/12/98 @ 1318 — Analysis/No. of Bottles: TPHg/BTEX, MTBE (2- VOC's w/HCl)

QA/QC: — @ ____ as an Equipment Blank Duplicate MS/MSD Lab Split Field Blank

Comments: ____

Sampled By: S. Penman and J. Lee Initials: SP JL

Environmental Sampling Services
6680 Alhambra Ave. Martinez, CA 94553
Tel/Fax: (510) 372-8108

CHROMALAB, INC.

Environmental Services (SDB)

April 3, 1998 Submission #: 9803195

WOODWARD-CLYDE OAKLAND
500 12th St., Suite 100
Oakland, CA 94607-4014

Attn: Xianggang Tong

RE: Analysis for project 941114NA & 961276NA.

REPORTING INFORMATION

Samples were received cold and in good condition on March 13, 1998. They were refrigerated upon receipt and analyzed as described in the attached report. ChromaLab followed EPA or equivalent methods for all testing reported.

Deviation from standard conditions was found in the following:

- For the Gasoline/BTEX/MTBE analysis, GC/MS confirmations were analyzed outside of recommended holding time criteria. Results for EW-1 are estimated due to QC failure caused by documented power-failure.

Client Sample ID	Matrix	Date collected	Sample #
EW-1	WTR	March 12, 1998	175337
LF-4	WTR	March 12, 1998	175340
MW-1	WTR	March 12, 1998	175344
TRIP BLANK	WTR	March 12, 1998	175346

Michael Verona *For*
Operations Manager

→ confirmed the presence of MTBE

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

April 1, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: Not provided *Project#:* 941114NA & 961276NA
Received: March 13, 1998

re: One sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **EW-1**
Spl#: 175337 *Matrix:* WATER
Sampled: March 12, 1998 *Run#:*11831 *Analyzed:* March 26, 1998
13

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	33000	2500	N.D.	108	50
MTBE	570	250	N.D.	79	50
BENZENE	2500	25	N.D.	81	50
TOLUENE	1300	25	N.D.	87	50
ETHYL BENZENE	1000	25	N.D.	101	50
XYLENES	3400	25	N.D.	93	50

Note: All concentrations are estimated due to QC failure.

Vincent Vancil
Chemist

Michael Verona
Operations Manager

**

LEV2
AS V132 Q:BTEXQC0220
VINCE 08:10

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

April 1, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: Not provided *Project#:* 941114NA & 961276NA
Received: March 13, 1998

re: One sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **LF-4**
Spl#: 175340 *Matrix:* WATER
Sampled: March 12, 1998 *Run#:*11831 *Analyzed:* March 26, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	910	50	N.D.	108	1
MTBE	14	5.0	N.D.	79	1
BENZENE	4.1	0.50	N.D.	81	1
TOLUENE	N.D.	0.50	N.D.	87	1
ETHYL BENZENE	7.1	0.50	N.D.	101	1
XYLENES	27	0.50	N.D.	93	1

Vincent Vancil
Chemist

Michael Verona
Operations Manager

**

LEV2

AS V132 O:BTEXQC0220
VINCE 09:10

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

April 1, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: Not provided *Project#:* 941114NA & 961276NA
Received: March 13, 1998

re: One sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **TRIP BLANK**
Spl#: 175346 *Matrix:* WATER
Sampled: March 12, 1998 *Run#:*11831 *Analyzed:* March 26, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	108	1
MTBE	N.D.	5.0	N.D.	79	1
BENZENE	N.D.	0.50	N.D.	81	1
TOLUENE	N.D.	0.50	N.D.	87	1
ETHYL BENZENE	N.D.	0.50	N.D.	101	1
XYLENES	N.D.	0.50	N.D.	93	1

Vincent Vancil
Chemist

Michael Verona
Operations Manager

**

LEV2

AS V132 O:BTEXQC0220

VINCE 09:10

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

April 1, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: 941114NA & 961276NA
Received: March 13, 1998

re: **Blank spike and duplicate** report for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Matrix: WATER
Lab Run#: 11831 *Analyzed:* March 26, 1998

Analyte	Spike Amount BSP (ug/L)	Spike Amount Dup	Spike Found BSP (ug/L)	Spike Found Dup	Spike Recov BSP (%)	Spike Recov Dup (%)	Control Limits	% RPD	% RPD Lim
GASOLINE	500	500	542	546	108	109	75-125	0.92	20
MTBE	100	100	79.4	81.2	79.4	81.2	75-125	2.24	20
BENZENE	100	100	81.0	80.3	81.0	80.3	77-123	0.86	20
TOLUENE	100	100	87.2	87.4	87.2	87.4	78-122	0.22	20
ETHYL BENZENE	100	100	101	98.8	101	98.8	70-130	2.20	20
XYLENES	300	300	280	278	93.3	92.7	75-125	0.64	20

BS Smpl #: 177469
BSD Smpl #: 177470

1220 Quarry Lane • Pleasanton, California 94566-4756
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Federal ID #68-0140157

LEV2
OC_BSD1226 VINCE 09:11:07

CHROMALAB, INC.

Environmental Services (SDB)

April 1, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: 941114NA & 961276NA
Received: March 13, 1998

re: **Surrogate** report for 4 samples for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod
Lab Run#: 11831
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
175337-1	EW-1	TRIFLUOROTOLUENE	79.7	65-135
175337-1	EW-1	4-BROMOFLUOROBENZENE	113	65-135
175340-1	LF-4	TRIFLUOROTOLUENE	91.0	65-135
175340-1	LF-4	4-BROMOFLUOROBENZENE	129	65-135
175344-1	MW-1	TRIFLUOROTOLUENE	78.4	65-135
175344-1	MW-1	4-BROMOFLUOROBENZENE	120	65-135
175346-1	TRIP BLANK	TRIFLUOROTOLUENE	76.2	65-135
175346-1	TRIP BLANK	4-BROMOFLUOROBENZENE	108	65-135

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
177468-1	*Reagent blank (MDB)*	TRIFLUOROTOLUENE	87.8	65-135
177468-1	*Reagent blank (MDB)*	4-BROMOFLUOROBENZENE	104	65-135
177469-1	*Spiked blank (BSP)*	TRIFLUOROTOLUENE	83.1	65-135
177469-1	*Spiked blank (BSP)*	4-BROMOFLUOROBENZENE	130	65-135
177470-1	*Spiked blank duplicate (BSD)*	TRIFLUOROTOLUENE	77.2	65-135
177470-1	*Spiked blank duplicate (BSD)*	4-BROMOFLUOROBENZENE	126	65-135

V132 LEV2
QCSURR1229 MV 01-Apr-98 09:08:1

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(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

April 1, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: 941114NA & 961276NA
Received: March 13, 1998

re: **Surrogate** report for 4 samples for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod
Lab Run#: 11837
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
175337-2	EW-1	TRIFLUOROTOLUENE	83.1	65-135
175337-2	EW-1	4-BROMOFLUOROBENZENE	104	65-135
175340-2	LF-4	TRIFLUOROTOLUENE	88.4	65-135
175340-2	LF-4	4-BROMOFLUOROBENZENE	104	65-135
175344-2	MW-1	TRIFLUOROTOLUENE	68.8	65-135
175344-2	MW-1	4-BROMOFLUOROBENZENE	95.9	65-135
175346-2	TRIP BLANK	TRIFLUOROTOLUENE	71.7	65-135
175346-2	TRIP BLANK	4-BROMOFLUOROBENZENE	98.9	65-135

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
177496-1	*Reagent blank (MDB)*	TRIFLUOROTOLUENE	75.1	65-135
177496-1	*Reagent blank (MDB)*	4-BROMOFLUOROBENZENE	109	65-135
177498-1	*Spiked blank (BSP)*	TRIFLUOROTOLUENE	81.5	65-135
177498-1	*Spiked blank (BSP)*	4-BROMOFLUOROBENZENE	110	65-135
177499-1	*Spiked blank duplicate (BSD)*	TRIFLUOROTOLUENE	77.2	65-135
177499-1	*Spiked blank duplicate (BSD)*	4-BROMOFLUOROBENZENE	114	65-135
177632-1	*Matrix spike (MS)*	TRIFLUOROTOLUENE	91.0	65-135
177632-1	*Matrix spike (MS)*	4-BROMOFLUOROBENZENE	113	65-135
177633-1	*Matrix spike duplicate (MSD)*	TRIFLUOROTOLUENE	85.0	65-135
177633-1	*Matrix spike duplicate (MSD)*	4-BROMOFLUOROBENZENE	108	65-135

V132 LEV2
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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

March 27, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: Not provided *Project#:* 941114NA & 961276NA
Received: March 13, 1998

re: 2 samples for TEPH analysis.
Method: *EPA 8015M*

Matrix: WATER *Extracted:* March 17, 1998
Sampled: March 12, 1998 *Run#:* 11661 *Analyzed:* March 17, 1998

Spl# CLIENT SPL ID	Diesel (ug/L)	Motor Oil (ug/L)
175337 EW-1	7700	N.D.

Note: Hydrocarbon reported does not match the pattern of our Diesel Diesel Standard. Surrogate high due to matrix interference.

Matrix: WATER *Extracted:* March 17, 1998
Sampled: March 12, 1998 *Run#:* 11661 *Analyzed:* March 18, 1998

Spl# CLIENT SPL ID	Diesel (ug/L)	Motor Oil (ug/L)
175340 LF-4	110	N.D.

Note: Hydrocarbon reported does not match the pattern of our Diesel Diesel Standard.

Reporting Limits	50	500
Blank Result	N.D.	
Blank Spike Result (%)	108	--

Carolyn House
Chemist

Bruce Havlik
Chemist

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CHROMALAB, INC.

Environmental Services (SDB)

March 27, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: 941114NA & 961276NA
Received: March 13, 1998

re: **Blank spike and duplicate** report for TEPH analysis.

Method: EPA 8015M

Matrix: WATER
Lab Run#: 11661 *Analyzed:* March 17, 1998

Analyte	Spike Amount BSP (ug/L)	Spike Amount Dup	Found BSP (ug/L)	Found Dup	Recov BSP (%)	Recov Dup (%)	Control Limits	% RPD	% RPD Lim
DIESEL	2500	2500	2690	2720	108	109	60-130	0.92	25

BS Smpl #: 175581
BSD Smpl #: 175582

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CHROMALAB, INC.

Environmental Services (SDB)

March 27, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: 941114NA & 961276NA
Received: March 13, 1998

re: **Surrogate** report for 2 samples for TEPH analysis.

Method: EPA 8015M
Lab Run#: 11661
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
175337-1	EW-1	O-TERPHENYL	135	60-130
175340-1	LF-4	O-TERPHENYL	104	60-130

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
175580-1	*Reagent blank (MDB)*	O-TERPHENYL	108	60-130
175581-1	*Spiked blank (BSP)*	O-TERPHENYL	128	60-130
175582-1	*Spiked blank duplicate (BSD)*	O-TERPHENYL	129	60-130

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Environmental Services (SDB)

March 23, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: Not provided *Project#:* 941114NA & 961276NA
Received: March 13, 1998

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *SW846 Method 8270A Nov 1990*

Client Sample ID: **EW-1**
Spl#: 175337 *Matrix:* WATER *Extracted:* March 20, 1998
Sampled: March 12, 1998 *Run#:* 11740 *Analyzed:* March 21, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	170	2.0	N.D.	--	1
ACENAPHTHYLENE	N.D.	2.0	N.D.	--	1
ACENAPHTHENE	N.D.	2.0	N.D.	89.0	1
FLUORENE	N.D.	5.0	N.D.	--	1
PHENANTHRENE	N.D.	2.0	N.D.	--	1
ANTHRACENE	N.D.	2.0	N.D.	--	1
FLUORANTHENE	N.D.	2.0	N.D.	--	1
PYRENE	N.D.	2.0	29.4	90.3	1
BENZO(A)ANTHRACENE	N.D.	2.0	N.D.	--	1
CHRYSENE	N.D.	2.0	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	2.0	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	2.0	N.D.	--	1
BENZO(A)PYRENE	N.D.	2.0	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	2.0	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	2.0	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	2.0	N.D.	--	1

Alex Tam
Chemist

Michael Verona
Operations Manager

510-874-3268 AS 03/27

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CHROMALAB, INC.

Environmental Services (SDB)

March 23, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: 941114NA & 961276NA
Received: March 13, 1998

re: **Blank spike and duplicate** report for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.

Method: SW846 Method 8270A Nov 1990

Matrix: WATER
Lab Run#: 11740 *Analyzed:* March 21, 1998

Analyte	Spike Amount BSP (ug/L)	Spike Amount Dup	Found BSP (ug/L)	Found Dup	Recov BSP (%)	Recov Dup (%)	Control Limits	% RPD	% RPD Lim
ACENAPHTHENE	30.0	30.0	26.7	25.7	89.0	85.7	56-118	3.78	30
PYRENE	30.0	30.0	27.1	27.1	90.3	90.3	52-115	0	35

BS Smpl #: 176555
BSD Smpl #: 176556

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CHROMALAB, INC.

Environmental Services (SDB)

March 23, 1998 *Submission #:* 9803195

WOODWARD-CLYDE OAKLAND

Atten: Xianggang Tong

Project: 941114NA & 961276NA
Received: March 13, 1998

re: **Surrogate** report for 1 sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: SW846 Method 8270A Nov 1990
Lab Run#: 11740
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
175337-1	EW-1	NITROBENZENE-D5	80.8	35-114
175337-1	EW-1	2-FLUOROBIPHENYL	83.0	43-116
175337-1	EW-1	TERPHENYL-D14	87.6	33-141

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
176554-1	*Reagent blank (MDB)*	NITROBENZENE-D5	89.1	35-114
176554-1	*Reagent blank (MDB)*	2-FLUOROBIPHENYL	81.8	43-116
176554-1	*Reagent blank (MDB)*	TERPHENYL-D14	93.3	33-141
176555-1	*Spiked blank (BSP)*	NITROBENZENE-D5	93.9	35-114
176555-1	*Spiked blank (BSP)*	2-FLUOROBIPHENYL	81.7	43-116
176555-1	*Spiked blank (BSP)*	TERPHENYL-D14	85.1	33-141
176556-1	*Spiked blank duplicate (BSD)*	NITROBENZENE-D5	93.9	35-114
176556-1	*Spiked blank duplicate (BSD)*	2-FLUOROBIPHENYL	81.7	43-116
176556-1	*Spiked blank duplicate (BSD)*	TERPHENYL-D14	85.1	33-141

S105
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03TP/175337-175346

38710

Woodward-Clyde Consultants
500 12th Street, Suite 100, Oakland, CA 94607-4014
(510) 893-3600

Chain of Custody Record

38710

PROJECT NO. 941114NA & 961276NA

SAMPLERS: (Signature)

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH gas + BTEX & MTBE	TPH diesel & motor oil	EPA 8270 PAH only			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
40th st.		Site:												10-day TAT
3/13/98	1245	EW-1 *	W					X	X	X			6	
3/13/98	1318	LF-4 *	W					X	X				3	Question/Results to Xinggang Tong (510)874-3060
Fire St.		No. 2 Site:												
3/13/98	1423	MW-1 *	W					X					3	* For these three samples, if MTBE is detected, confirm by EPA 8260
3/13/98	10:00	Trip Blank	W					X					2	All samples properly preserved according to analysis. Wrapped w/ziplock bags & placed in iced cooler for storage.

SUBM #: 9803195 REP: ASLEV2
CLIENT: W&C-OAK
DUE: 03/27/98
REF #:38710

TOTAL NUMBER OF CONTAINERS: 14 — 1 ICE CHEST

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	3/13/98 15:03				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Chroma Lab Courier				3:13 98 17:30

CHROMALAB, INC.

Environmental Service (SDB)

Sample Receipt Checklist

Client Name: WOODWARD-CLYDE OAKLAND Date/Time Received: 03/13/98 | 19:30

Reference/Submis: 38710 | 9803195 Received by: B.M.

Checklist completed by: C Cassidy (Signature) _____ (Date) Reviewed by: OK 3/16/98 (Initials | Date)

Matrix: Water Carrier name: Client - C/L BM.

Shipping container/cooler in good condition?	Yes ✓	No ____	Not Present ____
Custody seals intact on shipping container/cooler?	Yes ____	No ____	Not Present ✓
Custody seals intact on sample bottles?	Yes ____	No ____	Not Present ✓
Chain of custody present?	Yes ✓	No ____	
Chain of custody signed when relinquished and received?	Yes ✓	No ____	
Chain of custody agrees with sample labels?	Yes ✓	No ____	
Samples in proper container/bottle?	Yes ✓	No ____	
Sample containers intact?	Yes ✓	No ____	
Sufficient sample volume for indicated test?	Yes ✓	No ____	
All samples received within holding time?	Yes ✓	No ____	
Container/Temp Blank temperature in compliance? Temp: 4.9 °C	Yes ____	No ____	
Water - VOA vials have zero headspace? No VOA vials submitted ____	Yes ✓	No ____	
Water - pH acceptable upon receipt? ____ Adjusted? ____ Checked by _____ (chemist for VOAs)			

Any No and/or NA (not applicable) response must be detailed in the comments section below.

==========

Client contacted: _____ Date contacted: _____ Person contacted: _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____