File No. 8-90-420-GI

GROUNDWATER SAMPLING FOR THE SITE LOCATED AT 5175 BROADWAY STREET OAKLAND, CALIFORNIA FEBRUARY 1, 1991

PREPARED FOR:

MR. MOHAMMAD MEHDIZADEH

150 RANDOM WAY

PLEASANT HILL, CALIFORNIA 94523

BY:

SOIL TECH ENGINEERING, INC.

298 BROKAW ROAD

SANTA CLARA, CALIFORNIA 95050

SOIL TECH ENGINEERING, INC.

File No. 8-90-420-GI

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SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

February 1, 1991

File No. 8-90-420-GI

Mr. Mohammad Mehdizadeh
150 Random Way
Pleasant Hill, California 94523

Reference: **Groundwater Sampling for the Site**
Located at 5175 Broadway Street, in
Oakland, California

Dear Mr. Mehdizadeh:

This report presents the results of groundwater sampling performed during January 1991, by Soil Tech Engineering, Inc. (STE), at the subject site located at 5175 Broadway Street, in Oakland, California (Figure 1).

As requested, the following work was performed:

1) Measure depth-to-groundwater and liquid-hydrocarbon thickness (if present) in the three on-site wells.

2) Collect groundwater samples from the on-site, existing wells for analysis of Total Petroleum Hydrocarbons (TPH) and Aromatic Hydrocarbons (EPA Method 8020).

3) Update the database for water level/liquid-hydrocarbon level measurements and groundwater chemistry data.

4) Review results and prepare a report of the investigation.

BACKGROUND:

The site is located in a residential and light retail district. The site location is shown in Figure 2.

In January 1990, Tank Protect Engineering, Inc. (TPE) was retained to supervise the removal of three 8,000 gallon underground gasoline tanks and one 500 gallon waste oil tank, to conduct soil sampling, soil excavation, soil treatment, soil disposal and installation of three monitoring wells.

Initial analytical results of soil samples taken after the tank removal did show moderate levels of Total Petroleum Hydrocarbons as Gasoline (TPHg) in two locations only. The rest of the samples showed TPH ranging from non-detected to less than 120 parts per million (ppm). Due to the presence of TPH noted in the excavation, three monitoring wells (MW-1 to MW-3) were installed on-site, as required by state and local regulatory agencies (Figure 2). The preliminary groundwater assessment by TPE indicated that the shallow groundwater had been impacted. Excavated soil was treated to acceptable levels, according to County Health guidelines, to be re-used in the excavation.

The Alameda County Health Department (ACHD) had requested the property owner to conduct further investigation, in order to define the extent of dissolved hydrocarbon contamination.

MONITORING AND SAMPLING:

Soil Tech Engineering, Inc. (STE) was retained in September 1990 to conduct monitoring and sampling of the on-site monitoring wells. The objective of a quarterly groundwater sampling program is to monitor seasonal and long-term variations in the conditions of the shallow aquifer beneath the site and to assess the direction of the groundwater flow for further additional investigation.

The three on-site groundwater monitoring wells (MW-1 to MW-3) were sampled by STE on September 26, 1990 and January 14, 1991. The sampling was conducted in accordance with ACHD and California Regional Water Quality Control Board (CRWQCB) guidelines and our Standard Procedures detailed in Appendix "B".

ANALYTICAL RESULTS:

The three on-site wells detected moderate to high levels of dissolved hydrocarbons. A comparison of September 1990 sampling with TPE analytical results of April 1990, showed an increase in dissolved hydrocarbons in wells MW-1 and MW-2. In well MW-3 (down-gradient), TPHg and Toluene levels decreased, where as Benzene, Ethylbenzene and Total Xylenes increased slightly.

The analytical results for groundwater samples collected on January 14, 1991, showed an increase in TPH and BTEX levels in well MW-2 from those reported on September 1990. Well MW-1 also showed a

slight increase in TPH and Benzene, but showed a decrease in Toluene, Ethylbenzene and Xylene levels. Well MW-3 showed a substantial decrease in TPH and BTEX.

SUMMARY:

The groundwater elevation did increase in all three wells, ranging from a minimum of 0.2 feet (well MW-1) to a maximum of 0.92 feet (well MW-3). The analytical results of groundwater samples collected in January 1991 indicate that hydrocarbon levels increased in wells MW-1 and MW-2 and decreased in MW-3, from those previously reported for September 1990. These elevated levels may be due to residual soil contamination left in the ground. Recent results indicate continued hydrocarbon contamination on-site with little change in the down-gradient well. It is not known whether the reduced concentrations in well MW-3 are due to seasonal effect. Sampling during the next two scheduled quarterly sampling efforts will provide better information regarding hydrocarbon trends. The shallow groundwater flow was found to be in a south to southwesterly direction. In September 1990, groundwater elevations in the wells decreased from a minimum of 6-inches to a maximum of one foot since the last quarterly sampling.

RECOMMENDATION:

Since dissolved hydrocarbons continue to be present in the wells, and has increased in two of the on-site wells, STE recommends

installation of two additional wells on-site: One well to be up-gradient of well MW-1 and the other down-gradient of well MW-3 (see Figure 2).

LIMITATIONS:

This report was prepared in accordance with the currently accepted Standards for Environmental Investigations. The contents of this report reflect the conditions of the site at this particular time.

Please submit this report to ACHD and Regional Water Quality Control Board.

If you have any questions or require additional information, please feel free to contact our office at your convenience.

Sincerely,

SOIL TECH ENGINEERING, INC.

RICHARD DOWNS
ENVIRONMENTAL EDITOR

LAWRENCE KOO, P. E.
C. E. #34928

FRANK HAMEDI-FARD
GENERAL MANAGER

TABLE 1
SUMMARY OF ON-SITE
GROUNDWATER MONITORING WELLS

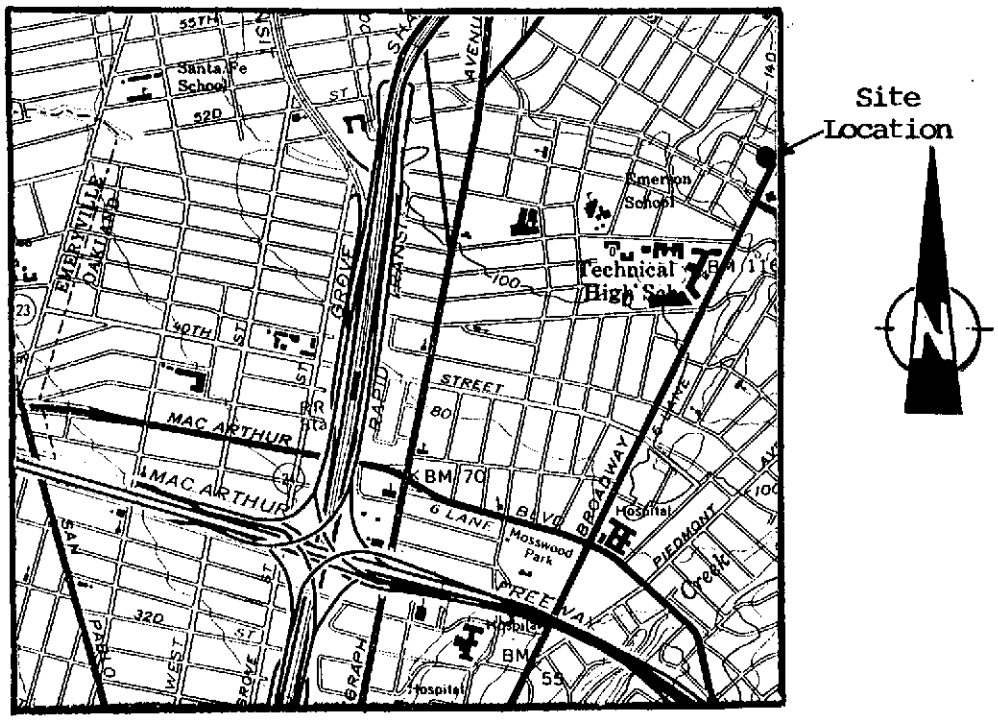
Date	Well No.	Water* Depth (feet)	Product Thickness (feet)	Odor
5/17/90**	MW-1	9.26	NA	NA
	MW-2	10.00	NA	NA
	MW-3	12.42	NA	NA
9/26/90	MW-1	9.92	NP	Mild
	MW-2	10.83	NP	Mild
	MW-3	13.50	NP	Mild
1/14/91	MW-1	9.54	NP	Mild
	MW-2	10.63	NP	None
	MW-3	12.58	Light Sheen	None

* = Below Ground Surface
** = Measured by TPE
NP = None Present
NA = Not Available

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
IN
PARTS PER BILLION (ppb)

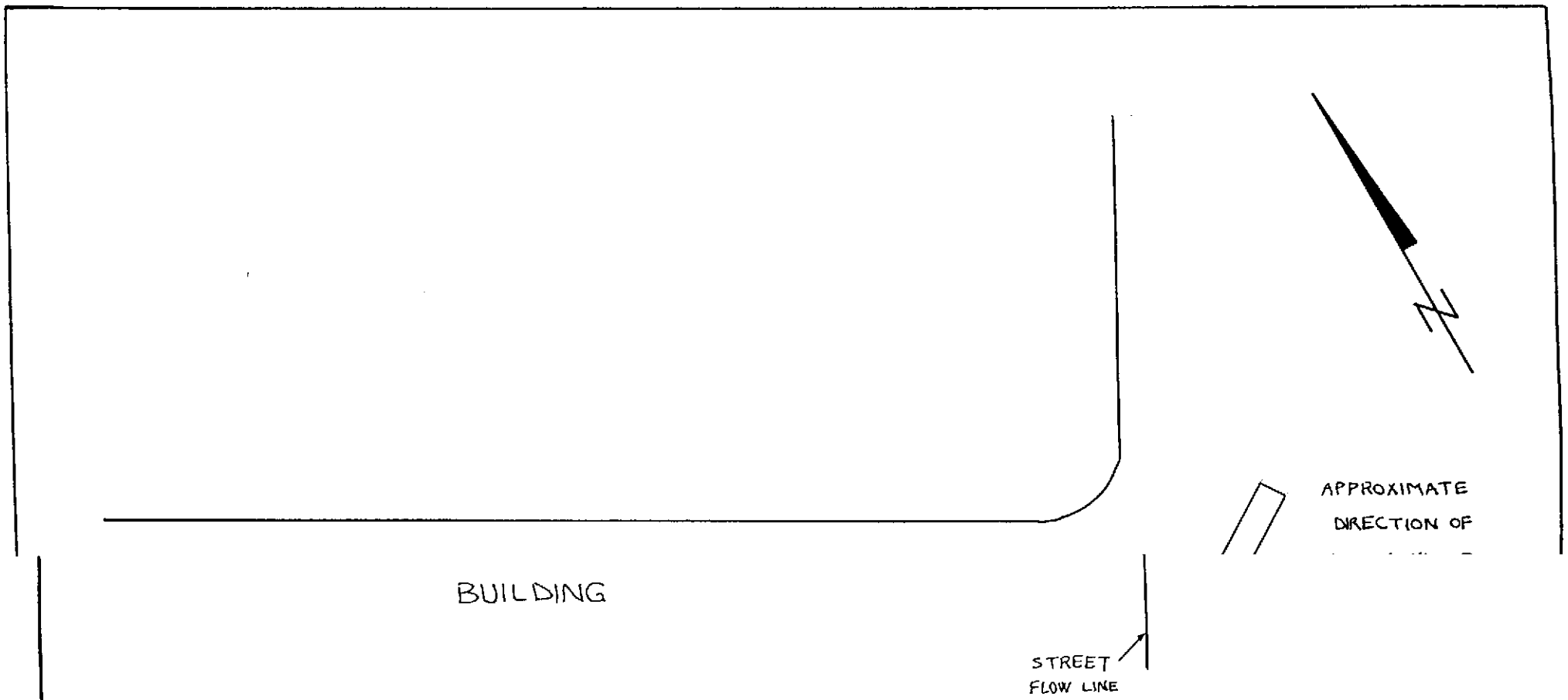
Date	Well No.	TPHg	B	T	E	X
4/30/89*	MW-1	200	18	5	2	12
	MW-2	230	39	18	5	23
	MW-3	56,000	3,600	8,600	1,300	7,200
9/26/90	MW-1	1,300	55	31	120	100
	MW-2	850	94	5	25	47
	MW-3	54,000	5,100	420	1,600	8,000
1/14/91	MW-1	1,700	57	28	41	53
	MW-2	3,100	350	83	86	130
	MW-3	35,000	2,600	6,600	1,500	5,700

TPHg = Total Petroleum Hydrocarbons as Gasoline
BTEX = Benzene, Toluene, Ethylbenzene, Xylene
* = Analytical Results from TPE Site Assessment



USGS 7.5 Minute Series
Oakland West Quadrangle
© 1980

Figure 1



EXISTING MONITORING WELL

PROPOSED MONITORING WELL

5175 BROADWAY OAKLAND CA

1"=20'	PROJECT NO 8-90-420-G1	FIG-2
DRAWN BY N.A.		2-8-91

SOIL TECH ENGINEERING INC.
298 BROKAW Rd. SANTA CLARA CA 95050

GROUNDWATER SAMPLING

Prior to collection of groundwater samples, all of the sampling equipment (i.e. bailer, cables, bladder pump, discharge lines and etc...) were cleaned by pumping a TSP water solution followed by distilled water.

Prior to purging, the well "Water Sampling Field Survey Forms" were filled out (depth to water and total depth of water column, measured and recorded). The well was then bailed or pumped to remove four to ten well volumes or until the discharged water temperature, conductivity and pH stabilized. "Stabilized" is defined as three consecutive readings within 15% of one another.

The groundwater sample was collected when the water level in the well recovered to 80% of its static level.

Forty milliliter (ml.), glass volatile organic analysis (VOA) vials with Teflon septa were used as sample containers. The groundwater sample is decanted into each VOA vial in such a manner that there is a meniscus at the top. The cap is quickly placed over the top of the vial and securely tightened. The VOA vial is then inverted and tapped to see if air bubbles are present. If none are present, the sample is labeled and refrigerated for delivery under chain-of-custody to the laboratory. Label information includes a sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name.

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

REPORT

MR. FRANK HAMEDI
SOIL TECH ENGINEERING
298 BROKAW ROAD
SANTA CLARA, CA 95050

Workorder # : 9009276
Date Received : 09/27/90
Project ID : 8-90-420-GI
Purchase Order: N/A

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

ANAMETRIX ID	CLIENT SAMPLE ID
9009276- 1	MW-1
9009276- 2	MW-2
9009276- 3	MW-3

This report is paginated for your convenience and ease of review. It contains 3 pages excluding the cover letter. The report is organized into sections. Each section contains all analytical results and quality assurance data related to a specific group or section within Anametrix. The Report Summary that precedes each section will help you determine which group at Anametrix generated the data. The Report Summary will contain the signatures of the department supervisor and a chemist, both of whom reviewed the analytical data. Please refer all questions to the department supervisor that signed the form.

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

Burt Sutherland
Laboratory Director

10-12-90
Date

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

MR. FRANK HAMEDI
SOIL TECH ENGINEERING
298 BROKAW ROAD
SANTA CLARA, CA 95050

Workorder # : 9009276
Date Received : 09/27/90
Project ID : 8-90-420-GI
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9009276- 1	MW-1	H2O	09/26/90	TPHg/BTEX
9009276- 2	MW-2	H2O	09/26/90	TPHg/BTEX
9009276- 3	MW-3	H2O	09/26/90	TPHg/BTEX

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

MR. FRANK HAMEDI
SOIL TECH ENGINEERING
298 BROKAW ROAD
SANTA CLARA, CA 95050

Workorder # : 9009276
Date Received : 09/27/90
Project ID : 8-90-420-GI
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

-The surrogate recoveries for samples MW-1 and MW-2 are high due to the presence of interfering peaks.

Cheryl Balmer 10/11/90
Department Supervisor Date

Chemist 10-11-90
Date

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

Anametrix W.O.#: 9009276
Matrix : WATER
Date Sampled : 09/26/90

Project Number : 8-90-420-GI
Date Released : 10/11/90

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW-1 -01	Sample I.D.# MW-2 -02	Sample I.D.# MW-3 -03	Sample I.D.# 12B1010A BLANK
Benzene	0.5	55	94	5100	ND
Toluene	0.5	31	5	420	ND
Ethylbenzene	0.5	120	25	1600	ND
Total Xylenes	0.5	100	47	8000	ND
TPH as Gasoline	50	1300	850	54000	ND
% Surrogate Rec.		191%	161%	129%	59%
Instrument #		HP12	HP12	HP12	HP12
Date Analyzed		10/10/90	10/10/90	10/10/90	10/10/90
RLMF		5	2	250	1

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

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

Analyst 10-11-90 Date

Supervisor 10/11/90 Date

900276 CHAIN OF CUST[illegible] RE[illegible]D

Anametrix

(2) 3/2 16:30

PROJ. NO.	NAME
8-90-420-6I	5175 Broadway OAKLAND

SAMPLERS: (Signature) N. Amini

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	Analyses Requested (2) TPH G/BTXE	REMARKS
1	9/26	2 50		✓	MW-1	4	✓	
2	9/26	3 10		✓	MW-2	4	✓	
3	9/26	3 35		✓	MW-3	4	✓	

	Date / Time			
Relinquished by: (Signature) A. Amini	9/27/90	2 45	Received by: (Signature) Bonny S. Cariaso	9-27-90 1445
Relinquished by: (Signature) Bonny S. Cariaso	9/27/90	1505	Received by: (Signature)	
Relinquished by: (Signature)			Received by: (Signature)	
Relinquished by: (Signature)			Received for Laboratory by: (Signature)	

Remarks: NTA

SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers

CHAIN OF CUSTODY RECORD

PROJ. NO.	NAME
8-90-420-G1	5175 Broadway OAKLAND

SAMPLERS: (Signature) N. Ann

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	Analyses Requested (2) TPH G/BTXKE	REMARKS
1	9/26	2 50		✓	MW-1	4	✓	
2	9/26	3 10		✓	MW-2	4	✓	
3	9/26	3 30		✓	MW-3	4	✓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
N. Ann	9/27/90 2 45	Benny S Cinco 9-27-90 1445			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				NTA	

SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers

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

REPORT

MR. FRANK HAMEDI
SOIL TECH ENGINEERING
298 BROKAW ROAD
SANTA CLARA, CA 95050

Workorder # : 9101111
Date Received : 01/15/91
Project ID : 8-90-420-GI
Purchase Order: N/A

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

ANAMETRIX ID	CLIENT SAMPLE ID
9101111- 1	MW-1
9101111- 2	MW-2
9101111- 3	MW-3

This report consists of 3 pages not including the cover letter, and is organized in sections according to the specific Anametrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anametrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

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

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

Burt Sutherland
Laboratory Director

1-23-91
Date

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

MR. FRANK HAMEDI
SOIL TECH ENGINEERING
298 BROKAW ROAD
SANTA CLARA, CA 95050

Workorder # : 9101111
Date Received : 01/15/91
Project ID : 8-90-420-GI
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9101111- 1	MW-1	WATER	01/14/91	TPHg/BTEX
9101111- 2	MW-2	WATER	01/14/91	TPHg/BTEX
9101111- 3	MW-3	WATER	01/14/91	TPHg/BTEX

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

MR. FRANK HAMEDI
SOIL TECH ENGINEERING
298 BROKAW ROAD
SANTA CLARA, CA 95050

Workorder # : 9101111
Date Received : 01/15/91
Project ID : 8-90-420-GI
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for these samples.

Cheryl Baemer 1/23/91
Department Supervisor Date

Gayle Voigt 1/23/91
Chemist Date

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

Anametrix W.O.: 9101111
Matrix : WATER
Date Sampled : 01/14/91

Project Number : 8-90-420-GI
Date Released : 01/23/91

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW-1 -01	Sample I.D.# MW-2 -02	Sample I.D.# MW-3 -03	Sample I.D.# 12B0117A BLANK	Sample I.D.# 12B0118D BLANK
Benzene	0.5	57	350	2600	ND	ND
Toluene	0.5	28	83	6600	ND	ND
Ethylbenzene	0.5	41	86	1500	ND	ND
Total Xylenes	0.5	53	130	5700	ND	ND
TPH as Gasoline	50	1700	3100	35000	ND	ND
% Surrogate Recovery		142%	136%	109%	79%	115%
Instrument I.D.		HP12	HP12	HP12	HP12	HP12
Date Analyzed		01/17/91	01/18/91	01/17/91	01/17/91	01/18/91
RLMF		5	5	100	1	1

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.
RLMF - Reporting Limit Multiplication Factor.
Anametrix control limits for surrogate recovery are 53-147%.

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

Analyst — Date 1/23/91

Supervisor — Date 1/23/91

Anametrix

CHAIN OF CUSTODY RECORD

PROJ. NO.	NAME
8-90-420-G1	5175 BROADWAY ST. OAKLAND

SAMPLERS: *(Signature)* N. Amrhein

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED ① TPHG/BTEX	REMARKS
1	1/14/91	2:50 PM		✓	MW-1	5	✓	
2	1/14/91	3:10 PM		✓	MW-2	5	✓	
3	1/14/91	3:20 PM		✓	MW-3	5	✓	

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Receive by: *(Signature)*
N. Amrhein	1-15-91 09:20	Sammy S. Cervantes			
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
				N. T. A.	

SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers

Anametrix

CHAIN OF CUSTODY RECORD

9101111

PROJ. NO.	NAME
8-90-420-G1	5175 BROADWAY ST. OAKLAND

SAMPLERS: (Signature) N. Amrhein

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED ② TPHG / BTEX	REMARKS
1	1/14/91	2:30 PM		✓	MW-1	5	✓	
2	1/14/91	3:10 PM		✓	MW-2	5	✓	
3	1/14/91	3:20 PM		✓	MW-3	5	✓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
N. Amrhein	1-15-91 09:20	Barry S. Carrizosa	Barry S. Carrizosa	1/15/91 0940	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) N. Amrhein 01/15/91 0940	Date / Time	Remarks N. T. A.	

SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers