



SMITH-EMERY GEOSERVICES

A MEMBER OF THE SMITH-EMERY COMPANIES, ESTABLISHED 1904

HUNTERS POINT SHIPYARD, BUILDING 114

P.O. BOX 880550

SAN FRANCISCO, CALIFORNIA 94188-0550

PHONE 415/330-3000

FAX 415/330-3030

November 16, 1995

SEG File No. 90404

SEG Report No. 95-405

Alameda County Department of Environmental Health (ACDEH)
1131 Harbor Bay Parkway, Suite #250
Alameda, California 94502-6577

Attn: Mr. Barney Chan

REPORT - QUARTER 3, 1995 GROUNDWATER MONITORING 3925 ALAMEDA AVENUE, OAKLAND, CALIFORNIA

Gentlemen:

INTRODUCTION

In accordance with your request, Smith-Emery GeoServices is pleased to present this report of quarterly groundwater monitoring for the above referenced site. The location of the site is shown on Vicinity Map, Plate 1. The locations of the monitoring wells and the calculated groundwater gradient are presented on the Plot Plan, Plate 2.

The details of the monitoring well installation previously were presented in Smith-Emery GeoServices Report No. 95-187, dated August 22, 1995.

SCOPE OF SERVICES

Smith-Emery GeoServices' scope of services for the quarterly groundwater monitoring at 3925 Alameda Avenue, Oakland, California included:

- Groundwater level measurements

LOS ANGELES

791 EAST WASHINGTON BOULEVARD
LOS ANGELES, CALIFORNIA 90021
PHONE 213/745-5333
FAX 213/746-0744

ANAHEIM

5427 EAST LA PALMA AVENUE
ANAHEIM, CALIFORNIA 92807
PHONE 714/693-1026
FAX 714/693-1034

- Monitoring well purging.
- Groundwater sampling and analytical testing.
- Calculation of groundwater gradient and flow direction.
- Interpretation of analytical and groundwater data and presentation of this report of our findings.

WELL MEASUREMENT

Groundwater level measurements were taken in groundwater monitoring wells MW1, MW2, and MW3 on September 22, 1995. Static water levels and well depths were measured to the nearest one-hundredth of a foot using an electronic groundwater level indicator. The top of the well casings were surveyed by a licensed surveyor and used as reference points from mean sea level during this sampling event. Well measurement and survey data obtained for the three wells are presented in Table 1 on the following page.

The gradient is approximately two tenths of one vertical foot over 100 horizontal feet at a direction of South8°East. A current gradient map showing the surveyed monitoring well locations and flow direction is included as the Plot Plan, Plate 2.

TABLE 1
Well Measurement Data

<u>Well I.D.</u>	<u>Date of Measurement</u>	<u>Casing Elevation</u>	<u>Depth to water from top of casing</u>	<u>Water Elevation, Mean Sea Level</u>
MW-1	9-22-95	8.73'	10.51'	-1.78'
MW-2	9-22-95	8.42'	9.69'	-1.27
MW-3	9-22-95	9.26'	9.88'	-0.62

Gradient: 2.2% @ S8°W

Note: The benchmark elevation was set referenced to City of Oakland survey monument BM-19NW24 at elevation 9.664 feet above mean sea level. Per the USGS topographical map for the Oakland East Quadrangle, the ground surface elevation at the site is approximately 10 feet above mean sea level.

WATER PURGING

The monitoring wells were purged and sampled according to established guidelines and the approved workplan (previously submitted). Prior to sampling, the depth to water was measured with respect to a reference point at the top of the casing using an electronic water level meter, accurate to the nearest one-hundredth of a foot. A transparent bailer was then used to sample the surface of the water table in the wells for the purpose of observing any free product. In wells MW1, MW2, and MW3, no visible free product was noticed. In MW1, MW2, and MW3 a slight petroleum odor was noticed in the purge water.

Each well was purged with a 0.5 gallon development bailer after checking for free product. A minimum of 3 well volumes had been removed from each well. Measured levels of conductivity, temperature, and pH were monitored prior to taking samples. Detailed records of well purging and sampling data appear in Appendix I - Well Purge Data Sheets.

Groundwater samples were obtained in clean disposable Teflon bailers equipped with a flow control valve. Water samples for EPA Method 8015M/602 were placed in EPA-approved 40 ml vials capped with Teflon backed caps. No air bubble or headspace was present in the samples taken. All samples were then labeled and placed in zip lock bags, preserved at approximately four degrees Celsius on blue ice, and transported with appropriate chain-of-custody documentation to a state-certified laboratory.

ANALYTICAL PROGRAM

Analytical tests on the samples taken for this project were performed by state-certified laboratories of Pace, Incorporated, in Petaluma. The detailed results of all analytical work are contained in Appendix II - Report of Analytical Results.

Groundwater Samples

The groundwater samples obtained from the wells MW1, MW2, and MW3 were analyzed by Standard Method EPA 8015M/602 for Gasoline, Diesel, Kerosene, Motor Oil, and BTEX (Benzene, Toluene, Ethylbenzene, and Xylenes). A summary of the analytical results are presented in the following table.

Table 2 - ANALYTICAL FINDINGS

MONITORING WELL SAMPLINGS, sampled 9/22/95, analyzed 9/29/95

TEST: BTEX, TPH AS GASOLINE, DIESEL, MOTOR OIL, AND KEROSENE

Sample	Gasoline (mg/L)	Diesel Fuel (mg/L)	Kerosene (mg/L)	Motor Oil (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl benzene (mg/L)	Xylenes (mg/L)
MW1	11.0	5	3	ND	2.3	0.081	0.390	0.560
MW2	7.2	3.5	2	ND	1.2	0.560	0.250	1.0
MW3	0.130	1.9	ND	ND	0.001	0.001	0.012	0.013 up gradient

Note: ND - Not Detected

Significantly higher than Ekoteh

HISTORY

Two underground storage tanks, a 10K diesel and a 1K gasoline, were removed from this site in March 1988 by Blaine Tech. Evidence of a hydrocarbon release was found under the tank at that time. Additional soil excavation and soil samplings by Engeo in March 1994 have confirmed gasoline, diesel, kerosene, and BTEX contamination of the subsurface soil immediately surrounding the former tank pit. The purpose of this work is to continue to monitor the extent of and concentrations of hydrocarbons in the subsurface downgradient of the former tank location and the adjacent Ekotek site. This quarterly monitoring program has been initiated at the request of the Alameda County Department of Environmental Health.

CONCLUSIONS

This sampling event occurred during the end of the seasonal dry period. Review of the this quarter's data from the monitoring wells indicated that the groundwater beneath the project site is flowing in a direction of S80°W with a slope of approximately two percent. The groundwater elevations have dropped on the order of one vertical foot since the last measurement on June 22, 1995, with a much steeper slope of 2.2% as compared to the previous 0.3%. In addition, the direction of groundwater flow has shifted about 45 degrees toward the south from the last quarter. This groundwater gradient demonstrates that currently the Ekotek site is directly upgradient. The groundwater gradients surrounding the project site may vary due to either natural or cultural influences, such as subsurface recharge zones, tidal influences, subsurface geology, or groundwater extraction wells.

This quarter's analytical results for the three wells reflect a slight decrease in total hydrocarbon concentrations from the previous quarter's result.

LIMITS OF LIABILITY

The findings, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our investigation, and we further assume the explorations to be representative of the subsurface conditions throughout the site.

The factual data and interpretations pertain to the specific project described in this report and are solely for the use of **Smooke and Sons Investment Company**, and are not applicable to any other project or site. Any reliance on this document by any other person or entity shall be at that party's sole risk.

Our investigation was performed using the standard of care level of skill ordinarily exercise under similar circumstances by reputable Environmental Assessors and Geologists currently practicing in these or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

The following plates and appendices complete this report.

Plate 1	Vicinity Map
Plate 2	Plot Plan with Groundwater Gradient
Appendix I	Well Purge Data Sheets
Appendix II	Analytical Results Chain of Custody

Respectfully submitted,

SMITH-EMERY GEOSERVICES



RICK WIDEBROOK
Project Geologist

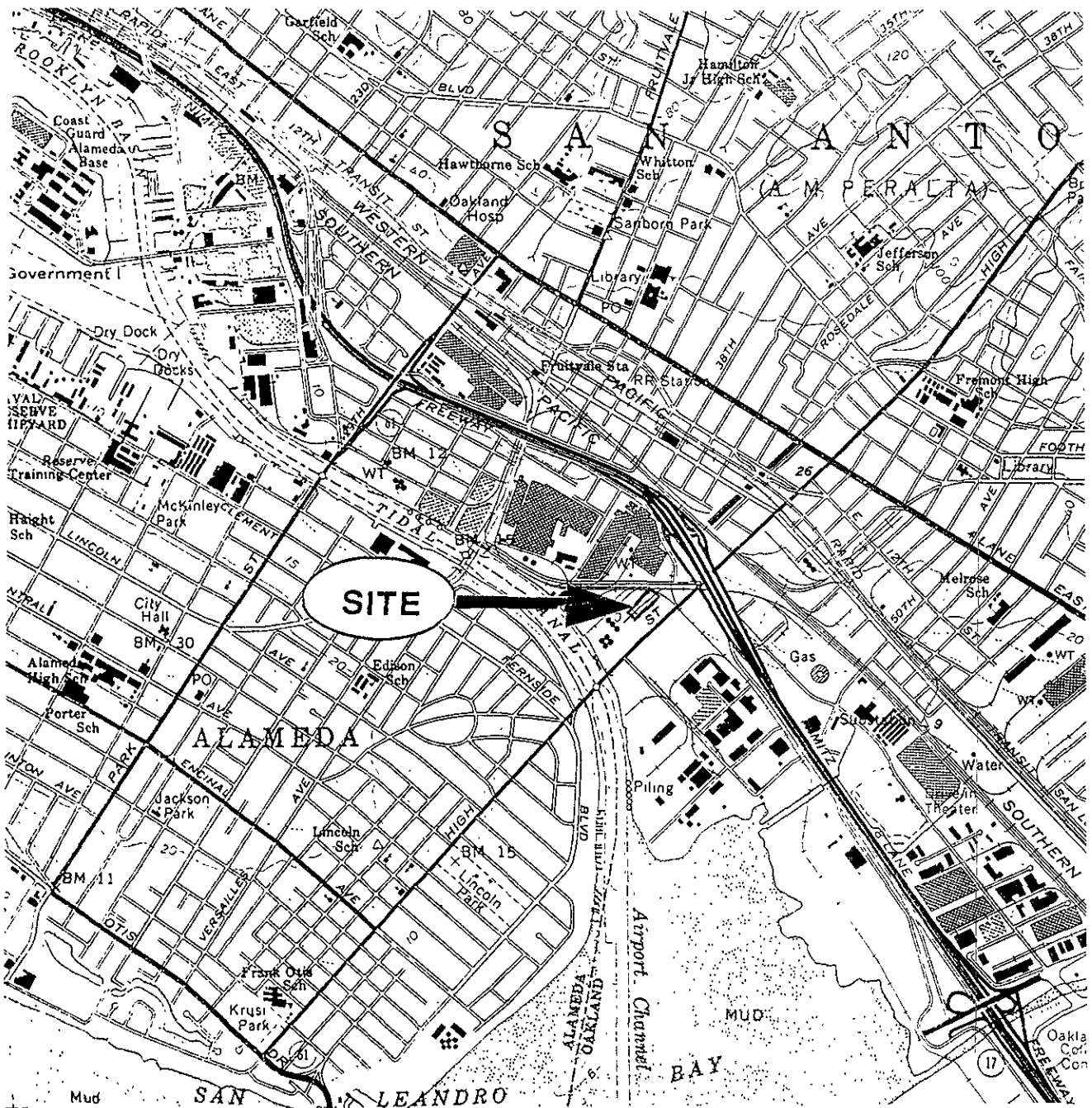
Reviewed and approved by,



KRIS JOHNSON
C.E.G. 1915, R.E.A. 3965
Vice President



SCALE: 1" = 2000'



REFERENCE:
U.S.D.I. - GEOLOGICAL SURVEY
OAKLAND EAST QUADRANGLE
ALAMEDA COUNTY, CALIFORNIA

VICINITY MAP

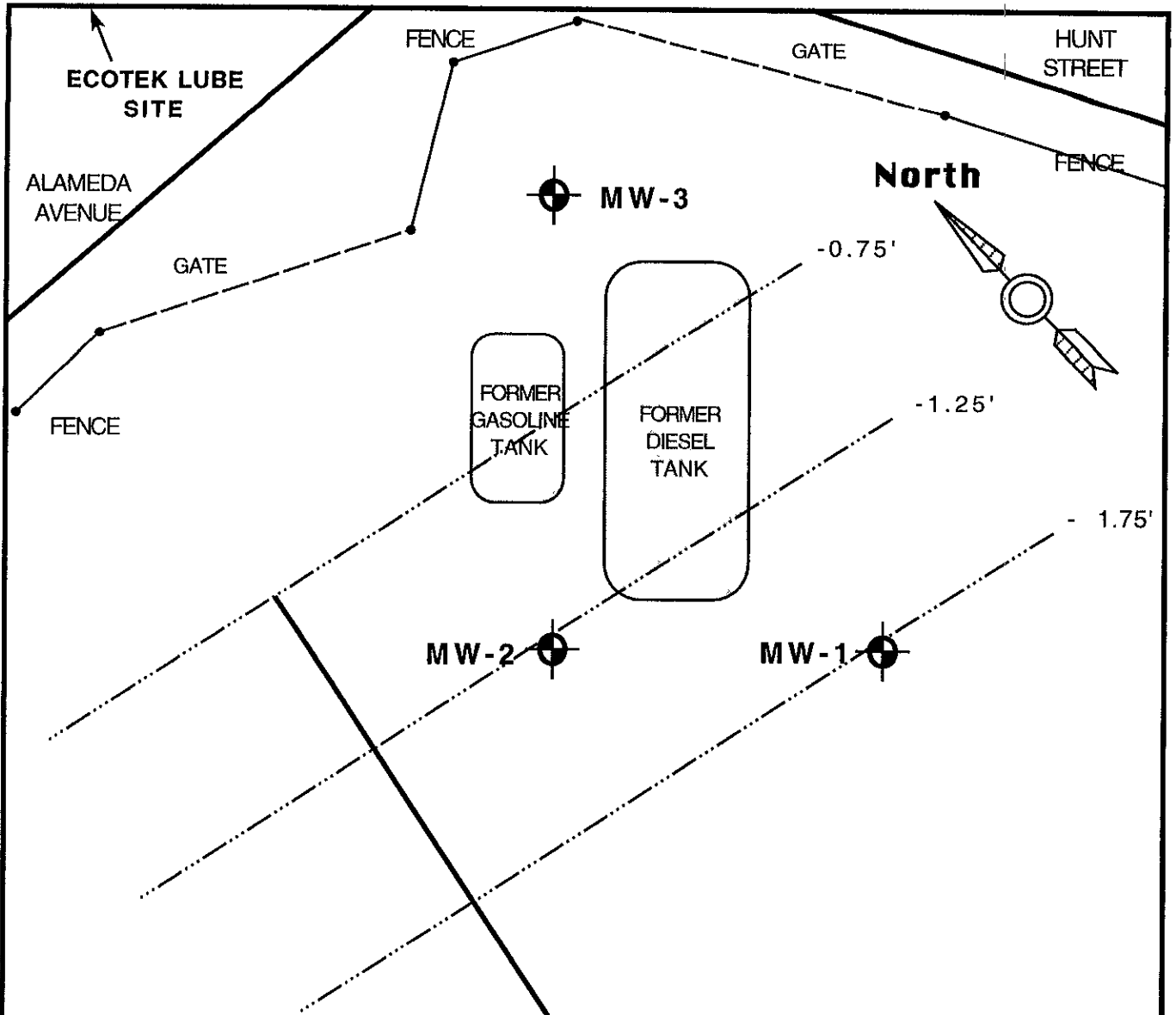
FILE NO. 90404

SMOOKE & SONS INVESTMENT CO.
3925 ALAMEDA AVENUE
OAKLAND, CALIFORNIA


SMITH-EMERY GEOSERVICES

TECHNICAL ILLUSTRATION BY P.M.


PLATE 1



LEGEND:

 MONITORING WELLS
MW-1

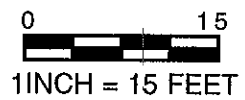
 FORMER TANK LOCATIONS

 GRADIENT

 GROUNDWATER TABLE CONTOUR, BELOW MEAN SEA LEVEL

GROUNDWATER GRADIENT, 9/22/95:
DIRECTION: S 8° E
SLOPE: 0.022'

**1-STORY WAREHOUSE
3925 ALAMEDA AVENUE**



*SMOOKE & SONS INVESTMENT CO.
3925 ALAMEDA AVENUE
OAKLAND, CALIFORNIA*

QUARTERLY MONITORING
SMITH-EMERY GEOSERVICES
SEG Job No. 90404 **PLATE 2**

APPENDIX I

WELL PURGE DATA SHEETS

SMITH-EMERY COMPANY
WATER QUALITY FIELD SAMPLING DATA SHEET

Project Name: SMOOKIE

Project Number: 90404

Samplers: Migrant

Well No.: 1

Date: 9-22-95

Starting Time: 10:30

Ending Time: _____

Single Well Volume: 5.8 (17.4^{3x} - 23.2^{4x}) Gal

Purge Method: 4" Bailer

Purge Volume: 21 Gallons

Purge Rate: _____

Starting Water Level: 10.51'

Ending Water Level: _____

Total Depth 19.36

A 4" dia
10 ft

21
3
13
20
24

Time	Temp (°C)	pH	Conductivity (Siemens)	ORP	Description
10:48	23	6.9	1315		0.5m moderately
11:00	22	6.9	1266		turbid)
11:18	22	6.9	1257		slight
11:32	22	6.9	1288		gasoline
11:40	22	6.9	1295		0205

Formulas:

Volume = π r² H 1 ft³ = 7.48 US Gallons

1 Gallon = 0.134 ft³

Schedule 40 PVC pipe: 4" diameter = 0.66 gallons/foot

) 17.4
5.8
3 2

14 13
 2

SMITH-EMERY COMPANY
WATER QUALITY FIELD SAMPLING DATA SHEET

Project Name: SMOKE

Project Number: 90404

Samplers: M. Grant

Well No.: 3

Date: 9-22-95

Starting Time: _____

Ending Time: _____

Single Well Volume: 6.3 (18.9 - 25.2) ^{3x} ^{lx}

Purge Method: 4" Bailer

Purge Volume: 24 gal

Purge Rate: _____

Starting Water Level: 9.88

Ending Water Level: _____

TOTAL DEPTH 19.48

	Time	Temp (°C)	pH	Conductivity (Siemens)	ORP	Description
4	12:44	23	6.9	1309		Brown
8	12:49	22	6.9	1185		moderately
12	12:00	22	6.9	1277		turbid,
16	13:07	22	6.9	1257		AD
20	13:16	22	6.9	1243		hydrocarbon
24	13:24	22	6.9	1273		odor

Formulas:

Volume = $\pi r^2 H$

1 ft³ = 7.48 US Gallons

1 Gallon = 0.134 ft³

Schedule 40 PVC pipe: 4" diameter = 0.66 gallons/foot

APPENDIX II

ANALYTICAL RESULTS



REPORT OF LABORATORY ANALYSIS

October 19, 1995

Mr. Rick Widebrook
Smith-Emery Company
P.O. Box 880550
Hunter's PT Shipyard #114
San Francisco, CA 94188

RE: PACE Project Number: 703432
Client Project ID: SMOOKE Q3 90404

Dear Mr. Widebrook:

Enclosed are the results of analyses for sample(s) received on September 22, 1995. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Carol Reid".

Carol Reid
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

DATE: 10/19/95
PAGE: 1

Smith-Emery Company
P.O. Box 880550
Hunter's PT Shipyard #114
San Francisco, CA 94188

PACE Project Number: 703432
Client Project ID: SMOOKE Q3 90404

Attn: Mr. Rick Widebrook
Phone: (415)330-3000 xx155

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
PACE Sample No: 70309703 Date Collected: 09/22/95 Client Sample ID: MW-1 Date Received: 09/22/95								
GC -- Volatiles								
GAS/BTEX by CA LUFT, Water								
Gasoline	11000	ug/L	2500	09/29/95	CA LUFT	ADS		
Benzene	2300	ug/L	25	09/29/95	CA LUFT	ADS	71-43-2	
Toluene	81	ug/L	25	09/29/95	CA LUFT	ADS	108-88-3	
Ethyl Benzene	390	ug/L	25	09/29/95	CA LUFT	ADS	100-41-4	
Xylene (Total)	560	ug/L	50	09/29/95	CA LUFT	ADS	1330-20-7	
a,a,a-Trifluorotoluene (S)	111	%		09/29/95	CA LUFT	ADS	2164-17-2	
4-Bromofluorobenzene (S)	100	%		09/29/95	CA LUFT	ADS	460-00-4	
GC								
TPH in Water by 8015 Modified								
Diesel Fuel	5	mg/L	0.05	10/09/95	TPH by EPA 8015M	DLL		
Motor Oil	ND	mg/L	0.25	10/09/95	TPH by EPA 8015M	DLL		
Kerosene	3	mg/L	0.5	10/09/95	TPH by EPA 8015M	DLL		
n-Pentacosane (S)	118	%		10/09/95	TPH by EPA 8015M	DLL	629-99-2	
Date Extracted				10/03/95				



REPORT OF LABORATORY ANALYSIS

DATE: 10/19/95
PAGE: 2

PACE Project Number: 703432
Client Project ID: SMOOKE Q3 90404

PACE Sample No: 70309711 Date Collected: 09/22/95
Client Sample ID: MW-2 Date Received: 09/22/95

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
GC -- Volatiles								
GAS/BTEX by CA LUFT, Water								
Gasoline	7200	ug/L	50	09/29/95	CA LUFT	ADS		
Benzene	1200	ug/L	2.5	09/29/95	CA LUFT	ADS	71-43-2	
Toluene	560	ug/L	0.5	09/29/95	CA LUFT	ADS	108-88-3	
Ethyl Benzene	250	ug/L	0.5	09/29/95	CA LUFT	ADS	100-41-4	
Xylene (Total)	1000	ug/L	1	09/29/95	CA LUFT	ADS	1330-20-7	
a,a,a-Trifluorotoluene (S)	125	%		09/29/95	CA LUFT	ADS	2164-17-2	
4-Bromofluorobenzene (S)	105	%		09/29/95	CA LUFT	ADS	460-00-4	
GC								
TPH in Water by 8015 Modified								
Diesel Fuel	3.5	mg/L	0.05	10/09/95	TPH by EPA 8015M	DLL		
Motor Oil	ND	mg/L	0.25	10/09/95	TPH by EPA 8015M	DLL		
Kerosene	2	mg/L	0.5	10/09/95	TPH by EPA 8015M	DLL		
n-Pentacosane (S)	120	%		10/09/95	TPH by EPA 8015M	DLL	629-99-2	
Date Extracted				10/03/95				



REPORT OF LABORATORY ANALYSIS

DATE: 10/19/95
PAGE: 3

PACE Project Number: 703432
Client Project ID: SMOOKE q3 90404

PACE Sample No: 70309729 Date Collected: 09/22/95
Client Sample ID: MW-3 Date Received: 09/22/95

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
GC -- Volatiles								
GAS/BTEX by CA LUFT, Water								
Gasoline	130	ug/L	50	09/29/95	CA LUFT	ADS		
Benzene	1.2	ug/L	0.5	09/29/95	CA LUFT	ADS	71-43-2	
Toluene	0.71	ug/L	0.5	09/29/95	CA LUFT	ADS	108-88-3	
Ethyl Benzene	12	ug/L	0.5	09/29/95	CA LUFT	ADS	100-41-4	
Xylene (Total)	13	ug/L	1	09/29/95	CA LUFT	ADS	1330-20-7	
a,a,a-Trifluorotoluene (S)	99	%		09/29/95	CA LUFT	ADS	2164-17-2	
4-Bromofluorobenzene (S)	96	%		09/29/95	CA LUFT	ADS	460-00-4	
GC								
TPH in Water by 8015 Modified								
Diesel Fuel	1.9	mg/L	0.05	10/09/95	TPH by EPA 8015M	DLL		
Motor Oil	ND	mg/L	0.25	10/09/95	TPH by EPA 8015M	DLL		
Kerosene	ND	mg/L	0.5	10/09/95	TPH by EPA 8015M	DLL		
n-Pentacosane (S)	126	%		10/09/95	TPH by EPA 8015M	DLL	629-99-2	
Date Extracted				10/03/95				



REPORT OF LABORATORY ANALYSIS

DATE: 10/19/95
PAGE: 4

PACE Project Number: 703432
Client Project ID: SMOOKE Q3 90404

PARAMETER FOOTNOTES

ND Not Detected
NC Not Calculable
PRL PACE Reporting Limit
(S) Surrogate



REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

DATE: 10/19/95
PAGE: 5

Smith-Emery Company
P.O. Box 880550
Hunter's PT Shipyard #114
San Francisco, CA 94188

PACE Project Number: 703432
Client Project ID: SMOOKE Q3 90404

Attn: Mr. Rick Widebrook
Phone: (415)330-3000 xx155

QC Batch ID: 7955
Associated PACE Samples: 70309703 70309711 70309729

Date of Batch: 09/29/95

METHOD BLANK: 70321344
Associated PACE Samples:

Parameter	Units	70309703	70309711 Method Blank Result	70309729 PRL	Footnotes
Gasoline	ug/L		ND	50	
Benzene	ug/L		ND	0.5	
Toluene	ug/L		ND	0.5	
Ethyl Benzene	ug/L		ND	0.5	
Xylene (Total)	ug/L		ND	1	
a,a,a-Trifluorotoluene (S)	%		101		
4-Bromofluorobenzene (S)	%		95		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 70326673 70326681

Parameter	Units	70309349	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
Gasoline	ug/L	ND	1000	830	83	860	86	4	

LABORATORY CONTROL SAMPLE & LCSD: 70321351 70321369

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	LCSD Result	Spike Dup % Rec	RPD	Footnotes
Gasoline	ug/L	1000	940	94	890	89	5	



REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

DATE: 10/19/95
PAGE: 6

Smith-Emery Company
P.O. Box 880550
Hunter's PT Shipyard #114
San Francisco, CA 94188

PACE Project Number: 703432
Client Project ID: SMOOKE Q3 90404

Attn: Mr. Rick Widebrook
Phone: (415)330-3000 xx155

QC Batch ID: 8124
Associated PACE Samples: 70309703 70309711 70309729

QC Batch Method: EPA 3520
Date of Batch: 10/03/95

METHOD BLANK: 70328992
Associated PACE Samples:

Parameter	Units	70309703	70309711 Method Blank Result	70309729 PRL	Footnotes
Diesel Fuel	mg/L		ND	0.05	
Motor Oil	mg/L		ND	0.25	
Kerosene	mg/L		ND	0.5	
n-Pentacosane (S)	%		89		

Parameter	Units	70329008		70329016		Spike Dup		Footnotes
		Spike Conc.	LCS Result	Spike % Rec	LCS Result	% Rec	RPD	
Diesel Fuel	mg/L	1	0.79	79	0.67	67	16	
n-Pentacosane (S)				89		82		



REPORT OF LABORATORY ANALYSIS

DATE: 10/19/95
PAGE: 7

PACE Project Number: 703432
Client Project ID: SMOOKE q3 90404

QUALITY CONTROL DATA PARAMETER FOOTNOTES

The Quality Control Sample Final Results listed above have been rounded to reflect an appropriate number of significant figures. Consistent with EPA guidelines unrounded concentrations have been used to calculate % Rec and RPD values.

ND Not Detected
NC Not Calculable
PRL PACE Reporting Limit
RPD Relative Percent Difference
(S) Surrogate

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client SMITH-EMERY GROSS SERVICES
Address Hunters Point Bldg 114
PO BOX 880550 SF CA 94118
Phone 415-330-3000

Report To: Rick Widebrook
Bill To: Same
P.O. # / Billing Reference _____
Project Name / No. SMOOKE Q3 90404

Pace Client No. _____
Pace Project Manager _____
Pace Project No. 70423a
*Requested Due Date: _____

Sampled By (PRINT):
MILES GRANT
Sampler Signature Miles Grant Date Sampled 9-22-95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES					ANALYSES REQUEST					REMARKS
						UNPRESERVED	H ₂ SO ₄	HNO ₃	VOA (no pres)	1ltr "	Gas/BTEX	TPH IN WATER	Diesel/Motor Oil	KEROSENE		
1	MW-1	1345		309703	66			42			X	X				
2	MW-2	1400		309711	66			42			X	X				
3	MW-3	1415		309729	66			42			X	X				
4																
5																
6																
7																
8																

COOLER NOS.	BAILERS	SHIPMENT METHOD		ITEM NUMBER
		OUT / DATE	RETURNED / DATE	

Additional Comments
4 x VOAs and 2 x 1000ml / well
STANDARD TURNAROUND TIME

RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
<u>Miles Grant SFB</u>	<u>Edley from Prime carrier</u>	<u>9/22/95</u>	<u>1600</u>
<u>Miles Grant SFB</u>	<u>Tom Newby</u>	<u>9/25/95</u>	<u>1900</u>