



GETTLER - RYAN INC.

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98 FEB -3 AM 9: 41

January 22, 1998

Job #6395.80

Mr. Phill Briggs
Chevron Products Company
P.O. Box 6004
San Ramon, CA 94583

Re: Fourth Quarter 1997 Groundwater Monitoring & Sampling Report
Chevron Service Station #9-9708
5910 MacArthur Boulevard
Oakland, California

Dear Mr. Briggs:

This report documents the quarterly groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R). On December 17, 1997, field personnel were on-site to monitor and sample three wells (MW-1, MW-2 and MW-3) at Chevron Service Station #9-9708 located at 5910 MacArthur Boulevard in Oakland, California.

Static groundwater levels were measured on December 17, 1997. All wells were checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were not present in any of the wells. Static water level data and groundwater elevations are presented in Table 1. A Potentiometric Map is included as Figure 1.

Groundwater samples were collected from the monitoring wells as specified by G-R Standard Operating Procedure - Groundwater Sampling (attached). The field data sheets for this event are also attached. The samples were analyzed by Sequoia Analytical. Analytical results are presented in Table 1. The chain of custody document and laboratory analytical reports are attached.

Thank you for allowing Gettler-Ryan Inc. to provide environmental services to Chevron. Please call if you have any questions or comments regarding this report.

Sincerely,

Deanna L. Harding
Deanna L. Harding
Project Coordinator

Barbara Sieminski
Barbara Sieminski
Registered Geologist, R.G. No. 6676



DLH/bs/dlh
6395.QML

Figure 1: Potentiometric Map
Table 1: Water Level Data and Groundwater Analytical Results
Attachments: Standard Operating Procedure - Groundwater Sampling
Field Data Sheets
Chain of Custody Document and Laboratory Analytical Reports



Table 1. Water Level Data & Groundwater Analytical Results - Chevron Service Station #9-9708, 5910 MacArthur Blvd., Oakland, California (continued)

EXPLANATION:

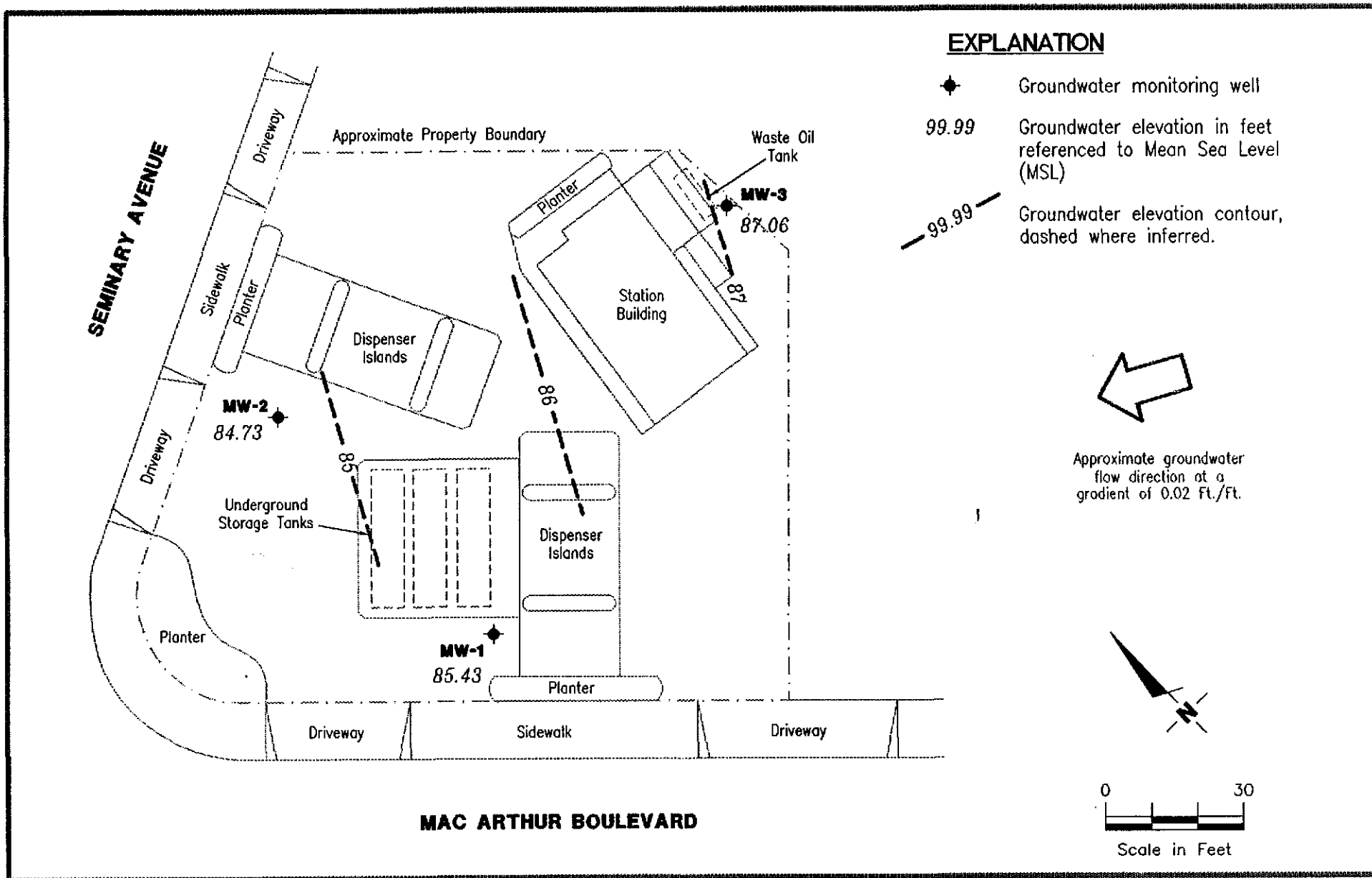
TOC = Top of casing elevation
(ft) = feet
GWE = Groundwater elevation
(msl) = Mean Sea Level
TPH(D) = Total Petroleum Hydrocarbons as diesel
TPH(G) = Total Petroleum Hydrocarbons as gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl tertiary-butyl ether
ppb = Parts per billion
— = Not analyzed, not measured
ND = Not detected

ANALYTICAL METHODS:

EPA Method 8015 Modified for TPH as Diesel
EPA Method 8015 for TPH as Gasoline
EPA Method 8020 for BTEX & MTBE
EPA Method 8260 for MTBE

NOTES:

- ¹ MW-1 through MW-3 were surveyed on June 18, 1997, by Virgil Chavez Land Surveying (PLS #6323). Benchmark Elevation = 95.88' (msl).
- ² Sample also analyzed for the following: Total Oil & Grease by EPA Method 5520F was ND; Semivolatile Organics by EPA Method 8270B were ND; Volatile Organics by EPA Method 8010B were ND except 1,2-Dichloroethane was detected at 1 ppb.
- ³ Laboratory report indicates the concentration of MTBE has not been included in the reported concentration of TPH(G).
- ⁴ Laboratory report indicates the material present is qualitatively uncertain. Therefore, all material in the C9 to C22 range was quantitated against diesel fuel without respect to pattern. Chromatographic data indicates the presence of material, which is heavier than diesel fuel in this sample.
- ⁵ Laboratory report indicates gas & unidentified hydrocarbons > C6.
- ⁶ MTBE by EPA Method 8260.
- ⁷ Laboratory report indicates gas & unidentified hydrocarbons C9-C24.



Gettler - Ryan Inc.

6747 Sierra Ct., Suite J (510) 551-7555
Dublin, CA 94568

POTENTIOMETRIC MAP
Chevron Service Station No. 9-9708
5910 Mac Arthur Boulevard
Oakland, California

FIGURE

1

JOB NUMBER
6395

REVIEWED BY

DATE
December 17, 1997

REVISED DATE



Table 1. Water Level Data & Groundwater Analytical Results - Chevron Service Station #9-9708, 5910 MacArthur Blvd., Oakland, California

Well ID/ TOC	Date Sampled	Depth to Water (ft)	GWE (msl)	Product Thickness (ft)	←-----ppb-----→						
					TPH(D)	TPH(G)	B	T	E	X	MTBE
MW-1											
96.61 ¹	05/29/97	12.20	84.41	0.00	---	---	---	---	---	---	---
	06/04/97	12.21	84.40	0.00	---	380	58	1.2	5.4	40	85
	09/16/97	12.77	83.84	0.00	---	420 ³	120	<0.5	19	2.7	28
	12/17/97	11.18	85.43	0.00	---	210 ⁵	43	0.61	11	0.61	69
MW-2											
96.91 ¹	05/29/97	13.06	83.85	0.00	---	---	---	---	---	---	---
	06/04/97	12.95	83.96	0.00	---	1,600	120	5.9	32	15	2,100
	09/16/97	12.99	83.92	0.00	---	1,100 ³	23	3.2	7.0	2.5	1,200
	12/17/97	12.18	84.73	0.00	---	7,100 ⁵	650	69	610	69	4,700/2,600 ⁶
MW-3											
97.86 ¹	05/29/97	11.45	86.41	0.00	---	---	---	---	---	---	---
	06/04/97 ²	11.28	86.58	0.00	1,200	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	09/16/97	12.19	85.67	0.00	2,700 ⁴	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	12/17/97	10.80	87.06	0.00	1,200 ⁷	<50	0.90	0.53	<0.50	<0.50	<2.5
Trip Blank											
	06/04/97	---	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	09/16/97	---	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	12/17/97	---	---	---	---	<50	<0.50	<0.50	<0.50	<0.50	<2.5



STANDARD OPERATING PROCEDURE - GROUNDWATER SAMPLING

Gettler-Ryan Inc. field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analysis by the analytical laboratory. Prior to sample collection, the type of analysis to be performed is determined. Loss prevention of volatile compounds is controlled and sample preservation for subsequent analysis is maintained.

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using a MMC flexi-dip interface probe. Product thickness, if present, is measured to the nearest 0.01 foot and is noted in the field notes. In addition, static water level measurements are collected with the interface probe and are also recorded in the field notes.

After water levels are collected and prior to sampling, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, suction, Grundfos), or polyvinyl chloride bailers. Temperature, pH and electrical conductivity are measured a minimum of three times during the purging. Purging continues until these parameters stabilize.

Groundwater samples are collected using Chevron-designated disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used when possible. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4°C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

A laboratory supplied trip blank accompanies each sampling set. For sampling sets greater than 20 samples, 5% trip blanks are included. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.

As requested by Chevron Products Company, the purge water and decontamination water generated during sampling activities is transported by IWM to McKittrick Waste Management located in McKittrick, California.

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Chevron Facility # 9-9708
 Address: 5910 MacArthur Blvd.
 City: Oakland, CA

Job #: 6395.80
 Date: 12-11-97
 Sampler: F. Cline

Well ID MW-1
 Well Diameter 2" in.
 Total Depth 2012 ft.
 Depth to Water 1118 ft.

Well Condition: okay
 Hydrocarbon Thickness: 0 in. Amount Bailed (product/water): 0 (gal.)

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.80	

9.02 X VF 0.17 = 1.5 X 3 (case volume) = Estimated Purge Volume: 4.5 (gal.)

Purge Equipment: Disposable Bailer
 Bailer
~~Stack~~
 Suction
 Grundfos
 Other: _____

Sampling Equipment: Disposable Bailer
~~Bailer~~
 Pressure Bailer
 Grab Sample
 Other: _____

Starting Time: 13:33
 Sampling Time: 13:38
 Purging Flow Rate: 1.6 gpm.
 Did well de-water? No

Weather Conditions: cloudy cool
 Water Color: clear Odor: none
 Sediment Description: None
 If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity μ mhos/cm	Temperature $^{\circ}$ C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>13:34</u>	<u>1.6</u>	<u>6.96</u>	<u>1222</u>	<u>22.1</u>			
<u>13:35</u>	<u>3.2</u>	<u>6.97</u>	<u>1210</u>	<u>22.1</u>			
<u>13:36</u>	<u>4.8</u>	<u>6.99</u>	<u>1194</u>	<u>22.4</u>			
<u>13:38</u>	<u>5.0</u>	<u>7.00</u>	<u>1195</u>	<u>22.3</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-1</u>	<u>3 x 40m/VOA</u>	<u>Y</u>	<u>HCL</u>	<u>NE/GTEL Sequoia</u>	<u>TPH-Gas/BTEX/MTBE</u>
MW	2 X liter	Y	NONE	NE/GTEL Sequoia	TPH-Diesel

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Chevron Facility # 9-9708

Job #: 6395.80

Address: 5910 MacArthur Blvd.

Date: 12-17-97

City: Oakland, CA

Sampler: E. Cline

Well ID MW-2

Well Condition: dry

Well Diameter 2" in.

Hydrocarbon Thickness: Ø in. Amount Bailed (product/water): Ø (gal.)

Total Depth 2011 ft.

Depth to Water 1218 ft.

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.80	

7.92 X VF 0.17 1.3 X 3 (case volume) = Estimated Purge Volume: 400 (gal.)

Purge Equipment: Stack Section
 Disposable Bailer Bailer
 Grundfos
 Other: _____

Sampling Equipment: Disposable Bailer
 Bailer
 Pressure Bailer
 Grab Sample
 Other: _____

Starting Time: 13:41
 Sampling Time: 13:46
 Purging Flow Rate: 1.5 gpm.
 Did well de-water? NO

Weather Conditions: cloudy cool
 Water Color: clear Odor: Mild
 Sediment Description: None
 If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity μ mhos/cm	Temperature $^{\circ}$ C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>13:42</u>	<u>1.5</u>	<u>6.96</u>	<u>916</u>	<u>17.7</u>			
<u>13:43</u>	<u>3.0</u>	<u>6.91</u>	<u>942</u>	<u>18.1</u>			
<u>13:44</u>	<u>4.5</u>	<u>6.89</u>	<u>943</u>	<u>18.2</u>			
<u>13:46</u>	<u>5.0</u>	<u>6.90</u>	<u>942</u>	<u>18.1</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-2</u>	<u>3 x 40m/VOA</u>	<u>Y</u>	<u>HCL</u>	<u>NE/STEL Sequoia</u>	<u>TPH-Gas/BTEX/MTBE</u>
MW-	2 X Liter	Y	NONE	NE/STEL	TPH-Diesel

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Chevron Facility # 9-9708
 Address: 5910 MacArthur Blvd.
 City: Oakland, CA

Job#: 6395.80
 Date: 12-17-97
 Sampler: F.Cline

Well ID MW-3
 Well Diameter 2" in.
 Total Depth 2011 ft.
 Depth to Water 10180 ft.

Well Condition: okay
 Hydrocarbon Thickness: 0 in. Amount Bailed (product/water): 0 (gal.)

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.80	

9.30 X VF 0.17 = 1.6 X 3 (case volume) = Estimated Purge Volume: 9.79 (gal.)

Purge Equipment: Stack Suction
 Disposable Bailer Bailer
 Grundfos
 Other: _____

Sampling Equipment: Disposable Bailer
 Bailer
 Pressure Bailer
 Grab Sample
 Other: _____

Starting Time: 13:11
 Sampling Time: 13:16
 Purging Flow Rate: 1.5 gpm.
 Did well de-water? NO

Weather Conditions: cloudy cool
 Water Color: Clear Odor: None
 Sediment Description: None
 If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity μ mhos/cm	Temperature $^{\circ}$ C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>13:12</u>	<u>1.6</u>	<u>7.31</u>	<u>1133</u>	<u>21.4</u>			
<u>13:13</u>	<u>3.2</u>	<u>7.13</u>	<u>1127</u>	<u>21.5</u>			
<u>13:14</u>	<u>4.8</u>	<u>6.98</u>	<u>1135</u>	<u>21.5</u>			
<u>13:16</u>	<u>5.0</u>	<u>6.99</u>	<u>1136</u>	<u>21.6</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-3</u>	<u>3 x 40m/VOA</u>	<u>Y</u>	<u>HCL</u>	<u>NEH/GTEL SEQUOIA</u>	<u>TPH-Gas/BTEX/MTBE</u>
<u>MW-3</u>	<u>2 X Liter</u>	<u>Y</u>	<u>NONE</u>	<u>NEH/GTEL SEQUOIA</u>	<u>TPH-Diesel</u>

COMMENTS: _____



Gettler Ryan/Geostrategies 6747 Sierra Court Suite G Dublin, CA 94568	Client Proj. ID: Chevron 9-9708, Oakland Sample Descript: TB-LB Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9712D54-01	Sampled: 12/17/97 Received: 12/19/97 Analyzed: 12/30/97 Reported: 01/09/98
Attention: Deanna Harding		

QC Batch Number: GC123097802002A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	118

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1271



Mike Gregory
Project Manager





Gettler Ryan/Geostrategies 6747 Sierra Court Suite G Dublin, CA 94568	Client Proj. ID: Chevron 9-9708, Oakland Sample Descript: MW-1 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9712D54-03	Sampled: 12/17/97 Received: 12/19/97 Analyzed: 12/29/97 Reported: 01/09/98
Attention: Deanna Harding		

QC Batch Number: GC122997802009A
Instrument ID: GCHP09


Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	210
Methyl t-Butyl Ether	2.5	69
Benzene	0.50	43
Toluene	0.50	0.61
Ethyl Benzene	0.50	11
Xylenes (Total)	0.50	0.61
Chromatogram Pattern: Gas & Unidentified HC		>C6

Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	101

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1271



Mike Gregory
Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court Suite G Dublin, CA 94568	Client Proj. ID: Chevron 9-9708, Oakland Sample Descript: MW-2 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9712D54-04	Sampled: 12/17/97 Received: 12/19/97 Analyzed: 12/29/97 Reported: 01/09/98
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QC Batch Number: GC122997802009A
Instrument ID: GCHP09

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	5000	7100
Methyl t-Butyl Ether	250	4700
Benzene	50	650
Toluene	50	69
Ethyl Benzene	50	610
Xylenes (Total)	50	69
Chromatogram Pattern: Gas & Unidentified HC		>C6

Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	100

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1271



Mike Gregory
Project Manager





Gettler Ryan/Geostrategies 6747 Sierra Court Suite G Dublin, CA 94568	Client Proj. ID: Chevron 9-9708, Oakland Sample Descript: MW-2 Matrix: LIQUID Analysis Method: EPA 8260 Lab Number: 9712D54-04	Sampled: 12/17/97 Received: 12/19/97 Analyzed: 01/06/98 Reported: 01/09/98
Attention: Deanna Harding		


QC Batch Number: MS0106988260S2A
Instrument ID: GCMS02

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.0	2600
Surrogates	Control Limits %	% Recovery
1,2-Dichloroethane-d4	76	114 Q
Toluene-d8	88	110 Q
4-Bromofluorobenzene	86	115 Q

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1271



Mike Gregory
Project Manager





Gettler Ryan/Geostrategies
6747 Sierra Court Suite G
Dublin, CA 94568

Attention: Deanna Harding

Client Proj. ID: Chevron 9-9708, Oakland
Sample Descript: MW-3
Matrix: LIQUID
Analysis Method: EPA 8015 Mod
Lab Number: 9712D54-02

Sampled: 12/17/97
Received: 12/19/97
Extracted: 12/29/97
Analyzed: 12/31/97
Reported: 01/09/98

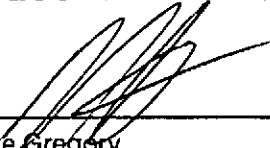
QC Batch Number: GC122997OHBPEXZ
Instrument ID: GCHP5A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel Chromatogram Pattern:	50 C9-C24	1200 Unid.-HC
Surrogates n-Pentacosane (C25)	Control Limits % 50 150	% Recovery 194 Q

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210



Mike Gregory
Project Manager





Gettler Ryan/Geostrategies 6747 Sierra Court Suite G Dublin, CA 94568	Client Proj. ID: Chevron 9-9708, Oakland Sample Descript: MW-3 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9712D54-02	Sampled: 12/17/97 Received: 12/19/97 Analyzed: 12/29/97 Reported: 01/09/98
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QC Batch Number: GC122997802009A
Instrument ID: GCHP09

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	0.90
Toluene	0.50	0.53
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	93

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1271


Mike Gregory
Project Manager



Gettler Ryan/Geostrategies
6747 Sierra Court Suite G
Dublin, CA 94568
Attention: Deanna Harding

Client Proj. ID: Chevron 9-9708, Oakland
Lab Proj. ID: 9712D54

Received: 12/19/97
Reported: 01/09/98

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 13 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

#Q - Surrogate coelution was confirmed.

Q - The surrogate used for the MTBE confirmation was Dibromofluoromethane, which had a %recovery of 98 with limits of 50-150.

TPGBMW: Sample 9712D54-04 was diluted 100-fold.

SEQUOIA ANALYTICAL


Mike Gregory
Project Manager



Chromatogram

Sample Name : DW9712D54-2 (500:1)

FileName : S:\GHP_05\0104\D31A017.raw

Method : TPH05A

Start Time : 0.00 min

Scale Factor: 0.0

End Time : 33.65 min

Plot Offset: 0 mV

Sample #: MW-3

Date : 12/31/97 20:16

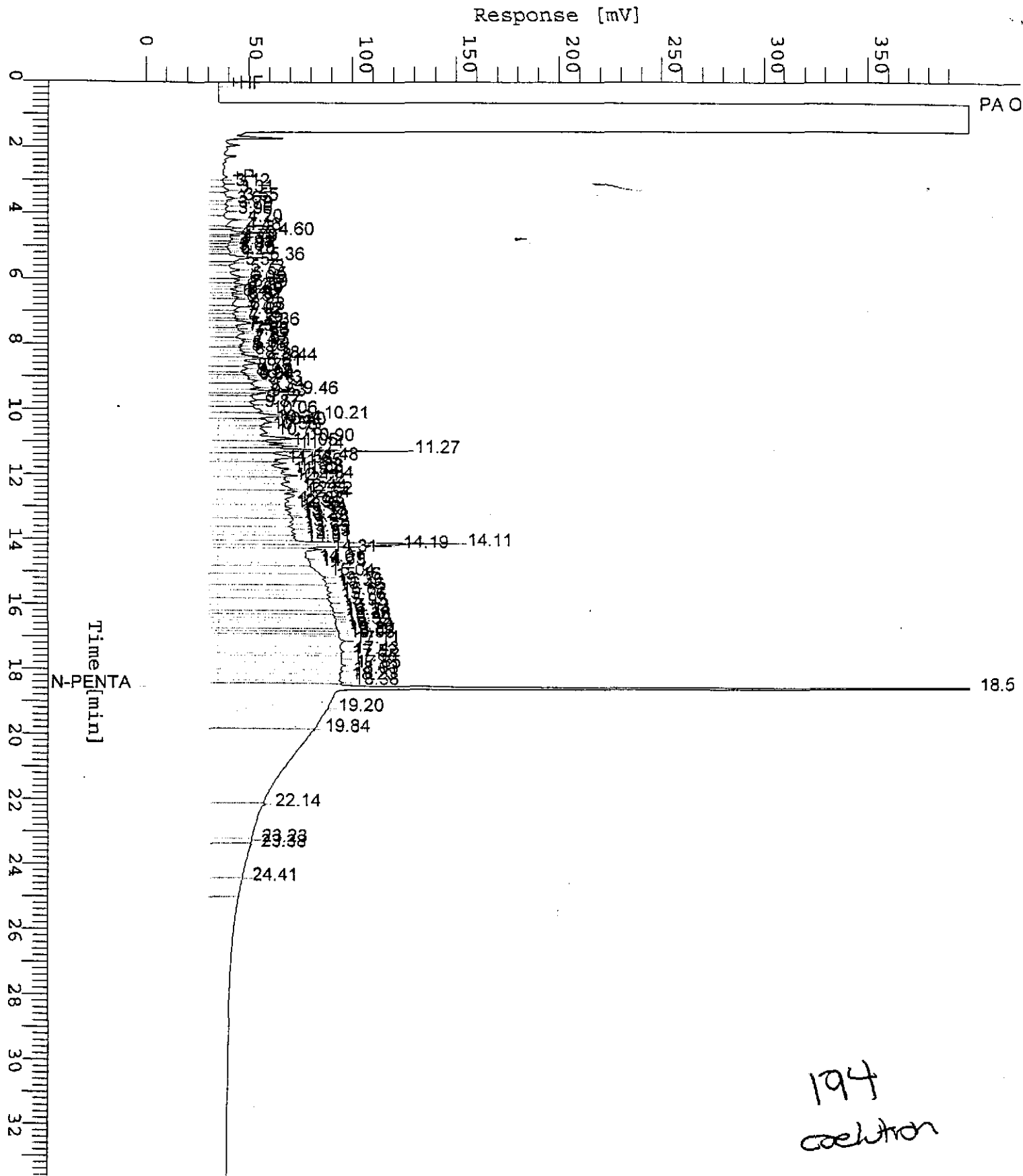
Time of Injection: 12/31/97 19:43

Low Point : 0.00 mV

Plot Scale: 400.0 mV

Page 1 of 1

High Point : 400.00 mV





Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Chevron 9-9708, Oakland
Matrix: Liquid

Work Order #: 9712D54 -02

Reported: Jan 12, 1998

QUALITY CONTROL DATA REPORT

Analyte: Diesel

QC Batch#: GC1229970HBPEXZ
Analy. Method: EPA 8015M
Prep. Method: EPA 3520

Analyst: G. Fish
MS/MSD #: 9712F7405
Sample Conc.: 1000
Prepared Date: 12/29/97
Analyzed Date: 12/31/97
Instrument I.D.#: GCHP5
Conc. Spiked: 1000 µg/L

Result: 1800*
MS % Recovery: 80

Dup. Result: 900*
MSD % Recov.: -10

RPD: 67*
RPD Limit: 0-50

*Matrix interference

LCS #: BLK122997

Prepared Date: 12/29/97
Analyzed Date: 12/31/97
Instrument I.D.#: GCHP5
Conc. Spiked: 1000 µg/L

LCS Result: 770
LCS % Recov.: 77

MS/MSD 50-150
LCS 60-140
Control Limits

Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL

Mike Gregory
Project Manager

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9712D54.GET <1>





Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Chevron 9-9708, Oakland
Matrix: Liquid

Work Order #: 9712D54-01

Reported: Jan 12, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC123097802002A	GC123097802002A	GC123097802002A	GC123097802002A	GC123097802002A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	D. Newcomb	D. Newcomb	D. Newcomb	D. Newcomb	D. Newcomb
MS/MSD #:	7122006	7122006	7122006	7122006	7122006
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	12/30/97	12/30/97	12/30/97	12/30/97	12/30/97
Analyzed Date:	12/30/97	12/30/97	12/30/97	12/30/97	12/30/97
Instrument I.D.#:	HP2	HP2	HP2	HP2	HP2
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	310 µg/L
Result:	20	21	21	66	310
MS % Recovery:	100	105	105	110	100
Dup. Result:	20	20	21	64	310
MSD % Recov.:	100	100	105	107	100
RPD:	0.0	4.9	0.0	3.1	0.0
RPD Limit:	0-20	0-20	0-20	0-20	0-50

LCS #:	LCS123097	LCS123097	LCS123097	LCS123097	LCS123097
Prepared Date:	12/30/97	12/30/97	12/30/97	12/30/97	12/30/97
Analyzed Date:	12/30/97	12/30/97	12/30/97	12/30/97	12/30/97
Instrument I.D.#:	HP2	HP2	HP2	HP2	HP2
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	310 µg/L
LCS Result:	19	19	19	60	310
LCS % Recov.:	95	95	95	100	100

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

SEQUOIA ANALYTICAL
Elap #1271

[Signature]
Mike Gregory
Project Manager

Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9712D54.GET <2>





Gettler Ryan/Geostrategies 6747 Sierra Court, Ste J Dublin, CA 94568 Attention: Deanna Harding	Client Project ID: Chevron 9-9708, Oakland Matrix: Liquid Work Order #: 9712D54-02-04	Reported: Jan 12, 1998
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QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC122997802009A	GC122997802009A	GC122997802009A	GC122997802009A	GC122997802009A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	K. Nill	K. Nill	K. Nill	K. Nill	K. Nill
MS/MSD #:	7121424	7121424	7121424	7121424	7121424
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	12/29/97	12/29/97	12/29/97	12/29/97	12/29/97
Analyzed Date:	12/29/97	12/29/97	12/29/97	12/29/97	12/29/97
Instrument I.D.#:	HP9	HP9	HP9	HP9	HP9
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	420 µg/L
Result:	21	21	22	67	370
MS % Recovery:	105	105	110	112	88
Dup. Result:	21	22	22	68	370
MSD % Recov.:	105	110	110	113	88
RPD:	0.0	4.7	0.0	1.5	0.0
RPD Limit:	0-20	0-20	0-20	0-20	0-50

LCS #:	LCS122997	LCS122997	LCS122997	LCS122997	LCS122997
Prepared Date:	12/29/97	12/29/97	12/29/97	12/29/97	12/29/97
Analyzed Date:	12/29/97	12/29/97	12/29/97	12/29/97	12/29/97
Instrument I.D.#:	HP9	HP9	HP9	HP9	HP9
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	420 µg/L
LCS Result:	19	21	22	67	360
LCS % Recov.:	95	105	110	112	86

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

SEQUOIA ANALYTICAL
Elap #1271

[Signature]
Mike Gregory
Project Manager

Please Note:

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** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

9712D54.GET <3>





Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Chevron 9-9708, Oakland
Matrix: Liquid

Work Order #: 9712D54-04

Reported: Jan 12, 1998

QUALITY CONTROL DATA REPORT

Analyte: MTBE

QC Batch#: MS0106988260S2A
Analy. Method: EPA 8260
Prep. Method: EPA 5030

Analyst: N. Nelson
MS/MSD #: LCS010698
Sample Conc.: N.D.
Prepared Date: 1/6/98
Analyzed Date: 1/6/98
Instrument I.D.#: GCMS2
Conc. Spiked: 50 µg/L

Result: 49
MS % Recovery: 98

Dup. Result: 50
MSD % Recov.: 100

RPD: 2.0
RPD Limit: 0-25

LCS #:

Prepared Date:
Analyzed Date:
Instrument I.D.#:
Conc. Spiked:

LCS Result:
LCS % Recov.:

MS/MSD 60-140
LCS 65-135
Control Limits

SEQUOIA ANALYTICAL
Elap #1271

Mike Gregory
Project Manager

Please Note:

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS= Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9712D54.GET <4>