



GETTLER-RYAN INC.

TRANSMITTAL

RD 253

April 24, 2001
G-R #:180062

MAY 10 2001

TO: Mr. David B. De Witt
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California

CC: Mr. Douglas Lee
Gettler-Ryan Inc.
Dublin, CA

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6747 Sierra Court, Suite J
Dublin, California 94568

RE: Tosco (Unocal) Service Station #5781
3535 Pierson Street
Oakland, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	April 19, 2001	Groundwater Monitoring and Sampling Report Annual - Event of March 7, 2001

COMMENTS:

This report is being sent to you for your review/comment, prior to being distributed on your behalf. If no comments are received by **May 7, 2001**, this report will be distributed to the following:

cc: Ms. Susan Hugo, Alameda County Health Care Services, 1131 Harbor Bay Parkway, Alameda, CA 94502

Enclosure

agency/5781dbd.qmt



GETTLER-RYAN INC.

April 19, 2001
G-R Job #180062

Mr. David B. De Witt
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

RE: Annual Event of March 7, 2001
Groundwater Monitoring & Sampling Report
Tosco (Unocal) Service Station #5781
3535 Pierson Street
Oakland, California

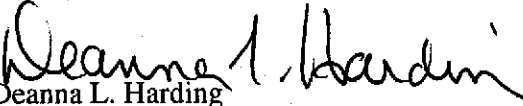
Dear Mr. De Witt:

This report documents the most recent groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R) at the referenced site. All field work was conducted in accordance with G-R Standard Operating Procedure - Groundwater Sampling (attached).

A static groundwater level was measured and the well was checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were not present in the well. Static water level and groundwater elevation data are summarized in Table 1. A Groundwater Elevation Map is included as Figure 1.

The groundwater samples were collected from the monitoring well as specified by G-R Standard Operating Procedure - Groundwater Sampling (attached). The field data is also attached. The samples were analyzed by Sequoia Analytical. Analytical results are summarized in Table 1, and a Concentration Map is included as Figure 2. The chain of custody document and laboratory analytical reports are also attached.

Sincerely,


Deanna L. Harding
Project Coordinator

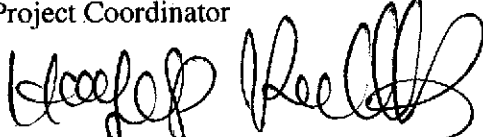

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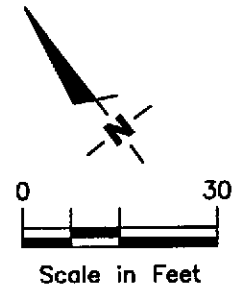
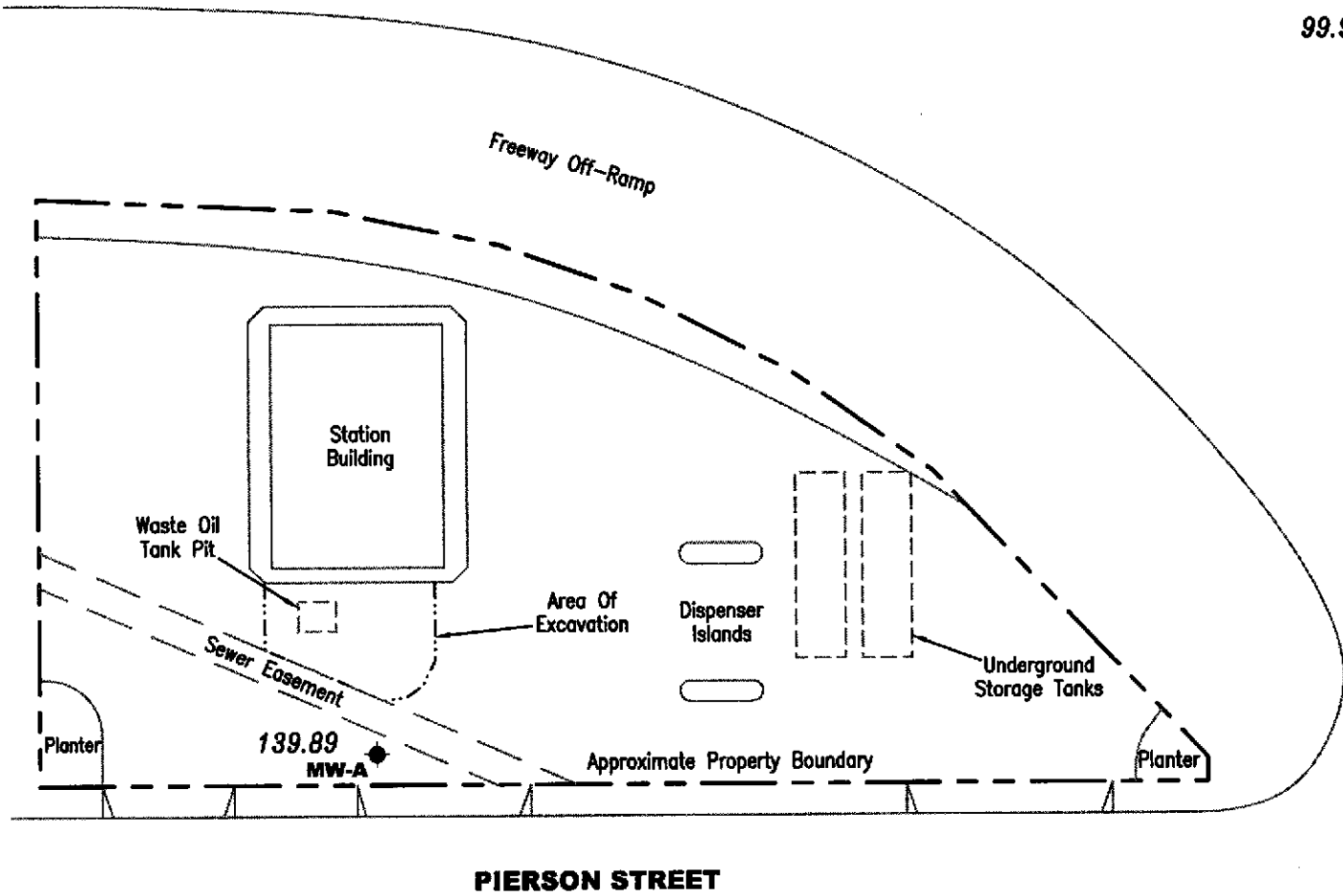


Figure 1: Groundwater Elevation Map
Figure 2: Concentration Map
Table 1: Groundwater Monitoring Data and Analytical Results
Table 2: Groundwater Analytical Results - Oxygenate Compounds
Attachments: Standard Operating Procedure - Groundwater Sampling
Field Data Sheet
Chain of Custody Document and Laboratory Analytical Reports

5781.qml

EXPLANATION

- ◆ Groundwater monitoring well
- 99.99 Groundwater elevation in feet referenced to Mean Sea Level (MSL)



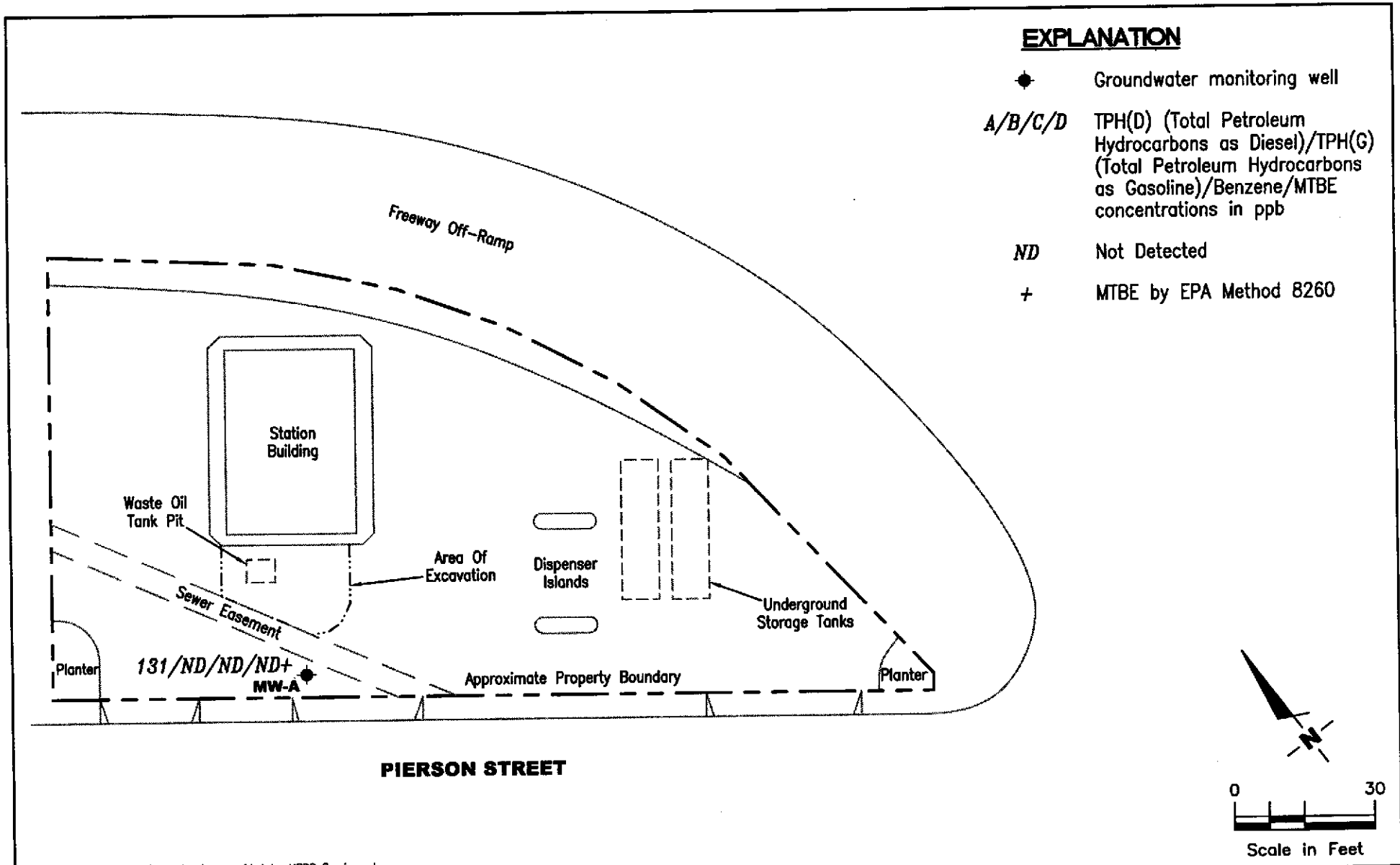
Source: Figure modified from drawing provided by MPDS Services, Inc.

GETTLER - RYAN INC.
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GROUNDWATER ELEVATION MAP
 Tosco (Unocal) Service Station #5781
 3535 Pierson Street
 Oakland, California

FIGURE
1

PROJECT NUMBER 180062	REVIEWED BY	DATE March 7, 2001	REVISED DATE
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Source: Figure modified from drawing provided by MPDS Services, Inc.

GETTLER - RYAN INC.
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CONCENTRATION MAP
 Tosco (Unocal) Service Station #5781
 3535 Pierson Street
 Oakland, California

FIGURE

2

PROJECT NUMBER
 180062

REVIEWED BY

DATE
 March 7, 2001

REVISED DATE

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #5781
 3535 Pierson Street
 Oakland, California

WELL ID/ TOC*	DATE	DTW (ft.)	GWE (msl)	TPH-D (ppb)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-A	12/18/90 ¹	--	--	73	ND	ND	ND	ND	ND	--
	05/03/91 ¹	--	--	ND	ND	ND	ND	ND	ND	--
	08/07/91 ¹	--	--	ND	ND	ND	ND	ND	ND	--
	11/08/91 ¹	--	--	ND	ND	ND	ND	ND	ND	--
151.80	02/06/92 ¹	19.88	131.92	ND	ND	ND	ND	ND	ND	--
	08/04/92 ¹	18.95	132.85	ND	ND	ND	ND	ND	0.51	--
	02/10/93 ¹	17.71	134.09	ND	ND	ND	ND	ND	ND	--
	02/10/94 ¹	15.25	136.55	ND	ND	ND	0.52	ND	0.92	--
	02/09/95 ¹	15.68	136.12	ND	ND	ND	ND	ND	ND	--
	02/06/96 ²	12.52	139.28	120 ³	ND	ND	ND	ND	2.1	--
	02/05/97 ¹	13.01	138.79	61 ⁴	ND	ND	ND	ND	ND	ND
	02/02/98 ^{1,5}	11.91	139.89	ND	ND	ND	ND	ND	ND	ND
	02/22/99 ⁶	11.24	140.56	ND	ND	ND	ND	ND	ND	ND
	02/26/00 ⁷	12.16	139.64	ND	ND	ND	1.01	ND	ND	ND
	03/07/01 ⁸	11.91	139.89	131 ⁹	ND	ND	ND	ND	ND	ND/ND ¹⁰
Trip Blank										
TB-LB	02/02/98	--	--	--	ND	ND	ND	ND	ND	ND
	02/22/99	--	--	--	ND	ND	ND	ND	ND	ND
	02/26/00	--	--	--	ND	ND	ND	ND	ND	ND
	03/07/01	--	--	--	ND	ND	ND	ND	ND	ND

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #5781
 3535 Pierson Street
 Oakland, California

EXPLANATIONS:

Groundwater monitoring data and laboratory results prior to February 2, 1998, were compiled from reports prepared by MPDS Services, Inc.

TOC = Top of Casing elevation	B = Benzene	(ppb) = Parts per billion
DTW = Depth to Water	T = Toluene	(ppm) = Parts per million
(ft.) = Feet	E = Ethylbenzene	ND = Not Detected
GWE = Groundwater Elevation	X = Xylenes	-- = Not Measured/Not Analyzed
TPH-D = Total Petroleum Hydrocarbons as Diesel	MTBE = Methyl tertiary butyl ether	TOG = Total Oil and Grease
TPH-G = Total Petroleum Hydrocarbons as Gasoline		

* TOC elevation has been surveyed relative to Mean Sea Level (msl) (Elevation = 119.80 msl).

- ¹ TOG and all EPA Method 8010 compounds were ND.
- ² TOG and all EPA Method 8010 compounds were ND except for tetrachloroethene, which was detected at a concentration of 1.8 ppb.
- ³ Laboratory report indicates the hydrocarbons detected did not appear to be diesel.
- ⁴ Laboratory report indicates the hydrocarbons detected appeared to be diesel and non-diesel mixture.
- ⁵ All EPA Method 8010 constituents were ND. Total recoverable petroleum hydrocarbons TRPH/TOG by SM 5520 B&F, was detected at 7 ppm.
- ⁶ TOG and all EPA Method 8010 compounds were ND except for Methylene chloride, which was detected at a concentration of 10 ppb.
- ⁷ TOG and all EPA Method 8010 compounds analyzed by EPA Method 8260B were ND except for Bromodichloromethane, which was detected at a concentration of 7.33 ppb, and Chloroform at 44.8 ppb.
- ⁸ TOG and all EPA Method 8021B compounds were ND.
- ⁹ Laboratory report indicates unidentified hydrocarbons C9-C24.
- ¹⁰ MTBE by EPA Method 8260.

Table 2
Groundwater Analytical Results - Oxygenate Compounds
 Tosco (Unocal) Service Station #5781
 3535 Pierson Street
 Oakland, California

WELL ID	DATE	ETHANOL (ppb)	TBA (ppb)	MTBE (ppb)	DIPE (ppb)	ETBE (ppb)	TAME (ppb)	1,2-DCA (ppb)	EDB (ppb)
MW-A	03/07/01	ND	ND	ND	ND	ND	ND	ND	ND

EXPLANATIONS:

TBA = Tertiary butyl alcohol
 MTBE = Methyl tertiary butyl ether
 DIPE = Di-isopropyl ether
 ETBE = Ethyl tertiary butyl ether
 TAME = Tertiary amyl methyl ether
 1,2-DCA = 1,2-Dichloroethane
 EDB = 1,2-Dibromoethane
 (ppb) = Parts per billion
 ND = Not Detected

ANALYTICAL METHOD:

EPA Method 8260 for Oxygenate Compounds

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 an 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, temperature, pH and electrical conductivity are measured. If purging is to occur, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, suction, Grundfos), or polyvinyl chloride bailers. The measurements are taken a minimum of three times during the purging. Purging continues until these parameters stabilize.

Groundwater samples are collected using 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 Tosco Marketing Company, the purge water and decontamination water generated during sampling activities is transported to Tosco - San Francisco Area Refinery, located in Rodeo, California.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility # 5781 Job #: 180062
 Address: 3535 Pierson Date: 3-7-01
 City: Oakland Sampler: Joe

Well ID: MW-A Well Condition: O.K.
 Well Diameter: 2 in. Hydrocarbon Thickness: 0 in. Amount Bailed (product/water): 0 (gal.)
 Total Depth: 45.02 ft.
 Depth to Water: 11.91 ft.

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

33.11 x VF 0.17 = 5.63 x 3 (case volume) = Estimated Purge Volume: 17 (gal.)

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

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

Starting Time: 7:00 Weather Conditions: cloudy
 Sampling Time: 7:35 A.M. Water Color: clear Odor: none
 Purging Flow Rate: 1 gpm. Sediment Description: none
 Did well de-water? _____ If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 10^2$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>7:12</u>	<u>6</u>	<u>7.64</u>	<u>13.16</u>	<u>71.0</u>	_____	_____	_____
<u>7:15</u>	<u>11</u>	<u>7.39</u>	<u>12.57</u>	<u>72.2</u>	_____	_____	_____
<u>7:17</u>	<u>17</u>	<u>7.37</u>	<u>12.52</u>	<u>71.6</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-A</u>	<u>3V0A</u>	<u>Y</u>	<u>HCL</u>	<u>Seq.</u>	<u>TPHG, BTEX, MTBE</u>
	<u>2V0A</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>(6) oxy 1.2 Oct/EDS 8260</u>
	<u>1V0A</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>8010</u>
	<u>1 Amb. Tube</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>TOG</u>
	<u>1 Amb.</u>	<u>"</u>	<u>-</u>	<u>"</u>	<u>TPHD</u>

COMMENTS: _____



Sequoia Analytical

1551 Industrial Road
San Carlos, CA 94070-4111
(650) 232-9600
FAX (650) 232-9612
www.sequoialabs.com

March 23 , 2001

Deanna Harding
Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin, CA 94568
RE: Tosco(1) / L103033

Enclosed are the results of analyses for samples received by the laboratory on 03/07/01. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Latonya K. Pelt

Latonya Pelt
Project Manager

CA ELAP Certificate Number 2360



Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#5781
Project Manager: Deanna Harding

Reported:
03/23/01 10:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-LB	L103033-01	Water	03/07/01 00:00	03/07/01 14:30
MW-A	L103033-02	Water	03/07/01 07:35	03/07/01 14:30

Gettler-Ryan/Geostrategies(1)
 6747 Sierra Court, Suite J
 Dublin CA, 94568

Project: Tosco(1)
 Project Number: Unocal SS#5781
 Project Manager: Deanna Harding

Reported:
 03/23/01 10:58

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB-LB (L103033-01) Water Sampled: 03/07/01 00:00 Received: 03/07/01 14:30									
Purgeable Hydrocarbons as Gasoline	ND	50.0	ug/l	1	1030047	03/14/01	03/14/01	DHS LUFT	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	0.500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.00	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		85.5 %		70-130	"	"	"	"	
MW-A (L103033-02) Water Sampled: 03/07/01 07:35 Received: 03/07/01 14:30									
Purgeable Hydrocarbons as Gasoline	ND	50.0	ug/l	1	1030047	03/14/01	03/15/01	DHS LUFT	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	0.500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.00	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		101 %		70-130	"	"	"	"	

Gettler-Ryan/Geostrategies(1)
 6747 Sierra Court, Suite J
 Dublin CA, 94568

Project: Tosco(1)
 Project Number: Unocal SS#5781
 Project Manager: Deanna Harding

Reported:
 03/23/01 10:58

Volatile Organic 8 Oxygenated Compounds by EPA Method 8260B
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-A (L103033-02) Water Sampled: 03/07/01 07:35 Received: 03/07/01 14:30									
Ethanol	ND	1000	ug/l	1	1030035	03/09/01	03/09/01	EPA 8260B	
1,2-Dibromoethane	ND	2.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.00	"	"	"	"	"	"	
Di-isopropyl ether	ND	2.00	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	2.00	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.00	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	2.00	"	"	"	"	"	"	
Tert-butyl alcohol	ND	100	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>105 %</i>		<i>76-114</i>	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		<i>102 %</i>		<i>88-110</i>	"	"	"	"	

Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#5781
Project Manager: Deanna Harding

Reported:
03/23/01 10:58

Diesel Hydrocarbons (C9-C24) by DHS LUFT
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-A (L103033-02) Water Sampled: 03/07/01 07:35 Received: 03/07/01 14:30									
Diesel Range Hydrocarbons	131	50.0	ug/l	1	1C15014	03/15/01	03/19/01	DHS LUFT	D-15
Surrogate: n-Pentacosane		100 %		50-150	"	"	"	"	

Gettler-Ryan/Geostrategies(1)
 6747 Sierra Court, Suite J
 Dublin CA, 94568

Project: Tosco(1)
 Project Number: Unocal SS#5781
 Project Manager: Deanna Harding

Reported:
 03/23/01 10:58

Volatile Organic Compounds by EPA Method 8021B
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-A (L103033-02) Water Sampled: 03/07/01 07:35 Received: 03/07/01 14:30									
Bromodichloromethane	ND	0.500	ug/l	1	1C20008	03/20/01	03/20/01	EPA 8021B	
Bromoform	ND	0.500	"	"	"	"	"	"	
Bromomethane	ND	1.00	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.500	"	"	"	"	"	"	
Chlorobenzene	ND	0.500	"	"	"	"	"	"	
Chloroethane	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	0.500	"	"	"	"	"	"	
Chloromethane	ND	1.00	"	"	"	"	"	"	
Dibromochloromethane	ND	0.500	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.500	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.500	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.500	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.500	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.500	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.500	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.500	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.500	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.500	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.500	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.500	"	"	"	"	"	"	
Methylene chloride	ND	5.00	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.500	"	"	"	"	"	"	
Tetrachloroethene	ND	0.500	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.500	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.500	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	0.500	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.500	"	"	"	"	"	"	
Vinyl chloride	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
<i>Surrogate: 1-Chloro-3-fluorobenzene</i>		86.5 %		70-130	"	"	"	"	

Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#5781
Project Manager: Deanna Harding

Reported:
03/23/01 10:58

Conventional Chemistry Parameters by APHA/EPA Methods
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-A (L103033-02) Water Sampled: 03/07/01 07:35 Received: 03/07/01 14:30									
Oil & Grease	ND	5.00	mg/l	1	1C21013	03/21/01	03/21/01	SM 5520B	

Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#5781
Project Manager: Deanna Harding

Reported:
03/23/01 10:58

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT - Quality Control
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1030047 - EPA 5030B (P/T)

Blank (1030047-BLK1)

Prepared & Analyzed: 03/14/01

Purgeable Hydrocarbons as Gasoline	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
Methyl tert-butyl ether	ND	5.00	"							
<i>Surrogate: a,a,a-Trifluorotoluene</i>	8.23		"	10.0		82.3	70-130			

LCS (1030047-BS1)

Prepared & Analyzed: 03/14/01

Benzene	8.46	0.500	ug/l	10.0		84.6	70-130			
Toluene	8.55	0.500	"	10.0		85.5	70-130			
Ethylbenzene	8.77	0.500	"	10.0		87.7	70-130			
Xylenes (total)	26.9	0.500	"	30.0		89.7	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.19		"	10.0		91.9	70-130			

LCS (1030047-BS2)

Prepared & Analyzed: 03/14/01

Purgeable Hydrocarbons as Gasoline	293	50.0	ug/l	250		117	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	10.6		"	10.0		106	70-130			

Matrix Spike (1030047-MS1)

Source: L103047-06

Prepared & Analyzed: 03/14/01

Benzene	9.07	0.500	ug/l	10.0	ND	90.7	60-140			
Toluene	9.01	0.500	"	10.0	ND	90.1	60-140			
Ethylbenzene	9.13	0.500	"	10.0	ND	91.3	60-140			
Xylenes (total)	27.5	0.500	"	30.0	ND	91.7	60-140			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	10.1		"	10.0		101	70-130			

Matrix Spike Dup (1030047-MSD1)

Source: L103047-06

Prepared & Analyzed: 03/14/01

Benzene	8.85	0.500	ug/l	10.0	ND	88.5	60-140	2.46	25	
Toluene	8.76	0.500	"	10.0	ND	87.6	60-140	2.81	25	
Ethylbenzene	8.80	0.500	"	10.0	ND	88.0	60-140	3.68	25	
Xylenes (total)	26.8	0.500	"	30.0	ND	89.3	60-140	2.58	25	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	10.4		"	10.0		104	70-130			

Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#5781
Project Manager: Deanna Harding

Reported:
03/23/01 10:58

Volatile Organic 8 Oxygenated Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1030035 - EPA 5030B [P/T]

Prepared & Analyzed: 03/09/01

Blank (1030035-BLK1)

Ethanol	ND	1000	ug/l							
1,2-Dibromoethane	ND	2.00	"							
1,2-Dichloroethane	ND	2.00	"							
Di-isopropyl ether	ND	2.00	"							
Ethyl tert-butyl ether	ND	2.00	"							
Methyl tert-butyl ether	ND	2.00	"							
Tert-amyl methyl ether	ND	2.00	"							
Tert-butyl alcohol	ND	100	"							
Surrogate: 1,2-Dichloroethane-d4	54.4		"	50.0		109	76-114			
Surrogate: Toluene-d8	50.1		"	50.0		100	88-110			

Prepared & Analyzed: 03/14/01

Blank (1030035-BLK2)

Ethanol	ND	1000	ug/l							
1,2-Dibromoethane	ND	2.00	"							
1,2-Dichloroethane	ND	2.00	"							
Di-isopropyl ether	ND	2.00	"							
Ethyl tert-butyl ether	ND	2.00	"							
Methyl tert-butyl ether	ND	2.00	"							
Tert-amyl methyl ether	ND	2.00	"							
Tert-butyl alcohol	ND	100	"							
Surrogate: 1,2-Dichloroethane-d4	47.8		"	50.0		95.6	76-114			
Surrogate: Toluene-d8	49.6		"	50.0		99.2	88-110			

Prepared & Analyzed: 03/09/01

LCS (1030035-BS1)

Methyl tert-butyl ether	52.6	2.00	ug/l	50.0		105	70-130			
Surrogate: 1,2-Dichloroethane-d4	52.3		"	50.0		105	76-114			
Surrogate: Toluene-d8	49.4		"	50.0		98.8	88-110			

Sequoia Analytical - San Carlos

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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 Dublin CA, 94568

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 Project Number: Unocal SS#5781
 Project Manager: Deanna Harding

Reported:
 03/23/01 10:58

Volatile Organic 8 Oxygenated Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1030035 - EPA 5030B [P/T]

LCS (1030035-BS2)										
										Prepared & Analyzed: 03/14/01
Methyl tert-butyl ether	46.3	2.00	ug/l	50.0		92.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	49.3		"	50.0		98.6	76-114			
Surrogate: Toluene-d8	49.3		"	50.0		98.6	88-110			
Matrix Spike (1030035-MS1)										
										Prepared & Analyzed: 03/09/01
Methyl tert-butyl ether	52.8	2.00	ug/l	50.0	ND	106	60-140			
Surrogate: 1,2-Dichloroethane-d4	51.1		"	50.0		102	76-114			
Surrogate: Toluene-d8	49.8		"	50.0		99.6	88-110			
Matrix Spike Dup (1030035-MSD1)										
										Prepared & Analyzed: 03/09/01
Methyl tert-butyl ether	52.2	2.00	ug/l	50.0	ND	104	60-140	1.14	25	
Surrogate: 1,2-Dichloroethane-d4	51.1		"	50.0		102	76-114			
Surrogate: Toluene-d8	49.8		"	50.0		99.6	88-110			

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Reported:
 03/23/01 10:58

Diesel Hydrocarbons (C9-C24) by DHS LUFT - Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C15014 - EPA 3510B										
Blank (1C15014-BLK1) Prepared: 03/15/01 Analyzed: 03/20/01										
Diesel Range Hydrocarbons	121	50.0	ug/l							A-01,Q-19
Surrogate: n-Pentacosane	90.2		"	100		90.2	50-150			
LCS (1C15014-BS1) Prepared: 03/15/01 Analyzed: 03/20/01										
Diesel Range Hydrocarbons	1990	50.0	ug/l	2000		99.5	60-140			
Surrogate: n-Pentacosane	234		"	200		117	50-150			
Matrix Spike (1C15014-MS1) Source: MKC0157-01 Prepared: 03/15/01 Analyzed: 03/16/01										
Diesel Range Hydrocarbons	633	50.0	ug/l	1000	50.9	58.2	50-150			
Surrogate: n-Pentacosane	65.6		"	100		65.6	50-150			
Matrix Spike Dup (1C15014-MSD1) Source: MKC0157-01 Prepared: 03/15/01 Analyzed: 03/16/01										
Diesel Range Hydrocarbons	505	50.0	ug/l	1000	50.9	45.4	50-150	22.5	50	
Surrogate: n-Pentacosane	63.9		"	100		63.9	50-150			

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Project: Tosco(1)
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Reported:
 03/23/01 10:58

Volatile Organic Compounds by EPA Method 8021B - Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1C20008 - EPA 5030B [P/T]

Matrix Spike (1C20008-MS1)		Source: MKC0244-12			Prepared: 03/20/01		Analyzed: 03/21/01			
Chlorobenzene	25.6	0.500	ug/l	25.0	ND	102	60-140			
1,1-Dichloroethene	23.4	0.500	"	25.0	ND	93.6	60-140			
Trichloroethene	26.9	0.500	"	25.0	ND	108	60-140			
<i>Surrogate: 1-Chloro-3-fluorobenzene</i>	9.22		"	10.0		92.2	70-130			
Matrix Spike Dup (1C20008-MSD1)		Source: MKC0244-12			Prepared: 03/20/01		Analyzed: 03/21/01			
Chlorobenzene	24.7	0.500	ug/l	25.0	ND	98.8	60-140	3.58	25	
1,1-Dichloroethene	23.6	0.500	"	25.0	ND	94.4	60-140	0.851	25	
Trichloroethene	26.8	0.500	"	25.0	ND	107	60-140	0.372	25	
<i>Surrogate: 1-Chloro-3-fluorobenzene</i>	8.42		"	10.0		84.2	70-130			

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Project: Tosco(1)
 Project Number: Unocal SS#5781
 Project Manager: Deanna Harding

Reported:
 03/23/01 10:58

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C21013 - General Prep										
Prepared & Analyzed: 03/21/01										
Blank (1C21013-BLK1)										
Oil & Grease	ND	5.00	mg/l							
Prepared & Analyzed: 03/21/01										
LCS (1C21013-BS1)										
Oil & Grease	16.0	5.00	mg/l	20.0		80.0	70-130			
Prepared & Analyzed: 03/21/01										
LCS Dup (1C21013-BSD1)										
Oil & Grease	15.7	5.00	mg/l	20.0		78.5	70-130	1.89	30	

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Project: Tosco(1)
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Project Manager: Deanna Harding

Reported:
03/23/01 10:58

Notes and Definitions

- A-01 Chromatogram Pattern: The method blank had an analyte concentration that was outside of acceptable criteria. A non detectable sample in the batch, MKC0157-03, satisfied the QC requirements and validated the batch.
- D-15 Chromatogram Pattern: Unidentified Hydrocarbons C9-C24
- Q-19 The method blank contains an analyte at a concentration above the MRL.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference