



GETTLER-RYAN INC.

TRANSMITTAL

September 20, 2000

G-R #: 180181

TO: Mr. David B. De Witt
Tosco Marketing Company
2000 Crow Canyon Place, Suite 4000
San Ramon, California 94583

CC: Mr. David Vossler
Gettler-Ryan Inc.
Petaluma, California

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

RE: Tosco (Unocal) SS #4186
1771 First Street
Livermore, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	September 18, 2000	Groundwater Monitoring and Sampling Report Third Quarter - Event of July 17, 2000

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 **October 3, 2000**, this report will be distributed to the following:

Enclosure

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

trans/4186.dbd



GETTLER - RYAN INC.

September 18, 2000
G-R Job #180181

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

RE: Third Quarter 2000 Groundwater Monitoring & Sampling Report
Tosco (Unocal) Service Station #4186
1771 First Street
Livermore, California

Dear Mr. De Witt:

This report documents the quarterly groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R). On July 17, 2000, field personnel monitored and sampled three wells (U-1, U-2 and U-3) at the above referenced site.

Static groundwater levels were measured and all wells were checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were not present in the wells. Static water level data and groundwater elevations are summarized 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 are also attached. The samples were analyzed by Sequoia Analytical. Analytical results are summarized in Tables 1 and 2. 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

Douglas J. Lee
Senior Geologist, R.G. No. 6882

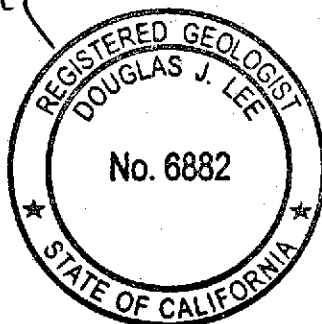


Figure 1: Potentiometric Map
Figure 2: Concentration Map
Table 1: Groundwater Monitoring Data and Analytical Results
Table 2: Groundwater Analytical Results - Oxygenate Compounds
Attachments: Standard Operating Procedure - Groundwater Sampling
Field Data Sheets
Chain of Custody Document and Laboratory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

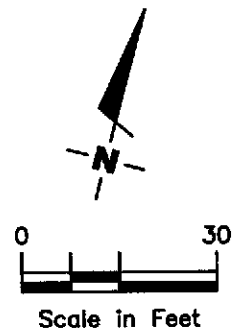
4186.qml

EXPLANATION

- ◆ Groundwater monitoring well
- 99.99 Groundwater elevation in feet referenced to Mean Sea Level (MSL)
- - - 99.99 - - - Groundwater elevation contour, dashed where inferred.

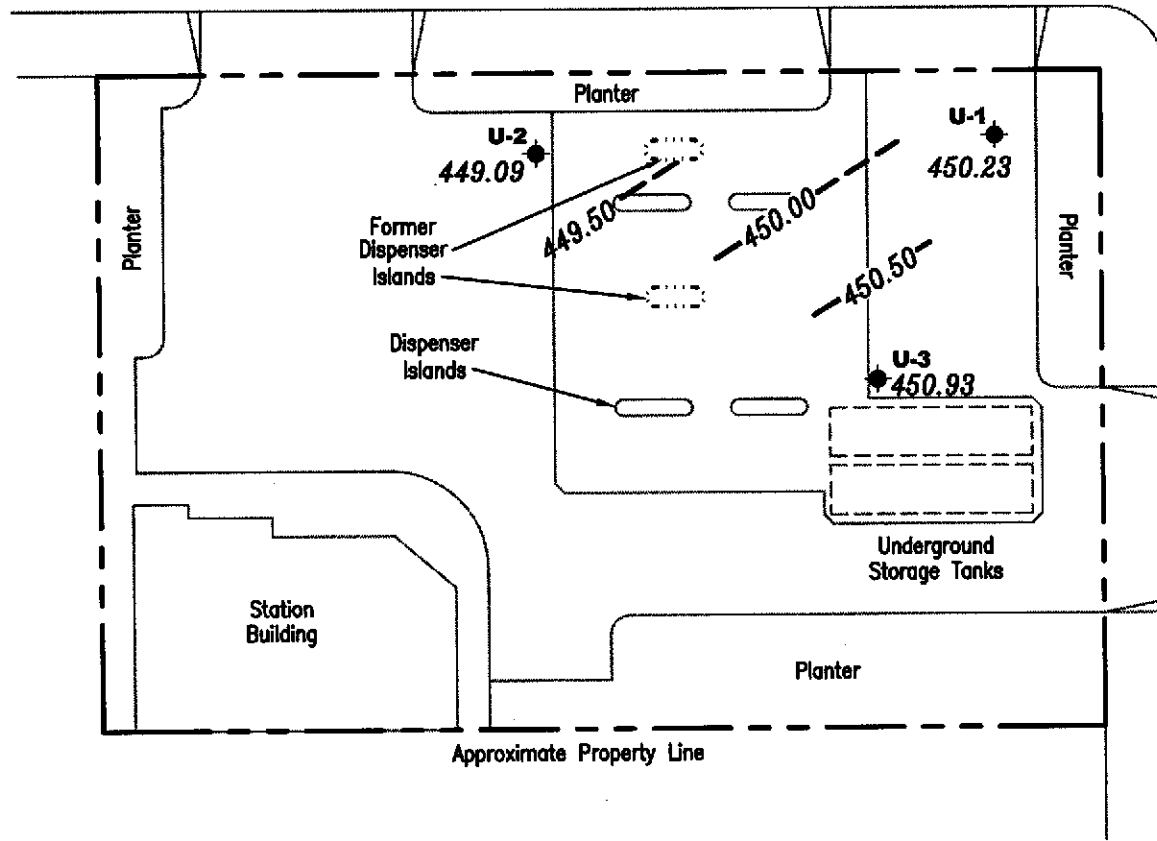


Approximate groundwater flow direction at a gradient of 0.03 Ft./Ft.



FIRST STREET

"N" STREET



Source: Figure modified from drawing provided by Virgil Chavez Land Surveying dated 8/96.



Gettler - Ryan Inc.

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Dublin, CA 94568 (925) 551-7555

POTENTIOMETRIC MAP
Tosco (Unocal) Service Station #4186
1771 First Street
Livermore, California

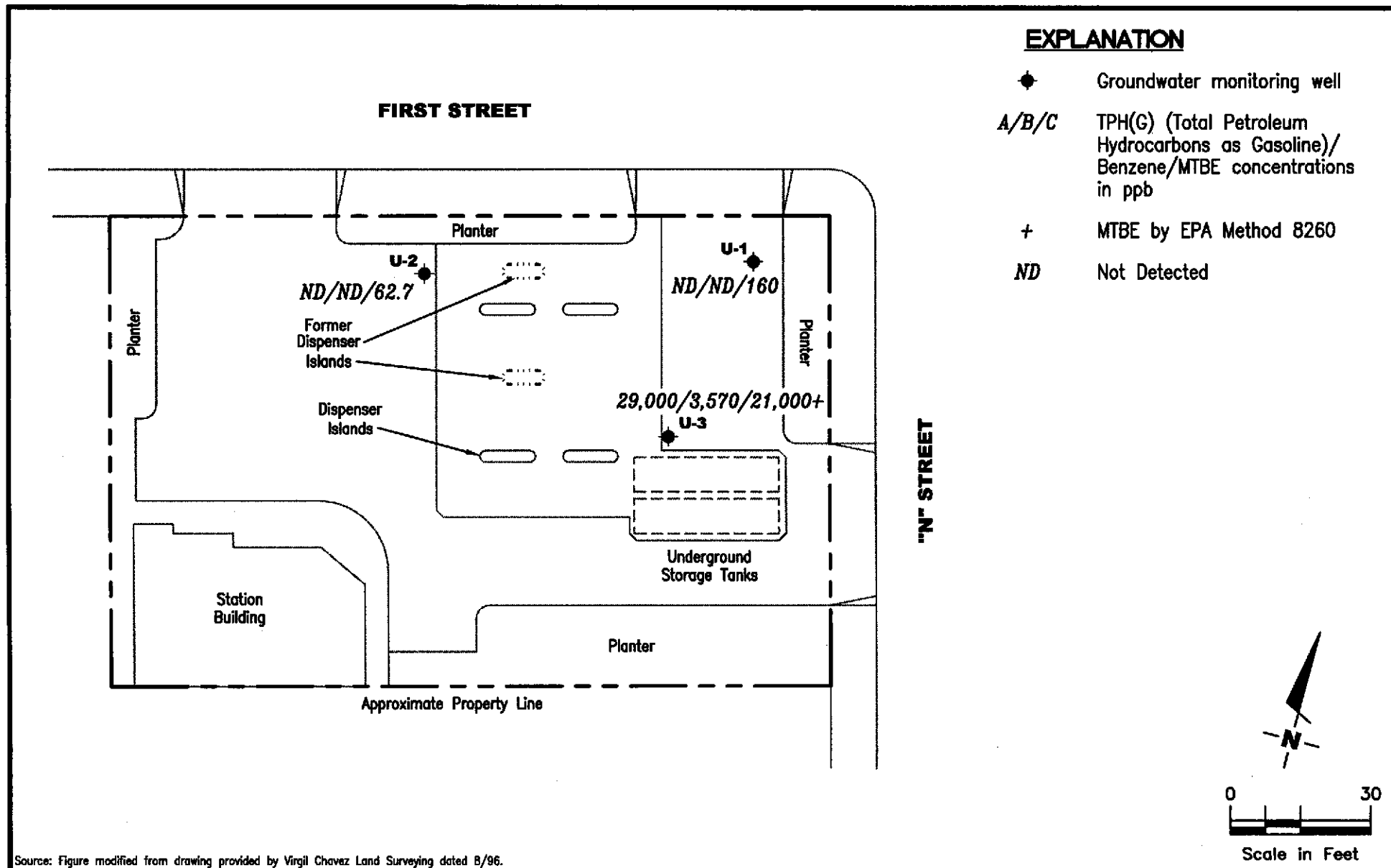
FIGURE
1

PROJECT NUMBER
180181

REVIEWED BY

DATE
July 17, 2000

REVISED DATE



Source: Figure modified from drawing provided by Virgil Chavez Land Surveying dated 8/96.



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CONCENTRATION MAP
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

FIGURE

2

PROJECT NUMBER
180181

REVIEWED BY

DATE
July 17, 2000

REVISED DATE

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

WELL ID/ TOC*	DATE	DTW (ft.)	S.L. (ft. bgs.)	GWE (msl)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-1										
478.27	07/13/98	23.28	14.0-34.0	454.99	ND	ND	ND	ND	ND	ND
	10/07/98	26.43		451.84	ND	ND	ND	ND	ND	ND
	01/15/99	30.42		447.85	ND	ND	ND	ND	1.1	7.3
	04/14/99	24.21		454.06	ND	ND	ND	ND	ND	160
	07/19/99	27.10		451.17	ND	ND	ND	ND	ND	92
	10/12/99	29.40		448.87	ND	ND	ND	ND	ND	37
	01/24/00	27.90		450.37	ND	ND	ND	ND	ND	28
	04/10/00	26.16		452.11	ND	ND	0.930	ND	ND	ND
	07/17/00	28.04		450.23	ND	ND	ND	ND	ND	160
U-2										
477.44	07/13/98	23.52	13.0-33.0	453.92	1,200	130	12	62	180	1,100
	10/07/98	25.31		452.13	ND	ND	ND	ND	ND	160
	01/15/99	30.22		447.22	ND	ND	ND	ND	ND	280
	04/14/99	24.50		452.94	ND	ND	ND	ND	ND	460
	07/19/99	28.54		448.90	ND	ND	ND	ND	ND	220
	10/12/99	30.48		446.96	ND	ND	ND	ND	ND	160
	01/24/00	24.52		452.92	ND	ND	ND	ND	ND	150
	04/10/00	23.68		453.76	ND	ND	ND	ND	ND	177
	07/17/00	28.35		449.09	ND	ND	ND	ND	ND	62.7
U-3										
478.46	07/13/98	23.82	14.0-34.0	454.64	70,000	3,100	5,500	2,700	16,000	7,500
	10/07/98	25.64		452.82	54,000	5,000	1,100	3,100	14,000	6,100
	01/15/99	30.92		447.54	41,000 ¹	3,100	ND ²	1,800	3,800	15,000
	04/14/99	24.48		453.98	33,000	86	290	2,200	7,800	39,000
	07/19/99	28.46		450.00	48,000	3,900	2,500	3,600	14,000	12,000/16,000 ³
	10/12/99	30.39		448.07	35,000 ⁴	4,200	ND ²	2,300	1,800	22,000/8,300 ⁵

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

WELL ID/ TOC*	DATE	DTW (ft.)	S.I. (ft. bgs.)	GWE (msl)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-3	01/24/00	23.43	14.0-34.0	455.03	13,000 ⁴	260	ND ²	770	3,200	53,000/42,000 ³
(cont)	04/10/00	23.31		455.15	35,200 ⁴	1,070	241	2,820	8,850	35,600/40,900 ³
	07/17/00	27.53		450.93	29,000 ⁴	3,570	525	3,180	5,660	22,500/21,000 ³
Trip Blank										
TB-LB	07/13/98	--		--	ND	ND	ND	ND	ND	ND
	10/07/98	--		--	ND	ND	ND	ND	ND	ND
	01/15/99	--		--	ND	ND	ND	ND	ND	ND
	04/14/99	--		--	ND	ND	ND	ND	ND	ND
	07/19/99	--		--	ND	ND	ND	ND	ND	ND
	10/12/99	--		--	ND	ND	ND	ND	ND	ND
	01/24/00	--		--	ND	ND	ND	ND	ND	ND
	04/10/00	--		--	ND	ND	ND	ND	ND	ND
	07/17/00	--		--	ND	ND	ND	ND	ND	ND

Table 1
Groundwater Monitoring Data and Analytical Results
Tosco (Unocal) Service Station #4186
1771 First Street
Livermore, California

EXPLANATIONS:

TOC = Top of Casing

DTW = Depth to Water

(ft.) = Feet

S. I. = Screen Interval

(ft. bgs.) = Feet Below Ground Surface

GWE = Groundwater Elevation

(msl) = Mean sea level

TPH(G) = Total Petroleum Hydrocarbons as Gasoline

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes

MTBE = Methyl tertiary butyl ether

ppb = Parts per billion

ND = Not Detected

-- = Not Measured/Not Analyzed

* TOC elevations are relative to Mean Sea Level (msl) in feet. The benchmark used was a City of Livermore survey monument at First & "Q" Streets.

¹ Laboratory report indicates gasoline and unidentified hydrocarbons C6-C12.

² Detection limit raised. Refer to analytical reports.

³ MTBE by EPA Method 8260.

⁴ Laboratory report indicates gasoline C6-C12.

⁵ MTBE by EPA Method 8260 analyzed past EPA recommended holding time.

Table 2
Groundwater Analytical Results - Oxygenate Compounds
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

WELL ID	DATE	ETHANOL (ppb)	TBA (ppb)	MTBE (ppb)	DIPE (ppb)	ETBE (ppb)	TAME (ppb)	EDB (ppb)	1,2-DCA (ppb)
U-3	07/19/99	--	--	16,000	--	--	--	--	--
	10/12/99	--	--	8,300	--	--	--	--	--
	01/24/00	--	--	42,000	--	--	--	--	--
	04/10/00	--	--	40,900	--	--	--	--	--
	07/17/00	--	--	21,000	--	--	--	--	--

EXPLANATIONS:

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

ANALYTICAL METHOD:

EPA Method 8260 for Oxygenate Compounds

¹ Detection limit raised. Refer to analytical reports.

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 # 4186
Address: 1771 First St.
City: Livermore, CA.

Job#: 180181
Date: 7-17-00
Sampler: Joe

Well ID U-1
Well Diameter 2 in
Total Depth 34.20 ft
Depth to Water 28.04 ft

Well Condition: O.K.
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	

6.16 x VF 0.17 = 1.05 x 3 (case volume) = Estimated Purge Volume: 3.5 (gal)

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

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

Starting Time: 8:38
Sampling Time: 8:55 A.M.
Purging Flow Rate: 0.5 gpm
Did well de-water? _____

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

Time	Volume (gal.)	pH	Conductivity (µmhos/cm)	Temperature (F)	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>8:50</u>	<u>1</u>	<u>7.58</u>	<u>8.96</u>	<u>66.3</u>			
<u>8:52</u>	<u>2</u>	<u>7.41</u>	<u>9.05</u>	<u>66.4</u>			
<u>5:55</u>	<u>3.5</u>	<u>7.94</u>	<u>9.09</u>	<u>66.5</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-1</u>	<u>3VCA</u>	<u>Y</u>	<u>HCL</u>	<u>Sequoia</u>	<u>TPNG, BTEX, MTBE</u>

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Client/
Facility # 4186
Address: 1771 First St.
City: Livermore, CA.

Job#: 180181
Date: 7-17-00
Sampler: Joc

Well ID U-2
Well Diameter 2 in.
Total Depth 33.20 ft.
Depth to Water 28.35 ft.

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

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

4.85 X VF 0.17 = 0.82 X 3 (case volume) = Estimated Purge Volume: 2.5 gal.

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

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

Starting Time: 9:10
Sampling Time: 9:30 A.M.
Purging Flow Rate: 0.5 gpm.
Did well de-water? _____

Weather Conditions: clear
Water Color: clear Odor: none
Sediment Description: none
If yes; Time: _____ Volume: _____ gal.

Time	Volume (gal.)	pH	Conductivity (µmhos/cm) ¹⁰	Temperature (F)	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
9:16	1	7.67	6.42	66.3			
9:19	2	7.38	6.58	66.1			
9:21	2.5	7.35	6.55	66.5			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-2</u>	<u>3VCA</u>	<u>Y</u>	<u>HCL</u>	<u>Sequoia</u>	<u>TPMG, BTEX, MTBE</u>

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Client/
Facility # 4186
Address: 1771 First st.
City: Livermore, CA.

Job#: 180181
Date: 7-17-00
Sampler: Joe

Well ID U-3

Well Condition: o.k.

Well Diameter 2 in.

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

Total Depth 33.40 ft.

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.90	

Depth to Water 27.53 ft.

5.87 x VF 0.17 = 1.00 x 3 (case volume) = Estimated Purge Volume: 3 (gal.)

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

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

Starting Time: 9:40

Weather Conditions: clear

Sampling Time: 10:05 A.M.

Water Color: clear Odor: yes

Purging Flow Rate: 0.5 gpm

Sediment Description: none

Did well de-water? _____

If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal)	pH	Conductivity μ mhos/cm ¹⁰⁰⁰	Temperature F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>9:47</u>	<u>1</u>	<u>6.90</u>	<u>1.36</u>	<u>65.9</u>	_____	_____	_____
<u>9:50</u>	<u>2</u>	<u>6.85</u>	<u>1.37</u>	<u>66.0</u>	_____	_____	_____
<u>9:53</u>	<u>3</u>	<u>6.84</u>	<u>1.44</u>	<u>66.1</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-3</u>	<u>3VCA</u>	<u>Y</u>	<u>HCL</u>	<u>Sequoia</u>	<u>TPHG, BTEX, MTBE-66 8260</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

COMMENTS: _____



**Sequoia
Analytical**

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

August 1, 2000

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

RE: Tosco(4)/L007118

Dear Deanna Harding:

Enclosed are the revised results for sample(s) received by the laboratory on July 17, 2000. The sample IDs have been changed from "V" to "U." If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Wayne Stevenson
Project Manager

CA ELAP Certificate Number I-2360

GETTLER-RYAN INC.
GENERAL CONTRACTORS





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

Project: Tosco(4)
Project Number: Unocal SS#4186
Project Manager: Deanna Harding

Sampled: 7/17/00
Received: 7/17/00
Reported: 8/1/00

ANALYTICAL REPORT FOR L007118

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TB-LB	L007118-01	Water	7/17/00
U-1	L007118-02	Water	7/17/00
U-2	L007118-03	Water	7/17/00
U-3	L007118-04	Water	7/17/00





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite J Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 7/17/00 Received: 7/17/00 Reported: 8/1/00
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Sample Description: TB-LB
Laboratory Sample Number: L007118-01

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
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Sequoia Analytical - San Carlos

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Purgeable Hydrocarbons as Gasoline	0070115	7/27/00	7/28/00		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Methyl tert-butyl ether	"	"	"		5.00	ND	"	
Surrogate: <i>a,a,a-Trifluorotoluene</i>	"	"	"	70.0-130		109	%	





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite J Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 7/17/00 Received: 7/17/00 Reported: 8/1/00
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Sample Description: **U-1**
Laboratory Sample Number: **L007118-02**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
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Sequoia Analytical - San Carlos

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Purgeable Hydrocarbons as Gasoline	0070115	7/27/00	7/28/00		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Methyl tert-butyl ether	"	"	"		5.00	160	"	
Surrogate: <i>a,a,a-Trifluorotoluene</i>	"	"	"	70.0-130		112	%	





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite J Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 7/17/00 Received: 7/17/00 Reported: 8/1/00
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Sample Description: U-2
Laboratory Sample Number: L007118-03

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
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Sequoia Analytical - San Carlos

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Purgeable Hydrocarbons as Gasoline	0070125	7/28/00	7/28/00		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Methyl tert-butyl ether	"	"	"		5.00	62.7	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		126	%	





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite J Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 7/17/00 Received: 7/17/00 Reported: 8/1/00
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Sample Description: U-3
Laboratory Sample Number: L007118-04

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method/ Surrogate Limits	Reporting Limit	Result	Units	Notes*
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Sequoia Analytical - San Carlos

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Purgeable Hydrocarbons as Gasoline	0070125	7/28/00	7/28/00		5000	29000	ug/l	1
Benzene	"	"	"		50.0	3570	"	
Toluene	"	"	"		50.0	525	"	
Ethylbenzene	"	"	"		50.0	3180	"	
Xylenes (total)	"	"	"		50.0	5660	"	
Methyl tert-butyl ether	"	"	"		500	22500	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		109	%	

MTBE by EPA Method 8260A

Methyl tert-butyl ether	0070137	7/31/00	7/31/00		500	21000	ug/l	
Surrogate: 1,2-Dichloroethane-d4	"	"	"	76.0-114		96.4	%	





Sequoia Analytical

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Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite J Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 7/17/00 Received: 7/17/00 Reported: 8/1/00
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Total Purgeable Hydrocarbons (C6-C12): BTEX and MTBE by DHS LUFF/Quality Control
Sequoia Analytical - San Carlos

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0070115						Extraction Method: EPA 5030B (P/T)				
Blank						0070115-BLK1				
Purgeable Hydrocarbons as Gasoline	7/27/00			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	5.00				
Methyl tert-butyl ether	"			ND	"					
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.72	"	70.0-130	97.2			
LCS						0070115-BS1				
Benzene	7/27/00	10.0		9.92	ug/l	70.0-130	99.2			
Toluene	"	10.0		9.16	"	70.0-130	91.6			
Ethylbenzene	"	10.0		9.21	"	70.0-130	92.1			
Xylenes (total)	"	30.0		28.2	"	70.0-130	94.0			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		11.2	"	70.0-130	112			
LCS						0070115-BS2				
Purgeable Hydrocarbons as Gasoline	7/27/00	250		245	ug/l	70.0-130	98.0			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.0	"	70.0-130	100			
Matrix Spike						0070115-MS1 L007108-07				
Purgeable Hydrocarbons as Gasoline	7/28/00	250	ND	244	ug/l	60.0-140	97.6			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.1	"	70.0-130	101			
Matrix Spike Dup						0070115-MSD1 L007108-07				
Purgeable Hydrocarbons as Gasoline	7/28/00	250	ND	252	ug/l	60.0-140	101	25.0	3.42	
Surrogate: a,a,a-Trifluorotoluene	"	10.0		11.3	"	70.0-130	113			
Batch: 0070125						Extraction Method: EPA 5030B (P/T)				
Blank						0070125-BLK1				
Purgeable Hydrocarbons as Gasoline	7/28/00			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	5.00				
Methyl tert-butyl ether	"			ND	"					
Surrogate: a,a,a-Trifluorotoluene	"	10.0		12.3	"	70.0-130	123			
LCS						0070125-BS1				
Benzene	7/28/00	10.0		8.42	ug/l	70.0-130	84.2			
Toluene	"	10.0		8.07	"	70.0-130	80.7			

*Refer to end of report for text of notes and definitions.





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

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD % Notes*
LCS (continued)									
	0070125-BS1								
Ethylbenzene	7/28/00	10.0		7.79	ug/l	70.0-130	77.9		
Xylenes (total)	"	30.0		23.7	"	70.0-130	79.0		
Surrogate: a,a,a-Trifluorotoluene	"	10.0		12.0	"	70.0-130	120		
LCS									
	0070125-BS2								
Purgeable Hydrocarbons as Gasoline	7/28/00	250		215	ug/l	70.0-130	86.0		
Surrogate: a,a,a-Trifluorotoluene	"	10.0		11.4	"	70.0-130	114		
Matrix Spike									
	0070125-MS1		L007126-06						
Benzene	7/28/00	10.0	ND	9.81	ug/l	60.0-140	98.1		
Toluene	"	10.0	ND	9.57	"	60.0-140	95.7		
Ethylbenzene	"	10.0	ND	9.12	"	60.0-140	91.2		
Xylenes (total)	"	30.0	ND	27.7	"	60.0-140	92.3		
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.6	"	70.0-130	106		
Matrix Spike Dup									
	0070125-MSD1		L007126-06						
Benzene	7/29/00	10.0	ND	9.56	ug/l	60.0-140	95.6	25.0	2.58
Toluene	"	10.0	ND	9.34	"	60.0-140	93.4	25.0	2.43
Ethylbenzene	"	10.0	ND	8.99	"	60.0-140	89.9	25.0	1.44
Xylenes (total)	"	30.0	ND	27.2	"	60.0-140	90.7	25.0	1.75
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.5	"	70.0-130	105		





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MTBE by EPA Method 8260A/Quality Control
Sequoia Analytical, San Carlos

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0070137			Date Prepared: 7/31/00			Extraction Method: EPA 5030B [P/T]				
Blank			0070137-BLK1							
Methyl tert-butyl ether	7/31/00			ND	ug/l	2.00				
Surrogate: 1,2-Dichloroethane-d4	"	50.0		48.3	"	76.0-114	96.6			
LCS			0070137-BS1							
Methyl tert-butyl ether	7/31/00	50.0		50.1	ug/l	70.0-130	100			
Surrogate: 1,2-Dichloroethane-d4	"	50.0		50.0	"	76.0-114	100			
Matrix Spike			0070137-MS1 L007217-03							
Methyl tert-butyl ether	7/31/00	50.0	ND	49.0	ug/l	60.0-140	98.0			
Surrogate: 1,2-Dichloroethane-d4	"	50.0		49.7	"	76.0-114	99.4			
Matrix Spike Dup			0070137-MSD1 L007217-03							
Methyl tert-butyl ether	7/31/00	50.0	ND	48.7	ug/l	60.0-140	97.4	25.0	0.614	
Surrogate: 1,2-Dichloroethane-d4	"	50.0		50.8	"	76.0-114	102			





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Notes and Definitions

#	Note
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- 1 Chromatogram Pattern: Gasoline C6-C12
- 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
- Recov. Recovery
- RPD Relative Percent Difference

00 OCT -4 PM 3: 25

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