

BC STD 1059



# GETTLER-RYAN INC.

ENVIRONMENTAL PROTECTION

## TRANSMITTAL

00 FEB 14 AM 8:39

January 27, 2000

G-R #:180061

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

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

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

**RE:** Tosco (Unocal) SS #5325  
3220 Lakeshore Avenue  
Oakland, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	January 21, 2000	Groundwater Monitoring and Sampling Report Fourth Quarter 1999 - Event of December 7, 1999

**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 *February 9, 2000*, this report will be distributed to the following:

Enclosure

cc: Alameda County Health Care Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

agency/5325dbd.qmt



# GETTLER-RYAN INC.

January 21, 2000  
G-R Job #180061

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

RE: Fourth Quarter 1999 Groundwater Monitoring & Sampling Report  
Tosco (Unocal) Service Station #5325  
3220 Lakeshore Avenue  
Oakland, California

Dear Mr. De Witt:

This report documents the quarterly groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R). On December 7, 1999, field personnel monitored and sampled six wells (U-1 through U-6) 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 any wells. Static water level data and groundwater elevations are summarized in Table 1. Dissolved Oxygen Concentrations are summarized in Table 3. A Potentiometric Map is included as Figure 1.

Groundwater samples were collected from the monitoring wells as specified by 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*  
Deanna L. Harding  
Project Coordinator

*Stephen J. Carter*  
Stephen J. Carter  
Senior Geologist, R.G. No. 5577

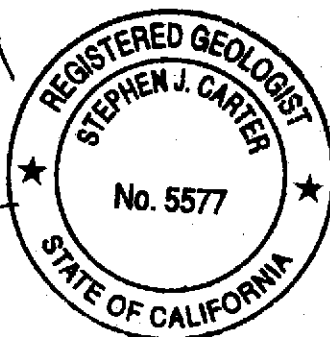
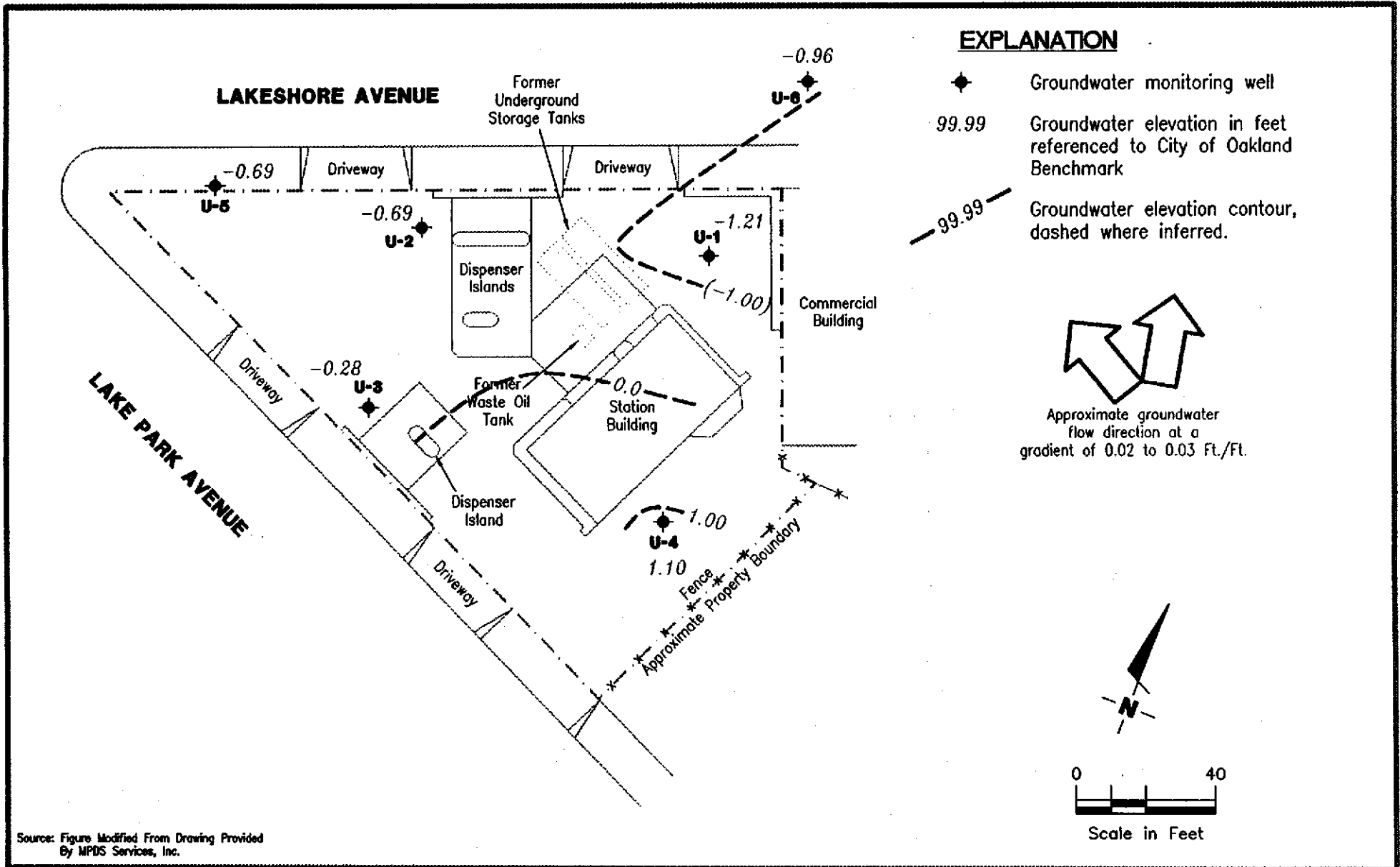


Figure 1: Potentiometric Map  
Figure 2: Concentration Map  
Table 1: Groundwater Monitoring Data and Analytical Results  
Table 2: Groundwater Analytical Results  
Table 3: Dissolved Oxygen Concentrations  
Attachments: Standard Operating Procedure - Groundwater Sampling  
Field Data Sheets  
Chain of Custody Document and Laboratory Analytical Reports

5325.qml



**Gettler - Ryan Inc.**

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Dublin, CA 94568

POTENTIOMETRIC MAP  
Tosco (Unocal) Service Station No. 5325  
3220 Lakeshore Avenue  
Oakland, California

FIGURE

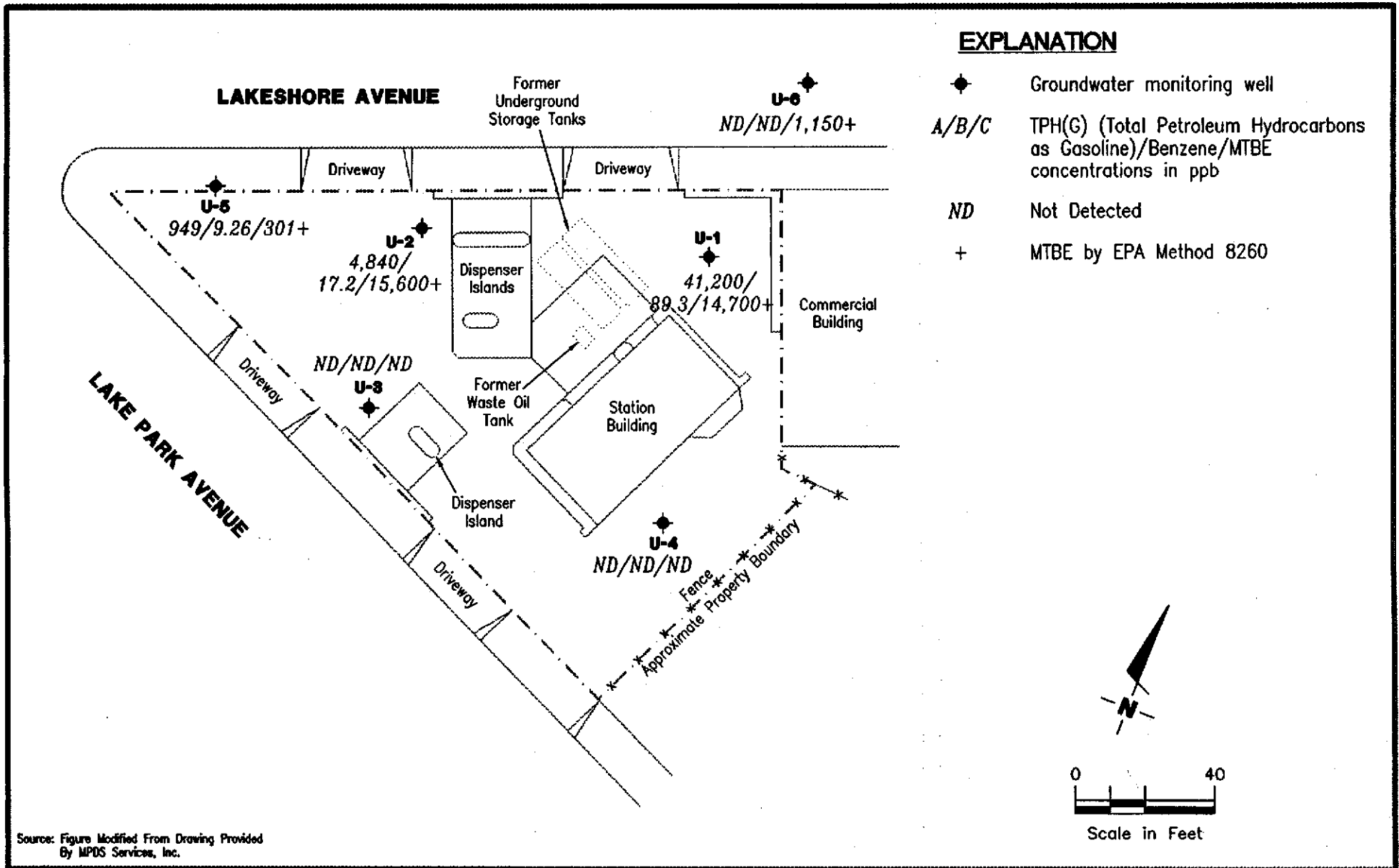
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JOB NUMBER  
180061

REVIEWED BY

DATE  
December 7, 1999

REVISED DATE



**Gettler - Ryan Inc.**

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Dublin, CA 94568

**CONCENTRATION MAP**  
Tosco (Unocal) Service Station No. 5325  
3220 Lakeshore Avenue  
Oakland, California

FIGURE

**2**

JOB NUMBER  
180061

REVIEWED BY

DATE  
December 7, 1999

REVISED DATE

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
Tosco (Unocal) Service Station #5325  
3220 Lakeshore Avenue  
Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product						
				Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-1	08/10/90	--	--	--	690	38	75	8.6	130	--
	01/07/91	--	--	--	250	22	16	4.2	17	--
	04/01/91	--	--	--	160	13	8.6	1.0	15	--
	07/03/91	--	--	--	140	21	4.3	0.36	17	--
	10/09/91	--	--	--	ND	ND	ND	ND	ND	--
	02/12/92	--	--	--	250	ND	ND	ND	ND	--
	05/05/92	--	--	--	230	1.2	ND	ND	ND	--
	06/11/92	--	--	--	1,000	80	1.4	6.7	41	--
	08/20/92	--	--	--	400 <sup>1</sup>	1.0	ND	ND	0.6	--
	02/22/93	--	--	--	34,000	1,400	5,500	910	7,300	--
	05/07/93	--	--	--	8,700	600	240	650	3,300	--
	08/08/93	--	--	--	4,900 <sup>2</sup>	79	ND	832	270	--
5.32	11/16/93	8.61	-3.29	0.00	690 <sup>3</sup>	ND	ND	ND	ND	--
	02/16/94	8.54	-3.22	0.00	6,800 <sup>4</sup>	ND	ND	ND	ND	--
8.46	06/22/94	8.39	0.07	0.00	200	ND	ND	5.9	21	--
	09/22/94	8.66	-0.20	0.00	6,100 <sup>3</sup>	ND	ND	ND	ND	--
	12/24/94	8.04	0.42	0.00	50,000	2,500	9,700	2,400	17,000	--
	03/25/95	7.72	1.02**	0.37	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	06/21/95	9.30	-0.69**	0.20	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	09/19/95	9.29	-0.53**	0.40	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	12/19/95	8.98	-0.50**	0.03	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	03/18/96	8.25	0.21	0.00	27,000	ND	2,300	1,400	11,000	4,900
	06/27/96	7.92	0.54	<0.01	120,000	540	4,300	2,600	26,000	ND
	09/26/96	9.10	-0.62**	0.02	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	12/09/96	6.88	1.60**	0.03	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	03/14/97	9.02	-0.15**	0.55	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	06/30/97	8.41	0.07**	0.02	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	09/19/97	8.56	-0.08**	0.02	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	12/12/97	8.58	-0.11**	0.01	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	03/03/98	8.23	0.26**	0.04	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	06/15/98	8.37	0.09	Sheen	52,000	ND <sup>7</sup>	900	1,800	13,000	ND <sup>7</sup>
	09/30/98	8.94	-0.48	Sheen	1,000,000 <sup>8</sup>	ND <sup>7</sup>	2,600	13,000	83,000	4,800

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
Tosco (Unocal) Service Station #5325  
3220 Lakeshore Avenue  
Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-1	12/28/98	8.57	-0.11	<0.01	1,100,000 <sup>9</sup>	ND <sup>7</sup>	1,600	8,600	71,000	5,700
(cont)	03/22/99	8.18	0.28	Sheen	130,000	470	1,100	2,000	28,000	5,700
	06/09/99	9.37	-0.91	0.00	40,000	230	640	590	13,000	3,500/2,100 <sup>10</sup>
	09/08/99	9.53	-1.07	0.00	55,000 <sup>11</sup>	217	202	745	14,300	6,890/6,690 <sup>10</sup>
	12/07/99	9.67	-1.21	0.00	41,200 <sup>13</sup>	89.3	ND <sup>7</sup>	385	6,930	15,800/14,700 <sup>12</sup>
U-2	08/10/90	--	--	--	780	27	46	15	130	--
	01/07/91	--	--	--	1,900	67	5.8	58	69	--
	04/01/91	--	--	--	1,700	250	89	34	190	--
	07/03/91	--	--	--	2,100	150	25	3.1	290	--
	10/09/91	--	--	--	230	7.1	ND	ND	11	--
	02/12/92	--	--	--	410	1.9	ND	0.36	0.4	--
	05/05/92	--	--	--	1,600	120	52	6.2	290	--
	06/11/92	--	--	--	620	17	2.1	ND	37	--
	08/20/92	--	--	--	700	28	6.5	1.3	4.6	--
	02/22/93	--	--	--	3,400	2,400	2,100	1,200	5,800	--
	05/07/93	--	--	--	17,000	1,800	660	1,700	4,000	--
	08/08/93	--	--	--	5,600 <sup>2</sup>	420	ND	410	670	--
4.53	11/16/93	8.17	-3.64	0.00	510 <sup>3</sup>	ND	ND	ND	ND	--
	02/16/94	7.73	-3.20	0.00	980 <sup>4</sup>	49	13	2.7	40	--
7.62	06/22/94	7.60	0.02	0.00	31,000	2,200	62	1,500	3,500	--
	09/22/94	7.93	-0.31	0.00	8,500 <sup>3</sup>	29	ND	ND	ND	--
	12/24/94	7.27	0.35	0.00	32,000	1,500	890	1,300	5,000	--
	03/25/95	7.01	0.61	0.00	170,000	1,900	21,000	4,800	33,000	--
	06/21/95	6.98	0.64	0.00	16,000	2,100	ND	1,800	1,700	--
	09/19/95	7.70	-0.08	0.00	3,000	610	ND	78	240	-- <sup>5</sup>
	12/19/95	7.30	0.32	0.00	1,600	140	55	52	270	-- <sup>6</sup>
	03/18/96	6.45	1.17	0.00	12,900	2,200	ND	1,200	2,200	22,000
	06/27/96	7.41	0.21	0.00	28,000	3,400	ND	2,800	3,100	3,000
	09/26/96	7.90	-0.28	0.00	5,900	750	ND	ND	ND	18,000
	12/09/96	6.76	0.86	0.00	13,000	5,100	290	980	370	2,700

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-2	03/14/97	7.12	0.52**	0.03	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
(cont)	06/30/97	6.19	1.43	<0.01	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	09/19/97	7.31	0.31	<0.01	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	12/12/97	6.75	0.88**	<0.01	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	03/03/98	6.36	1.26	Sheen	80,000	3,000	1,100	820	16,000	16,000
	06/15/98	6.51	1.11	Sheen	48,000	1,800	330	470	7,900	20,000
	09/30/98	7.17	0.45	Sheen	60,000	1,300	ND <sup>7</sup>	500	9,700	19,000
	12/28/98	7.06	0.56	0.00	63,000	590	160	320	5,600	16,000
	03/22/99	6.82	0.80	0.00	28,000	1,100	ND <sup>7</sup>	360	2,900	25,000
	06/09/99	7.51	0.11	0.00	21,000	110	190	310	2,600	7,900/7,800 <sup>10</sup>
	09/08/99	8.16	-0.54	0.00	23,300 <sup>11</sup>	477	138	286	4,110	16,400/15,300 <sup>10</sup>
	<b>12/07/99</b>	<b>8.31</b>	<b>-0.69</b>	<b>0.00</b>	<b>4,840<sup>13</sup></b>	<b>17.2</b>	<b>ND<sup>7</sup></b>	<b>ND<sup>7</sup></b>	<b>157</b>	<b>14,900/15,600<sup>12</sup></b>
U-3	08/10/90	--	--	--	ND	ND	ND	ND	ND	--
	01/07/91	--	--	--	ND	ND	ND	ND	1.8	--
	04/01/91	--	--	--	ND	1.0	2.9	0.53	5.4	--
	07/03/91	--	--	--	ND	ND	ND	ND	ND	--
	10/09/91	--	--	--	ND	ND	ND	ND	ND	--
	02/12/92	--	--	--	ND	ND	ND	ND	ND	--
	05/05/92	--	--	--	ND	ND	ND	ND	ND	--
	06/11/92	--	--	--	ND	ND	ND	ND	ND	--
	08/20/92	--	--	--	ND	ND	ND	ND	ND	--
	02/22/93	--	--	--	ND	ND	ND	ND	ND	--
	05/07/93	--	--	--	ND	ND	ND	ND	ND	--
	08/08/93	--	--	--	210	5.0	9.7	0.7	4.1	--
7.86	11/16/93	11.82	-3.96	0.00	ND	ND	ND	ND	ND	--
	02/16/94	11.62	-3.76	0.00	ND	ND	ND	ND	ND	--
10.98	06/22/94	11.64	-0.66	0.00	ND	ND	ND	ND	ND	--
	09/22/94	11.76	-0.78	0.00	ND	ND	ND	ND	ND	--
	12/24/94	11.28	-0.30	0.00	ND	ND	ND	ND	ND	--
	03/25/95	10.96	0.02	0.00	ND	ND	ND	ND	ND	--

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-3	06/21/95	11.37	-0.39	0.00	ND	ND	ND	ND	ND	--
(cont)	09/19/95	11.55	-0.57	0.00	ND	ND	ND	ND	ND	-- <sup>5</sup>
	12/19/95	11.45	-0.47	0.00	ND	ND	ND	ND	ND	--
	03/18/96	11.10	-0.12	0.00	ND	ND	ND	ND	ND	--
	06/27/96	11.16	-0.18	0.00	440	49	50	51	140	50
	09/26/96	11.55	-0.57	0.00	ND	ND	ND	ND	ND	ND
	12/09/96	10.12	0.86	0.00	ND	ND	ND	ND	ND	29
	03/14/97	10.87	0.11	0.00	ND	ND	ND	ND	ND	ND
	06/30/97	11.08	-0.10	0.00	ND	ND	ND	ND	ND	ND
	09/19/97	11.05	-0.07	0.00	ND	ND	ND	ND	ND	ND
	12/12/97	10.58	0.40	0.00	ND	ND	ND	ND	ND	ND
	03/03/98	9.84	1.14	0.00	ND	ND	ND	ND	ND	ND
	06/15/98	10.56	0.42	0.00	ND	ND	ND	ND	ND	ND
	09/30/98	11.12	-0.14	0.00	ND	ND	ND	ND	ND	ND
	12/28/98	10.96	0.02	0.00	ND	ND	ND	ND	ND	ND
	03/22/99	9.46	1.52	0.00	ND	ND	ND	ND	ND	ND
	06/09/99	11.01	-0.03	0.00	ND	ND	ND	ND	ND	ND
	09/08/99	11.31	-0.33	0.00	ND	ND	ND	ND	ND	ND
	12/07/99	11.26	-0.28	0.00	ND	ND	ND	ND	ND	ND
<b>U-4</b>										
11.15	06/22/94	10.16	0.99	0.00	ND	ND	ND	ND	ND	--
	09/22/94	10.79	0.36	0.00	ND	0.78	1.3	ND	1.4	--
	12/24/94	9.81	1.34	0.00	ND	ND	ND	ND	ND	--
	03/25/95	9.51	1.64	0.00	ND	ND	ND	ND	ND	--
	06/21/95	9.54	1.61	0.00	ND	ND	ND	ND	ND	--
	09/19/95	10.17	0.98	0.00	ND	ND	ND	ND	ND	--
	12/19/95	9.98	1.17	0.00	ND	ND	ND	ND	ND	--
	03/18/96	9.66	1.49	0.00	ND	ND	ND	ND	ND	--
	06/27/96	9.74	1.41	0.00	ND	ND	ND	ND	ND	ND
	09/26/96	10.14	1.01	0.00	ND	ND	ND	ND	ND	ND



**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-4	12/09/96	8.67	2.48	0.00	ND	ND	ND	ND	ND	33
(cont)	03/14/97	9.35	1.80	0.00	ND	ND	ND	ND	ND	ND
	06/30/97	9.89	1.26	0.00	ND	ND	ND	ND	ND	ND
	09/19/97	9.96	1.19	0.00	ND	ND	ND	ND	ND	ND
	12/12/97	8.56	2.59	0.00	ND	ND	ND	ND	ND	ND
	03/03/98	7.85	3.30	0.00	ND	ND	ND	ND	ND	ND
	06/15/98	9.08	2.07	0.00	ND	ND	ND	ND	ND	ND
	09/30/98	9.75	1.40	0.00	ND	ND	ND	ND	ND	ND
	12/28/98	9.59	1.56	0.00	ND	ND	ND	ND	ND	ND
	03/22/99	8.34	2.81	0.00	ND	ND	ND	ND	ND	ND
	06/09/99	9.39	1.76	0.00	ND	ND	ND	ND	ND	ND
	09/08/99	9.90	1.25	0.00	ND	ND	ND	ND	ND	ND
	<b>12/07/99</b>	<b>10.05</b>	<b>1.10</b>	<b>0.00</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>
<b>U-5</b>										
6.98	06/22/94	6.83	0.15	0.00	210	7.1	13	4.5	26	--
	09/22/94	6.90	0.08	0.00	170	8.4	10	8.5	18	--
	12/24/94	6.43	0.55	0.00	8,700	560	70	670	430	--
	03/25/95	6.35	0.63	0.00	44,000	390	960	1,500	7,600	--
	06/21/95	7.11	-0.13	0.00	400	2.3	ND	9.1	3.5	--
	09/19/95	6.99	-0.01	0.00	850	14	7.1	13	66	-- <sup>5</sup>
	12/19/95	7.17	-0.19	0.00	ND	ND	ND	ND	ND	--
	03/18/96	6.65	0.33	0.00	100	0.67	0.5	0.51	5.4	--
	06/27/96	6.49	0.49	0.00	16,000	280	150	1,400	4,600	530
	09/26/96	7.13	-0.15	0.00	ND	ND	0.57	ND	0.96	ND
	12/09/96	5.90	1.08	0.00	1,300	29	46	ND	140	97
	03/14/97	6.99	-0.01	0.00	ND	ND	ND	ND	ND	14
	06/30/97	7.08	-0.10	0.00	4,200	74	51	180	980	270
	09/19/97	6.78	0.20	0.00	6,300	160	13	370	1000	480
	12/12/97	6.94	0.04	0.00	60	1.3	ND	1.6	2.1	47
	03/03/98	6.50	0.48	0.00	1,700	29	ND <sup>7</sup>	150	190	330

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product						
				Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-5	06/15/98	6.85	0.13	0.00	1,500	32	ND <sup>7</sup>	91	83	330
(cont)	09/30/98	7.31	-0.33	0.00	1,700	44	ND <sup>7</sup>	39	150	60
	12/28/98	7.25	-0.27	0.00	1,400	59	ND <sup>7</sup>	13	27	150
	03/22/99	6.86	0.12	0.00	780	8.9	ND	0.76	4.5	350
	06/09/99	7.28	-0.30	0.00	1,000	ND <sup>7</sup>	ND <sup>7</sup>	10	35	280/350 <sup>10</sup>
	09/08/99	7.52	-0.54	0.00	2,620 <sup>11</sup>	26.2	ND <sup>7</sup>	32.2	157	280/239 <sup>12</sup>
	12/07/99	7.67	-0.69	0.00	949 <sup>11</sup>	9.26	ND <sup>7</sup>	11.2	22.7	235/301 <sup>12</sup>
<b>U-6</b>										
7.14	06/22/94	7.14	0.00	0.00	ND	ND	ND	ND	ND	--
	09/22/94	7.34	-0.20	0.00	130	1.3	0.8	ND	0.73	--
	12/24/94	6.67	0.47	0.00	6,900	500	59	600	380	--
	03/25/95	6.29	0.85	0.00	47,000	450	1,300	1,700	8,200	--
	06/21/95	7.60	-0.46	0.00	ND	ND	ND	ND	ND	--
	09/19/95	7.70	-0.56	0.00	ND	ND	ND	ND	ND	-- <sup>5</sup>
	12/19/95	7.75	-0.61	0.00	210	2.5	1.0	2.9	17	--
	03/18/96	6.86	0.28	0.00	ND	ND	ND	ND	ND	--
	06/27/96	6.52	0.62	0.00	ND	ND	ND	ND	ND	510
	09/26/96	7.62	-0.48	0.00	ND	ND	ND	ND	ND	1,400
	12/09/96	5.88	1.26	0.00	1,200	29	48	6.4	140	58
	03/14/97	7.30	-0.16	0.00	ND	ND	ND	ND	ND	1,500
	06/30/97	7.35	-0.21	0.00	ND	ND	ND	ND	ND	990
	09/19/97	7.25	-0.11	0.00	ND	ND	ND	ND	ND	1,400
	12/12/97	7.29	-0.15	0.00	ND	ND	ND	ND	ND	680
	03/03/98	7.00	0.14	0.00	ND	ND	ND	ND	ND	1,600
	06/15/98	7.18	-0.04	0.00	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	1,000
	09/30/98	7.90	-0.76	0.00	ND	ND	ND	ND	ND	1,200
	12/28/98	7.79	-0.65	0.00	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	730
	03/22/99	7.47	-0.33	0.00	ND	ND	ND	ND	ND	1,800

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-6	06/09/99	7.73	-0.59	0.00	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	ND <sup>7</sup>	1,000/850 <sup>10</sup>
(cont)	09/08/99	7.95	-0.81	0.00	ND	ND	ND	ND	ND	851/1,040 <sup>10</sup>
	12/07/99	8.10	-0.96	0.00	ND	ND	ND	ND	ND	1,140/1,150 <sup>12</sup>
<b>Trip Blank</b>										
TB-LB	03/03/98	--	--	--	ND	ND	ND	ND	ND	ND
	06/15/98	--	--	--	ND	ND	ND	ND	ND	ND
	09/30/98	--	--	--	ND	ND	1.7	ND	2.2	ND
	12/28/98	--	--	--	ND	ND	0.71	ND	0.72	9.5
	03/22/99	--	--	--	ND	ND	ND	ND	ND	ND
	06/09/99	--	--	--	ND	ND	ND	ND	ND	ND
	09/08/99	--	--	--	ND	ND	ND	ND	ND	ND
	12/07/99	--	--	--	ND	ND	0.762	ND	ND	ND

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

**EXPLANATIONS:**

Groundwater monitoring data and laboratory analytical results prior to March 3, 1998, were compiled from reports prepared by MPDS Services, Inc.

TOC = Top of Casing	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(G) = Total Petroleum Hydrocarbons as Gasoline	MTBE = Methyl tertiary butyl ether	

\* TOC elevations are surveyed relative to City of Oakland Benchmark, at the northeasterly corner of Weller and Cheney Avenue (Elevation = 9.055 feet, city datum; add 3.00' to U.S.G.S. datum). Prior to November 16, 1993, the DTW measurements were taken from the well cover.

\*\* Groundwater elevation corrected due to the presence of free product; correction factor = [(TOC-DTW)+(Product Thickness x 0.75)].

- 1 The positive result for gasoline does not appear to have a typical gasoline pattern.
- 2 The concentration reported as gasoline is primarily due to the presence of a combination of gasoline and a discrete peak not indicative of gasoline.
- 3 Laboratory report indicates the hydrocarbons detected did not appear to be gasoline
- 4 Laboratory report indicates the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.
- 5 Laboratory has potentially identified the presence of MTBE at reportable levels in the groundwater sample collected from this well.
- 6 Laboratory has identified the presence of MTBE at a level above or equal to the taste and odor threshold of 40 ppb in the sample collected from this well.
- 7 Detection limit raised. Refer to analytical reports.
- 8 Laboratory report indicates unidentified hydrocarbons C6-C12.
- 9 Laboratory report indicates gasoline and unidentified hydrocarbons >C8.
- 10 MTBE by EPA Method 8260.
- 11 Laboratory report indicates gasoline C6-C12.
- 12 MTBE by EPA Method 8260 analyzed past the recommended holding time.
- 13 Laboratory report indicates weathered gasoline C6-C12.

**Table 2**  
**Groundwater Analytical Results**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

Well ID	Date	Iron (ppm)	Nitrate as NO3 (ppm)	Phosphate as PO4 (ppm)	Redox Potential mg/L <sup>3</sup> or mV <sup>2</sup>
U-1	06/15/98	39	ND	ND	382 <sup>2</sup>
	09/30/98	17	ND	ND	366 <sup>2</sup>
	12/28/98	4.3	6.3	28	298 <sup>2</sup>
	03/22/99	4.9	ND	3.5	320 <sup>3</sup>
	06/09/99	1.2	ND	ND	260 <sup>3</sup>
	09/08/99	1.80	ND <sup>1</sup>	ND <sup>1</sup>	85 <sup>3</sup>
	<b>12/07/99</b>	<b>5.70</b>	<b>ND<sup>1</sup></b>	<b>17.0</b>	<b>404<sup>3</sup></b>
U-2	03/03/98	25	ND	ND	369 <sup>2</sup>
	06/15/98	42	ND	ND	341 <sup>2</sup>
	09/30/98	25	ND	ND	354 <sup>2</sup>
	12/28/98	28	ND	ND	276 <sup>2</sup>
	03/22/99	0.68	ND	2.3	320 <sup>3</sup>
	06/09/99	0.50	ND	ND	290 <sup>3</sup>
	09/08/99	1.90	ND <sup>1</sup>	ND <sup>1</sup>	235 <sup>3</sup>
	<b>12/07/99</b>	<b>0.250</b>	<b>ND<sup>1</sup></b>	<b>ND<sup>1</sup></b>	<b>389<sup>3</sup></b>
U-3	06/30/97	1.4	21	0.86	190 <sup>3</sup>
	09/19/97	0.57	19	ND	75 <sup>3</sup>
	12/12/97	1.9	23	0.85	390 <sup>3</sup>
	03/03/98	0.013	36	ND	358 <sup>2</sup>
	06/15/98	0.16	33	ND	318 <sup>2</sup>
	09/30/98	0.040	31	ND	295 <sup>2</sup>
	12/28/98	ND	29	ND	281 <sup>2</sup>
	03/22/99	0.015	30	0.14	310 <sup>3</sup>
	06/09/99	ND	26	1.2	350 <sup>3</sup>
	09/08/99	ND	32.9	ND <sup>1</sup>	417 <sup>3</sup>
<b>12/07/99</b>	<b>0.0520</b>	<b>27.9</b>	<b>ND<sup>1</sup></b>	<b>437<sup>3</sup></b>	
U-4	06/30/97	0.13	35	0.52	200 <sup>3</sup>
	09/19/97	0.35	30	ND	45 <sup>3</sup>
	12/12/97	0.68	31	0.73	380 <sup>3</sup>
	03/03/98	0.018	3.2	ND	284 <sup>2</sup>
	06/15/98	0.14	33	ND	256 <sup>2</sup>
	09/30/98	0.049	31	ND	276 <sup>2</sup>
	12/28/98	0.36	31	ND	280 <sup>2</sup>
	03/22/99	ND	30	0.14	320 <sup>3</sup>
	06/09/99	ND	35	0.91	340 <sup>3</sup>
	09/08/99	ND	24	ND <sup>1</sup>	391 <sup>3</sup>
<b>12/07/99</b>	<b>ND</b>	<b>27.7</b>	<b>ND<sup>1</sup></b>	<b>478<sup>3</sup></b>	

**Table 2**  
**Groundwater Analytical Results**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

Well ID	Date	Iron (ppm)	Nitrate as NO3 (ppm)	Phosphate as PO4 (ppm)	Redox Potential mg/L <sup>3</sup> or mV <sup>2</sup>
U-5	06/30/97	16	ND	ND	160 <sup>3</sup>
	09/19/97	0.22	ND	ND	63 <sup>3</sup>
	12/12/97	6.7	ND	ND	400 <sup>3</sup>
	03/03/98	18	3.1	ND	345 <sup>2</sup>
	06/15/98	17	ND	ND	333 <sup>2</sup>
	09/30/98	17	ND	ND	318 <sup>2</sup>
	12/28/98	17	6.6	ND	305 <sup>2</sup>
	03/22/99	0.12	ND	2.4	340 <sup>3</sup>
	06/09/99	0.23	ND	ND	320 <sup>3</sup>
	09/08/99	2.10	ND <sup>1</sup>	ND <sup>1</sup>	335 <sup>3</sup>
	12/07/99	0.310	ND <sup>1</sup>	ND <sup>1</sup>	408 <sup>3</sup>
U-6	06/30/97	88	0.80	ND	190 <sup>3</sup>
	09/19/97	2.9	1.80	ND	ND <sup>3</sup>
	12/12/97	51	ND	ND	380 <sup>3</sup>
	03/03/98	60	3.5	ND	327 <sup>2</sup>
	06/15/98	590	4.8	ND	315 <sup>2</sup>
	09/30/98	33	ND	ND	345 <sup>2</sup>
	12/28/98	83	7.2	ND	297 <sup>2</sup>
	03/22/99	2.1	ND	0.98	330 <sup>3</sup>
	06/09/99	0.47	0.20	ND	320 <sup>3</sup>
	09/08/99	0.140	5.59	ND <sup>1</sup>	305 <sup>3</sup>
	12/07/99	0.260	ND <sup>1</sup>	ND <sup>1</sup>	443 <sup>3</sup>

**EXPLANATIONS:**

Groundwater analytical results prior to March 3, 1998, were compiled from reports prepared by MPDS Services, Inc.

ppm = Parts per million

ND = Not Detected

mg/L = milligrams per liter

mV = millivolts

<sup>1</sup> Detection limit raised. Refer to analytical reports.

<sup>2</sup> Field measurement.

<sup>3</sup> Analyzed by laboratory.

**Table 3**  
**Dissolved Oxygen Concentrations**  
 Tosco (Unocal) Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

Well ID	Date	Before Purge (mg/L)
U-1	12/07/99	1.36
U-2	12/07/99	2.28
U-3	06/30/97	4.1
	09/19/97	4.2
	12/12/97	2.97
	03/03/98	2.63
	06/15/98	2.93
	09/30/98	3.11
	12/28/98	3.59
	03/22/99	4.02
	06/09/99	3.70
	09/08/99	3.96
	12/07/99	4.21
U-4	06/30/97	5.4
	09/19/97	5.1
	12/12/97	3.11
	03/03/98	2.94
	06/15/98	3.08
	09/30/98	4.05
	12/28/98	4.57
	03/22/99	4.26
	06/09/99	3.61
	09/08/99	3.75
	12/07/99	4.03
U-5	06/30/97	3.4
	09/19/97	0.6
	12/12/97	1.75
	03/03/98	2.36
	06/15/98	2.55
	09/30/98	1.93
	12/28/98	1.64
	03/22/99	1.99
	06/09/99	2.10
	09/08/99	2.21
	12/07/99	2.66
U-6	06/30/97	0.30
	09/19/97	0.60
	12/12/97	2.70

**Table 3**  
**Dissolved Oxygen Concentrations**  
Tosco (Unocal) Service Station #5325  
3220 Lakeshore Avenue  
Oakland, California

<b>Well ID</b>	<b>Date</b>	<b>Before Purge (mg/L)</b>
U-6	03/03/98	2.18
(cont)	06/15/98	2.48
	09/30/98	3.06
	12/28/98	3.42
	03/22/99	3.88
	06/09/99	3.29
	09/08/99	3.12
	<b>12/07/99</b>	<b>3.44</b>

**EXPLANATIONS:**

Dissolved oxygen concentrations prior to March 3, 1998, were compiled from reports prepared by MPDS Services, Inc.

mg/L = milligrams per liter



## 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, 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 # 5325 Job#: 180061  
Address: 3220 Lakeshore Ave. Date: 12-7-99  
City: Oakland Sampler: Joe

Well ID U-1 Well Condition: O.K.

Well Diameter 3 in. Hydrocarbon Amount Bailed  
Thickness: 0 (feet) (product/water): 0 (Gallons)

Total Depth 19.70 ft.

Depth to Water 9.67 ft.

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

10.03 x VF 0.38 = 3.81 x 3 (case volume) = Estimated Purge Volume: 11.5 (gal.)

Purge Equipment: Disposable Bailer  
Bailer  
Stack  
Suction  
Grundfos  
Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
Bailer  
Pressure Bailer  
Grab Sample  
Other: \_\_\_\_\_

Starting Time: 11:50 Weather Conditions: clear rainy/cold  
Sampling Time: 12:15 P.M. Water Color: clear Odor: yes  
Purging Flow Rate: 1 gpm. Sediment Description: none  
Did well de-water? \_\_\_\_\_ If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 10^5$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>11:55</u>	<u>4</u>	<u>6.85</u>	<u>1.33</u>	<u>69.5</u>	<u>1.36</u>		
<u>11:57</u>	<u>8</u>	<u>6.90</u>	<u>1.35</u>	<u>69.2</u>			
<u>12:00</u>	<u>11.5</u>	<u>6.91</u>	<u>1.32</u>	<u>69.8</u>			

**LABORATORY INFORMATION**

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-1</u>	<u>3VOA</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPH(GI)/btex/mtbe</u>
	<u>1 plastic</u>	<u>"</u>	<u>-</u>	<u>"</u>	<u>Iron</u>
					<u>Nitrate, phosphate</u>
					<u>Redox</u>

COMMENTS: No product found in well skimmer.

**WELL MONITORING/SAMPLING  
FIELD DATA SHEET**

Client/  
Facility # 5325 Job#: 180061  
Address: 3220 Lakeshore Ave. Date: 12-7-99  
City: Oakland Sampler: Joe

Well ID U-2 Well Condition: O.K.  
Well Diameter 3 in. Hydrocarbon Amount Bailed  
Thickness: 0 (feet) (product/water): 0 (Gallons)  
Total Depth 19.62 ft.  
Depth to Water 8.31 ft.

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

11.31 x VF 0.38 = 4.30 X 3 (case volume) = Estimated Purge Volume: 13 (gal.)

Purge Equipment: Disposable Bailer  
Bailer  
Stack  
Suction  
Grundfos  
Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
Bailer  
Pressure Bailer  
Grab Sample  
Other: \_\_\_\_\_

Starting Time: 10:58 Weather Conditions: clear rainy & cold  
Sampling Time: 11:27 AM Water Color: clear Odor: yes  
Purging Flow Rate: 1 gpm. Sediment Description: none  
Did well de-water? \_\_\_\_\_ If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 10^0$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>11:15</u>	<u>4.5</u>	<u>7.30</u>	<u>1.77</u>	<u>70.1</u>	<u>2.28</u>		
<u>11:17</u>	<u>9</u>	<u>7.25</u>	<u>1.80</u>	<u>70.7</u>			
<u>11:19</u>	<u>13</u>	<u>7.20</u>	<u>1.82</u>	<u>70.6</u>			

**LABORATORY INFORMATION**

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-2</u>	<u>3 vial</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPH(G)/bTEX/mtbe</u>
	<u>1 plastic</u>	<u>"</u>	<u>-</u>	<u>"</u>	<u>Iron</u>
					<u>Nitrate, phosphate</u>
					<u>Redox</u>

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**WELL MONITORING/SAMPLING  
FIELD DATA SHEET**

Client/ Facility # 5325 Job#: 180061  
 Address: 3220 Lakeshore Ave. Date: 12-7-99  
 City: Oakland Sampler: Joe

Well ID U-3 Well Condition: O.K.

Well Diameter 3 in. Hydrocarbon Thickness: 0 (feet) Amount Bailed (product/water): 0 (Gallons)

Total Depth 19.40 ft.

Depth to Water 11.26 ft.

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

8.14 x VF 0.38 = 3.09 x 3 (case volume) = Estimated Purge Volume: 9.5 (gal.)

Purge Equipment: Disposable Bailer, Bailer, Stack, Suction, Grundfos, Other: \_\_\_\_\_  
 Sampling Equipment: Disposable Bailer, Bailer, Pressure Bailer, Grab Sample, Other: \_\_\_\_\_

Starting Time: 8:02 Weather Conditions: clear

Sampling Time: 8:33 AM 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 $\mu\text{mhos/cm} \times 10^5$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>8:16</u>	<u>3</u>	<u>7.48</u>	<u>8.51</u>	<u>69.3</u>	<u>4.21</u>		
<u>8:18</u>	<u>6</u>	<u>7.41</u>	<u>8.53</u>	<u>70.5</u>			
<u>8:20</u>	<u>9.5</u>	<u>7.31</u>	<u>8.54</u>	<u>70.4</u>			

**LABORATORY INFORMATION**

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-3</u>	<u>3 VOC</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPH(GI)/btex/mtbe</u>
	<u>1 plastic</u>	<u>"</u>	<u>-</u>	<u>"</u>	<u>Iron</u>
					<u>Nitrate, phosphate</u>
					<u>Redox</u>

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**WELL MONITORING/SAMPLING  
FIELD DATA SHEET**

Client/  
Facility # 5325 Job#: 180061  
Address: 3220 Lakeshore Ave. Date: 12-7-99  
City: Oakland Sampler: Joe

Well ID U-4 Well Condition: O.K.

Well Diameter 4 in. Hydrocarbon Thickness: 0 (feet) Amount Bailed (product/water): 0 (Gallons)

Total Depth 20.15 ft.

Depth to Water 10.05 ft.

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

10.1 x VF 0.66 = 6.67 x 3 (case volume) = Estimated Purge Volume: 20 (gal.)

Purge Equipment: Disposable Bailer  
Bailer  
Stack  
Suction  
Grundfos  
Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
Bailer  
Pressure Bailer  
Grab Sample  
Other: \_\_\_\_\_

Starting Time: 8:50 Weather Conditions: clear  
Sampling Time: 9:16 A.M. Water Color: clear Odor: none  
Purging Flow Rate: 2 gpm. Sediment Description: none  
Did well de-water? \_\_\_\_\_ If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 10^0$	Temperature °F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>9:00</u>	<u>7</u>	<u>7.76</u>	<u>8.91</u>	<u>69.5</u>	<u>4.03</u>		
<u>9:03</u>	<u>13</u>	<u>7.38</u>	<u>8.48</u>	<u>70.5</u>			
<u>9:07</u>	<u>20</u>	<u>7.32</u>	<u>8.56</u>	<u>70.7</u>			
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

**LABORATORY INFORMATION**

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-4</u>	<u>3 voc</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPH(GI)/btex/mtbe</u>
	<u>plastic</u>	<u>"</u>	<u>-</u>	<u>"</u>	<u>Iron</u>
					<u>Nitrate, phosphate</u>
					<u>Redox</u>

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**WELL MONITORING/SAMPLING  
FIELD DATA SHEET**

Client/Facility #5325 Job#: 180061  
 Address: 3220 Lakeshore Ave. Date: 12-7-99  
 City: Oakland Sampler: Joc

Well ID U-5 Well Condition: O.K.  
 Well Diameter 4 in. Hydrocarbon Thickness: 0 (feet) Amount Bailed (product/water): 0 (Gallons)  
 Total Depth 20.05 ft.  
 Depth to Water 7.67 ft.

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

12.38 X VF 0.66 = 8.17 X 3 (case volume) = Estimated Purge Volume: 25 (gal.)

Purge Equipment: Disposable Bailer Bailer Stack Suction Grundfos Other: \_\_\_\_\_  
 Sampling Equipment: Disposable Bailer Bailer Pressure Bailer Grab Sample Other: \_\_\_\_\_

Starting Time: 10:20 Weather Conditions: clear  
 Sampling Time: 10:45 A.M. Water Color: clear Odor: yes  
 Purging Flow Rate: 2 gpm. Sediment Description: none  
 Did well de-water? \_\_\_\_\_ If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 10^3$	Temperature °F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>10:28</u>	<u>8</u>	<u>7.10</u>	<u>2.10</u>	<u>70.3</u>	<u>2.66</u>		
<u>10:32</u>	<u>16</u>	<u>7.12</u>	<u>2.14</u>	<u>69.7</u>			
<u>10:36</u>	<u>25</u>	<u>7.15</u>	<u>2.16</u>	<u>69.4</u>			
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

**LABORATORY INFORMATION**

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-5</u>	<u>3 voc</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPH(GI)/btex/mtbe</u>
	<u>1 plastic</u>	<u>"</u>	<u>-</u>	<u>"</u>	<u>Iron</u>
					<u>Nitrate, phosphate</u>
					<u>Redox</u>

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**WELL MONITORING/SAMPLING  
FIELD DATA SHEET**

Client/  
Facility #5325 Job#: 180061  
Address: 3220 Lakeshore Ave. Date: 12-7-99  
City: Oakland Sampler: Soe

Well ID U-6 Well Condition: O.K.

Well Diameter 2 in. Hydrocarbon Amount Bailed  
Thickness: 0 (feet) (product/water): 0 (Gallons)  
Total Depth 23.80 ft.  
Depth to Water 8.10 ft.

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

15.7 x VF 0.17 = 2.70 x 3 (case volume) = Estimated Purge Volume: 8 (gal.)

Purge Equipment: Disposable Bailer  
Bailer  
Stack  
Suction  
Grundfos  
Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
Bailer  
Pressure Bailer  
Grab Sample  
Other: \_\_\_\_\_

Starting Time: 9:27 Weather Conditions: clear  
Sampling Time: 9:55 AM 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 $\mu\text{mhos/cm} \times 10^0$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>9:40</u>	<u>3.5</u>	<u>7.61</u>	<u>6.16</u>	<u>70.3</u>	<u>3.44</u>		
<u>9:41</u>	<u>5</u>	<u>7.31</u>	<u>6.14</u>	<u>71.4</u>			
<u>9:43</u>	<u>8</u>	<u>7.35</u>	<u>6.07</u>	<u>71.8</u>			

**LABORATORY INFORMATION**

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-6</u>	<u>3 vial</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPH(G)/bTEX/mtbe</u>
	<u>1 plastic</u>	<u>"</u>	<u>-</u>	<u>"</u>	<u>Iron</u>
					<u>Nitrate, phosphate</u>
					<u>Redox</u>

COMMENTS: \_\_\_\_\_







# Sequoia Analytical

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

December 28, 1999

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

RE: Tosco(4)/L912054

Dear Deanna Harding:

Enclosed are the results of analyses for sample(s) received by the laboratory on December 7, 1999. 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

RECEIVED  
DEC 29 1999  
CENTRAL PACIFIC INC.  
SAN CARLOS, CALIFORNIA



Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**ANALYTICAL REPORT FOR L912054**

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TB-LB	L912054-01	Water	12/7/99
U-1	L912054-02	Water	12/7/99
U-2	L912054-03	Water	12/7/99
U-3	L912054-04	Water	12/7/99
U-4	L912054-05	Water	12/7/99
U-5	L912054-06	Water	12/7/99
U-6	L912054-07	Water	12/7/99





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Sample Description:** TB-LB  
**Laboratory Sample Number:** L912054-01

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	9120064	12/14/99	12/14/99		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
<b>Toluene</b>	"	"	"		0.500	<b>0.762</b>	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Methyl tert-butyl ether	"	"	"		5.00	ND	"	
Surrogate: <i>a,a,a</i> -Trifluorotoluene	"	"	"	70.0-130		81.5	%	





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Sample Description:** U-1  
**Laboratory Sample Number:** L912054-02

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	9120059	12/13/99	12/13/99		5000	41200	ug/l	1
Benzene	"	"	"		50.0	89.3	"	
Toluene	"	"	"		50.0	ND	"	
Ethylbenzene	"	"	"		50.0	385	"	
Xylenes (total)	"	"	"		50.0	6930	"	
Methyl tert-butyl ether	"	"	"		500	15800	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		89.1	%	

**MTBE by EPA Method 8260A**

Methyl tert-butyl ether	9120105	12/22/99	12/22/99		400	14700	ug/l	3
Surrogate: 1,2-Dichloroethane-d4	"	"	"	76.0-114		93.0	%	

**Total Metals by EPA 6000/7000 Series Methods**

Ferrous Iron	9120231	12/8/99	12/9/99	EPA 6010A	0.0100	5.70	mg/l	
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**Anions by EPA Method 300.0**

Nitrate as NO3	9120275	12/8/99	12/8/99	EPA 300.0	1.00	ND	mg/l	D
Phosphate	"	"	"	EPA 300.0	10.0	17.0	"	D

**Subcontracted Analyses**

Oxidation/Reduction Potential	9120249	12/7/99	12/7/99	ASTM D149876	10.0	404	mv	
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Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Sample Description:** U-2  
**Laboratory Sample Number:** L912054-03

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	9120059	12/13/99	12/13/99		1000	4840	ug/l	1
Benzene	"	"	"		10.0	17.2	"	
Toluene	"	"	"		10.0	ND	"	
Ethylbenzene	"	"	"		10.0	ND	"	
Xylenes (total)	"	"	"		10.0	157	"	
Methyl tert-butyl ether	"	"	"		500	14900	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		86.0	%	

**MTBE by EPA Method 8260A**

Methyl tert-butyl ether	9120105	12/22/99	12/22/99		200	15600	ug/l	3
Surrogate: 1,2-Dichloroethane-d4	"	"	"	76.0-114		95.4	%	

**Total Metals by EPA 6000/7000 Series Methods**

Ferrous Iron	9120231	12/8/99	12/9/99	EPA 6010A	0.0100	0.250	mg/l	
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**Anions by EPA Method 300.0**

Nitrate as NO3	9120275	12/8/99	12/8/99	EPA 300.0	1.00	ND	mg/l	D
Phosphate	"	"	"	EPA 300.0	10.0	ND	"	D

**Subcontracted Analyses**

Oxidation/Reduction Potential	9120249	12/7/99	12/7/99	ASTM D149876	10.0	389	mv	
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Getler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Sample Description:** U-3  
**Laboratory Sample Number:** L912054-04

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	9120058	12/13/99	12/13/99		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	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	"	"	"	70.0-130		71.8	%	

**Total Metals by EPA 6000/7000 Series Methods**

<b>Ferrous Iron</b>	9120231	12/8/99	12/9/99	EPA 6010A	0.0100	<b>0.0520</b>	mg/l	
<b><u>Anions by EPA Method 300.0</u></b>								
Nitrate as NO3	9120275	12/8/99	12/8/99	EPA 300.0	1.00	<b>27.9</b>	mg/l	D
Phosphate	"	"	"	EPA 300.0	10.0	ND	"	D

**Subcontracted Analyses**

<b>Oxidation/Reduction Potential</b>	9120249	12/7/99	12/7/99	ASTM D149876	10.0	<b>437</b>	mv	
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Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Sample Description:** U-4  
**Laboratory Sample Number:** L912054-05

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	9120051	12/13/99	12/13/99		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</i> -Trifluorotoluene	"	"	"	70.0-130		105	%	

**Total Metals by EPA 6000/7000 Series Methods**

Ferrous Iron	9120231	12/8/99	12/9/99	EPA 6010A	0.0100	ND	mg/l	
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**Anions by EPA Method 300.0**

Nitrate as NO3	9120275	12/8/99	12/8/99	EPA 300.0	1.00	27.7	mg/l	D
Phosphate	"	"	"	EPA 300.0	10.0	ND	"	D

**Subcontracted Analyses**

Oxidation/Reduction Potential	9120249	12/7/99	12/7/99	ASTM D149876	10.0	478	mv	
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Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Sample Description:** U-5  
**Laboratory Sample Number:** L912054-06

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	9120051	12/13/99	12/13/99		500	949	ug/l	2
Benzene	"	"	"		5.00	9.26	"	
Toluene	"	"	"		5.00	ND	"	
Ethylbenzene	"	"	"		5.00	11.2	"	
Xylenes (total)	"	"	"		5.00	22.7	"	
Methyl tert-butyl ether	"	"	"		50.0	235	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		96.8	%	

**MTBE by EPA Method 8260A**

Methyl tert-butyl ether	9120105	12/22/99	12/22/99		4.00	301	ug/l	3
Surrogate: 1,2-Dichloroethane-d4	"	"	"	76.0-114		91.8	%	

**Total Metals by EPA 6000/7000 Series Methods**

Ferrous Iron	9120231	12/8/99	12/9/99	EPA 6010A	0.0100	0.310	mg/l	
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**Anions by EPA Method 300.0**

Nitrate as NO3	9120275	12/8/99	12/8/99	EPA 300.0	1.00	ND	mg/l	D
Phosphate	"	"	"	EPA 300.0	10.0	ND	"	D

**Subcontracted Analyses**

Oxidation/Reduction Potential	9120249	12/7/99	12/7/99	ASTM D149876	10.0	408	mv	
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Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Sample Description:** U-6  
**Laboratory Sample Number:** L912054-07

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	9120051	12/13/99	12/13/99		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	"	"	"		50.0	1140	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		99.4	%	

**MTBE by EPA Method 8260A**

Methyl tert-butyl ether	9120105	12/22/99	12/22/99		20.0	1150	ug/l	3
Surrogate: 1,2-Dichloroethane-d4	"	"	"	76.0-114		93.6	%	

**Total Metals by EPA 6000/7000 Series Methods**

Ferrous Iron	9120231	12/8/99	12/9/99	EPA 6010A	0.0100	0.260	mg/l	
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**Anions by EPA Method 300.0**

Nitrate as NO3	9120275	12/8/99	12/8/99	EPA 300.0	1.00	ND	mg/l	D
Phosphate	"	"	"	EPA 300.0	10.0	ND	"	D

**Subcontracted Analyses**

Oxidation/Reduction Potential	9120249	12/7/99	12/7/99	ASTM D149876	10.0	443	mv	
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Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT/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*
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**Batch: 9120051**

**Date Prepared: 12/10/99**

**Extraction Method: EPA 5030B [P/T]**

**Blank**

**9120051-BLK1**

Purgeable Hydrocarbons as Gasoline	12/10/99			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				
Methyl tert-butyl ether	"			ND	"	5.00				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.62	"	70.0-130	96.2			

**Blank**

**9120051-BLK3**

Purgeable Hydrocarbons as Gasoline	12/13/99			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				
Methyl tert-butyl ether	"			ND	"	5.00				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.4	"	70.0-130	104			

**LCS**

**9120051-BS1**

Benzene	12/10/99	10.0		8.30	ug/l	70.0-130	83.0			
Toluene	"	10.0		8.09	"	70.0-130	80.9			
Ethylbenzene	"	10.0		8.37	"	70.0-130	83.7			
Xylenes (total)	"	30.0		25.1	"	70.0-130	83.7			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.46	"	70.0-130	94.6			

**LCS**

**9120051-BS2**

Purgeable Hydrocarbons as Gasoline	12/10/99	250		265	ug/l	70.0-130	106			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.71	"	70.0-130	87.1			

**LCS**

**9120051-BS3**

Benzene	12/13/99	10.0		8.76	ug/l	70.0-130	87.6			
Toluene	"	10.0		8.50	"	70.0-130	85.0			
Ethylbenzene	"	10.0		8.74	"	70.0-130	87.4			
Xylenes (total)	"	30.0		26.0	"	70.0-130	86.7			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		11.1	"	70.0-130	111			

**LCS**

**9120051-BS4**

Purgeable Hydrocarbons as Gasoline	12/13/99	250		281	ug/l	70.0-130	112			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.2	"	70.0-130	102			





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT/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*
<b>Matrix Spike</b>	<b>9120051-MS1</b>		<b>L912064-06</b>							
Purgeable Hydrocarbons as Gasoline	12/10/99	250	ND	267	ug/l	60.0-140	107			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.58	"	70.0-130	85.8			
<b>Matrix Spike Dup</b>	<b>9120051-MSD1</b>		<b>L912064-06</b>							
Purgeable Hydrocarbons as Gasoline	12/10/99	250	ND	286	ug/l	60.0-140	114	25.0	6.33	
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.76	"	70.0-130	97.6			
<b>Batch: 9120058</b>	<b>Date Prepared: 12/13/99</b>					<b>Extraction Method: EPA 5030B (P/T)</b>				
<b>Blank</b>	<b>9120058-BLK1</b>									
Purgeable Hydrocarbons as Gasoline	12/13/99			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				
Methyl tert-butyl ether	"			ND	"	5.00				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.38	"	70.0-130	83.8			
<b>LCS</b>	<b>9120058-BS1</b>									
Benzene	12/13/99	10.0		7.54	ug/l	70.0-130	75.4			
Toluene	"	10.0		7.53	"	70.0-130	75.3			
Ethylbenzene	"	10.0		7.73	"	70.0-130	77.3			
Xylenes (total)	"	30.0		23.3	"	70.0-130	77.7			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.72	"	70.0-130	87.2			
<b>LCS</b>	<b>9120058-BS2</b>									
Purgeable Hydrocarbons as Gasoline	12/13/99	250		275	ug/l	70.0-130	110			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.30	"	70.0-130	93.0			
<b>Matrix Spike</b>	<b>9120058-MS1</b>		<b>L912060-01</b>							
Benzene	12/13/99	10.0	ND	8.67	ug/l	60.0-140	86.7			
Toluene	"	10.0	ND	8.23	"	60.0-140	82.3			
Ethylbenzene	"	10.0	ND	9.26	"	60.0-140	92.6			
Xylenes (total)	"	30.0	ND	27.3	"	60.0-140	91.0			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.77	"	70.0-130	97.7			
<b>Matrix Spike Dup</b>	<b>9120058-MSD1</b>		<b>L912060-01</b>							
Benzene	12/13/99	10.0	ND	8.49	ug/l	60.0-140	84.9	25.0	2.10	
Toluene	"	10.0	ND	7.95	"	60.0-140	79.5	25.0	3.46	
Ethylbenzene	"	10.0	ND	8.92	"	60.0-140	89.2	25.0	3.74	
Xylenes (total)	"	30.0	ND	26.1	"	60.0-140	87.0	25.0	4.49	
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.52	"	70.0-130	85.2			



Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT/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*
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**Batch: 9120059**

**Date Prepared: 12/13/99**

**Extraction Method: EPA 5030B [P/T]**

<b>Blank 9120059-BLK1</b>										
Purgeable Hydrocarbons as Gasoline	12/13/99			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				
Methyl tert-butyl ether	"			ND	"	5.00				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		7.93	"	70.0-130	79.3			

**LCS**

**9120059-BS1**

Benzene	12/13/99	10.0		8.53	ug/l	70.0-130	85.3			
Toluene	"	10.0		8.20	"	70.0-130	82.0			
Ethylbenzene	"	10.0		8.14	"	70.0-130	81.4			
Xylenes (total)	"	30.0		24.6	"	70.0-130	82.0			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.98	"	70.0-130	89.8			

**LCS**

**9120059-BS2**

Purgeable Hydrocarbons as Gasoline	12/13/99	250		290	ug/l	70.0-130	116			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		11.3	"	70.0-130	113			

**Matrix Spike**

**9120059-MS1**

**L912034-04**

Benzene	12/13/99	10.0	ND	8.80	ug/l	60.0-140	88.0			
Toluene	"	10.0	ND	8.66	"	60.0-140	86.6			
Ethylbenzene	"	10.0	ND	8.51	"	60.0-140	85.1			
Xylenes (total)	"	30.0	ND	25.6	"	60.0-140	85.3			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.51	"	70.0-130	95.1			

**Matrix Spike Dup**

**9120059-MSD1**

**L912034-04**

Benzene	12/13/99	10.0	ND	8.37	ug/l	60.0-140	83.7	25.0	5.01	
Toluene	"	10.0	ND	8.35	"	60.0-140	83.5	25.0	3.64	
Ethylbenzene	"	10.0	ND	8.18	"	60.0-140	81.8	25.0	3.95	
Xylenes (total)	"	30.0	ND	24.9	"	60.0-140	83.0	25.0	2.73	
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.79	"	70.0-130	87.9			

**Batch: 9120064**

**Date Prepared: 12/14/99**

**Extraction Method: EPA 5030B [P/T]**

<b>Blank 9120064-BLK1</b>										
Purgeable Hydrocarbons as Gasoline	12/14/99			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				



Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT/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*
<b>Blank (continued)</b>	<b>9120064-BLK1</b>									
Methyl tert-butyl ether	12/14/99			ND	ug/l	5.00				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		7.03	"	70.0-130	70.3			
<b>LCS</b>	<b>9120064-BS2</b>									
Purgeable Hydrocarbons as Gasoline	12/14/99			254	ug/l	70.0-130				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.55	"	70.0-130	95.5			
<b>LCS</b>	<b>9120064-BS4</b>									
Benzene	12/14/99			8.79	ug/l	70.0-130				
Toluene	"			8.38	"	70.0-130				
Ethylbenzene	"			8.22	"	70.0-130				
Xylenes (total)	"			24.7	"	70.0-130				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.00	"	70.0-130	90.0			
<b>Matrix Spike</b>	<b>9120064-MS1</b>		<b>L912091-02</b>							
Purgeable Hydrocarbons as Gasoline	12/14/99	250	104	323	ug/l	60.0-140	87.6			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.44	"	70.0-130	84.4			
<b>Matrix Spike Dup</b>	<b>9120064-MSD1</b>		<b>L912091-02</b>							
Purgeable Hydrocarbons as Gasoline	12/14/99	250	104	333	ug/l	60.0-140	91.6	25.0	4.46	
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.19	"	70.0-130	91.9			





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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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*
<b>Batch: 9120105</b>		<b>Date Prepared: 12/21/99</b>			<b>Extraction Method: EPA 5030B (P/T)</b>					
<b>Blank</b>										
<b>9120105-BLK1</b>										
Methyl tert-butyl ether	12/21/99			ND	ug/l	2.00				
Surrogate: 1,2-Dichloroethane-d4	"	50.0		44.9	"	76.0-114	89.8			
<b>Blank</b>										
<b>9120105-BLK2</b>										
Methyl tert-butyl ether	12/22/99			ND	ug/l	2.00				
Surrogate: 1,2-Dichloroethane-d4	"	50.0		47.4	"	76.0-114	94.8			
<b>LCS</b>										
<b>9120105-BS1</b>										
Methyl tert-butyl ether	12/21/99	50.0		52.0	ug/l	70.0-130	104			
Surrogate: 1,2-Dichloroethane-d4	"	50.0		48.7	"	76.0-114	97.4			
<b>LCS</b>										
<b>9120105-BS2</b>										
Methyl tert-butyl ether	12/22/99	50.0		55.9	ug/l	70.0-130	112			
Surrogate: 1,2-Dichloroethane-d4	"	50.0		48.7	"	76.0-114	97.4			
<b>Matrix Spike</b>										
<b>9120105-MS1 L912168-01</b>										
Methyl tert-butyl ether	12/21/99	50.0	ND	58.8	ug/l	60.0-140	118			
Surrogate: 1,2-Dichloroethane-d4	"	50.0		44.8	"	76.0-114	89.6			
<b>Matrix Spike Dup</b>										
<b>9120105-MSD1 L912168-01</b>										
Methyl tert-butyl ether	12/21/99	50.0	ND	58.8	ug/l	60.0-140	118	25.0	0	
Surrogate: 1,2-Dichloroethane-d4	"	50.0		45.1	"	76.0-114	90.2			





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Total Metals by EPA 6000/7000 Series Methods/Quality Control  
Sequoia Analytical - Morgan Hill**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
<b>Batch: 9120231</b>	<b>Date Prepared: 12/8/99</b>			<b>Extraction Method: EPA 3020A</b>						
<b>Blank</b>	<b>9120231-BLK1</b>									
Ferrous Iron	12/8/99			ND	mg/l	0.0100				
<b>LCS</b>	<b>9120231-BS1</b>									
Ferrous Iron	12/8/99	1.00		1.10	mg/l	80.0-120	110			
<b>Matrix Spike</b>	<b>9120231-MS1</b>		<b>M912192-01</b>							
Ferrous Iron	12/8/99	1.00	ND	0.946	mg/l	80.0-120	94.6			
<b>Matrix Spike Dup</b>	<b>9120231-MSD1</b>		<b>M912192-01</b>							
Ferrous Iron	12/8/99	1.00	ND	0.930	mg/l	80.0-120	93.0	20.0	1.71	





Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Anions by EPA Method 300.0/Quality Control  
Sequoia Analytical - Morgan Hill**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
<b>Batch: 9120275</b>			<b>Date Prepared: 12/8/99</b>			<b>Extraction Method: General Preparation</b>				
<b>Blank</b>			<b>9120275-BLK1</b>							
Nitrate as NO3	12/8/99			ND	mg/l	0.100				
Phosphate	"			ND	"	1.00				
<b>LCS</b>			<b>9120275-BS1</b>							
Nitrate as NO3	12/8/99	10.0		10.1	mg/l	80.0-120	101			
Phosphate	"	10.0		10.5	"	80.0-120	105			
<b>Matrix Spike</b>			<b>9120275-MS1 M912199-01</b>							
Nitrate as NO3	12/8/99	10.0	0.812	11.0	mg/l	75.0-125	102			
Phosphate	"	10.0	ND	9.56	"	75.0-125	95.6			
<b>Matrix Spike Dup</b>			<b>9120275-MSD1 M912199-01</b>							
Nitrate as NO3	12/8/99	10.0	0.812	11.2	mg/l	75.0-125	104	20.0	1.94	
Phosphate	"	10.0	ND	10.4	"	75.0-125	104	20.0	8.42	







Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Subcontracted Analyses/Quality Control  
Sequoia Analytical - Morgan Hill**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
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**Batch: 9120249**

**Date Prepared: 12/7/99**

**Extraction Method: General Preparation**

**Duplicate**

**9120249-DUPL      L912054-07**

Oxidation/Reduction Potential

12/7/99

443

430

mv

20.0

2.98



Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco(4) Project Number: Unocal SS#5325/180061.85 Project Manager: Deanna Harding	Sampled: 12/7/99 Received: 12/7/99 Reported: 12/28/99
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**Notes and Definitions**

#	Note
D	Data reported from a dilution.
1	Chromatogram Pattern: Weathered Gasoline C6-C12
2	Chromatogram Pattern: Gasoline C6-C12
3	This sample was analyzed outside the EPA recommended holding time.
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

