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15 November, 2011

Mr. Jerry Wickham
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

**Subject: Third Quarter 2011 Status Report
1619 1st Street, Livermore, California
Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0434**

Dear Mr. Wickham:

Enclosed please find a copy of the quarterly status report for the subject site located at 1619 1st Street in Livermore, California. This report is submitted by Arctos Environmental on behalf of Tesoro Environmental Resources Company.

Based on my inquiry of the person or persons directly responsible for gathering the information contained in this report, I believe the information was prepared by qualified personnel who properly gathered and evaluated the information, and that the information submitted is, to the best of my knowledge and belief, true, correct, and complete. Please feel free to call me at 253/896-8700 or Matthew Nelson of Arctos Environmental at 562/988-2755 with questions.

Sincerely,

A handwritten signature in blue ink that reads "Jeffrey M. Baker".

Jeffrey M. Baker, P.E.
Supervisor, Environmental
Compliance & Remediation
Tesoro Companies, Inc.

Attachments

CC: Arctos – Matthew Nelson



Arctos Environmental
1332 Peralta Avenue 510 525-2180 PHONE
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15 November 2011

Project No. 01LV

Jerry Wickham
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Third Quarter 2011 Status Report
1619 1st Street, Livermore, California
Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0434

Dear Mr. Wickham:

Arctos Environmental (Arctos), on behalf of Tesoro Environmental Resources Company (Tesoro), has prepared this letter report summarizing project tasks completed during the third quarter 2011 at the subject site (Figure 1).

Executive Summary

During the third quarter 2011, the soil vapor extraction (SVE) system operated at 99 percent uptime. During operation, 80 pounds of petroleum hydrocarbons were removed through volatilization and an estimated 1,050 pounds were removed through biodegradation. SVE wells MW-11, TP-1, and TP-2 were added to the SVE well field on 1 September 2011 as water levels decreased by approximately 4 feet from July to September 2011. The mass removal of the SVE system was limited during the quarter due to high water levels.

The oxygen injection system operated at 100 percent uptime during the third quarter 2011. Dissolved oxygen (DO) averaged above 13 milligrams per liter (mg/l) at the injection wells and above 17 mg/l at the monitoring wells located within 10 feet of active injection wells.

Quarterly groundwater monitoring was conducted from 3 to 4 August 2011. There was an average 4-foot decrease in water levels since the second quarter 2011. Petroleum hydrocarbon concentrations were consistent with the previous quarter.

Site Background

The site description and background are included in Arctos's Interim Remedial Action Plan (IRAP) dated 21 March 2008 (Arctos, 2008).

Groundwater Monitoring Activities

Arctos's subcontractor, Environmental Field Services, LLC, of Patterson, California, performed quarterly groundwater monitoring from 3 to 4 August 2011 at selected wells. Samples were collected from wells MW-1 through MW-3, MW-6, MW-11, DW-1 through DW-3, and DW-5 through DW-8 (Figure 2) in accordance with the site monitoring plan (Attachment A). Groundwater monitoring was performed in accordance with the guidelines of the California Underground Storage Tank Regulations, Title 23, Division 3, Chapter 16, California Code of Regulations. Groundwater sampling quality assurance/quality control (QA/QC) procedures are in Attachment A. Field data sheets are in Attachment B.

Analytical Program

Groundwater and vapor samples were analyzed in accordance with the analytical plans in Attachments A and C, respectively.

Groundwater Results

Groundwater elevations were approximately 434 to 445 feet above mean sea level (29 to 36 feet below ground surface). Water levels decreased an average of 4 feet compared to the second quarter 2011 (Table 1). The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.017 (1 foot/60 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment D).

During the quarterly monitoring of only select wells, the highest total petroleum hydrocarbon as gasoline (TPHg) and benzene concentrations of 65,000 and 2,900 micrograms per liter ($\mu\text{g/l}$), respectively, were at well DW-8, located in P Street downgradient of the underground storage tanks (USTs). The highest methyl tert-butyl ether (MTBE) concentration of 660 $\mu\text{g/l}$ was at well MW-2, located in the northwest portion of the site downgradient of the current dispenser islands. The highest tert-butyl alcohol (TBA) concentration 1,000 $\mu\text{g/l}$ was at well MW-6, located approximately 120 feet downgradient of the site.

In August 2011, TPHg, benzene, MTBE, and TBA were detected in the furthest downgradient well DW-7 at concentrations of 1,400, 83, 97, and 160 $\mu\text{g/l}$, respectively.

TPHg and benzene concentrations in well DW-7 have decreased more than 80 percent since it was installed in November 2009. MTBE and TBA concentrations have remained stable since 2009.

Groundwater analytical results are summarized in Table 2. Figures 3, 4, and 5 show isoconcentration contours for TPHg, benzene, and MTBE, respectively. Historical analytical results are in Attachment E, and the laboratory reports and the chain-of-custody forms are in Attachment F.

Source Area Remediation

SVE System

Hydrocarbon-impacted soil exposed during periods of low groundwater levels is being remediated by the SVE system, which has operated since June 2010. The system removes hydrocarbon mass from the exposed soil and assists with groundwater remediation. During July and August 2011, the SVE system only operated on well VW-2 due to high water levels. The remaining SVE wells did not have enough exposed screen to operate. On 1 September 2011, wells MW-11, TP-1, and TP-2 were added to the SVE well configuration. Well MW-1 did not have not enough exposed screen and was not operated during the third quarter 2011. The SVE wells are described below.

Well	Well Location	Well Diameter (inches)	Screen Interval (feet bgs ^(a))
MW-1	SW corner in equipment area	4	34 - 54
MW-11	SW corner adjacent to USTs	4	28 - 43
TP-1	NW corner north of dispensers	2	28 - 43
TP-2	NW corner north of dispensers	2	28 - 43
VW-2	NW corner west of dispensers	2	22 - 37

(a) bgs – Below ground surface.

The SVE system influent was monitored frequently with a field photoionization detector and monthly by laboratory analysis of soil gas samples. The SVE system was monitored to document and optimize hydrocarbon mass removal from the soil. Table 3 summarizes the laboratory analytical results for influent SVE system samples.

Influent TPHg concentrations ranged from 78 parts per million by volume (ppmv; 13 July) to 360 ppmv (27 September). Influent concentrations increased during the quarter as water levels decreased by approximately 4 feet from July to September 2011. During the third quarter 2011, the system operated at an average flow rate of 16 standard cubic feet per minute and an average vacuum of 3.8 inches of mercury (in. Hg).

Hydrocarbon mass was removed from the subsurface through (1) volatilization caused by the SVE system and (2) in situ bioremediation from increasing oxygen levels. The daily rate of hydrocarbon mass removal by volatilization was calculated from influent soil gas sample results and field flow measurements. Mass removal by biodegradation was calculated using equations from the Environmental Protection Agency document *Bioventing Principles and Practice, Volume II: Bioventing Design*, 1995. SVE influent soil gas analytical results and SVE system parameters used for these calculations are summarized in Tables 3 and 4, respectively. The following is a summary of the operating conditions for the system during the third quarter 2011:

Operation Period	Operating Wells	Operating Time (days)	Average Vacuum (in. Hg)	Average Mass Removal Rate (pounds/day)	Mass Removed ^(a) (pounds)
7/1 to 9/1	VW-2	62	4.0	0.6	30
9/1 to 9/30	VW-2, MW-11, TP-1, TP-2	30	3.5	1.8	50

(a) Mass removed by volatilization only.

Influent TPHg concentrations declined throughout July and August while the SVE operated on well VW-2 only. Mass removal was limited by low influent concentrations in July and August, and improved during September after wells MW-11, TP-1, and TP-2 were added to the operational SVE well field.

During the third quarter 2011, approximately 80 pounds of hydrocarbons were removed by the SVE system through volatilization and up to 1,050 pounds of hydrocarbons were estimated to have been degraded by biodegradation. The total hydrocarbon mass removed by the SVE system to date is estimated to be 22,000 pounds or approximately 3,400 gallons (at a density of 6.5 pounds per gallon). Figures 6, 7, and 8 show soil vapor influent concentrations, mass removal by volatilization, and mass removal by biodegradation, respectively. Soil vapor sampling procedures are in Attachment C.

Oxygen Injection System

The oxygen injection system operated at 100 percent uptime during the third quarter 2011. The system delivered oxygen to the subsurface in pulsed intervals to increase oxygen levels while decreasing the potential for “pushing” dissolved hydrocarbons away from injection wells. The oxygen purity was approximately 94 percent and the average flow rate was 35 standard cubic feet per hour.

During July and August, oxygen was injected into wells IP-1 through IP-5 and IP-8 through IP-10 for 32 minutes at a time and wells IP-6 and IP-7 for 52 minutes at a time. DO was monitored in the operating injection wells and monitoring wells DW-1, MW-1, MW-2, MW-11, TP-1, and TP-2. DO averaged above 13 mg/l at the injection wells and above

17 mg/l at the monitoring wells located within 10 feet of active injection wells. DO readings are summarized in Table 5. On 1 September, wells IP-1 and IP-8 through IP-10 were temporarily removed from the injection cycle in preparation of an in situ chemical oxidation (ISCO) pilot test scheduled to occur during the fourth quarter 2011.

ISCO Pilot Test

On 9 September 2011, Arctos submitted a work plan to Alameda County Environmental Health (ACEH) to conduct an ISCO pilot test injection of RegenOx™ chemical oxidant technology into well IP-9. The work plan was prepared based on results of a membrane interface probe investigation to assess the lateral and vertical extent of free product detected in injection well IP-8 in October 2010. In a letter from ACEH dated 27 September 2011, Arctos received approval to conduct the pilot test. The results of the pilot test will be included in the fourth quarter 2011 status report.

Conclusions

Results of the groundwater sampling, SVE operation, oxygen injection system operation, and investigation activities indicate the following conclusions:

1. Mass removal by the SVE system improved after adding three wells to the operational field during decreasing water levels.
2. Oxygen demand is being met at oxygen injection wells and nearby monitoring wells based on DO concentrations monitored during the quarter.

Recommendations

Based on the activities completed during this quarter and the results of the groundwater monitoring activities, Arctos recommends the following tasks during the fourth quarter of 2011:

- Continue operation of the SVE and oxygen injection systems
- Continue to monitor water levels at the site to evaluate when SVE well MW-1 can be operated in an attempt to increase flow rates and mass removal
- Conduct an ISCO pilot test at well IP-9.

If you have questions or comments, please call Mike Purchase at 510/525-2180 or Matthew Nelson at 562/988-2755.

Very truly yours,

ARCTOS ENVIRONMENTAL



Matthew J. Nelson, P.E.
Project Engineer



Michael P. Purchase, P.E.
Senior Project Manager

Copy: Jeffrey M. Baker, P.E. – Tesoro Companies, Inc.
Colleen Winey – Zone 7 Water Agency

Attachments: Table 1 – Well and Groundwater Elevations
Table 2 – Groundwater Analytical Results
Table 3 – SVE Influent Analytical Results
Table 4 – SVE System Parameters
Table 5 – Oxygen System Monitoring Results
Figure 1 – Site Location Map
Figure 2 – Groundwater Elevation Contours
Figure 3 – TPHg Concentration Contours
Figure 4 – Benzene Concentration Contours
Figure 5 – MTBE Concentration Contours
Figure 6 – Soil Vapor Influent Concentrations
Figure 7 – Mass Removal by Volatilization
Figure 8 – Mass Removal by Biodegradation
Attachment A – Groundwater Sampling QA/QC Procedures
Attachment B – Field Data Sheets
Attachment C – Soil Vapor Sampling QA/QC Procedures
Attachment D – Historical Well and Groundwater Elevations
Attachment E – Historical Groundwater Analytical Results
Attachment F – Laboratory Analytical Reports and Chain-of-Custody Forms
Attachment G – Waste Manifests

References

Arctos Environmental, 2008. *Interim Remedial Action Plan for Groundwater, 1619 1st Street, Livermore, California, Tesoro Station No. 67076, Former Beacon Station No. 3604, ACEH Case No. RO0434, 21 March.*

TABLE 1

**WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076**

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
MW-1	8/2/10	34.56	474.21 ^(c)	439.65
	11/2/10	37.04		437.17
	2/1/11	32.51		441.70
	4/25/11	27.73		446.48
	8/3/11	31.57		442.64
MW-2	8/2/10	35.34	472.98	437.64
	11/2/10	38.15		434.83
	2/1/11	33.40		439.58
	4/25/11	28.49		444.49
	8/3/11	32.40		440.58
MW-3	8/2/10	34.61	473.37	438.76
	11/2/10	37.20		436.17
	2/1/11	32.59		440.78
	4/25/11	27.60		445.77
	8/3/11	31.69		441.68
MW-4	8/2/10	35.15	473.64	438.49
	11/2/10	37.55		436.09
	2/1/11	32.86		440.78
	4/25/11	28.69		444.95
	8/3/11	32.01		441.63
MW-5	8/2/10	36.16	472.67	436.51
	11/2/10	38.75		433.92
	2/1/11	32.77		439.90
	4/25/11	29.03		443.64
	8/3/11	33.18		439.49
MW-6	8/2/10	37.87	471.93	434.06
	11/2/10	40.45		431.48
	2/1/11	35.73		436.20
	4/25/11	30.72		441.21
	8/3/11	34.95		436.98
MW-7	8/2/10	34.31	472.33	438.02
	11/2/10	36.68		435.65
	2/1/11	32.66		439.67

TABLE 1

**WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076**

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
MW-7 (cont.)	4/25/11	27.75	472.33	444.58
	8/3/11	31.36		440.97
MW-8	8/2/10	36.08	471.18	435.10
	11/2/10	38.44		432.74
	2/1/11	34.11		437.07
	4/25/11	28.72		442.46
	8/3/11	33.09		438.09
MW-9	8/2/10	38.00	470.78	432.78
	11/2/10	40.30		430.48
	2/1/11	35.97		434.81
	4/25/11	30.64		440.14
	8/3/11	35.17		435.61
MW-10	8/2/10	36.12	471.63	435.51
	11/2/10	38.30		433.33
	2/1/11	34.63		437.00
	4/25/11	29.63		442.00
	8/3/11	33.26		438.37
MW-11	8/2/10	31.94	473.26	441.02
	11/2/10	36.98	472.96 ^(c)	435.98
	2/1/11	32.30		440.66
	4/25/11	27.31		445.65
	8/3/11	31.11		441.85
VW-2	8/2/10	33.15	472.57 ^(c)	439.42
	11/2/10	DRY ^(d)		--
	2/1/11	32.80		439.77
	4/25/11	25.43		447.14
	8/3/11	26.82		445.75
VW-3	8/2/10	34.72	474.38	439.66
	11/2/10	DRY		--
	2/1/11	32.56		441.82
	4/25/11	27.81		446.57
	8/3/11	28.93		445.45

TABLE 1

**WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076**

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
TP-1	8/2/10	33.96	472.64 ^(c)	438.68
	11/2/10	37.46		435.18
	2/1/11	33.01		439.63
	4/25/11	28.23		444.41
	8/3/11	31.85		440.79
TP-2	8/2/10	33.57	472.78 ^(c)	439.21
	11/2/10	37.35		435.43
	2/1/11	32.79		439.99
	4/25/11	28.30		444.48
	8/3/11	31.59		441.19
DW-1	8/2/10	34.76	472.85	438.09
	11/2/10	37.49		435.36
	2/1/11	32.83		440.02
	4/25/11	27.96		444.89
	8/3/11	31.96		440.89
DW-2	8/2/10	37.72	471.61	433.89
	11/2/10	40.50		431.11
	2/1/11	35.66		435.95
	4/25/11	30.69		440.92
	8/3/11	35.00		436.61
DW-3	8/2/10	35.59	470.33	434.74
	11/2/10	40.00		430.33
	2/1/11	35.50		434.83
	4/25/11	30.45		439.88
	8/3/11	34.71		435.62
DW-4	8/2/10	36.94	468.48	431.54
	11/2/10	39.50		428.98
	2/1/11	35.11		433.37
	4/25/11	30.12		438.36
	8/3/11	34.54		433.94
DW-5	8/2/10	37.56	471.86	434.30
	11/2/10	40.00		431.86
	2/1/11	35.57		436.29

TABLE 1

**WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076**

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
DW-5 (cont.)	4/25/11	30.59	471.86	441.27
	8/3/11	34.64		437.22
DW-6	8/2/10	38.35	471.77	433.42
	11/2/10	40.09		431.68
	2/1/11	36.35		435.42
	4/25/11	31.32		440.45
	8/3/11	35.63		436.14
DW-7	8/2/10	37.82	470.07	432.25
	11/2/10	40.42		429.65
	2/1/11	35.76		434.31
	4/25/11	30.82		439.25
	8/3/11	35.19		434.88
DW-8	4/25/11	27.23	472.31	445.08
	8/3/11	31.14		441.17

- (a) Elevation of PVC well casing (north edge) surveyed relative to mean sea level (MSL).
Wells were surveyed by Cross Land Surveying, Inc., per AB 2886 requirements.
Benchmark K2-741, elevation is 467.835 feet above MSL.
- (b) Water Table Elevation = (Casing Elevation - Depth to Water)
- (c) Wells were resurveyed by Cross Land Surveying, Inc., per AB 2886 requirements, on 19 October 2010 after remediation system construction.
Benchmark K2-741, elevation is 467.835 feet above MSL.
- (d) Depth of groundwater assumed to be below screened interval; well had 6 inches or less of water.

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
MW-1	8/3/10	1,200	2.4	3.7	22	23	ND<0.5 ^(b)	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	1,100	7.3	34	18	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	200	ND<0.5	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/25/11	130	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/11	1,500	2.0	15	44	86	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-2	8/3/10	19,000	2,000	150	840	730	280	ND<4	ND<4	4.4	200	ND<400	ND<40	ND<4	ND<4
	11/4/10	13,000	2,000	160	420	390	540	ND<4	ND<4	5.7	510	ND<400	ND<40	ND<4	ND<4
	2/2/11	10,000	1,600	130	320	410	410	ND<4	ND<4	4.2	410	ND<400	ND<40	ND<4	ND<4
	4/28/11	13,000	1,400	100	470	670	450	ND<2.5	ND<2.5	4.6	200	ND<250	ND<50	ND<2.5	ND<2.5
	8/4/11	16,000	1,900	200	430	820	660	ND<3	ND<3	5.7	420	ND<1,500	ND<30	ND<3	ND<3
MW-3	8/3/10	74	2.4	5.5	0.96	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	ND<50	ND<0.5	2.5	ND<0.5	3.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-4	8/2/10	NS ^(c)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-5	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	190	ND<0.5	ND<0.5	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	8/3/10	21,000	2,700	120	690	250	730	ND<5	ND<5	7.4	480	ND<500	ND<50	ND<5	ND<5
	11/2/10	12,000	1,600	57	410	120	240	ND<2.5	ND<2.5	2.7	160	ND<250	ND<25	ND<2.5	ND<2.5

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
MW-6 (cont.)	2/2/11	15,000	1,600	89	460	150	350	ND<2.5	ND<2.5	3.7	310	ND<250	ND<25	ND<2.5	ND<2.5
	4/27/11	8,500	870	28	180	67	1,200	ND<2.5	ND<2.5	10	1,100	ND<250	ND<25	ND<2.5	ND<2.5
	8/4/11	6,300	600	17	58	16	650	ND<1.5	ND<1.5	7.8	1,000	ND<600	ND<15	ND<1.5	ND<1.5
MW-7	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	2,100	4.6	1.3	16	3.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,200	3.3	0.59	1.6	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-8	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	430	1.1	ND<0.5	ND<0.5	ND<0.5	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,300	14	ND<0.5	2.8	0.71	23	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/2/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	8/3/10	53,000	2,800	3,800	2,100	10,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	11/4/10	59,000	2,100	5,400	1,400	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	2/2/11	20,000	210	610	560	3,600	ND<5	ND<5	ND<5	ND<5	38	ND<500	ND<50	ND<5	ND<5

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
MW-11 (cont.)	4/28/11	20,000	300	920	450	4,300	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
	8/4/11	15,000	96	370	240	2,800	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
VW-2	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	14,000	1,000	270	280	1,600	4,500	ND<8	ND<8	28	4,800	ND<800	ND<80	ND<8	ND<8
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	6,600	350	64	170	730	2,600	ND<5	ND<5	15	1,400	ND<500	ND<50	ND<5	ND<5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-2	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	4,900	230	82	150	630	980	ND<5	ND<5	6.3	14,000	ND<500	ND<50	ND<5	ND<5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	130	1.6	ND<0.5	1.5	5.2	350	ND<0.5	ND<0.5	1.3	630	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-1	8/2/10	1,400	53	11	67	78	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	ND<50	0.90	ND<0.5	0.70	1.3	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	58	1.9	ND<0.5	2.0	2.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/28/11	72	2.2	5.7	2.0	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	55	0.57	ND<0.5	0.92	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
DW-2	8/2/10	3,800	420	22	21	28	300	ND<0.9	ND<0.9	3.5	600	ND<300	ND<20	ND<0.9	ND<0.9
	11/2/10	2,600	230	7.0	11	4.0	300	ND<0.5	ND<0.5	3.3	660	ND<300	ND<8	ND<0.5	ND<0.5
	2/1/11	3,300	220	6.8	18	10	210	ND<0.5	ND<0.5	2.7	620	ND<300	ND<5	ND<0.5	ND<0.5
	4/27/11	1,900	78	2.6	2.6	5.6	200	ND<0.5	ND<0.5	2.2	590	ND<300	ND<5	ND<0.5	ND<0.5
	8/4/11	4,400	420	10	24	13	160	ND<0.5	ND<0.5	2.1	500	ND<100	ND<10	ND<0.5	ND<0.5
DW-3	8/2/10	640	4.0	ND<0.5	5.3	3.9	0.59	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	170	0.85	ND<0.5	ND<0.5	0.59	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	60	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	310	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-4	8/2/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	0.70	4.0	0.59	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-5	8/2/10	12,000	240	9.4	350	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	11/2/10	5,000	120	3.6	68	35	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/1/11	3,800	70	2.5	37	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	710	8.0	ND<0.5	4.3	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	6,100	76	3.7	110	97	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
DW-6	8/2/10	4,500	13	4.4	54	14	5.9	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<8	ND<0.5	ND<0.5
	11/2/10	5,200	20	4.2	47	13	8.9	ND<0.9	ND<0.9	ND<0.9	26	ND<90	ND<9	ND<0.9	ND<0.9
	2/1/11	4,000	11	2.9	32	11	6.0	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	3,100	8.8	2.4	12	8.2	6.2	ND<0.5	ND<0.5	ND<0.5	19	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/11	2,900	4.2	0.95	6.0	4.9	6.5	ND<0.5	ND<0.5	ND<0.5	24	ND<50	ND<8	ND<0.5	ND<0.5
DW-7	8/3/10	3,500	280	13	49	30	130	ND<0.5	ND<0.5	1.3	220	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	660	30	1.2	5.0	3.3	130	ND<0.5	ND<0.5	1.2	220	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
DW-7	2/2/11	760	43	1.8	9.4	4.0	91	ND<0.5	ND<0.5	0.76	160	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	4/27/11	1,600	120	4.6	4.2	6.7	95	ND<0.5	ND<0.5	1.0	170	ND<200	ND<5	ND<0.5	ND<0.5
	8/4/11	1,400	83	2.5	4.4	5.2	97	ND<0.5	ND<0.5	0.96	160	ND<80	ND<5	ND<0.5	ND<0.5
DW-8	4/28/11	72,000	5,200	10,000	1,900	12,000	ND<10	ND<10	ND<10	ND<10	56	ND<1,000	ND<100	ND<10	ND<10
	8/4/11	65,000	2,900	8,100	650	10,000	ND<20	ND<20	ND<20	ND<20	ND<90	ND<2,000	ND<200	ND<20	ND<20

(a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), methanol, ethanol, 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) analyzed by EPA Method 8260; reported in micrograms per liter (µg/l).

(b) ND - Not detected at the reporting limit listed.

(c) NS - Not sampled.

TABLE 3

**SVE INFLUENT ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Sample ID	Date	TPHg ^(a) (ppmv)	Benzene ^(a) (ppmv)	Toluene ^(a) (ppmv)	Ethylbenzene ^(a) (ppmv)	Xylenes ^(a) (ppmv)	MTBE ^(a) (ppmv)	Methane ^(b) (%)	Carbon Dioxide ^(b) (%)	Carbon Monoxide ^(b) (%)	Oxygen ^(b) (%)	Nitrogen ^(b) (%)
SVE-Influent-0	6/29/10	5,300	16	20	45	110	75	-- ^(c)	--	--	--	--
SVE-Influent-1	6/29/10	4,700	15	12	36	90	58	0.58	3.6	ND<0.5 ^(d)	16.4	79.4
SVE-Influent	6/30/10	3,200	12	20	30	76	60	--	--	--	--	--
SVE-Influent	7/1/10	3,400	12	22	34	84	68	ND<0.5	4.0	ND<0.5	15.9	80.1
SVE-Influent	7/6/10	4,000	9.4	24	36	92	87	ND<0.5	4.3	ND<0.5	16.1	79.5
SVE-Influent	7/8/10	7,500	14	25	44	110	87	ND<0.5	5.3	ND<0.5	13.5	81.0
SVE-Influent	7/14/10	4,200	7.0	22	29	82	50	ND<0.5	5.5	ND<0.5	15.5	78.9
SVE-Influent	7/28/10	3,000	3.5	15	20	64	34	ND<0.5	4.0	ND<0.5	17.4	78.6
SVE-Manifold	8/5/10	4,800	4.4	12	20	66	28	ND<0.5	5.3	ND<0.5	12.1	82.4
SVE-Manifold	8/18/10	4,300	4.3	12	19	72	29	ND<0.5	5.2	ND<0.5	13.2	81.5
SVE-Manifold	9/7/10	1,100	2.2	6.2	4.8	26	10	ND<0.5	4.1	ND<0.5	17.6	78.3
SVE-Manifold	9/16/10	1,600	3.2	8.3	7.6	44	13	ND<0.5	4.0	ND<0.5	17.6	78.4
SVE-Manifold	9/29/10	1,800	2.8	5.6	6.1	34	12	ND<0.5	3.6	ND<0.5	15.4	81.0
SVE-Manifold	10/7/10	2,100	6.1	8.8	7.3	36	11	ND<0.5	3.6	ND<0.5	18.1	78.2
SVE-Manifold	10/13/10	2,100	7.8	10	6.1	32	8.9	ND<0.5	3.4	ND<0.5	16.8	79.7
SVE-Manifold	12/8/10	2,500	2.6	6.4	4.8	28	5.4	ND<0.5	4.7	ND<0.5	23.8	71.4
SVE-Manifold	12/14/10	1,700	2.1	5.4	5.2	30	4.9	ND<0.5	4.1	ND<0.5	18.3	77.6
SVE-Manifold	12/21/10	640	0.9	4.1	3.9	26	3.8	ND<0.5	2.2	ND<0.5	20.1	77.7
SVE-Manifold	12/29/10	150	ND<0.05	ND<0.05	ND<0.05	0.09	ND<0.05	ND<0.5	2.3	ND<0.5	19.2	78.4
SVE-Manifold	1/12/11	280	ND<0.05	ND<0.05	ND<0.05	0.09	--	ND<0.5	3.5	ND<0.5	18.5	77.9
SVE-Manifold	3/4/11	620	ND<0.1	ND<0.09	ND<0.08	0.1	--	ND<0.5	5.1	ND<0.5	46.6	48.3
SVE-Manifold	3/9/11	440	ND<0.1	ND<0.09	ND<0.08	ND<0.08	ND<0.1	ND<0.5	4.2	ND<0.5	24.6	71.2

TABLE 3

**SVE INFLUENT ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Sample ID	Date	TPHg ^(a) (ppmv)	Benzene ^(a) (ppmv)	Toluene ^(a) (ppmv)	Ethylbenzene ^(a) (ppmv)	Xylenes ^(a) (ppmv)	MTBE ^(a) (ppmv)	Methane ^(b) (%)	Carbon Dioxide ^(b) (%)	Carbon Monoxide ^(b) (%)	Oxygen ^(b) (%)	Nitrogen ^(b) (%)
SVE-Manifold	3/30/11	5.2	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	3.3	ND<0.5	22.9	73.8
SVE-Manifold	4/19/11	38	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.6	ND<0.5	18.9	76.5
SVE-Manifold	4/28/11	150	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.8	ND<0.5	17.5	77.6
SVE-Manifold	5/12/11	280	ND<0.06	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.7	ND<0.5	17.2	78.1
SVE-Manifold	5/25/11	330	0.2	0.1	ND<0.05	0.10	ND<0.1	ND<0.5	5.1	ND<0.5	16.4	78.5
SVE-Manifold	6/8/11	340	0.1	ND<0.05	ND<0.05	0.084	ND<0.1	ND<0.5	4.5	ND<0.5	15.9	79.6
SVE-Manifold	6/16/11	370	0.1	0.1	0.1	0.15	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	360	0.2	ND<0.07	ND<0.06	0.13	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	370	0.2	0.1	0.1	0.18	ND<0.1	ND<0.5	4.8	ND<0.5	15.6	79.6
SVE-Manifold	6/27/11	310	0.2	0.1	ND<0.05	0.18	ND<0.1	ND<0.5	4.7	ND<0.5	16.5	78.9
SVE-Manifold	7/7/11	130	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.5	ND<0.5	18.3	77.2
SVE-Manifold	7/13/11	78	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.9	ND<0.5	18.4	76.7
SVE-Manifold	7/27/11	88	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.4	ND<0.5	19.0	76.6
SVE-Manifold	8/9/11	87	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.2	ND<0.5	19.6	76.2
SVE-Manifold	8/23/11	92	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.3	ND<0.5	19.7	76.0
SVE-Manifold	9/1/11	140	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.2	ND<0.5	19.5	76.3
SVE-Manifold	9/1/11	310	0.1	0.3	0.1	1.5	ND<0.1	ND<0.5	3.6	ND<0.5	22.9	73.5
SVE-Manifold	9/15/11	310	0.3	1.2	0.2	4.3	ND<0.1	ND<0.5	2.8	ND<0.5	20.1	77.1
SVE-Manifold	9/27/11	360	0.2	0.9	0.2	3.4	ND<0.1	ND<0.5	2.7	ND<0.5	20.3	77.1

(a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, and methyl tert-butyl ether (MTBE), analyzed by EPA Method 8260; reported in parts per million by volume (ppmv).

(b) Fixed gases analyzed by Method ASTM D-1946; reported in percent (%)

(c) "--" - Not analyzed.

(d) ND - Not detected at the reporting limit listed.

TABLE 4
SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (°F)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Oxygen (%)	Mass Removal Rate (lbs/day)
1	6/29/10	8.7	0.4	5,300	-- ^(a)	--	1.5	63 ^(b)	124	--	NA ^(c)
2	6/29/10	12.9	0.5	4,700	--	--	1.25	63 ^(b)	110	16.4	119
3	6/30/10	31	1	3,200	0.03	71	1.5	63 ^(b)	75	--	NA
4	7/1/10	56	2	3,400	0.05	72	1.5	63 ^(b)	80	15.9	130
5	7/6/10	175	7	4,000	0.04	69	1.5	63 ^(b)	94	16.1	126
6	7/8/10	200	8	7,500	0.03	73	1.5	63 ^(b)	176	13.5	182
7	7/14/10	343	14	4,200	1.25	90.0	1.5	81	127	15.5	179
8	7/28/10	625	26	3,000	0.62	68.0	1.5	59	65	17.4	91
9	8/5/10	793	33	4,800	0.73	68	1.0	65	115	12.1	218
10	8/18/10	985	41	4,300	0.64	71	1.0	60	97	13.2	181
11	9/7/10	1,309	55	1,100	2.05	75	1.6	106	43	17.6	156
12	9/16/10	1,473	61	1,600	0.81	76	1.4	67	40	17.6	99
13	9/29/10	1,628	68	1,800	0.08	89	1.5	21	14	15.4	46
14	10/7/10	1,821	76	2,100	0.26	69	1.5	38	30	18.1	50
15	10/13/10	1,866	78	2,100	0.09	76	3.3	21	16	16.8	36
16	12/8/10	1,912	80	2,500	1.02	53	2.4	74	69	23.8	0
17	12/14/10	2,051	85	1,700	1.45	58	2.1	89	56	18.3	110
18	12/21/10	2,221	93	640	0.78	59	2.1	65	15	20.1	40
19	12/29/10 ^(d)	2,412	101	150	0.35	49	4.1	41	2.3	19.2	38
20	1/12/11	2,748	115	280	--	54	4.2	14 ^(e)	1.5	18.5	16
21	3/4/11	2,922	122	620	--	63	5.9	15	3.5	46.6	0
22	3/9/11	3,040	127	440	--	68	2.4	13	2.1	24.6	0

TABLE 4

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (°F)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Oxygen (%)	Mass Removal Rate (lbs/day)
23	3/30/11	3,539	147	5.2	--	55	2.4	12	0.02	22.9	0
24	4/19/11	4,020	168	38	--	63	2.3	12	0.2	18.9	14
25	4/28/11	4,238	177	150	--	65	2.3	15	0.9	17.5	21
26	5/12/11	4,570	190	280	--	60	2.4	14	1.5	17.2	23
27	5/25/11	4,885	204	330	--	66	2.4	11	1.4	16.4	27
28	6/8/11	5,219	217	340	--	64	2.4	9	1.2	15.9	29
29	6/16/11	5,410	225	370	--	68	2.4	9	1.2	15.0	33
30	6/16/11	5,412	225	360	--	73	4.1	15	2.0	15.0	33
31	6/16/11	5,416	226	370	--	83	4.0	13	1.7	15.6	30
32	6/27/11	5,676	237	310	--	71	4.0	16	1.8	16.5	26
33	7/7/11	5,918	247	130	--	91	4.0	15	0.7	18.3	17
34	7/13/11	6,062	253	78	--	72	4.1	16	0.5	18.4	17
35	7/27/11	6,395	266	88	--	74	4.0	16	0.5	19.0	14
36	8/9/11	6,709	280	87	--	75	4.0	16	0.5	19.6	11
37	8/23/11	7,015	292	92	--	83	4.0	15	0.5	19.7	11
38	9/1/11	7,227	301	140	--	66	4.0	20	1.0	19.5	12
39	9/1/11	7,231	301	310	--	74	3.6	14	1.6	22.9	0
40	9/15/11	7,566	315	310	--	70	3.6	17	2.0	20.1	9
41	9/27/11	7,857	327	360	--	81	3.5	13	1.7	20.3	8

- (a) "--" not sampled, analyzed, or collected.
- (b) An average flow rate was used due to inaccurate system parameter readings.
- (c) NA - not applicable.
- (d) Only operating on well VW-2 due to high water levels.
- (e) Flow measurements taken with a TSI anemometer for better accuracy at low flow rates.

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-1	10/15/2010	0.03	NM ^(c)
	10/18/2010	NM	NM
	10/22/2010	9.96	NM
	10/25/2010	41.75	82.2
	11/1/2010	51.19	77.7
	12/9/2010	24.66	51.3
	12/14/2010	23.67	53.3
	12/23/2010	28.27	58.1
	1/5/2011	29.06	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.25	88.9
	3/4/2011	15.02	90.4
	4/8/2011	0.12	49.8
	5/3/2011	0.01	88.0
	6/27/2011	0.01	0.0
	6/28/2011	0.24	91.3
	6/30/2011	0.08	94.3
	7/5/2011	0.13	94.5
	7/7/2011	0.01	94.2
	7/13/2011	0.01	95.3
7/22/2011	0.01	94.5	
8/9/2011	0.01	94.5	
9/1/2011	0.05	92.9	
IP-2	10/15/2010	0.03	NM
	10/18/2010	NM	NM
	10/22/2010	0.05	NM
	10/25/2010	0.29	82.2
	11/1/2010	0.02	77.7
	12/9/2010	0.46	51.3
	12/14/2010	0.84	53.3
	12/23/2010	0.41	58.1
	1/5/2011	NM	52.0
	1/18/2011	2.01	0.0
	2/1/2011	2.09	88.9
	3/4/2011	1.45	90.4

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-2 (cont.)	4/8/2011	3.38	49.8
	5/3/2011	0.47	88.0
	6/27/2011	0.01	0.0
	6/28/2011	25.05	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	9.31	94.5
	8/9/2011	17.38	94.5
	9/1/2011	24.79	92.9
IP-3	10/15/2010	0.06	NM
	10/18/2010	NM	NM
	10/22/2010	NM	NM
	10/25/2010	NM	82.2
	11/1/2010	0.12	77.7
	12/9/2010	0.15	51.3
	12/14/2010	0.19	53.3
	12/23/2010	0.33	58.1
	1/5/2011	0.66	52.0
	1/18/2011	0.08	0.0
	2/1/2011	15.12	88.9
	3/4/2011	14.61	90.4
	4/8/2011	20.46	49.8
	5/3/2011	5.59	88.0
	6/27/2011	0.01	0.0
	6/28/2011	0.96	91.3
	6/30/2011	0.67	94.3
	7/5/2011	0.55	94.5
	7/7/2011	1.32	94.2
	7/13/2011	0.26	95.3
7/22/2011	0.30	94.5	
8/9/2011	0.49	94.5	
9/1/2011	3.63	92.9	
IP-4	10/15/2010	0.01	NM

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-4 (cont.)	10/18/2010	NM	NM
	10/22/2010	0.04	NM
	10/25/2010	0.14	82.2
	11/1/2010	0.15	77.7
	12/9/2010	0.09	51.3
	12/14/2010	0.01	53.3
	12/23/2010	0.03	58.1
	1/5/2011	0.02	52.0
	1/18/2011	1.04	0.0
	2/1/2011	1.25	88.9
	3/4/2011	0.18	90.4
	4/8/2011	1.02	49.8
	5/3/2011	13.77	88.0
	6/27/2011	1.33	0.0
	6/28/2011	7.11	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	9.74	94.5
8/9/2011	15.48	94.5	
9/1/2011	16.45	92.9	
IP-5	10/15/2010	0.02	NM
	10/18/2010	NM	NM
	10/22/2010	0.04	NM
	10/25/2010	0.09	82.2
	11/1/2010	0.02	77.7
	12/9/2010	0.21	51.3
	12/14/2010	0.01	53.3
	12/23/2010	0.07	58.1
	1/5/2011	NM	52.0
	1/18/2011	0.72	0.0
	2/1/2011	0.77	88.9
	3/4/2011	50.28	90.4
	4/8/2011	25.82	49.8

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-5 (cont.)	5/3/2011	19.23	88.0
	6/27/2011	0.03	0.0
	6/28/2011	38.65	91.3
	6/30/2011	30.79	94.3
	7/5/2011	41.81	94.5
	7/7/2011	42.53	94.2
	7/13/2011	38.87	95.3
	7/22/2011	31.29	94.5
	8/9/2011	32.78	94.5
	9/1/2011	40.51	92.9
IP-6	10/15/2010	0.25	NM
	10/18/2010	NM	NM
	10/22/2010	0.27	NM
	10/25/2010	0.44	82.2
	11/1/2010	11.22	77.7
	12/9/2010	12.55	51.3
	12/14/2010	12.79	53.3
	12/23/2010	12.82	58.1
	1/5/2011	14.3	52
	1/18/2011	5.19	0.0
	2/1/2011	15.94	88.9
	3/4/2011	10.31	90.4
	4/8/2011	13.22	49.8
	5/3/2011	9.97	88.0
	6/27/2011	4.88	0.0
	6/28/2011	3.65	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
7/22/2011	2.69	94.5	
8/9/2011	2.40	94.5	
9/1/2011	2.79	92.9	
IP-7	10/15/2010	0.01	NM
	10/18/2010	NM	NM

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-7 (cont.)	10/22/2010	0.13	NM
	10/25/2010	0.17	82.2
	11/1/2010	0.34	77.7
	12/9/2010	5.75	51.3
	12/14/2010	4.72	53.3
	12/23/2010	6.29	58.1
	1/5/2011	5.75	52.0
	1/18/2011	0.14	0.0
	2/1/2011	32.69	88.9
	3/4/2011	10.22	90.4
	4/8/2011	2.58	49.8
	5/3/2011	0.75	88.0
	6/27/2011	0.26	0.0
	6/28/2011	0.26	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	0.15	94.5
	8/9/2011	0.10	94.5
9/1/2011	0.24	92.9	
IP-8	10/15/2010	0.02	NM
	10/18/2010	NM	NM
	10/22/2010	0.27	NM
	10/25/2010	0.21	82.2
	11/1/2010	NM	77.7
	12/9/2010	NM	51.3
	12/14/2010	NM	53.3
	12/23/2010	NM	58.1
	1/5/2011	NM	52.0
	1/18/2011	NM	0.0
	2/1/2011	NM	88.9
	3/4/2011	NM	90.4
	4/8/2011	24.74	49.8
	5/3/2011	5.15	88.0

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-8 (cont.)	6/27/2011	0.01	0.0
	6/28/2011	21.98	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	11.34	94.5
	8/9/2011	12.88	94.5
	9/1/2011	16.02	92.9
IP-9	10/15/2010	0.01	NM
	10/18/2010	NM	NM
	10/22/2010	11.27	NM
	10/25/2010	18.36	82.2
	11/1/2010	18.96	77.7
	12/9/2010	31.42	51.3
	12/14/2010	33.16	53.3
	12/23/2010	31.77	58.1
	1/5/2011	35.3	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.65	88.9
	3/4/2011	0.45	90.4
	4/8/2011	0.42	49.8
	5/3/2011	0.55	88.0
	6/27/2011	0.01	0.0
	6/28/2011	NM	91.3
	6/30/2011	27.14	94.3
	7/5/2011	23.48	94.5
	7/7/2011	22.62	94.2
	7/13/2011	21.37	95.3
	7/22/2011	20.65	94.5
8/9/2011	16.24	94.5	
9/1/2011	36.38	92.9	
IP-10	10/15/2010	0.11	NM
	10/18/2010	NM	NM
	10/22/2010	0.07	NM

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-10 (cont.)	10/25/2010	5.33	82.2
	11/1/2010	8.48	77.7
	12/9/2010	0.25	51.3
	12/14/2010	0.30	53.3
	12/23/2010	0.04	58.1
	1/5/2011	0.01	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.18	88.9
	3/4/2011	0.04	90.4
	4/8/2011	26.54	49.8
	5/3/2011	4.45	88.0
	6/27/2011	0.04	0.0
	6/28/2011	10.08	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	NM	95.3
	7/22/2011	29.15	94.5
	8/9/2011	11.44	94.5
9/1/2011	37.28	92.9	
MW-1	10/15/2010	0.11	NM
	10/18/2010	NM	NM
	10/22/2010	0.31	NM
	10/25/2010	0.35	82.2
	11/1/2010	1.79	77.7
	12/9/2010	0.21	51.3
	12/14/2010	0.01	53.3
	12/23/2010	0.01	58.1
	1/5/2011	0.0	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.66	88.9
	3/4/2011	NM	90.4
	4/8/2011	10.53	49.8
	5/3/2011	10.43	88.0
	6/27/2011	0.71	0.0

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
MW-1 (cont.)	6/28/2011	NM	91.3
	6/30/2011	NM	94.3
	7/5/2011	NM	94.5
	7/7/2011	NM	94.2
	7/13/2011	11.42	95.3
	7/22/2011	16.04	94.5
	8/9/2011	27.72	94.5
	9/1/2011	32.16	92.9
MW-2	10/15/2010	0.02	NM
	10/18/2010	NM	NM
	10/22/2010	0.15	NM
	10/25/2010	0.04	82.2
	11/1/2010	0.08	77.7
	12/9/2010	0.03	51.3
	12/14/2010	0.21	53.3
	12/23/2010	0.01	58.1
	1/5/2011	0.06	52.0
	1/18/2011	0.0	0.0
	2/1/2011	0.15	88.9
	3/4/2011	0.44	90.4
	4/8/2011	0.06	49.8
	5/3/2011	0.01	88.0
	6/27/2011	0.02	0.0
	6/28/2011	NM	91.3
	6/30/2011	0.04	94.3
	7/5/2011	0.01	94.5
	7/7/2011	0.07	94.2
	7/13/2011	0.04	95.3
7/22/2011	0.11	94.5	
8/9/2011	1.14	94.5	
9/1/2011	0.24	92.9	
MW-11	10/15/2010	0.04	NM
	10/18/2010	NM	NM
	10/22/2010	29.48	NM
	10/25/2010	29.78	82.2

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
MW-11 (cont.)	11/1/2010	32.42	77.7
	12/9/2010	5.07	51.3
	12/14/2010	13.39	53.3
	12/23/2010	11.87	58.1
	1/5/2011	11.42	52.0
	1/18/2011	0.0	0.0
	2/1/2011	1.18	88.9
	3/4/2011	0.23	90.4
	4/8/2011	16.87	49.8
	5/3/2011	12.14	88.0
	6/27/2011	0.01	0.0
	6/28/2011	36.72	91.3
	6/30/2011	32.83	94.3
	7/5/2011	33.76	94.5
	7/7/2011	33.91	94.2
	7/13/2011	35.42	95.3
	7/22/2011	33.97	94.5
	8/9/2011	34.22	94.5
9/1/2011	27.88	92.9	
DW-1	10/15/2010	0.03	NM
	10/18/2010	NM	NM
	10/22/2010	NM	NM
	10/25/2010	NM	82.2
	11/1/2010	0.03	77.7
	12/9/2010	10.38	51.3
	12/14/2010	9.93	53.3
	12/23/2010	7.14	58.1
	1/5/2011	15.77	52.0
	1/18/2011	11.58	0.0
	2/1/2011	24.42	88.9
	3/4/2011	28.71	90.4
	4/8/2011	19.81	49.8
	5/3/2011	0.01	88.0
	6/27/2011	0.02	0.0
6/28/2011	0.24	91.3	

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
DW-1 (cont.)	6/30/2011	0.05	94.3
	7/5/2011	0.08	94.5
	7/7/2011	0.16	94.2
	7/13/2011	0.04	95.3
	7/22/2011	0.08	94.5
	8/9/2011	0.46	94.5
	9/1/2011	0.09	92.9
TP-1	10/15/2010	0.12	NM
	10/18/2010	NM	NM
	10/22/2010	2.11	NM
	10/25/2010	16.11	82.2
	11/1/2010	5.15	77.7
	12/9/2010	0.01	51.3
	12/14/2010	0.33	53.3
	12/23/2010	0.16	58.1
	1/5/2011	0.0	52.0
	1/18/2011	0.0	0.0
	2/1/2011	27.22	88.9
	3/4/2011	12.11	90.4
	4/8/2011	15.61	49.8
	5/3/2011	1.25	88.0
	6/27/2011	0.01	0.0
	6/28/2011	7.49	91.3
	6/30/2011	0.02	94.3
	7/5/2011	0.19	94.5
	7/7/2011	8.43	94.2
	7/13/2011	0.02	95.3
7/22/2011	11.89	94.5	
8/9/2011	18.19	94.5	
9/1/2011	10.35	92.9	
TP-2	10/15/2010	0.05	NM
	10/18/2010	NM	NM
	10/22/2010	25.44	NM
	10/25/2010	24.9	82.2
	11/1/2010	25.83	77.7

TABLE 5

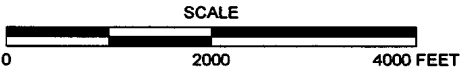
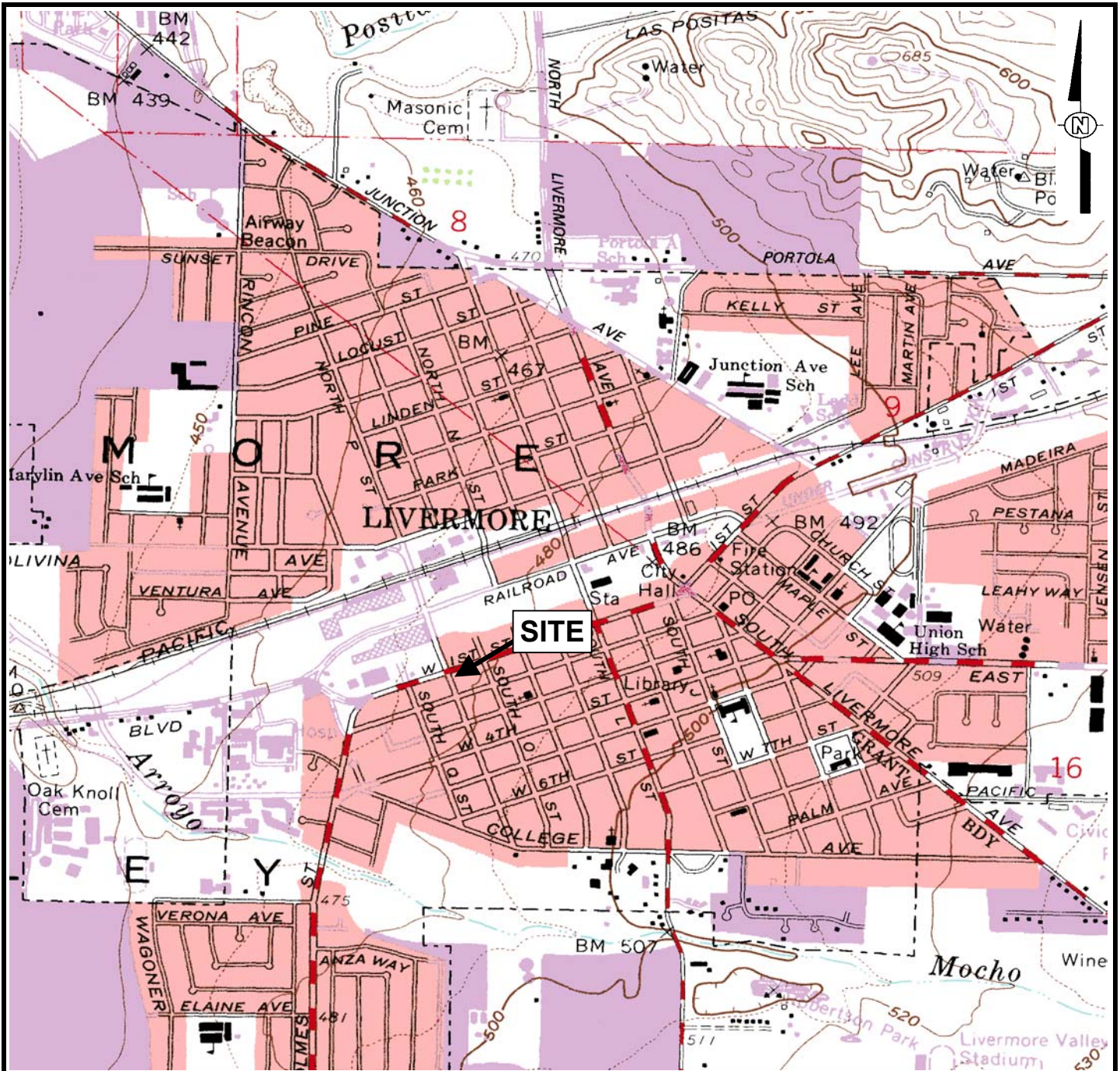
**OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076**

Well	Date	Dissolved Oxygen^(a) (mg/l)	Oxygen Purity^(b) (%)
TP-2 (cont.)	12/9/2010	6.03	51.3
	12/14/2010	5.12	53.3
	12/23/2010	0.63	58.1
	1/5/2011	0.43	52.0
	1/18/2011	0.0	0.0
	2/1/2011	33.44	88.9
	3/4/2011	34.15	90.4
	4/8/2011	19.31	49.8
	5/3/2011	11.95	88
	6/27/2011	0.01	0.0
	6/28/2011	24.27	91.3
	6/30/2011	23.57	94.3
	7/5/2011	31.33	94.5
	7/7/2011	33.74	94.2
	7/13/2011	33.16	95.3
	7/22/2011	33.72	94.5
	8/9/2011	35.64	94.5
	9/1/2011	26.08	92.9

(a) Dissolved oxygen measured in milligrams per liter (mg/l).

(b) Oxygen purity measured at injection manifold (same for all wells) in percent (%).

(c) Not measured.



REFERENCE
 7.5 MINUTE USGS TOPOGRAPHIC MAP OF
 LIVERMORE, CALIFORNIA QUADRANGLE
 DATE: 1961, PHOTOREVISED 1980
 SCALE = 1:24,000

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
SITE LOCATION MAP			
PROJECT NO. 01LV	DRAWN BY MP	CHECKED BY MP	APPROVED BY JG
FILE NO. Site Map.xls		FIGURE 1	

01LV11B-20413.dwg
9/2/2011 2:58PM



Legend

- MW-7 Groundwater Monitoring Well With Groundwater Elevation (Feet, MSL) Measured 3 August 2011
- DW-1 Deep Groundwater Monitoring Well with Groundwater Elevation (Feet, MSL) Measured 3 August 2011
- IP-1 Injection Well

- IP-6 Angled Injection Well Screen Location
- VN-2 Vapor Extraction Well with Groundwater Elevation (Feet, MSL) Measured 3 August 2011
- TP-2 Monitoring Well/Vapor Extraction Well with Groundwater Elevation (Feet, MSL) Measured 3 August 2011
- Groundwater Elevation Contour
- * Groundwater Elevation Not Used for Contours



REVISION	REVISIONS		
	NO.	BY	DATE
13	8	MY	8/19/10
	9	MY	11/19/10
	10	MY	3/1/11
	11	MY	5/13/11
	12	MY	8/15/11
13	MY	11/15/11	

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
GROUNDWATER ELEVATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. O1LV11B-20413.DWG		FIGURE 2	

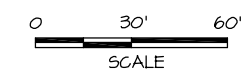
9/16/2011 2:52PM 01LV11B-20513.dwg



Legend

- MW-7 Groundwater Monitoring Well with 26 to 28 April and 3 and 4 August 2011 Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
- DW-1 Deep Groundwater Monitoring Well with 26 to 28 April and 3 and 4 August 2011 TPHg Results in µg/L
- IP-1 Injection Well
- IP-6 Angled Injection Well Screen Location

- VW-2 Vapor Extraction Well with 26 to 28 April and 3 and 4 August 2011 TPHg Results in µg/L
- TP-2 Monitoring Well/Vapor Extraction Well with 26 to 28 April and 3 and 4 August 2011 TPHg Results in µg/L
- 1,000 TPHg Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (130/1500) Previous Quarter/Current Quarter TPHg Results in µg/L



REVISION		REVISIONS	
NO.	BY	DATE	DESCRIPTION
9	MY	11/19/10	Third Quarter 2010 Monitoring Report
10	MY	3/1/11	Fourth Quarter 2010 Monitoring Report
11	MY	5/13/11	First Quarter 2011 Monitoring Report
12	MY	8/15/11	Second Quarter 2011 Monitoring Report
13	MY	11/15/11	Third Quarter 2011 Monitoring Report

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
TPHg CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. O1LV11B-20513.DWG		FIGURE 3	

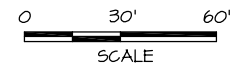
01LV11B-20613.dwg
9/16/2011 2:56PM



Legend

- MW-7 Groundwater Monitoring Well with 26 to 28 April and 3 and 4 August 2011 Benzene Results in µg/L
- DW-1 Deep Groundwater Monitoring Well with 26 to 28 April and 3 and 4 August 2011 Benzene Results in µg/L
- IP-1 Injection Well
- IP-6 Angled Injection Well Screen Location

- VW-2 Vapor Extraction Well with 26 to 28 April and 3 and 4 August 2011 Benzene Results in µg/L
- TP-2 Monitoring Well/Vapor Extraction Well with 26 to 28 April and 3 and 4 August 2011 Benzene Results in µg/L
- 1,000 Benzene Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (ND<0.5/2.0) Previous Quarter/Current Quarter Benzene Results in µg/L



REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
13	9	MY	11/19/10	Third Quarter 2010 Monitoring Report
	10	MY	3/1/11	Fourth Quarter 2010 Monitoring Report
	11	MY	5/13/11	First Quarter 2011 Monitoring Report
	12	MY	8/15/11	Second Quarter 2011 Monitoring Report
	13	MY	11/15/11	Third Quarter 2011 Monitoring Report

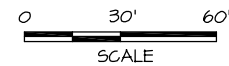
ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
BENZENE CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B-20613.DWG		FIGURE 4	

01LV11B-20713.dwg
9/16/2011 3:08PM



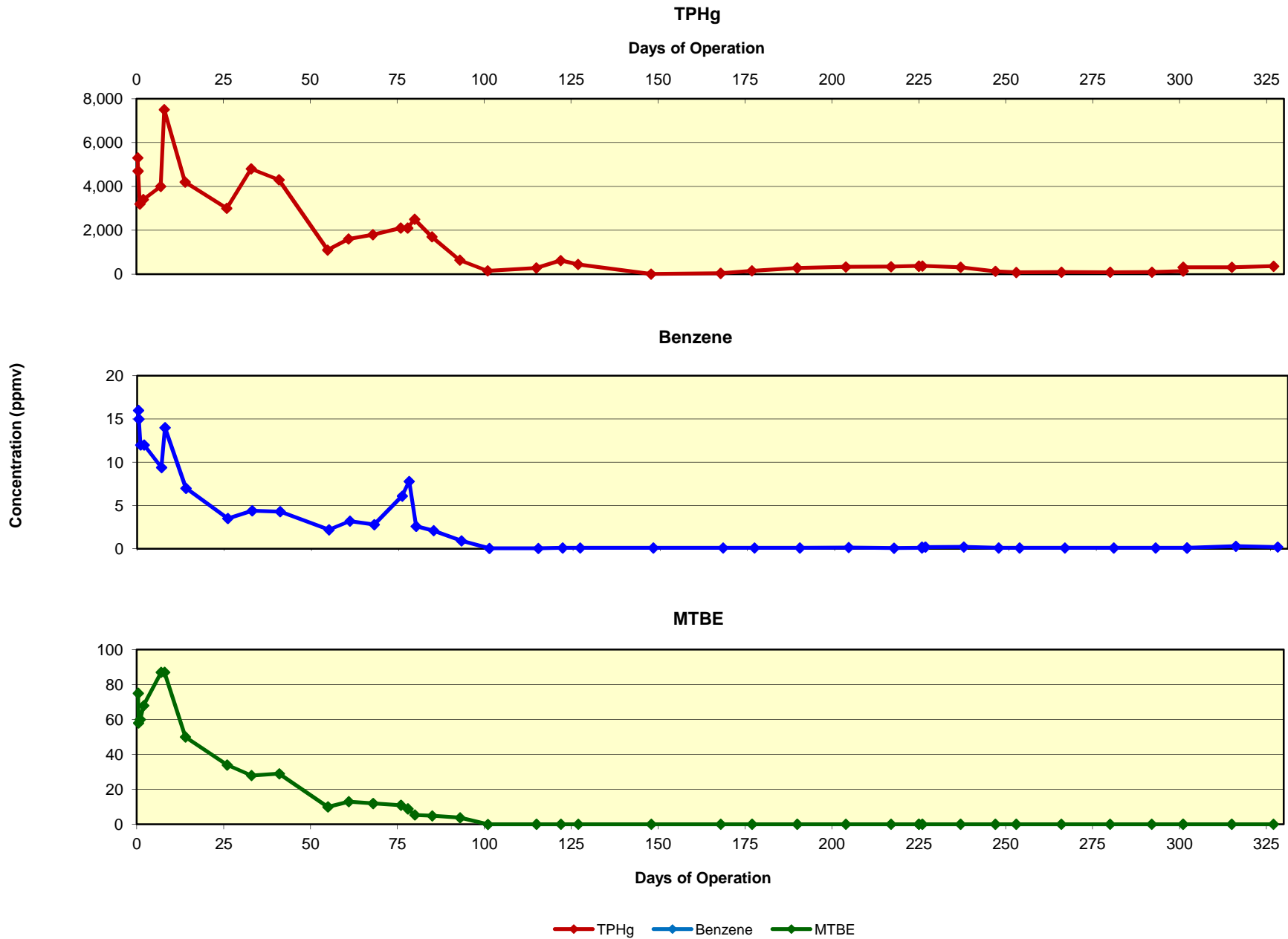
- Legend**
- MW-7 Groundwater Monitoring Well with 26 to 28 April and 3 and 4 August 2011 Methyl Tert-Butyl Ether (MTBE) Results in µg/L
 - DW-1 Deep Groundwater Monitoring Well with 26 to 28 April and 3 and 4 August 2011 MTBE Results in µg/L
 - IP-1 Injection Well
 - IP-6 Angled Injection Well Screen Location

- VW-2 Vapor Extraction Well with 26 to 28 April and 3 and 4 August 2011 MTBE Results in µg/L
- TP-2 Monitoring Well/Vapor Extraction Well with 26 to 28 April and 3 and 4 August 2011 MTBE Results in µg/L
- 1000 MTBE Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (ND<0.5/ND<0.5) Previous Quarter/Current Quarter MTBE Results in µg/L

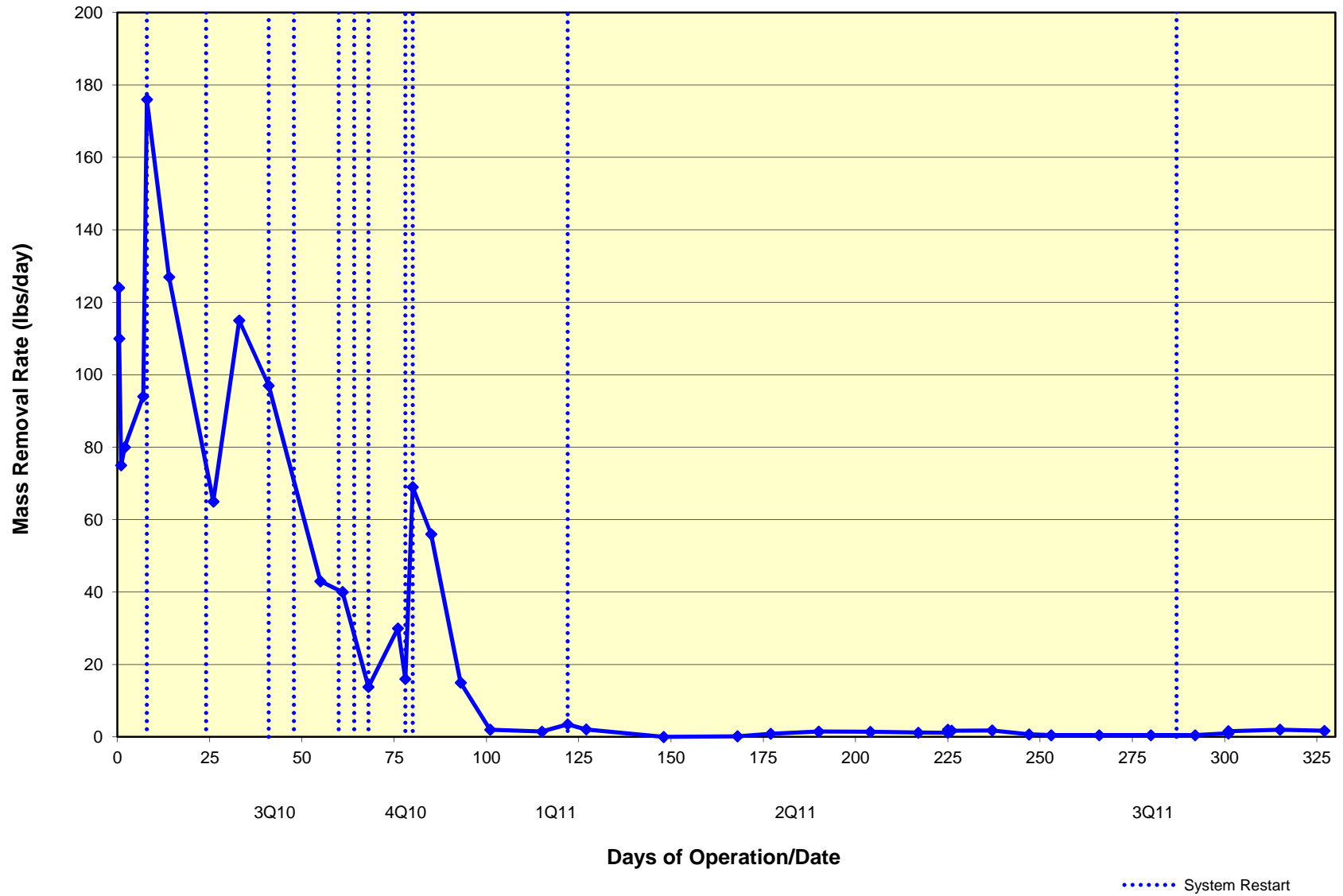


REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
13	8	MY	8/19/10	Second Quarter 2010 Monitoring Report
	4	MY	11/19/10	Third Quarter 2010 Monitoring Report
	11	MY	5/13/11	First Quarter 2011 Monitoring Report
	12	MY	8/15/11	Second Quarter 2011 Monitoring Report
	13	MY	11/15/11	Third Quarter 2011 Monitoring Report

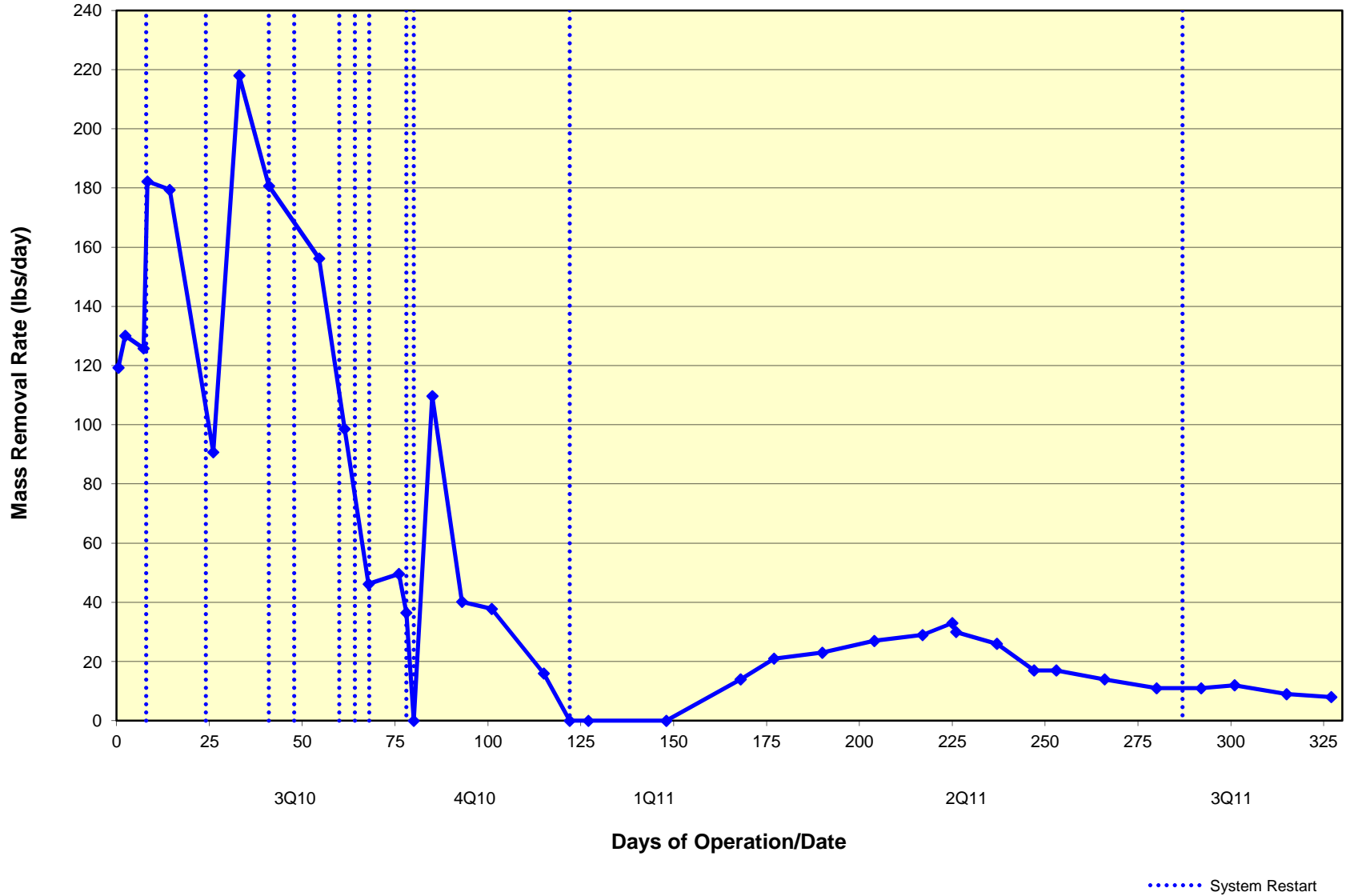
ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
MTBE CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B-20713.DWG		FIGURE 5	



HYDROCARBON MASS REMOVED BY VOLATILIZATION = 6,960 lbs



HYDROCARBON MASS REMOVED BY BIODEGRADATION = 14,770 lbs



ATTACHMENT A
GROUNDWATER SAMPLING QA/QC PROCEDURES

ATTACHMENT A

GROUNDWATER SAMPLING QA/QC PROCEDURES

Monitoring Plan

In accordance with the California State Water Resources Control Board's (SWRCB) Resolution No. 2009-0042, referenced in Alameda Environmental Health's (ACEH) 23 July 2009 letter to Tesoro Environmental Resources Company (Tesoro), Arctos Environmental (Arctos) proposed to reduce the monitoring and sampling frequency to semiannually in the second quarter 2009 status report. Select wells will continue to be monitored quarterly to assess the effectiveness of the planned groundwater remediation system according to the following groundwater monitoring plan:

Well Designation	Location	Sampling Frequency
MW-1, MW-3, and MW-11	Upgradient	Quarterly
MW-2 and DW-1	Source area	
MW-6, DW-2, DW-3, DW-5, DW-6, and DW-7	Downgradient	
MW-4 and VW-3	Upgradient	Semiannually (2nd and 4th quarters)
TP-1, TP-2, and VW-2	Source area	
MW-5 and MW-7	Cross gradient	
MW-8, MW-9, MW-10, and DW-4	Downgradient	

Analytical Plan

The groundwater samples were analyzed by Kiff Analytical LLC, a State-certified laboratory in Davis, California, for total petroleum hydrocarbons as gasoline; benzene, toluene, ethylbenzene, and total xylenes; methyl tert-butyl ether; and other oxygenates using Environmental Protection Agency (EPA) Method 8260B.

Arctos, as Tesoro's Authorized Responsible Party for the site, also electronically submitted the groundwater monitoring results to the SWRCB. The data were submitted in the State-mandated Electronic Data Format, in accordance with Assembly Bill 2886 requirements for underground storage tank sites in California.

Purge-and-Bail Sampling Procedures

The depth to groundwater and total well depth were measured before sampling using an electronic water well sounder. The sequence of well sampling depended on the level of contamination in each well, if known, and was determined before sampling. Sampling occurred beginning at the well with the lowest contaminant concentration and ending at the well with the highest contaminant concentration. Before sampling, at least 3 casing volumes were purged from each monitoring well using a submersible pump. Throughout

purging, pH, conductivity, turbidity, and temperature were measured and recorded for the evacuated groundwater. These measurements were used to confirm that the well was purged sufficiently. Water samples were generally collected after the measurements of pH, conductivity, and temperature had stabilized to within 10 percent of the previous readings. Copies of the well purging and sampling logs are provided in Attachment B.

Sampling was performed with a new 1-1/2-inch-diameter disposable polyethylene bailer suspended from new nylon line. The bailer was equipped with a bottom-release device. Groundwater was collected with the bailer from just below the water surface in each monitoring well. Water samples were collected from the bailers in new 40-milliliter glass bottles provided by the analytical laboratory. The samples were collected so that no headspace was present in each bottle. The preservatives necessary for the analyses performed were provided in the glass bottles by the analytical laboratory.

The collected water samples were placed in sealable plastic bags and packed on ice in a portable ice chest immediately after collection. Samples were delivered within 24 to 48 hours to the analytical laboratory. Additional QA/QC procedures, including the use of sample identification labels and chain-of-custody forms, were followed to track sample collection and delivery.

General Field QA/QC Procedures

Chain-of-Custody Records

Chain-of-custody records were completed before samples were packaged for shipment. One copy of these records was placed in the project file. A second copy accompanied samples during transportation to the laboratory. The individual in the analytical laboratory who accepted responsibility for samples signed and dated the chain-of-custody record.

Equipment Decontamination Procedures

Field equipment was decontaminated between sampling events using the following procedures:

1. Rinsed with water using a brush to remove soil and mud.
2. Washed with non-phosphate detergent and water using a brush.
3. Rinsed with deionized or distilled water.
4. Rinsed again with deionized or distilled water.
5. Air dried.

Personal Decontamination Procedures

At a minimum, field personnel followed the following decontamination procedures:

1. Wore appropriate gloves.
2. Washed hands thoroughly with soap and water.
3. Avoided unnecessary contact with groundwater.

The site health and safety plan (HSP) was reviewed for site-specific personal decontamination procedures.

Wastewater and Solid Waste Storage and Disposal

Small volumes of used wash and rinse solutions were collected during field work and transported to a central decontamination area. This wastewater was stored in a holding tank. The Project Manager determined the appropriate disposal method for this wastewater. Waste manifests for this quarter are in Attachment G.

Solid wastes such as used personal protective equipment, paper towels, trash bags, and any other solid debris were collected for disposal. Because the sampled groundwater was not a hazardous waste, the solid wastes were disposed with the onsite trash.

Field Investigation Documentation Procedures

Field personnel followed documentation procedures developed for site investigation work. The procedures served to (1) provide a record of the activities performed in the field and (2) permit identification of samples and tracking of their status in the field, during shipment, and at the laboratory. All documentation was recorded with waterproof ink. Groundwater sampling activities were documented on daily field reports and on well purge and sample logs.

Health and Safety

Arctos used a site-specific HSP with procedures that were followed by field personnel for equipment safety, medical surveillance, personal protection, air quality monitoring, exposure control, emergency response, and general work practices during field activities. Before beginning work at the site, a site safety meeting was conducted. Field personnel reviewed the HSP and signed the accompanying acknowledgment form before initiating field activities. Field personnel were required to comply with the HSP throughout performance of site assessment activities.

Analytical QA/QC Procedures

Laboratory analytical QA/QC procedures included (1) preparing and analyzing laboratory samples to assess the performance of the analytical laboratory and (2) conducting data validation in accordance with the protocols described below. QC samples prepared by the laboratory included method blanks, matrix spike and matrix spike duplicates, and laboratory control samples.

The laboratory results were reviewed in general accordance with EPA guidelines for data validation. The data validation process included reviewing laboratory results for the following parameters:

- Completeness of the data package
- Compliance with EPA-required holding times
- Agreement of dilution factors with reported detection limits
- Presence or absence of analytes in the method blanks
- Agreement of duplicate samples
- Percent recovery and relative percent difference results for matrix spike and matrix spike duplicate analyses
- Percent recovery results for laboratory control samples.

ATTACHMENT B
FIELD DATA SHEETS

Field Data Sheet

Date: 8/3/2011

Project Name: Tesoro #67076

Project Number: 01LV

Technician: C.Arroyo/A.Pantoja

Location: Livermore, CA

Global ID : T0600101410

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
MW-1	4"	54.55	-	31.57	-	
MW-2	4"	54.1	-	32.4	-	
MW-3	4"	52.9	-	31.69	-	
MW-4	2"	46.8	-	32.01	-	not sampled this quarter
MW-5	2"	46.27	-	33.18	-	not sampled this quarter
MW-6	2"	47.65	-	34.95	-	
MW-7	2"	46.8	-	31.36	-	not sampled this quarter
MW-8	2"	44.5	-	33.09	-	not sampled this quarter
MW-9	2"	44.58	-	35.17	-	not sampled this quarter
MW-10	2"	45.1	-	33.26	-	not sampled this quarter
MW-11	4"	42.85	-	31.11	-	
DW-1	4"	64.75	-	31.96	-	
DW-2	4"	59.84	-	35	-	
DW-3	4"	59.74	-	34.71	-	
DW-4	4"	70.04	-	34.54	-	not sampled this quarter
DW-5	4"	59.8	-	34.64	-	
DW-6	4"	60.15	-	35.63	-	
DW-7	4"	65.2	-	35.19	-	
DW-8	4"	64.65	-	31.14	-	
TP-1	2"	43.22	-	31.85	-	not sampled this quarter
TP-2	2"	41.21	-	31.59	-	not sampled this quarter
VW-2	2"	36.78	-	26.82	-	not sampled this quarter
VW-3	2"	36.34	-	28.93	-	not sampled this quarter

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV - 5A
Location:	Walnut Creek, CA	Date:	8/3/11
Well Number:	MW-1	Well Integrity:	Good
Technician:	C. Arroyo / R. Alpiche	Ambient Conditions:	Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth To Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	54.55	31.57	22.98	0.66	15.16
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: None

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	10:22	1.053	526	14.8	130.4	7.02	68.37
1	15	10:34	0.959	480	25.3	138.6	7.25	67.7
2	30	10:46	0.925	463	42	112.1	7.35	67.82
3	45	11:00	0.887	444	39	84.9	7.39	68.17
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

<p>Water Level Recovery:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="width: 40%;">Depth to GW (ft.)</td> </tr> <tr> <td>(I) Initially</td> <td style="border-bottom: 1px solid black; text-align: center;">31.57</td> </tr> <tr> <td>(P) After Purging</td> <td style="border-bottom: 1px solid black; text-align: center;">39.81</td> </tr> <tr> <td>P- 0.8(P-I) =</td> <td style="border-bottom: 1px solid black; text-align: center;">33.21 80% Recovery</td> </tr> <tr> <td>(S) Before Sampling</td> <td style="border-bottom: 1px solid black; text-align: center;">32.17</td> </tr> <tr> <td>Sampled 80% - 100%</td> <td style="border-bottom: 1px solid black; text-align: center;">Yes</td> </tr> </table>		Depth to GW (ft.)	(I) Initially	31.57	(P) After Purging	39.81	P- 0.8(P-I) =	33.21 80% Recovery	(S) Before Sampling	32.17	Sampled 80% - 100%	Yes	<p>Sample Containers:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="width: 20%;">No.</td> <td style="width: 20%;">Preservation</td> </tr> <tr> <td>500 ml polypropylene</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>1 liter(L), amber glass</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>40ml VOA</td> <td style="border-bottom: 1px solid black; text-align: center;">3</td> <td style="border-bottom: 1px solid black; text-align: center;">HCL</td> </tr> <tr> <td>250 ml glass</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>250 ml polypropylene</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> </table>		No.	Preservation	500 ml polypropylene			1 liter(L), amber glass			40ml VOA	3	HCL	250 ml glass			250 ml polypropylene		
	Depth to GW (ft.)																														
(I) Initially	31.57																														
(P) After Purging	39.81																														
P- 0.8(P-I) =	33.21 80% Recovery																														
(S) Before Sampling	32.17																														
Sampled 80% - 100%	Yes																														
	No.	Preservation																													
500 ml polypropylene																															
1 liter(L), amber glass																															
40ml VOA	3	HCL																													
250 ml glass																															
250 ml polypropylene																															
<p>Sample Date : <u>8/3/11</u> Time: <u>11:22</u> Turbidity (NTU): <u>198</u></p> <p>Sampling Equipment : <u>Disposable Bailer</u></p> <p>Calibrate Date: <u>8/3/11</u></p> <p>Comments: _____</p>																															

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV - 5A
Location:	Walnut Creek, CA	Date:	8/4/11
Well Number:	MW-2	Well Integrity:	Good
Technician:	C. Arroyo / R. Alpiche	Ambient Conditions:	Sunny/Warm

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth To Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	54.1	32.4	21.7	0.66	14.32
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	14:31	1.114	557	-36.9	52.6	7.26	72.71
1	14	14:38	1.08	540	-43.4	40	7.11	71.26
2	28	14:44	1.044	518	-48	33.2	7.19	70.58
3	42	14:51	1.001	501	-49.2	33.3	7.22	70.49
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.) (I) Initially <u>32.4</u> (P) After Purging <u>33.7</u> P- 0.8(P-I) = <u>32.66</u> 80% Recovery (S) Before Sampling <u>32.42</u> Sampled 80% - 100% <u>Yes</u>	Sample Containers: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="width: 10%; text-align: center;">No.</td> <td style="width: 30%; text-align: center;">Preservation</td> </tr> <tr> <td>500 ml polypropylene</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>1 liter(L), amber glass</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>40ml VOA</td> <td style="text-align: center;">3</td> <td style="text-align: center;">HCL</td> </tr> <tr> <td>250 ml glass</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>250 ml polypropylene</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> </table>		No.	Preservation	500 ml polypropylene			1 liter(L), amber glass			40ml VOA	3	HCL	250 ml glass			250 ml polypropylene		
	No.	Preservation																	
500 ml polypropylene																			
1 liter(L), amber glass																			
40ml VOA	3	HCL																	
250 ml glass																			
250 ml polypropylene																			

Sample Date : 8/4/11 Time: 15:00 Turbidity (NTU): 156
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 8/3/11

Comments: _____

Groundwater Sampling Form

Project Name:	<u>Tesoro #67076</u>	Project Number:	<u>01LV - 5A</u>
Location:	<u>Walnut Creek, CA</u>	Date:	<u>8/4/11</u>
Well Number:	<u>MW-3</u>	Well Integrity:	<u>Good</u>
Technician:	<u>C. Arroyo / R. Alpiche</u>	Ambient Conditions:	<u>Sunny</u>

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	52.9	31.69	21.21	0.66	13.99
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: None

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	6:55	0.983	492	2.9	41.1	7.31	66.82
1	14	7:04	0.955	477	14.2	37.8	7.57	67.09
2	28	7:11	0.922	461	10.4	38.2	7.51	67.47
3	42	7:18	0.916	458	0.5	34.3	7.49	67.52
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.) (I) Initially <u>31.69</u> (P) After Purging <u>35.26</u> P- 0.8(P-I) = <u>32.4</u> 80% Recovery (S) Before Sampling <u>31.83</u> Sampled 80% - 100% <u>Yes</u>	Sample Containers: 500 ml polypropylene 1 liter(L), amber glass 40ml VOA <u>3</u> HCL 250 ml glass 250 ml polypropylene
Sample Date : <u>8/4/11</u> Time: <u>7:40</u> Turbidity (NTU): <u>31.6</u>	
Sampling Equipment : <u>Disposable Bailer</u>	
Calibrate Date: <u>8/3/11</u>	

Comments: _____

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV - 5A
Location:	Walnut Creek, CA	Date:	8/4/11
Well Number:	MW-6	Well Integrity:	Good
Technician:	C. Arroyo / R. Alpiche	Ambient Conditions:	Sunny/Warm

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	47.65	34.95	12.7	0.17	2.15
3	-	=	X	0.38	=
4	-	=	X	0.66	
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: None

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	15:30	1.27	635	-57.5	52.4	7.4	70.68
1	2	15:33	1.275	637	-62.5	38.7	7.19	69.8
2	4	15:36	1.269	634	-60.8	32.8	7.16	70.03
3	6	15:39	1.267	633	-59.2	30.8	7.19	69.81
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.) (I) Initially <u>34.95</u> (P) After Purging <u>35.64</u> P - 0.8(P-I) = <u>35.08</u> 80% Recovery (S) Before Sampling <u>35.01</u> Sampled 80% - 100% <u>Yes</u>	Sample Containers: <table border="0" style="width: 100%;"> <tr> <td style="width: 60%;"></td> <td style="width: 10%;">No.</td> <td style="width: 30%;">Preservation</td> </tr> <tr> <td>500 ml polypropylene</td> <td></td> <td></td> </tr> <tr> <td>1 liter(L), amber glass</td> <td></td> <td></td> </tr> <tr> <td>40ml VOA</td> <td style="text-align: center;">3</td> <td style="text-align: center;">HCL</td> </tr> <tr> <td>250 ml glass</td> <td></td> <td></td> </tr> <tr> <td>250 ml polypropylene</td> <td></td> <td></td> </tr> </table>		No.	Preservation	500 ml polypropylene			1 liter(L), amber glass			40ml VOA	3	HCL	250 ml glass			250 ml polypropylene		
	No.	Preservation																	
500 ml polypropylene																			
1 liter(L), amber glass																			
40ml VOA	3	HCL																	
250 ml glass																			
250 ml polypropylene																			

Sample Date : 8/4/11 Time: 15:48 Turbidity (NTU): 116
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 8/3/11

Comments: _____

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV - 5A
Location:	Walnut Creek, CA	Date:	8/4/11
Well Number:	MW-11	Well Integrity:	Good
Technician:	C. Arroyo / R. Alpiche	Ambient Conditions:	Sunny/Warm

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	42.85	31.11	11.74	0.66	7.74
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: None

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	14:20	1.573	788	-42.8	114	7.62	69.73
1	8	14:25	1.576	788	-40.4	101.6	7.47	70.07
2	16							
3	24							
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

<p>Water Level Recovery:</p> <p style="margin-left: 40px;">Depth to GW (ft.)</p> <p>(I) Initially <u>31.11</u></p> <p>(P) After Purging <u>Dry (41.96)</u></p> <p>P- 0.8(P-I) = <u>33.28</u> 80% Recovery</p> <p>(S) Before Sampling <u>33.02</u></p> <p>Sampled 80% - 100% <u>Yes</u></p> <p>Sample Date : <u>8/4/11</u> Time: <u>15:10</u></p> <p>Sampling Equipment : <u>Disposable Bailer</u></p> <p>Calibrate Date: <u>8/3/11</u></p> <p>Comments: <u>Well went dry @ 10 gal.</u></p>	<p>Sample Containers:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%;">No.</th> <th style="width: 20%;">Preservation</th> </tr> </thead> <tbody> <tr> <td>500 ml polypropylene</td> <td></td> <td></td> </tr> <tr> <td>1 liter(L), amber glass</td> <td></td> <td></td> </tr> <tr> <td>40ml VOA</td> <td style="text-align: center;">3</td> <td style="text-align: center;">HCL</td> </tr> <tr> <td>250 ml glass</td> <td></td> <td></td> </tr> <tr> <td>250 ml polypropylene</td> <td></td> <td></td> </tr> </tbody> </table> <p>Turbidity (NTU): <u>269</u></p>		No.	Preservation	500 ml polypropylene			1 liter(L), amber glass			40ml VOA	3	HCL	250 ml glass			250 ml polypropylene		
	No.	Preservation																	
500 ml polypropylene																			
1 liter(L), amber glass																			
40ml VOA	3	HCL																	
250 ml glass																			
250 ml polypropylene																			

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV - 5A
Location:	Walnut Creek, CA	Date:	8/4/11
Well Number:	DW-1	Well Integrity:	Good
Technician:	C. Arroyo / R. Alpiche	Ambient Conditions:	Sunny/Warm

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	64.75	31.96	32.79	0.66	21.64
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: None

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	12:44	0.85	425	-36.4	87.6	5.92	70.55
1	22	12:56	0.854	427	-33.4	74	5.71	69.37
2	44	13:03	0.861	430	-34.5	57.3	5.71	69.03
3	66	13:15	0.864	432	-34.6	54.6	5.7	69.08
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

<p>Water Level Recovery:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="width: 40%; text-align: right;">Depth to GW (ft.)</td> </tr> <tr> <td>(I) Initially</td> <td style="text-align: right; border-bottom: 1px solid black;">31.96</td> </tr> <tr> <td>(P) After Purging</td> <td style="text-align: right; border-bottom: 1px solid black;">37.39</td> </tr> <tr> <td>P- 0.8(P-I) =</td> <td style="text-align: right; border-bottom: 1px solid black;">33.04 80% Recovery</td> </tr> <tr> <td>(S) Before Sampling</td> <td style="text-align: right; border-bottom: 1px solid black;">32.71</td> </tr> <tr> <td>Sampled 80% - 100%</td> <td style="text-align: right; border-bottom: 1px solid black;">Yes</td> </tr> </table>		Depth to GW (ft.)	(I) Initially	31.96	(P) After Purging	37.39	P- 0.8(P-I) =	33.04 80% Recovery	(S) Before Sampling	32.71	Sampled 80% - 100%	Yes	<p>Sample Containers:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="width: 20%; text-align: center;">No.</td> <td style="width: 20%; text-align: center;">Preservation</td> </tr> <tr> <td>500 ml polypropylene</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>1 liter(L), amber glass</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>40ml VOA</td> <td style="text-align: center; border-bottom: 1px solid black;">3</td> <td style="text-align: center; border-bottom: 1px solid black;">HCL</td> </tr> <tr> <td>250 ml glass</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td>250 ml polypropylene</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> </table>		No.	Preservation	500 ml polypropylene			1 liter(L), amber glass			40ml VOA	3	HCL	250 ml glass			250 ml polypropylene		
	Depth to GW (ft.)																														
(I) Initially	31.96																														
(P) After Purging	37.39																														
P- 0.8(P-I) =	33.04 80% Recovery																														
(S) Before Sampling	32.71																														
Sampled 80% - 100%	Yes																														
	No.	Preservation																													
500 ml polypropylene																															
1 liter(L), amber glass																															
40ml VOA	3	HCL																													
250 ml glass																															
250 ml polypropylene																															
Sample Date :	8/4/11	Time: <u>13:45</u>	Turbidity (NTU): <u>31.1</u>																												
Sampling Equipment :	Disposable Bailer																														
Calibrate Date:	8/3/11																														

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV - 5A
 Location: Walnut Creek, CA Date: 8/4/11
 Well Number: DW-2 Well Integrity: Good
 Technician: C. Arroyo / R. Alpiche Ambient Conditions: Cloudy

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	59.84	35	24.84	0.66	16.39
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: None

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	8:28	0.95	475	58.1	35.9	7.91	68.37
1	16	8:41	0.971	486	18.8	31.6	7.39	68.38
2	32	8:53	0.968	484	-0.2	33.1	7.38	68.51
3	48	9:02	0.972	486	67.6	34.3	7.4	68.76
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: **Sample Containers:**
 Depth to GW (ft.) No. Preservation
 (I) Initially 35 500 ml polypropylene _____
 (P) After Purging 36.1 1 liter(L), amber glass _____
 P- 0.8(P-I) = 35.22 80% Recovery 40ml VOA 3 HCL
 (S) Before Sampling 35 250 ml glass _____
 Sampled 80% - 100% Yes 250 ml polypropylene _____
 Sample Date : 8/4/11 Time: 9:35 Turbidity (NTU): 27.6
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 8/3/11
 Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 **Project Number:** 01LV - 5A
Location: Walnut Creek, CA **Date:** 8/4/11
Well Number: DW-3 **Well Integrity:** Good
Technician: C. Arroyo / R. Alpiche **Ambient Conditions:** Cloudy

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	59.74	34.71	35.03	0.66	16.51
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** None **Odor:** None

Groundwater Purging Purge Method

Submersible Pump **Honda Pump** **Hand Bail** **Grab Sample**

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	7:42	0.903	451	53.9	39.7	8	69.71
1	16.5	7:50	0.921	461	8.8	32.4	7.71	69.11
2	33	7:59	0.942	471	10.5	34.5	7.62	70.12
3	49.5	8:08	0.943	472	-2.3	36.8	7.62	70.15
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: **Sample Containers:**
 Depth to GW (ft.) No. Preservation
 (I) Initially 34.71 500 ml polypropylene _____
 (P) After Purging 37.03 1 liter(L), amber glass _____
 P- 0.8(P-I) = 35.17 80% Recovery 40ml VOA 3 HCL
 (S) Before Sampling 34.84 250 ml glass _____
 Sampled 80% - 100% Yes 250 ml polypropylene _____
 Sample Date : 8/4/11 Time: 8:25 Turbidity (NTU): 28.6
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 8/3/11

Comments: _____

Groundwater Sampling Form

Project Name:	<u>Tesoro #67076</u>	Project Number:	<u>01LV - 5A</u>
Location:	<u>Walnut Creek, CA</u>	Date:	<u>8/4/11</u>
Well Number:	<u>DW-5</u>	Well Integrity:	<u>Good</u>
Technician:	<u>C. Arroyo / R. Alpiche</u>	Ambient Conditions:	<u>Cloudy</u>

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	59.8	34.64	25.16	0.66	16.6
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	9:26	583	434	25.5	41.4	7.87	68.44
1	16.5	9:36	594	444	86.7	34.8	7.62	69.22
2	33	9:47	593	456	74.5	29.6	7.54	67.81
3	49.5	9:59	596	452	37	31.3	7.54	66.88
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:	Depth to GW (ft.)	Sample Containers:
(I) Initially	<u>34.64</u>	500 ml polypropylene
(P) After Purging	<u>39.81</u>	1 liter(L), amber glass
P - 0.8(P-I) =	<u>35.67</u> 80% Recovery	40ml VOA
(S) Before Sampling	<u>35.67</u>	250 ml glass
Sampled 80% - 100%	<u>Yes</u>	250 ml polypropylene
Sample Date :	<u>8/4/11</u> Time: <u>10:15</u>	Turbidity (NTU): <u>323</u>
Sampling Equipment :	<u>Disposable Bailer</u>	
Calibrate Date:	<u>8/3/11</u>	

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 **Project Number:** 01LV - 5A
Location: Walnut Creek, CA **Date:** 8/4/11
Well Number: DW-6 **Well Integrity:** Good
Technician: C. Arroyo / R. Alpiche **Ambient Conditions:** Sunny/Warm

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	60.15	35.63	24.52	0.66	16.18
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** None **Odor:** Yes

Groundwater Purging Purge Method

Submersible Pump **Honda Pump** **Hand Bail** **Grab Sample**

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	10:26	612	454	40.8	26.3	7.59	71.32
1	16.5	10:36	605	453	22.7	28.7	7.49	71.14
2	33	10:45	597	456	-16.9	28.8	7.47	71.47
3	49.5	10:53	602	452	-35.6	45.5	7.49	72.53
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: **Sample Containers:**
Depth to GW (ft.)
No.
Preservation

(I) Initially	<u>35.63</u>		500 ml polypropylene		
(P) After Purging	<u>38.12</u>		1 liter(L), amber glass		
P- 0.8(P-I) =	<u>36.12</u>	80% Recovery	40ml VOA	<u>3</u>	HCL
(S) Before Sampling	<u>35.63</u>		250 ml glass		
Sampled 80% - 100%	<u>Yes</u>		250 ml polypropylene		

Sample Date : 8/4/11 **Time:** 11:10 **Turbidity (NTU):** 47.3
Sampling Equipment : Disposable Bailer
Calibrate Date: 8/3/11

Comments: _____

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV - 5A
Location:	Walnut Creek, CA	Date:	8/4/11
Well Number:	DW-7	Well Integrity:	Good
Technician:	C. Arroyo / R. Alpiche	Ambient Conditions:	Sunny/Warm

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	65.2	35.19	30.01	0.66	19.81
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: None

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	11:51	0.939	470	-38.5	48.69	6.63	72.04
1	20	11:58	0.991	495	-36.8	33.7	6.51	71.45
2	40	12:09	0.996	498	-43.4	33.1	6.43	71.42
3	60	12:18	0.993	496	-45.4	32.3	6.36	71.26
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.) (I) Initially <u>35.19</u> (P) After Purging <u>37.31</u> P- 0.8(P-I) = <u>35.61</u> 80% Recovery (S) Before Sampling <u>35.22</u> Sampled 80% - 100% <u>Yes</u>	Sample Containers: 500 ml polypropylene 1 liter(L), amber glass 40ml VOA <u>3</u> HCL 250 ml glass 250 ml polypropylene
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------

Sample Date : 8/4/11 Time: 12:30 Turbidity (NTU): 46.8
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 8/3/11

Comments: _____

Groundwater Sampling Form

Project Name:	<u>Tesoro #67076</u>	Project Number:	<u>01LV - 5A</u>
Location:	<u>Walnut Creek, CA</u>	Date:	<u>8/4/11</u>
Well Number:	<u>DW-8</u>	Well Integrity:	<u>Good</u>
Technician:	<u>C. Arroyo / R. Alpiche</u>	Ambient Conditions:	<u>Sunny/Warm</u>

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth To Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
4	64.65	31.14	33.51	0.66	22.11
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None Sheen/Iridescence: None Odor: Yes

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (uS/cm)	tds (ppm)	ORP	DO %	pH	Temp.(°F)
0	Int.	13:29	0.987	494	-36.8	45.8	6.4	70.31
1	22	13:38	0.993	497	-38	30.9	6.41	69.7
2	44	13:48	0.997	498	-38.7	30.2	6.37	69.2
3	66	13:59	0.991	495	-39.3	29.3	6.38	70.15
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.) (I) Initially <u>31.14</u> (P) After Purging <u>40.1</u> P- 0.8(P-I) = <u>32.93</u> 80% Recovery (S) Before Sampling <u>31.6</u> Sampled 80% - 100% <u>Yes</u>	Sample Containers: 500 ml polypropylene 1 liter(L), amber glass 40ml VOA <u>3</u> HCL 250 ml glass 250 ml polypropylene
Sample Date : <u>8/4/11</u> Time: <u>14:15</u> Turbidity (NTU): <u>21.6</u>	
Sampling Equipment : <u>Disposable Bailer</u>	
Calibrate Date: <u>8/3/11</u>	

Comments: _____

ATTACHMENT C
SOIL VAPOR SAMPLING QA/QC PROCEDURES

ATTACHMENT C

SOIL VAPOR SAMPLING QA/QC PROCEDURES

Vapor Sample Collection

Vapor samples were collected using a vacuum chamber with a Tedlar bag. Sample lines were 1/4-inch-diameter Teflon or new vinyl tubing with a length not exceeding 10 feet. Generally, the length of tubing was the minimum necessary to connect the sample source to the sampling apparatus. Samples bags were made of Tedlar film with a minimum thickness of 0.002 inches.

An airtight rigid vacuum chamber was used when the bags were filled by applying vacuum. The chamber was opaque (to decrease sample degradation due to ultraviolet light) except for a small window that allowed the sampler to check the condition of the bag during sampling. The chamber had the necessary couplings to connect with sample bags, sample line, and vacuum line and a flow control valve to shut off the flow to the bag. The chamber was also equipped with a vacuum relief valve to protect both the bag and container. An oil-less vacuum pump with a minimum capacity of 2 liters per minute was used. If it was necessary to observe the sampling rate, a rotameter (or equivalent) flow meter was used with a range of 0.05 to 1.0 liter per minute. All connections were leak checked before collecting gas samples. To leak check the connections, a Tedlar bag was placed inside the rigid container with the valve on the bag closed. The vacuum pump was turned on and the vacuum monitored until 15 inches of water column was maintained.

The following procedures were followed when collecting a vapor sample for laboratory analysis:

1. Assemble the sample train and leak check the connections.
2. Place an open Tedlar bag inside the vacuum chamber and connect both the Tedlar bag and vacuum line to the sample train.
3. Turn on the vacuum pump and open the desired sample port or wellhead valve.
4. Wait for the sample line to be purged of 3 to 5 casing volumes.
5. Switch the vacuum line from the sample train to the chamber and allow the chamber vacuum to inflate the Tedlar bag.
6. Fill the Tedlar bag to approximately 80 percent capacity.
7. Close the sample port and turn off the vacuum pump.

8. Release the vacuum on the chamber by disconnecting the vacuum line.
9. Open the chamber and close the Tedlar bag.

Once collected, vapor samples were stored and shipped in an opaque container free of sharp edges, metal closures, or staples to protect the integrity of the Tedlar bag. Vapor samples collected in Tedlar bags were analyzed by a State-certified analytical laboratory within 72 hours of collection.

Analytical Plan

The vapor samples were submitted to Kiff Analytical LLC, a State-certified laboratory in Davis, California, and analyzed for the following parameters:

- Total petroleum hydrocarbons as gasoline; benzene, toluene, ethylbenzene, and total xylenes; and methyl tert-butyl ether using Environmental Protection Agency Method 8260B
- Fixed gases (oxygen, nitrogen, methane, and carbon dioxide) by American Society for Testing and Materials Method D1946 or equivalent.

Analytical QA/QC Procedures

Laboratory analytical QA/QC procedures are described in Attachment A.

ATTACHMENT D
HISTORICAL WELL AND GROUNDWATER ELEVATIONS

TABLE D-1

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076**

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
MW-1	6/1/93	37.50	474.29	436.79
	6/22/93	38.46		435.83
	10/6/93	42.22		432.07
	1/13/94	34.52		439.77
	3/30/94	31.93		442.36
	4/25/94	33.49		440.80
	8/12/94	41.03		433.26
	12/14/94	38.63		435.66
	2/10/95	30.80		443.49
	6/15/95	25.46		448.83
	9/26/95	31.05		443.24
	12/15/95	28.11		446.18
	3/21/96	17.67		456.62
	6/13/96	22.86		451.43
	9/16/96	30.04		444.25
	12/2/96	26.74		447.55
	3/7/97	20.84		453.45
	6/12/97	28.71		445.58
	9/29/97	33.91		440.38
	12/1/97	34.88		439.41
	3/19/98	19.83		454.46
	5/29/98	21.57		452.72
	9/15/98	31.68		442.61
	11/30/98	36.80		437.49
	1/17/99	30.02		444.27
	6/10/99	29.30		444.99
	9/7/99	31.41		442.88
	12/13/99	32.95		441.34
3/13/00	25.74	448.55		
6/12/00	28.24	446.05		
11/10/00	30.56	443.73		

TABLE D-1

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076**

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
MW-1 (cont.)	12/31/00	31.71	474.29	442.58
	3/27/01	30.43		443.86
	6/30/01	36.61		437.68
	9/26/01	45.10		429.19
	12/18/01	39.39		434.90
	3/18/02	38.24		436.05
	8/21/02	36.71		436.05
	12/3/02	36.85		437.44
	3/4/03	33.72		440.57
	6/10/03	31.31		442.98
	9/9/03	35.05		439.24
	12/23/03	30.15		444.14
	3/23/04	26.61		447.68
	5/10/04	30.31		443.98
	8/4/04	34.77		439.52
	11/4/04	33.93		440.36
	1/12/05	27.82		446.47
	5/2/05	24.87		449.42
	7/19/05	29.26		445.03
	11/21/05	31.15		443.14
	2/9/06	26.24		448.05
	5/16/06	24.87		449.42
	8/9/06	31.64		442.65
	11/8/06	31.16		443.13
	2/14/07	30.00		444.29
	5/17/07	33.75		440.54
	8/2/07	40.00		434.29
	11/12/07	48.55		425.74
2/14/08	34.74	439.55		
5/8/08	36.15	438.14		
7/23/08	45.76	428.53		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-1 (cont.)	10/13/08	51.00	474.29	423.29
	2/11/09	48.69		425.60
	4/27/09	41.90		432.39
	8/4/09	51.44		422.85
	12/8/09	39.87		434.42
	2/11/10	35.20		439.09
	5/3/10	31.23		443.06
	8/2/10	34.56	474.21 ^(c)	439.65
	11/2/10	37.04		437.17
	2/1/11	32.51		441.70
	4/25/11	27.73		446.48
	8/3/11	31.57		442.64
	MW-2	6/1/93		38.02
6/22/93		39.07	433.91	
10/6/93		43.72	429.26	
1/13/94		35.85	437.13	
3/30/94		32.82	440.16	
4/25/94		34.76	438.22	
8/12/94		44.33	428.65	
12/14/94		40.00	432.98	
2/10/95		32.16	440.82	
6/15/95		25.93	447.05	
9/26/95		32.42	440.56	
12/15/95		29.41	443.57	
3/21/96		17.47	455.51	
6/13/96		23.69	449.29	
9/16/96		31.24	441.74	
12/2/96		26.90	446.08	
3/7/97		21.33	451.65	
6/12/97	29.94	443.04		
9/29/97	34.22	438.76		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-2 (cont.)	12/1/97	35.94	472.98	437.04
	3/19/98	20.34		452.64
	5/29/98	22.63		450.35
	9/15/98	32.30		440.68
	11/30/98	36.90		436.08
	1/17/99	30.17		442.81
	6/10/99	29.98		443.00
	9/7/99	31.85		441.13
	12/13/99	33.72		439.26
	3/13/00	26.54		446.44
	6/12/00	28.44		444.54
	11/10/00	31.31		441.67
	12/31/00	32.68		440.30
	3/27/01	30.81		442.17
	6/30/01	37.58		435.40
	9/26/01	44.97		428.01
	12/18/01	40.67		432.31
	3/18/02	38.94		434.04
	6/5/02	36.45		436.53
	8/21/02	37.15		435.83
	12/3/02	36.76		436.22
	3/4/03	33.60		439.38
	6/10/03	32.89		440.09
	9/9/03	35.45		437.53
	12/23/03	31.79		441.19
	3/23/04	28.25		444.73
	5/10/04	30.91		442.07
8/4/04	35.36	437.62		
11/4/04	34.92	438.06		
1/12/05	29.46	443.52		
5/2/05	25.61	447.37		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-2 (cont.)	7/19/05	30.11	472.98	442.87
	11/21/05	32.04		440.94
	2/9/06	27.11		445.87
	5/17/06	25.18		447.80
	8/9/06	32.69		440.29
	11/8/06	33.21		439.77
	2/14/07	31.27		441.71
	5/17/07	34.40		438.58
	8/2/07	41.23		431.75
	11/12/07	48.22		424.76
	2/14/08	36.31		436.67
	5/8/08	36.70		436.28
	7/23/08	45.78		427.20
	10/13/08	51.30		421.68
	2/11/09	48.90		424.08
	4/27/09	42.62		430.36
	8/4/09	51.83		421.15
	12/8/09	40.82		432.16
	2/11/10	36.54		436.44
	5/3/10	32.44		440.54
8/2/10	35.34	437.64		
11/2/10	38.15	434.83		
2/1/11	33.40	439.58		
4/25/11	28.49	444.49		
8/3/11	32.40	440.58		
MW-3	6/1/93	36.18	473.37	437.19
	6/22/93	37.11		436.26
	10/6/93	41.15		432.22
	1/13/94	33.95		439.42
	3/30/94	30.97		442.40
	4/25/94	32.46		440.91

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-3 (cont.)	8/12/94	41.72	473.37	431.65
	12/14/94	37.62		435.75
	2/10/95	29.96		443.41
	6/15/95	23.66		449.71
	9/26/95	29.62		443.75
	12/15/95	27.10		446.27
	3/21/96	15.85		457.52
	6/13/96	21.31		452.06
	9/16/96	28.62		444.75
	12/2/96	25.55		447.82
	3/7/97	19.77		453.60
	6/12/97	27.67		445.70
	9/29/97	29.60		443.77
	12/1/97	33.37		440.00
	3/19/98	18.76		454.61
	5/29/98	20.64		452.73
	9/15/98	30.70		442.67
	11/30/98	34.96		438.41
	1/17/99	28.81		444.56
	6/10/99	28.10		445.27
	9/7/99	30.38		442.99
	12/13/99	31.46		441.91
	3/13/00	24.28		449.09
	6/12/00	26.80		446.57
	11/10/00	29.47		443.90
	12/31/00	31.38		441.99
	3/27/01	29.94		443.43
6/30/01	37.54	435.83		
9/26/01	45.17	428.20		
12/18/01	39.41	433.96		
3/18/02	37.73	435.64		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-3 (cont.)	6/5/02	35.35	473.37	438.02
	8/21/02	36.21		437.16
	12/3/02	35.62		437.75
	3/4/03	32.75		440.62
	6/10/03	31.26		442.11
	9/9/03	34.72		438.65
	12/23/03	30.47		442.90
	3/23/04	26.67		446.70
	5/10/04	30.25		443.12
	8/4/04	34.70		438.67
	11/4/04	33.94		439.43
	1/12/05	28.21		445.16
	5/2/05	24.56		448.81
	7/19/05	29.39		443.98
	11/21/05	31.30		442.07
	2/9/06	26.21		447.16
	5/16/06	24.36		449.01
	8/9/06	31.90		441.47
	11/8/06	31.30		442.07
	2/14/07	30.20		443.17
	5/17/07	33.64		439.73
	8/2/07	41.74		431.63
	11/12/07	47.41		425.96
	2/14/08	34.73		438.64
	5/8/08	35.60		437.77
	7/23/08	45.00		428.37
10/13/08	50.70	422.67		
2/11/09	47.81	425.56		
4/27/09	41.18	432.19		
8/4/09	51.89	421.48		
12/8/09	39.50	433.87		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-3 (cont.)	2/11/10	35.19	473.37	438.18
	5/3/10	31.39		441.98
	8/2/10	34.61		438.76
	11/2/10	37.20		436.17
	2/1/11	32.59		440.78
	4/25/11	27.60		445.77
	8/3/11	31.69		441.68
MW-4	3/30/94	31.56	473.64	442.08
	4/25/94	32.73		440.91
	8/12/94	41.61		432.03
	12/14/94	38.11		435.53
	2/10/95	30.50		443.14
	6/15/95	23.63		450.01
	9/26/95	29.70		443.94
	12/15/95	27.56		446.08
	3/21/96	15.63		458.01
	6/13/96	21.07		452.57
	9/16/96	28.99		444.65
	12/2/96	26.04		447.60
	3/7/97	19.69		453.95
	6/12/97	28.04		445.60
	9/29/97	29.91		443.73
	12/1/97	33.88		439.76
	3/19/98	18.67		454.97
	5/29/98	20.16		453.48
	9/15/98	30.46		443.18
	11/30/98	34.50		439.14
1/17/99	28.30	445.34		
6/10/99	27.60	446.04		
9/7/99	30.79	442.85		
12/13/99	31.60	442.04		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-4 (cont.)	3/13/00	24.35	473.64	449.29
	6/12/00	26.91		446.73
	11/10/00	29.71		443.93
	12/31/00	31.79		441.85
	3/27/01	29.98		443.66
	6/30/01	36.88		436.76
	9/26/01	43.87		429.77
	12/18/01	39.30		434.34
	3/18/02	37.75		435.89
	6/5/02	35.68		437.96
	8/21/02	36.58		437.06
	12/3/02	35.90		437.74
	3/4/03	32.73		440.91
	6/10/03	31.20		442.44
	9/9/03	34.64		439.00
	12/23/03	31.30		442.34
	3/23/04	26.71		446.93
	5/10/04	30.33		443.31
	8/4/04	34.87		438.77
	11/4/04	34.28		439.36
	1/12/05	28.67		444.97
	5/2/05	24.46		449.18
	7/19/05	29.36		444.28
	11/21/05	31.80		441.84
	2/9/06	26.34		447.30
	5/16/06	24.30		449.34
	8/9/06	32.05		441.59
11/8/06	32.85	440.79		
2/14/07	30.46	443.18		
5/17/07	33.92	439.72		
8/2/07	40.68	432.96		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-4 (cont.)	11/12/07	DRY ^(d)	473.64	--
	2/14/08	34.53		439.11
	5/8/08	35.55		438.09
	7/23/08	43.87		429.77
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	40.64		433.00
	8/4/09	DRY		--
	12/8/09	39.46		434.18
	2/11/10	35.31		438.33
	5/3/10	31.55		442.09
	8/2/10	35.15		438.49
	11/2/10	37.55		436.09
	2/1/11	32.86		440.78
	4/25/11	28.69		444.95
8/3/11	32.01	441.63		
MW-5	3/30/94	32.07	472.67	440.60
	4/25/94	33.65		439.02
	8/12/94	42.73		429.94
	12/14/94	38.89		433.78
	2/10/95	31.44		441.23
	6/15/95	24.99		447.68
	9/26/95	30.20		442.47
	12/15/95	28.56		444.11
	3/21/96	16.82		455.85
	6/13/96	22.61		450.06
	9/16/96	29.78		442.89
	12/2/96	26.51		446.16
	3/7/97	21.91		450.76
	9/29/97	31.74		440.93
	12/1/97	34.05		438.62

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-5 (cont.)	3/19/98	20.93	472.67	451.74
	5/29/98	21.30		451.37
	9/15/98	31.32		441.35
	11/30/98	35.44		437.23
	1/17/99	29.59		443.08
	6/10/99	28.05		444.62
	9/7/99	31.11		441.56
	12/13/99	32.66		440.01
	3/13/00	25.87		446.80
	6/12/00	28.15		444.52
	11/10/00	30.05		442.62
	12/31/00	31.81		440.86
	3/27/01	30.57		442.10
	6/30/01	37.24		435.43
	9/26/01	44.53		428.14
	12/18/01	40.65		432.02
	3/18/02	38.75		433.92
	6/5/02	36.21		436.46
	8/21/02	36.76		435.91
	12/3/02	36.12		436.55
	3/4/03	32.90		439.77
	6/10/03	33.04		439.63
	9/9/03	34.20		438.47
	12/23/03	31.38		441.29
	3/23/04	27.51		445.16
	5/10/04	31.12		441.55
	8/4/04	35.09		437.58
11/4/04	34.34	438.33		
1/12/05	29.19	443.48		
5/2/05	25.31	447.36		
7/19/05	30.49	442.18		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-5 (cont.)	11/21/05	32.35	472.67	440.32
	2/9/06	27.19		445.48
	5/16/06	25.30		447.37
	8/9/06	32.68		439.99
	11/8/06	32.22		440.45
	2/14/07	34.00		438.67
	5/17/07	34.29		438.38
	8/2/07	41.72		430.95
	11/12/07	DRY		--
	2/14/08	35.66		437.01
	5/8/08	36.60		436.07
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	42.50		430.17
	8/4/09	DRY		--
	12/8/09	39.92		432.75
	2/11/10	36.62		436.05
	5/3/10	32.89		439.78
	8/2/10	36.16		436.51
11/2/10	38.75	433.92		
2/1/11	32.77	439.90		
4/25/11	29.03	443.64		
8/3/11	33.18	439.49		
MW-6	3/30/94	33.38	471.93	438.55
	4/25/94	35.49		436.44
	8/12/94	45.14		426.79
	12/14/94	40.99		430.94
	2/10/95	33.34		438.59
	6/15/95	26.88		445.05
	9/26/95	33.55		438.38

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-6 (cont.)	12/15/95	30.32	471.93	441.61
	3/21/96	18.89		453.04
	6/13/96	24.62		447.31
	9/16/96	32.64		439.29
	12/2/96	27.42		444.51
	3/7/97	22.13		449.80
	6/12/97	31.02		440.91
	9/29/97	35.77		436.16
	12/1/97	37.14		434.79
	3/19/98	21.10		450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	9/7/99	33.94		437.99
	12/13/99	35.84		436.09
	3/13/00	28.45		443.48
	6/12/00	30.52		441.41
	11/10/00	32.99		438.94
	12/31/00	34.95		436.98
	3/27/01	32.72		439.21
	6/30/01	39.86		432.07
	9/26/01	DRY		--
	12/18/01	43.36		428.57
	3/18/02	41.29		430.64
	6/5/02	38.85		433.08
8/21/02	39.02	432.91		
12/3/02	38.76	433.17		
3/4/03	35.13	436.80		
6/10/03	34.15	437.78		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-6 (cont.)	9/9/03	37.66	471.93	434.27
	12/23/03	33.43		438.50
	3/23/04	29.96		441.97
	5/10/04	32.98		438.95
	8/4/04	37.02		434.91
	11/4/04	37.03		434.90
	1/12/05	32.01		439.92
	5/2/05	27.30		444.63
	7/19/05	32.27		439.66
	11/21/05	33.23		438.70
	2/9/06	29.07		442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	5/17/07	36.50		435.43
	8/2/07	42.24		429.69
	11/12/07	DRY		--
	2/14/08	38.67		433.26
	5/8/08	38.50		433.43
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	44.87		427.06
	8/4/09	DRY		--
	12/8/09	43.02		428.91
	2/11/10	38.89		433.04
5/3/10	34.56	437.37		
8/2/10	37.87	434.06		
11/2/10	40.45	431.48		
2/1/11	35.73	436.20		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-6 (cont.)	4/25/11	30.72	471.93	441.21
	8/3/11	34.95		436.98
MW-7	3/30/94	31.98	472.33	440.35
	4/25/94	33.56		438.77
	8/12/94	43.35		428.98
	12/14/94	39.34		432.99
	2/10/95	32.11		440.22
	6/15/95	25.51		446.82
	9/26/95	31.43		440.90
	12/15/95	28.97		443.36
	3/21/96	17.36		454.97
	6/13/96	23.47		448.86
	9/16/96	31.35		440.98
	12/2/96	27.11		445.22
	3/7/97	21.33		451.00
	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
	1/17/99	31.04		441.29
	6/10/99	29.89		442.44
9/7/99	32.38	439.95		
12/13/99	33.98	438.35		
3/13/00	27.09	445.24		
6/12/00	28.76	443.57		
11/10/00	31.54	440.79		
12/31/00	32.76	439.57		
3/27/01	30.97	441.36		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-7 (cont.)	6/30/01	37.50	472.33	434.83
	9/26/01	45.11		427.22
	12/18/01	41.13		431.20
	3/18/02	39.22		433.11
	6/5/02	36.55		435.78
	8/21/02	36.81		435.52
	12/3/02	36.52		435.81
	3/4/03	32.60		439.73
	6/10/03	31.33		441.00
	9/9/03	34.71		437.62
	12/23/03	30.80		441.53
	3/23/04	26.41		445.92
	5/10/04	29.86		442.47
	8/4/04	34.06		438.27
	11/4/04	34.12		438.21
	1/12/05	28.83		443.50
	5/2/05	24.66		447.67
	7/19/05	29.07		443.26
	11/21/05	30.42		441.91
	2/9/06	26.15		446.18
	5/16/06	24.44		447.89
	8/9/06	31.77		440.56
	11/8/06	31.14		441.19
	2/14/07	30.39		441.94
	5/17/07	33.31		439.02
	8/2/07	37.09		435.24
	11/12/07	DRY		--
2/14/08	36.51	435.82		
5/8/08	36.00	436.33		
7/23/08	44.42	427.91		
10/13/08	DRY	--		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-7 (cont.)	2/11/09	DRY	472.33	--
	4/27/09	41.80		430.53
	8/4/09	DRY		--
	12/17/09	39.26		433.07
	2/11/10	36.18		436.15
	5/3/10	31.80		440.53
	8/2/10	34.31		438.02
	11/2/10	36.68		435.65
	2/1/11	32.66		439.67
	4/25/11	27.75		444.58
	8/3/11	31.36		440.97
MW-8	12/23/03	32.01	471.18	439.17
	3/23/04	28.50		442.68
	5/10/04	31.44		439.74
	8/4/04	35.11		436.07
	11/4/04	34.77		436.41
	1/12/05	29.66		441.52
	5/2/05	25.91		445.27
	7/19/05	30.56		440.62
	11/21/05	32.48		438.70
	2/9/06	27.40		443.78
	5/16/06	25.60		445.58
	8/9/06	32.77		438.41
	11/8/06	32.10		439.08
	2/14/07	30.94		440.24
	5/17/07	34.14		437.04
	8/2/07	41.24		429.94
	11/12/07	DRY		--
	2/14/08	35.55		435.63
5/8/08	36.64	434.54		
7/23/08	DRY	--		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-8 (cont.)	10/13/08	DRY	471.18	--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	39.92		431.26
	2/11/10	36.72		434.46
	5/3/10	32.81		438.37
	8/2/10	36.08		435.10
	11/2/10	38.44		432.74
	2/1/11	34.11		437.07
	4/25/11	28.72		442.46
	8/3/11	33.09		438.09
MW-9	12/23/03	34.03	470.78	436.75
	3/23/04	30.01		440.77
	5/10/04	33.61		437.17
	8/4/04	37.47		433.31
	11/4/04	37.44		433.34
	5/2/05	27.73		443.05
	7/19/05	32.90		437.88
	11/21/05	34.15		436.63
	2/9/06	29.44		441.34
	5/16/06	27.50		443.28
	8/9/06	35.85		434.93
	11/8/06	34.18		436.60
	2/14/07	34.00		436.78
	5/17/07	36.88		433.90
	8/2/07	44.11		426.67
	11/12/07	DRY		--
	2/14/08	39.32		431.46
5/8/08	38.90	431.88		
7/23/08	DRY	--		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-9 (cont.)	10/13/08	DRY	470.78	--
	2/11/09	DRY		--
	4/27/09	43.79		426.99
	8/4/09	DRY		--
	12/8/09	43.61		427.17
	2/11/10	39.48		431.30
	5/3/10	34.96		435.82
	8/2/10	38.00		432.78
	11/2/10	40.30		430.48
	2/1/11	35.97		434.81
	4/25/11	30.64		440.14
	8/3/11	35.17		435.61
MW-10	12/23/03	33.80	471.63	437.83
	3/23/04	28.68		442.95
	5/10/04	32.15		439.48
	8/4/04	36.40		435.23
	11/4/04	36.21		435.42
	1/12/05	31.64		439.99
	5/2/05	27.01		444.62
	7/19/05	31.59		440.04
	11/21/05	32.96		438.67
	2/9/06	28.56		443.07
	5/16/06	26.83		444.80
	8/9/06	34.37		437.26
	11/8/06	33.41		438.22
	2/14/07	32.81		438.82
	5/17/07	35.85		435.78
	8/2/07	43.46		428.17
	11/12/07	DRY		--
	2/14/08	39.71		431.92
5/8/08	37.55	434.08		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-10 (cont.)	7/23/08	DRY	471.63	--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	45.10		426.53
	8/4/09	44.52		427.11
	12/8/09	42.80		428.83
	2/11/10	39.74		431.89
	5/3/10	33.97		437.66
	8/2/10	36.12		435.51
	11/2/10	38.30		433.33
	2/1/11	34.63		437.00
	4/25/11	29.63		442.00
	8/3/11	33.26		438.37
MW-11	12/16/08	DRY	473.26	--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	40.25		433.01
	2/11/10	NM ^(e)		--
	5/3/10	31.36	441.90	
	8/2/10	31.94	472.96 ^(c)	441.02
	11/2/10	36.98		435.98
	2/1/11	32.30		440.66
	4/25/11	27.31		445.65
	8/3/11	31.11		441.85
VW-2	8/4/04	34.13	473.28	439.15
	11/4/04	34.75		438.53
	1/12/05	29.35		443.93
	5/2/05	25.34		447.94
	7/19/05	29.76		443.52
	11/21/05	31.81		441.47

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
VW-2 (cont.)	2/9/06	27.21	473.28	446.07
	5/17/06	25.26		448.02
	8/9/06	31.74		441.54
	11/8/06	33.52		439.76
	2/14/07	30.77		442.51
	5/17/07	33.17		440.11
	8/2/07	36.33		436.95
	11/12/07	DRY		--
	2/14/08	35.55		437.73
	5/8/08	35.31		437.97
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
	2/11/10	NM		--
	5/3/10	31.84		441.44
	8/2/10	33.15		472.57 ^(c)
	11/2/10	DRY	--	
2/1/11	32.80	439.77		
4/25/11	25.43	447.14		
	8/3/11	26.82		445.75
VW-3	8/4/04	32.89	474.38	441.49
	11/4/04	34.78		439.60
	1/12/05	29.51		444.87
	5/2/05	24.79		449.59
	7/19/05	28.91		445.47
	11/21/05	31.07		443.31
	2/9/06	26.60		447.78
	5/16/06	24.19		450.19

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
VW-3 (cont.)	8/9/06	30.53	474.38	443.85
	11/8/06	31.62		442.76
	2/14/07	30.48		443.90
	5/17/07	31.70		442.68
	8/2/07	35.55		438.83
	11/12/07	DRY		--
	2/14/08	DRY		--
	5/8/08	34.80		439.58
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
	2/11/10	DRY		--
	5/3/10	31.85		442.53
	8/2/10	34.72		439.66
	11/2/10	DRY		--
2/1/11	32.56	441.82		
4/25/11	27.81	446.57		
8/3/11	28.93	445.45		
TP-1	7/19/05	29.91	472.82	442.91
	11/21/05	32.28		440.54
	2/9/06	28.02		444.80
	5/17/06	25.18		447.64
	8/9/06	32.81		440.01
	11/8/06	32.02		440.80
	2/14/07	33.59		439.23
	5/17/07	33.52		439.30
	8/2/07	40.30		432.52
	11/12/07	DRY		--

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
TP-1 (cont.)	2/14/08	36.17	472.82	436.65
	5/8/08	36.17		436.65
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	41.39		431.43
	2/11/10	NM		--
	5/3/10	32.32		440.50
	8/2/10	33.96	472.64 ^(c)	438.68
	11/2/10	37.46		435.18
	2/1/11	33.01		439.63
	4/25/11	28.23		444.41
	8/3/11	31.85		440.79
TP-2	7/19/05	29.67	472.93	443.26
	11/21/05	31.43		441.50
	2/9/06	27.27		445.66
	5/17/06	25.00		447.93
	8/9/06	31.74		441.19
	11/8/06	32.80		440.13
	2/14/07	30.32		442.61
	5/17/07	33.28		439.65
	8/2/07	39.35		433.58
	11/12/07	DRY		--
	2/14/08	35.62		437.31
	5/8/08	36.62		436.31
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
4/27/09	DRY	--		

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
TP-2 (cont.)	8/4/09	DRY	472.93	--
	12/8/09	40.08		432.85
	2/11/10	NM		--
	5/3/10	31.85	472.78 ^(c)	441.08
	8/2/10	33.57		439.21
	11/2/10	37.35		435.43
	2/1/11	32.79		439.99
	4/25/11	28.30		444.48
	8/3/11	31.59		441.19
DW-1	5/22/08	37.30	472.85	435.55
	7/23/08	45.55		427.30
	10/13/08	51.40		421.45
	2/11/09	48.28		424.57
	4/27/09	41.74		431.11
	8/4/09	52.22		420.63
	12/8/09	39.79		433.06
	2/11/10	35.57		437.28
	5/3/10	31.70		441.15
	8/2/10	34.76		438.09
	11/2/10	37.49		435.36
	2/1/11	32.83		440.02
	4/25/11	27.96		444.89
	8/3/11	31.96		440.89
DW-2	5/22/08	39.80	471.61	431.81
	7/23/08	48.25		423.36
	10/13/08	53.40		418.21
	2/11/09	51.50		420.11
	4/27/09	44.71		426.90
	8/4/09	54.67		416.94
	12/8/09	42.88		428.73
	2/11/10	38.63		432.98

TABLE D-1

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076**

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
DW-2 (cont.)	5/3/10	34.46	471.61	437.15
	8/2/10	37.72		433.89
	11/2/10	40.50		431.11
	2/1/11	35.66		435.95
	4/25/11	30.69		440.92
	8/3/11	35.00		436.61
DW-3	5/22/08	40.20	470.33	430.13
	7/23/08	49.09		421.24
	10/13/08	54.62		415.71
	2/11/09	51.96		418.37
	4/27/09	45.17		425.16
	8/4/09	56.32		414.01
	12/8/09	42.92		427.41
	2/11/10	38.75		431.58
	5/3/10	34.51		435.82
	8/2/10	35.59		434.74
	11/2/10	40.00		430.33
	2/1/11	35.50		434.83
	4/25/11	30.45		439.88
	8/3/11	34.71		435.62
DW-4	5/22/08	40.20	468.48	428.28
	7/23/08	49.50		418.98
	10/13/08	54.90		413.58
	2/11/09	51.71		416.77
	4/27/09	45.10		423.38
	8/4/09	56.46		412.02
	12/8/09	42.26		426.22
	2/11/10	37.98		430.50
	5/3/10	34.04		434.44
	8/2/10	36.94		431.54
	11/2/10	39.50		428.98

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
DW-4 (cont.)	2/1/11	35.11	468.48	433.37
	4/25/11	30.12		438.36
	8/3/11	34.54		433.94
DW-5	12/8/09	43.05	471.86	428.81
	2/11/10	38.93		432.93
	5/3/10	34.55		437.31
	8/2/10	37.56		434.30
	11/2/10	40.00		431.86
	2/1/11	35.57		436.29
	4/25/11	30.59		441.27
	8/3/11	34.64		437.22
DW-6	12/8/09	43.50	471.77	428.27
	2/11/10	39.22		432.55
	5/3/10	35.15		436.62
	8/2/10	38.35		433.42
	11/2/10	40.09		431.68
	2/1/11	36.35		435.42
	4/25/11	31.32		440.45
	8/3/11	35.63		436.14
DW-7	12/8/09	43.01	470.07	427.06
	2/11/10	38.70		431.37
	5/3/10	34.64		435.43
	8/2/10	37.82		432.25
	11/2/10	40.42		429.65
	2/1/11	35.76		434.31
	4/25/11	30.82		439.25
	8/3/11	35.19		434.88
DW-8	4/25/11	27.23	472.31	445.08
	8/3/11	31.14		441.17
MW-A	1/17/99	30.13	NM	--
MW-B	1/17/99	30.29	NM	--

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
MW-C	1/17/99	30.60	NM	--
MW-D	1/17/99	31.32	NM	--
MW-E	1/17/99	31.36	NM	--
MW-W	1/17/99	30.91	NM	--
IP-1	7/23/08	45.49	473.16	427.67
	10/13/08	51.30		421.86
	5/3/10 ^(f)	33.80		439.36
	4/25/11	27.97		445.19
IP-2	7/23/08	46.83	473.21	426.38
	10/13/08	51.40		421.81
	5/3/10 ^(f)	32.00		441.21
	4/25/11	28.04		445.17
IP-3	7/23/08	45.47	472.97	427.50
	10/13/08	51.11		421.86
	5/3/10 ^(f)	31.68		441.29
	4/25/11	28.07		444.90
IP-4	7/23/08	44.55	473.02	428.47
	10/13/08	50.89		422.13
	5/3/10 ^(f)	31.61		441.41
	4/25/11	27.93		445.09
IP-5	7/23/08	44.70	473.06	428.36
	10/13/08	51.06		422.00
	5/3/10 ^(f)	31.60		441.46
	4/25/11	27.80		445.26
IP-6	7/23/08	49.91	472.73	422.82
	10/13/08	55.63		417.10
	5/3/10 ^(f)	34.98		437.75
	4/25/11	30.60		442.13
IP-7	7/23/08	51.45	472.86	421.41
	10/13/08	57.23		415.63

TABLE D-1

**HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076**

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
IP-7 (cont.)	5/3/10 ^(f)	35.75	472.86	437.11
	4/25/11	31.51		441.35
IP-8	12/16/08	50.48	473.13	422.65
	5/3/10 ^(f)	33.34		439.79
	4/25/11	28.07		445.06
IP-9	12/16/08	52.51	473.47	420.96
	5/3/10 ^(f)	31.79		441.68
	4/25/11	27.84		445.63
IP-10	2/11/09	48.77	473.78	425.01
	5/3/10 ^(f)	32.23		441.55
	4/25/11	27.79		445.99

- (a) Elevation of PVC well casing (north edge) surveyed relative to mean sea level (MSL).
Wells were surveyed by Cross Land Surveying, Inc., per AB 2886 requirements.
Benchmark K2-741, elevation is 467.835 feet above MSL.
- (b) Water Table Elevation = (Casing Elevation - Depth to Water)
- (c) Wells were resurveyed by Cross Land Surveying, Inc., per AB 2886 requirements, on 19 October 2010 after remediation system construction.
Benchmark K2-741, elevation is 467.835 feet above MSL.
- (d) Depth of groundwater assumed to be below screened interval; well had 6 inches or less of water.
- (e) NM - Not measured.
- (f) Baseline remediation system values.

ATTACHMENT E
HISTORICAL GROUNDWATER ANALYTICAL RESULTS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-1	6/1/93	27,000	2,200	400	ND<0.5 ^(c)	4,900	-- ^(d)	--	--	--	--	--	--	--	--
	6/22/93	87,000	8,000	10,000	260	10,000	--	--	--	--	--	--	--	--	--
	10/6/93	40,000	4,700	6,500	740	5,300	--	--	--	--	--	--	--	--	--
	1/13/94	9,400	1,300	9,500	110	850	--	--	--	--	--	--	--	--	--
	3/30/94	NS ^(e)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	11,000	1,500	1,800	290	1,700	--	--	--	--	--	--	--	--	--
	8/12/94	11,000	550	330	260	1,400	--	--	--	--	--	--	--	--	--
	12/14/94	11,000	1,000	1,200	320	1,500	--	--	--	--	--	--	--	--	--
	2/10/95	9,300	1,200	1,500	280	1,500	--	--	--	--	--	--	--	--	--
	6/15/95	140	5.6	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	410	140	ND<0.5	ND<0.5	43	--	--	--	--	--	--	--	--	--
	12/15/95	740	250	ND<1.3	ND<1.3	87	--	--	--	--	--	--	--	--	--
	3/21/96	ND<50	0.52	ND<0.5	ND<0.5	0.51	--	--	--	--	--	--	--	--	--
	6/13/96	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/16/96	720	70	ND<0.5	1.0	5.1	ND<5	--	--	--	--	--	--	--	--
	12/2/96	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	600	6.7	ND<0.5	1.2	1.8	ND<5	--	--	--	--	--	--	--	--
	6/12/97	18,000	180	800	410	1,800	ND<5	--	--	--	--	--	--	--	--
	9/29/97	350	120	1.5	ND<0.5	12	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	7.0	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/15/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/30/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
3/13/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
11/10/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-1 (cont.)	12/31/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	3/27/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	6/30/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	9/26/01	90	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/18/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	11/4/04	4,500	2.5	5.8	79	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	78	0.80	0.70	0.86	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<40	ND<5	ND<0.5	ND<0.5
	7/19/05	290	ND<0.5	ND<0.5	4.0	4.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	370	ND<0.5	ND<0.5	0.75	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	140	ND<0.5	ND<0.5	0.67	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	400	ND<0.5	ND<0.5	1.7	1.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	410	ND<0.5	ND<0.5	2.2	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	2,300	ND<0.5	0.66	17	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	--	--
	8/2/07	580	5.7	0.64	6.8	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	750	0.85	2.7	4.2	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	2/14/08	1,700	3.3	17	38	83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	620	1.8	ND<0.5	12	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	270	0.52	ND<0.5	3.9	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	10/13/08	730	ND<0.5	ND<0.5	0.68	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	2/11/09	2,100	4.1	8.1	18	36	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	4/27/09	2,800	9.9	34	94	170	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/09	890	ND<0.5	ND<0.5	1.7	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	12/8/09	3,200	16	18	81	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<20	ND<0.5	ND<0.5
	2/11/10	1,300	3.7	1.7	13	6.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
5/5/10	710	2.2	0.92	5.9	2.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/3/10	1,200	2.4	3.7	22	23	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
11/3/10	1,100	7.3	34	18	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
2/1/11	200	ND<0.5	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	

TABLE E-1
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-1 (cont.)	4/25/11	130	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/11	1,500	2.0	15	44	86	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-2	6/1/93	170,000	20,000	21,000	3,300	18,000	--	--	--	--	--	--	--	--	--
	6/22/93	160,000	19,000	22,000	3,500	18,000	--	--	--	--	--	--	--	--	--
	10/6/93	110,000	17,000	17,000	3,000	15,000	--	--	--	--	--	--	--	--	--
	1/13/94	93,000	20,000	19,000	2,300	14,000	--	--	--	--	--	--	--	--	--
	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	41,000	9,600	7,300	840	7,800	--	--	--	--	--	--	--	--	--
	8/12/94	59,000	11,000	11,000	2,300	11,000	--	--	--	--	--	--	--	--	--
	12/14/94	63,000	13,000	13,000	2,200	12,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	12,000	12,000	2,200	11,000	--	--	--	--	--	--	--	--	--
	6/15/95	61,000	11,000	12,000	1,900	11,000	--	--	--	--	--	--	--	--	--
	9/26/95	61,000	9,400	11,000	2,300	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	48,000	8,000	8,300	2,200	12,000	--	--	--	--	--	--	--	--	--
	3/21/96	48,000	8,000	7,700	2,400	12,000	--	--	--	--	--	--	--	--	--
	6/13/96	33,000	7,300	8,800	1,900	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	8,600	510	640	180	1,300	ND<250	--	--	--	--	--	--	--	--
	12/2/96	29,000	4,400	4,000	1,300	6,100	ND<130	--	--	--	--	--	--	--	--
	3/7/97	13,000	1,800	1,100	270	2,000	ND<250	--	--	--	--	--	--	--	--
	6/12/97	68,000	7,800	6,600	2,300	11,000	ND<500	--	--	--	--	--	--	--	--
	9/29/97	15,000	1,500	97	740	1,800	ND<250	--	--	--	--	--	--	--	--
	12/1/97	13,000	900	37	860	2,400	ND<250	--	--	--	--	--	--	--	--
	3/19/98	42,000	5,000	3,600	2,000	8,300	ND<250	--	--	--	--	--	--	--	--
	5/29/98	68,000	5,600	4,700	2,400	11,000	ND<250	--	--	--	--	--	--	--	--
	9/15/98	36,000	3,900	1,200	1,400	7,800	ND<250	--	--	--	--	--	--	--	--
11/30/98	16,000	2,200	59	1,200	1,500	ND<250	--	--	--	--	--	--	--	--	
1/17/99	30,000	4,000	2,200	2,100	9,500	ND<250	--	--	--	--	--	--	--	--	
6/10/99	70,000	6,300	1,800	3,600	14,000	ND<500	--	--	--	--	--	--	--	--	
9/7/99	42,000	3,800	840	1,900	8,000	150	--	--	--	--	--	--	--	--	
12/13/99	14,000	1,400	87	690	110	34	--	--	--	--	--	--	--	--	
3/13/00	38,000	2,400	2,300	1,600	6,400	2,400	--	--	--	--	--	--	--	--	

TABLE E-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-2 (cont.)	6/12/00	56,000	4,000	950	2,300	7,200	ND<50	--	--	--	--	--	--	--	--	
	11/10/00	35,000	5,100	850	1,500	3,200	230	--	--	--	--	--	--	--	--	
	12/31/00	21,000	3,200	420	1,300	1,200	440	--	--	--	--	--	--	--	--	
	3/27/01	3,500	420	64	16	280	120	--	--	--	--	--	--	--	--	
	6/30/01	1,200	88	4.5	65	37	29	--	--	--	--	--	--	--	--	
	9/26/01	53,000	8,500	1,500	2,400	4,600	270	--	--	--	--	--	--	--	--	
	12/18/01	26,000	5,400	900	1,500	2,200	430	--	--	--	--	--	--	--	--	
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	4,200	240	7.3	200	53	89	--	--	--	--	--	--	--	--	
	6/5/02	25,000	3,500	390	1,400	2,400	550	--	--	--	--	--	--	--	--	
	8/21/02	10,000	1,200	32	620	300	160	--	--	--	--	--	--	--	--	
	12/3/02	3,700	110	2.5	130	11	29	--	--	--	--	--	--	--	--	
	3/4/03	8,700	1,100	77	350	540	230	ND<0.5	ND<0.5	ND<10	21	ND<150	ND<5	ND<0.5	ND<0.5	
	6/10/03	6,300	660	35	190	120	410	ND<2.5	ND<2.5	ND<5	ND<25	ND<250	ND<25	ND<2.5	ND<2.5	
	9/9/03	6,900	500	ND<20	360	29	9,500	ND<20	ND<20	60	ND<200	ND<2,000	ND<200	ND<20	ND<20	
	12/23/03	22,000	4,900	1,300	720	2,300	1,700	ND<20	ND<20	21	ND<200	ND<2,000	ND<200	ND<20	ND<20	
	3/23/04	45,000	5,200	1,500	1,800	5,000	750	ND<20	ND<20	34	ND<200	ND<2,000	ND<200	ND<20	ND<20	
	5/10/04	7,300	1,000	51	240	290	1,800	ND<5	ND<5	14	ND<50	ND<500	ND<50	ND<5	ND<5	
	8/4/04	45,000	7,200	1,900	1,800	5,100	2,500	ND<25	ND<25	31	ND<250	ND<2,500	ND<250	ND<25	ND<25	
	11/4/04	27,000	4,400	1,100	840	2,200	3,500	ND<9	ND<9	29	ND<50	ND<900	ND<90	ND<9	ND<9	
	1/12/05	16,000	1,900	640	570	1,500	1,900	ND<4	ND<4	19	28 ^(f)	ND<400	ND<40	ND<4	ND<4	
	5/2/05	44,000	5,200	1,100	1,800	4,800	2,200	ND<20	ND<20	30	ND<200	ND<2,000	ND<200	ND<20	ND<20	
	7/20/05	21,000	3,000	500	1,000	1,500	4,400	ND<7	ND<7	32	74 ^(f)	ND<700	ND<70	ND<7	ND<7	
	11/22/05	33,000	4,400	880	1,200	2,600	2,200	ND<9	ND<9	19	480	ND<900	ND<90	ND<9	ND<9	
	2/9/06	25,000	3,300	720	1,300	2,200	2,500	ND<7	ND<7	27	490	ND<700	ND<70	ND<7	ND<7	
	5/17/06	22,000	3,200	240	1,200	2,100	4,600	ND<7	ND<7	46	1,000	ND<700	ND<70	ND<7	ND<7	
	8/9/06	34,000	4,200	830	1,300	2,400	2,900	ND<9	ND<9	25	1,600	ND<900	ND<90	ND<9	ND<9	
	11/8/06	27,000	3,600	300	1,200	1,800	1,500	ND<9	ND<9	15	1,100	ND<900	ND<90	ND<9	ND<9	
	2/14/07	36,000	4,600	740	1,600	2,100	1,800	ND<5	ND<5	20	910	ND<700	ND<50	ND<5	ND<5	
	5/17/07	37,000	7,400	680	1,900	2,400	3,000	ND<9	ND<9	24	2,600	ND<4,000	ND<90	--	--	
	8/2/07	37,000	4,200	500	1,800	2,200	1,300	ND<9	ND<9	18	1,200	ND<2,000	ND<90	ND<9	ND<9	

TABLE E-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-2 (cont.)	11/12/07	25,000	5,900	120	1,700	820	1,400	ND<15	ND<15	16	720	ND<1,500	ND<150	ND<15	ND<15
	2/14/08	31,000	5,400	450	1,900	2,000	1,200	ND<15	ND<15	16	410	ND<1,500	ND<150	ND<15	ND<15
	5/8/08	29,000	3,200	620	1,400	1,700	580	ND<5	ND<5	10	210	ND<1,000	ND<50	ND<5	ND<5
	7/23/08	25,000	3,800	220	1,600	1,000	780	ND<5	ND<5	14	470	ND<900	ND<50	ND<5	ND<5
	10/13/08	31,000	7,600	160	1,800	440	1,600	ND<9	ND<9	20	710	ND<1,500	ND<90	ND<9	ND<9
	2/11/09	22,000	4,400	120	1,500	430	650	ND<9	ND<9	12	330	ND<3,000	ND<90	ND<9	ND<9
	4/28/09	28,000	3,400	600	1,500	1,700	380	ND<8	ND<8	8.1	150	ND<1,000	ND<80	ND<8	ND<8
	8/4/09	30,000	5,800	170	1,500	370	1,400	ND<9	ND<9	18	670	ND<3,000	ND<90	ND<9	ND<9
	12/8/09	24,000	3,100	200	1,200	830	520	ND<7	ND<7	8	250	ND<700	ND<70	ND<7	ND<7
	2/12/10	19,000	2,900	440	940	1,300	820	ND<7	ND<7	9.5	400	ND<700	ND<70	ND<7	ND<7
	5/3/10	26,000	3,100	870	1,100	2,200	530	ND<7	ND<7	8	370	ND<700	ND<70	ND<7	ND<7
	8/3/10	19,000	2,000	150	840	730	280	ND<4	ND<4	4.4	200	ND<400	ND<40	ND<4	ND<4
	11/4/10	13,000	2,000	160	420	390	540	ND<4	ND<4	5.7	510	ND<400	ND<40	ND<4	ND<4
	2/2/11	10,000	1,600	130	320	410	410	ND<4	ND<4	4.2	410	ND<400	ND<40	ND<4	ND<4
	4/28/11	13,000	1,400	100	470	670	450	ND<2.5	ND<2.5	4.6	200	ND<250	ND<50	ND<2.5	ND<2.5
8/4/11	16,000	1,900	200	430	820	660	ND<3	ND<3	5.7	420	ND<1,500	ND<30	ND<3	ND<3	
MW-3	6/1/93	270	4.6	ND<0.5	ND<0.5	1.9	--	--	--	--	--	--	--	--	--
	6/22/93	160	8.2	ND<0.5	ND<0.5	0.72	--	--	--	--	--	--	--	--	--
	10/6/93	740	57	110	24	120	--	--	--	--	--	--	--	--	--
	1/13/94	83	2.6	0.67	0.78	4.2	--	--	--	--	--	--	--	--	--
	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	60	0.75	3.2	0.5	3.6	--	--	--	--	--	--	--	--	--
	8/12/94	310	7.3	14	2.6	13	--	--	--	--	--	--	--	--	--
	12/14/94	75	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	96	1.4	ND<0.5	ND<0.5	1.8	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	6.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	140	ND<0.5	ND<0.5	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-3 (cont.)	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/08	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.83	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	57	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	61	ND<5	ND<0.5	ND<0.5
	2/11/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.64	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/8/09	150	3.6	1.1	2.4	2.6	0.82	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	2/11/10	61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	53	ND<5	ND<0.5	ND<0.5
	5/6/10	ND<50	ND<0.5	1.0	ND<0.5	0.95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/3/10	74	2.4	5.5	0.96	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
11/3/10	ND<50	ND<0.5	2.5	ND<0.5	3.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
2/1/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/4/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
MW-4	3/30/94	120	4.2	15	2.5	26	--	--	--	--	--	--	--	--	--
	4/25/94	65	ND<0.5	1.8	ND<0.5	2.1	--	--	--	--	--	--	--	--	--
	8/12/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/14/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-4 (cont.)	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--	
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--	
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/2/05	ND<50	1.8	1.1	1.4	4.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--	
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	ND<50	2.4	1.8	2.3	4.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-5	3/30/94	7,500	1,300	20	ND<13	160	--	--	--	--	--	--	--	--	--
	4/25/94	6,500	1,100	41	130	740	--	--	--	--	--	--	--	--	--
	8/12/94	4,000	420	2.9	41	98	--	--	--	--	--	--	--	--	--
	12/14/94	4,800	660	ND<2.5	33	13	--	--	--	--	--	--	--	--	--
	2/10/95	5,200	490	ND<13	23	19	--	--	--	--	--	--	--	--	--
	6/15/95	460	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	1,400	61	ND<0.5	3.1	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	2,100	77	1.5	10	1.5	--	--	--	--	--	--	--	--	--
	3/21/96	930	35	2.0	2.0	18	--	--	--	--	--	--	--	--	--
	6/13/96	610	38	0.72	1.9	2.0	ND<5	--	--	--	--	--	--	--	--
	9/16/96	380	29	ND<0.5	0.95	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/2/96	200	1.1	0.64	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
	6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	540	4.1	ND<0.5	ND<0.5	0.52	ND<5	--	--	--	--	--	--	--	--
	9/15/98	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/30/98	430	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	820	46	1.7	10	21	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	270	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	2,200	42	1.1	25	30	8.6	--	--	--	--	--	--	--	--
	12/31/00	1,300	21	ND<0.5	4.3	2.6	10	--	--	--	--	--	--	--	--
	3/27/01	1,200	11	ND<0.5	2.6	ND<0.5	21	--	--	--	--	--	--	--	--
	6/30/01	1,400	4.8	ND<0.5	1.5	0.56	14	--	--	--	--	--	--	--	--
	9/26/01	660	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	--	--	--	--	--	--	--	--

TABLE E-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-5 (cont.)	12/18/01	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	890	0.65	ND<0.5	ND<0.5	ND<0.5	3.1	--	--	--	--	--	--	--	--
	6/5/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/21/02	2,100	20	ND<0.5	63	4.0	7.0	--	--	--	--	--	--	--	--
	12/3/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/4/03	490	10	ND<0.5	2.2	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/9/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/23/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/23/04	440	2.3	ND<0.5	1.0	5.9	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/04	160	ND<0.5	ND<0.5	ND<0.5	0.71	0.94	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	290	0.74	ND<0.5	0.58	1.3	0.61	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	300	ND<0.5	ND<0.5	0.51	1.6	0.73	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	210	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	0.63	1.0	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	220	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	200	ND<0.5	ND<0.5	ND<0.5	1.1	2.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	85	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	980	ND<0.5	ND<0.5	2.1	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	580	ND<0.5	ND<0.5	1.8	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-5 (cont.)	4/27/09	250	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	220	ND<0.5	ND<0.5	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	190	ND<0.5	ND<0.5	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-6	3/30/94	63,000	21,000	8,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	4/25/94	77,000	22,000	12,000	2,300	16,000	--	--	--	--	--	--	--	--	--
	8/12/94	65,000	12,000	8,100	2,200	16,000	--	--	--	--	--	--	--	--	--
	12/14/94	65,000	18,000	9,500	2,200	14,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	21,000	8,400	2,000	14,000	--	--	--	--	--	--	--	--	--
	6/15/95	75,000	20,000	11,000	2,100	15,000	--	--	--	--	--	--	--	--	--
	9/26/95	62,000	15,000	9,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	61,000	15,000	9,000	2,300	15,000	--	--	--	--	--	--	--	--	--
	3/21/96	65,000	18,000	9,800	2,400	16,000	--	--	--	--	--	--	--	--	--
	6/13/96	29,000	8,600	3,300	2,200	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	42,000	6,400	1,800	2,100	11,000	ND<250	--	--	--	--	--	--	--	--
	12/2/96	28,000	3,000	1,100	970	8,300	ND<500	--	--	--	--	--	--	--	--
	3/7/97	12,000	2,000	190	520	2,300	ND<250	--	--	--	--	--	--	--	--
	6/12/97	37,000	3,900	470	1,600	6,200	ND<100	--	--	--	--	--	--	--	--
	9/29/97	34,000	3,500	370	1,600	5,200	ND<100	--	--	--	--	--	--	--	--
	12/1/97	20,000	2,100	ND<10	1,200	2,200	ND<100	--	--	--	--	--	--	--	--
	3/19/98	24,000	2,900	460	1,100	3,400	ND<100	--	--	--	--	--	--	--	--
	5/29/98	38,000	3,500	700	1,800	5,200	ND<100	--	--	--	--	--	--	--	--
	9/15/98	22,000	1,900	110	1,400	3,000	ND<100	--	--	--	--	--	--	--	--
11/30/98	9,900	770	16	820	710	ND<100	--	--	--	--	--	--	--	--	
1/17/99	14,000	2,200	160	1,700	3,600	ND<100	--	--	--	--	--	--	--	--	

TABLE E-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-6 (cont.)	6/10/99	22,000	1,600	160	1,400	2,900	5.5	--	--	--	--	--	--	--	--
	9/7/99	17,000	1,400	33	1,300	1,800	ND<50	--	--	--	--	--	--	--	--
	12/13/99	16,000	790	9.2	840	780	ND<25	--	--	--	--	--	--	--	--
	3/13/00	16,000	790	85	780	1,600	ND<25	--	--	--	--	--	--	--	--
	6/12/00	24,000	1,100	150	1,300	2,300	5,600	--	--	--	--	--	--	--	--
	11/10/00	13,000	440	7.0	760	350	1,000	--	--	--	--	--	--	--	--
	12/31/00	12,000	680	8.0	820	190	1,400	--	--	--	--	--	--	--	--
	3/27/01	14,000	330	17	940	670	380	--	--	--	--	--	--	--	--
	6/30/01	750	45	0.93	47	14	54	--	--	--	--	--	--	--	--
	9/26/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/18/01	43,000	3,800	350	1,900	3,000	900	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	33,000	2,600	120	1,800	2,800	740	--	--	--	--	--	--	--	--
	6/5/02	10,000	1,100	16	700	180	600	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	23	710	290	370	--	--	--	--	--	--	--	--
	12/3/02	16,000	1,700	63	970	630	1,500	--	--	--	--	--	--	--	--
	3/4/03	16,000	1,700	25	1,200	40	7,700	ND<20	ND<20	ND<70	ND<200	ND<2,000	ND<200	ND<200	ND<20
	6/10/03	9,500	860	15	380	47	2,600	ND<5	ND<5	18	ND<50	ND<500	ND<50	ND<50	ND<5
	9/9/03	11,000	1,000	16	630	120	2,500	ND<5	ND<5	20	52	ND<500	ND<50	ND<50	ND<5
	12/23/03	18,000	2,100	41	1,100	390	4,900	ND<10	ND<10	42	ND<100	ND<1,000	ND<100	ND<100	ND<10
	3/23/04	24,000	1,400	71	1,500	2,000	7,500	ND<20	ND<20	66	ND<200	ND<2,000	ND<200	ND<200	ND<20
	5/10/04	6,500	550	ND<10	71	43	3,700	ND<10	ND<10	31	ND<100	ND<1,000	ND<100	ND<100	ND<10
	8/4/04	8,200	990	19	300	120	3,300	ND<5	ND<5	23	ND<50	ND<500	ND<50	ND<50	ND<5
	11/4/04	9,600	1,100	30	320	160	2,200	ND<4	ND<4	18	22	ND<400	ND<40	ND<40	ND<4
	1/12/05	12,000	1,100	34	600	500	3,600	ND<4	ND<4	31	30	ND<400	ND<40	ND<40	ND<4
	5/2/05	14,000	630	22	610	920	4,000	ND<10	ND<10	32	120	ND<3,000	ND<100	ND<100	ND<10
	7/20/05	9,800	1,200	21	340	150	1,800	ND<2.5	ND<2.5	14	140	ND<500	ND<25	ND<25	ND<2.5
	11/21/05	6,600	150	26	580	640	100	ND<1	ND<1	ND<1	13	ND<100	ND<10	ND<10	ND<1
	2/9/06	7,100	340	11	370	360	910	ND<2	ND<2	9.3	120	ND<200	ND<20	ND<20	ND<2
	5/17/06	7,100	270	5.1	320	290	930	ND<2	ND<2	8.4	260	ND<200	ND<20	ND<20	ND<2
8/9/06	5,800	440	7.5	120	45	670	ND<2	ND<2	7.3	380	ND<2,000	ND<50	ND<50	ND<2	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-6 (cont.)	11/8/06	9,200	990	37	390	140	310	ND<2	ND<2	3.2	110	ND<200	ND<20	ND<2	ND<2
	2/14/07	5,900	480	10	73	23	1,600	ND<2	ND<2	14	1,100	ND<500	ND<20	ND<2	ND<2
	5/17/07	3,700	240	3.4	30	10	770	ND<0.5	ND<0.5	9.2	800	ND<2,000	ND<5	--	--
	8/2/07	15,000	1,800	120	980	510	310	ND<2.5	ND<2.5	3.0	180	ND<250	ND<25	ND<2.5	ND<2.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	14,000	2,000	63	750	190	810	ND<2.5	ND<2.5	7.7	600	ND<250	ND<25	ND<2.5	ND<2.5
	5/8/08	15,000	1,700	59	700	130	540	ND<2.5	ND<2.5	5.9	410	ND<2,000	ND<25	ND<2.5	ND<2.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/09	16,000	2,200	160	860	230	320	ND<2.5	ND<2.5	3.8	580	ND<1,000	ND<25	ND<2.5	ND<2.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	15,000	2,100	96	800	160	340	ND<5	ND<5	ND<5	460	ND<2,000	ND<50	ND<5	ND<5
	2/12/10	21,000	2,500	140	1,000	240	540	ND<5	ND<5	6.0	460	ND<500	ND<50	ND<5	ND<5
	5/4/10	17,000	2,100	120	780	260	820	ND<5	ND<5	8.6	450	ND<500	ND<50	ND<5	ND<5
	8/3/10	21,000	2,700	120	690	250	730	ND<5	ND<5	7.4	480	ND<500	ND<50	ND<5	ND<5
	11/2/10	12,000	1,600	57	410	120	240	ND<2.5	ND<2.5	2.7	160	ND<250	ND<25	ND<2.5	ND<2.5
	2/2/11	15,000	1,600	89	460	150	350	ND<2.5	ND<2.5	3.7	310	ND<250	ND<25	ND<2.5	ND<2.5
	4/27/11	8,500	870	28	180	67	1,200	ND<2.5	ND<2.5	10	1,100	ND<250	ND<25	ND<2.5	ND<2.5
8/4/11	6,300	600	17	58	16	650	ND<1.5	ND<1.5	7.8	1,000	ND<600	ND<15	ND<1.5	ND<1.5	
MW-7	3/30/94	43,000	7,200	2,400	1,600	11,000	--	--	--	--	--	--	--	--	--
	4/25/94	30,000	3,900	1,000	940	6,900	--	--	--	--	--	--	--	--	--
	8/12/94	30,000	3,800	1,400	1,300	7,500	--	--	--	--	--	--	--	--	--
	12/14/94	31,000	3,600	1,200	900	6,400	--	--	--	--	--	--	--	--	--
	2/10/95	27,000	4,000	900	890	5,100	--	--	--	--	--	--	--	--	--
	6/15/95	17,000	920	680	740	4,100	--	--	--	--	--	--	--	--	--
	9/26/95	7,000	200	150	170	810	--	--	--	--	--	--	--	--	--
	12/15/95	11,000	350	170	540	1,900	--	--	--	--	--	--	--	--	--
	3/21/96	12,000	320	100	730	2,500	--	--	--	--	--	--	--	--	--
	6/13/96	5,900	98	19	370	620	ND<50	--	--	--	--	--	--	--	--
9/16/96	7,800	140	43	440	590	ND<25	--	--	--	--	--	--	--	--	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-7 (cont.)	12/2/96	6,300	87	29	290	430	ND<50	--	--	--	--	--	--	--	--
	3/7/97	4,500	35	19	360	470	ND<25	--	--	--	--	--	--	--	--
	6/12/97	3,900	29	5.2	170	48	ND<5	--	--	--	--	--	--	--	--
	9/29/97	6,100	56	9.0	340	190	ND<25	--	--	--	--	--	--	--	--
	12/1/97	6,500	24	ND<2.5	400	250	ND<25	--	--	--	--	--	--	--	--
	3/19/98	2,000	20	ND<2.5	73	79	ND<25	--	--	--	--	--	--	--	--
	5/29/98	5,700	22	7.3	290	350	ND<25	--	--	--	--	--	--	--	--
	9/15/98	1,700	15	ND<2.5	44	5.1	ND<25	--	--	--	--	--	--	--	--
	11/30/98	4,800	42	12	270	640	ND<25	--	--	--	--	--	--	--	--
	1/17/99	3,400	33	ND<5	200	190	ND<50	--	--	--	--	--	--	--	--
	6/10/99	1,700	7.8	1.5	23	4.1	ND<5	--	--	--	--	--	--	--	--
	9/7/99	1,900	9.7	2.1	70	2.9	ND<5	--	--	--	--	--	--	--	--
	12/13/99	1,900	8.0	1.1	10	1.1	ND<5	--	--	--	--	--	--	--	--
	3/13/00	1,500	7.5	ND<0.5	6.7	2.9	ND<5	--	--	--	--	--	--	--	--
	6/12/00	1,200	5.4	ND<0.5	5.2	1.0	ND<5	--	--	--	--	--	--	--	--
	11/10/00	1,000	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/31/00	620	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	3/27/01	1,200	4.8	ND<0.5	6.7	0.94	ND<0.5	--	--	--	--	--	--	--	--
	6/30/01	2,800	10	1.7	75	170	ND<0.5	--	--	--	--	--	--	--	--
	9/26/01	1,900	16	0.89	2.3	25	ND<0.5	--	--	--	--	--	--	--	--
	12/18/01	3,000	13	0.88	3.4	3.4	ND<0.5	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	3,100	7.3	1.5	38	110	ND<0.5	--	--	--	--	--	--	--	--
	6/5/02	1,800	7.6	1.0	39	20	ND<0.5	--	--	--	--	--	--	--	--
	8/21/02	3,300	7.6	0.70	85	36	ND<0.5	--	--	--	--	--	--	--	--
	12/3/02	1,700	5.4	ND<0.5	15	5.5	ND<0.5	--	--	--	--	--	--	--	--
	3/4/03	440	1.8	ND<0.5	0.54	2.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/03	550	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
9/9/03	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	

TABLE E-1
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-7 (cont.)	5/10/04	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/04	2,600	2.5	ND<0.5	36	31	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/4/04	1,600	2.0	ND<0.5	16	16	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/12/05	830	1.6	ND<0.5	15	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/2/05	710	ND<0.5	ND<0.5	0.75	0.52	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/20/05	1,400	1.1	ND<0.5	9.2	8.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/21/05	1,100	0.56	ND<0.5	3.4	23	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/9/06	270	ND<0.5	ND<0.5	1.2	0.98	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/16/06	930	0.84	ND<0.5	10	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/9/06	650	ND<0.5	ND<0.5	1.2	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/8/06	800	ND<0.5	ND<0.5	1.0	0.62	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/07	800	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/17/07	700	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--	
	8/2/07	3,200	1.3	ND<0.5	50	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	1,600	1.2	ND<0.5	4.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/8/08	1,400	2.2	0.74	2.8	0.93	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	2,300	3.9	1.4	8.9	5.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/09	4,500	7.4	3.8	33	7.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	4,500	6.7	3.4	27	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5	
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	3,600	7.9	3.6	14	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5	
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/3/10	2,100	4.6	1.3	16	3.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
4/26/11	1,200	3.3	0.59	1.6	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-8	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	7.3	ND<0.5	ND<0.5	
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.86	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.57	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/8/06	ND<50	1.2	1.9	ND<0.5	0.66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--	
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-8 (cont.)	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-9	9/5/03	3,400	23	1.5	110	10	10	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	
	12/23/03	1,100	2.4	ND<0.5	0.80	0.80	2.1	ND<0.5	ND<0.5	ND<0.5	5.9	ND<50	ND<5	ND<0.5	ND<0.5	
	3/23/04	760	8.5	ND<0.5	4.9	0.95	18	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/10/04	1,100	4.4	ND<0.5	1.3	0.67	11	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/04	1,200	3.4	0.59	16	7.6	6.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/4/04	610	0.52	ND<0.5	1.3	ND<0.5	2.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/12/05	1,400	1.6	0.55	5.5	1.1	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/2/05	1,500	10	0.55	6.7	1.1	27	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/20/05	1,800	5.5	0.69	12	1.6	10	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/21/05	1,200	0.94	ND<0.5	1.4	ND<0.5	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/9/06	1,200	2.8	0.51	6.4	0.84	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/16/06	1,600	3.8	0.57	12	1.8	4.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/9/06	760	ND<0.5	ND<0.5	1.0	ND<0.5	2.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/8/06	1,700	1.7	0.53	6.7	1.4	1.7	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/07	1,000	ND<0.5	ND<0.5	0.51	ND<0.5	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/17/07	870	ND<0.5	ND<0.5	0.54	ND<0.5	0.93	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--	
	8/2/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	3,300	68	2.1	110	7.8	16	ND<0.5	ND<0.5	ND<0.5	13	ND<50	ND<5	ND<0.5	ND<0.5	
	5/8/08	1,200	8.2	0.52	4.0	0.74	5.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	1,200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
5/4/10	2,700	120	7.0	35	14	44	ND<0.5	ND<0.5	0.52	31	ND<200	ND<5	ND<0.5	ND<0.5		
8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-9 (cont.)	11/3/10	430	1.1	ND<0.5	ND<0.5	ND<0.5	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,300	14	ND<0.5	2.8	0.71	23	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-10 (cont.)	5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/2/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	12/16/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	100,000	6,100	9,000	3,100	20,000	3.3	ND<0.5	ND<0.5	ND<0.5	25	ND<200	ND<20	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/3/10	62,000	3,600	5,900	2,600	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	8/3/10	53,000	2,800	3,800	2,100	10,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	11/4/10	59,000	2,100	5,400	1,400	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	2/2/11	20,000	210	610	560	3,600	ND<5	ND<5	ND<5	ND<5	38	ND<500	ND<50	ND<5	ND<5
	4/28/11	20,000	300	920	450	4,300	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
8/4/11	15,000	96	370	240	2,800	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4	
VW-2	8/4/04	5,700	480	ND<20	600	ND<20	12,000	ND<20	ND<20	110	ND<90	ND<2,000	ND<200	ND<20	ND<20
	11/4/04	5,800	340	ND<20	38	ND<20	10,000	ND<20	ND<20	120	ND<90	ND<2,000	ND<200	ND<20	ND<20
	1/12/05	3,800	210	ND<5	90	54	2,900	ND<5	ND<5	33	26 ^(f)	ND<500	ND<50	ND<5	ND<5
	5/2/05	2,600	84	ND<2	13	7.0	960	ND<2	ND<2	12	57	ND<500	ND<20	ND<2	ND<2
	7/20/05	6,200	240	13	290	480	6,600	ND<2	ND<2	56	59 ^(f)	ND<2,000	ND<20	ND<2	ND<2
	11/21/05	3,100	100	ND<9	22	10	5,300	ND<9	ND<9	54	76 ^(f)	ND<900	ND<90	ND<9	ND<9
	2/9/06	3,500	140	ND<25	130	36	12,000	ND<25	ND<25	65	2,800	ND<2,500	ND<250	ND<25	ND<25
	5/17/06	1,800	90	2.6	39	11	1,200	ND<2.5	ND<2.5	12	700	ND<250	ND<25	ND<2.5	ND<2.5
	8/9/06	4,300	86	3.5	200	16	2,500	ND<2.5	ND<2.5	28	2,800	ND<5,000	ND<25	ND<2.5	ND<2.5
	11/8/06	3,200	46	3.1	10	4.8	1,500	ND<3	ND<3	11	7,100	ND<800	ND<30	ND<3	ND<3
	2/14/07	3,300	75	4.6	50	82	580	ND<2	ND<2	7.0	4,100	ND<500	ND<20	ND<2	ND<2
	5/17/07	3,500	51	7.3	17	24	100	ND<2.5	ND<2.5	ND<2.5	7,100	ND<250	ND<25	--	--
	8/2/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE E-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
VW-2 (cont.)	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	5,700	180	14	150	120	530	ND<2.5	ND<2.5	4.1	5,000	ND<250	ND<25	ND<2.5	ND<2.5
	5/8/08	3,000	40	3.8	32	34	270	ND<1.5	ND<1.5	2.7	4,500	ND<250	ND<15	ND<1.5	ND<1.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	2,800	130	6.1	170	130	1,300	ND<2.5	ND<2.5	12	1,700	ND<250	ND<25	ND<2.5	ND<2.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
VW-3	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	1,100
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/14/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
VW-3 (cont.)	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	12/9/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
TP-1	7/20/05	42,000	2,800	1,100	1,700	4,800	12,000	ND<20	ND<20	92	130	ND<2,000	ND<200	ND<20	ND<20	
	11/22/05	36,000	2,100	290	1,400	2,600	11,000	ND<20	ND<20	70	810	ND<2,000	ND<200	ND<20	ND<20	
	2/9/06	19,000	1,400	230	990	1,700	8,900	ND<15	ND<15	72	2,200	ND<1,500	ND<150	ND<15	ND<15	
	5/17/06	20,000	1,400	200	920	1,800	9,200	ND<20	ND<20	37	2,500	ND<10,000	ND<200	ND<20	ND<20	
	8/9/06	28,000	1,600	150	1,200	2,200	13,000	ND<15	ND<15	84	4,900	ND<2,500	ND<150	ND<15	ND<15	
	11/8/06	20,000	1,100	78	990	1,600	6,800	ND<15	ND<15	47	4,400	ND<8,000	ND<150	ND<15	ND<15	
	2/14/07	15,000	820	37	810	1,000	8,300	ND<15	ND<15	58	8,500	ND<4,000	ND<150	ND<15	ND<15	
	5/17/07	16,000	850	35	810	1,200	6,700	ND<10	ND<10	42	12,000	ND<2,000	ND<100	--	--	
	8/2/07	15,000	2,000	100	970	630	3,400	ND<7	ND<7	25	4,000	ND<700	ND<70	ND<7	ND<7	
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/14/08	18,000	1,100	49	1,200	910	7,000	ND<15	ND<15	58	4,200	ND<1,500	ND<150	ND<15	ND<15	
	5/8/08	12,000	890	54	770	380	2,500	ND<5	ND<5	22	3,400	ND<2,500	ND<50	ND<5	ND<5	
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
TP-1 (cont.)	12/17/09	10,000	690	19	700	45	1,000	ND<2.5	ND<2.5	8.8	2,900	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	15,000	2,100	360	1,100	620	3,400	ND<8	ND<8	27	4,500	ND<800	ND<80	ND<8	ND<8
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	14,000	1,000	270	280	1,600	4,500	ND<8	ND<8	28	4,800	ND<800	ND<80	ND<8	ND<8
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	6,600	350	64	170	730	2,600	ND<5	ND<5	15	1,400	ND<500	ND<50	ND<5	ND<5
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
TP-2	7/20/05	26,000	1,800	1,100	1,100	2,500	63,000	ND<150	ND<150	400	ND<700	ND<15,000	ND<1,500	ND<150	ND<150
	11/22/05	16,000	1,200	140	840	820	52,000	ND<90	ND<90	340	1,200	ND<9,000	ND<900	ND<90	ND<90
	2/9/06	2,700	94	2.9	28	14	1,200	ND<2.5	ND<2.5	13	1,600	ND<250	ND<25	ND<2.5	ND<2.5
	5/17/06	31,000	2,200	1,100	1,500	3,300	87,000	ND<90	ND<90	680	4,800	ND<15,000	ND<1,500	ND<90	ND<90
	8/9/06	14,000	1,400	86	1,200	830	56,000	ND<2.5	ND<2.5	350	2,800	ND<4,000	ND<25	ND<2.5	ND<2.5
	11/8/06	16,000	1,300	ND<90	930	370	38,000	ND<90	ND<90	280	3,600	ND<40,000	ND<900	ND<90	ND<90
	2/14/07	22,000	1,900	230	1,700	1,600	53,000	ND<90	ND<90	400	2,800	ND<20,000	ND<900	ND<90	ND<90
	5/17/07	ND<25,000	2,400	51	1,500	510	69,000	ND<2	ND<0.5	550	4,300	ND<25,000	ND<5	--	--
	8/2/07	10,000	1,200	ND<25	640	140	14,000	ND<25	ND<25	110	16,000	ND<10,000	ND<250	ND<25	ND<25
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	12,000	920	28	850	740	17,000	ND<25	ND<25	120	5,900	ND<4,000	ND<250	ND<25	ND<25
	5/8/08	7,400	710	10	510	110	6,400	ND<8	ND<8	64	5,200	ND<12,000	ND<80	ND<8	ND<8
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	7,200	950	ND<25	77	ND<25	13,000	ND<25	ND<25	130	20,000	ND<2,500	ND<250	ND<25	ND<25
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	6,400	740	ND<25	450	130	14,000	ND<25	ND<25	130	9,900	ND<2,500	ND<250	ND<25	ND<25
8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
11/4/10	4,900	230	82	150	630	980	ND<5	ND<5	6.3	14,000	ND<500	ND<50	ND<5	ND<5	
2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
TP-2 (cont.)	4/28/11	130	1.6	ND<0.5	1.5	5.2	350	ND<0.5	ND<0.5	1.3	630	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-1	5/22/08	5,100	470	150	210	570	100	ND<0.9	ND<0.9	0.98	76	ND<90	ND<9	ND<0.9	ND<0.9
	7/23/08	560	43	5.2	18	40	16	ND<0.5	ND<0.5	ND<0.5	21	ND<100	ND<5	ND<0.5	ND<0.5
	10/13/08	2,800	370	15	120	78	140	ND<0.5	ND<0.5	1.2	220	ND<300	ND<80	ND<0.5	ND<0.5
	2/11/09	520	45	5.3	32	31	42	ND<0.5	ND<0.5	ND<0.5	43	ND<100	ND<8	ND<0.5	ND<0.5
	4/28/09	2,700	250	36	160	190	86	ND<0.5	ND<0.5	0.84	120	ND<50	ND<5	ND<0.5	ND<0.5
	8/5/09	2,100	330	17	87	53	220	ND<0.5	ND<0.5	2.0	310	ND<50	ND<5	ND<0.5	ND<0.5
	12/8/09	6,200	560	63	400	490	140	ND<0.5	ND<0.5	1.1	200	ND<200	ND<8	ND<0.5	ND<0.5
	2/12/10	2,000	200	36	130	150	49	ND<0.5	ND<0.5	ND<0.5	58	ND<200	ND<5	ND<0.5	ND<0.5
	5/4/10	1,800	160	27	110	140	21	ND<0.5	ND<0.5	ND<0.5	41	ND<100	ND<5	ND<0.5	ND<0.5
	8/2/10	1,400	53	11	67	78	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	ND<50	0.9	ND<0.5	0.7	1.3	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	58	1.9	ND<0.5	2.0	2.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/28/11	72	2.2	5.7	2.0	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	55	0.57	ND<0.5	0.92	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-2	5/22/08	11,000	1,300	170	460	230	620	ND<2.5	ND<2.5	9.6	870	ND<400	ND<25	ND<2.5	ND<2.5
	7/23/08	7,600	980	44	180	55	420	ND<2	ND<2	5.7	720	ND<200	ND<20	ND<2	ND<2
	10/13/08	7,300	910	23	120	18	280	ND<1.5	ND<1.5	3.1	650	ND<2,000	ND<50	ND<1.5	ND<1.5
	2/11/09	8,000	1,100	31	230	46	290	ND<2.5	ND<2.5	3.9	600	ND<800	ND<25	ND<2.5	ND<2.5
	4/28/09	5,800	500	27	110	55	330	ND<1	ND<1	4.4	600	ND<400	ND<10	ND<1	ND<1
	8/4/09	6,800	910	19	37	27	200	ND<1	ND<1	2.7	530	ND<200	ND<10	ND<1	ND<1
	12/9/09	6,600	450	14	55	34	210	ND<0.9	ND<0.9	2.6	410	ND<200	ND<9	ND<0.9	ND<0.9
	2/11/10	4,500	340	14	44	25	320	ND<0.9	ND<0.9	3.9	520	ND<300	ND<9	ND<0.9	ND<0.9
	5/4/10	2,300	110	7.1	17	16	350	ND<0.9	ND<0.9	4.1	550	ND<200	ND<9	ND<0.9	ND<0.9
	8/2/10	3,800	420	22	21	28	300	ND<0.9	ND<0.9	3.5	600	ND<300	ND<20	ND<0.9	ND<0.9
	11/2/10	2,600	230	7.0	11	4.0	300	ND<0.5	ND<0.5	3.3	660	ND<300	ND<8	ND<0.5	ND<0.5
	2/1/11	3,300	220	6.8	18	10	210	ND<0.5	ND<0.5	2.7	620	ND<300	ND<5	ND<0.5	ND<0.5
	4/27/11	1,900	78	2.6	2.6	5.6	200	ND<0.5	ND<0.5	2.2	590	ND<300	ND<5	ND<0.5	ND<0.5
	8/4/11	4,400	420	10	24	13	160	ND<0.5	ND<0.5	2.1	500	ND<100	ND<10	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
DW-3	5/22/08	4,700	8.7	2.1	120	200	0.86	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	2,800	8.1	1.4	94	100	2.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	4,100	59	10	160	70	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<80	ND<0.5	ND<0.5
	2/11/09	1,700	21	1.7	35	21	9.8	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<10	ND<0.5	ND<0.5
	4/27/09	1,800	16	2.3	26	10	3.0	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	1,200	6.8	0.99	4.3	3.4	18	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<5	ND<0.5	ND<0.5
	12/9/09	2,200	24	5.9	56	29	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.2	ND<300	ND<20	ND<0.5	ND<0.5
	2/11/10	700	9.5	2.0	18	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
	5/4/10	420	5.5	0.93	8.8	3.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/2/10	640	4.0	ND<0.5	5.3	3.9	0.59	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	170	0.85	ND<0.5	ND<0.5	0.59	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	60	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/4/11	310	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
DW-4	5/22/08	1,200	4.2	8.6	16	200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	91	0.79	ND<0.5	6.5	7.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	43	ND<0.5	ND<0.5
	2/11/09	ND<50	0.68	ND<0.5	1.4	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	0.5	ND<0.5	1.1	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/5/09	52	1.7	ND<0.5	1.4	0.83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/9/09	ND<50	3.0	ND<0.5	2.0	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	180	3.3	3.7	13	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	0.7	4.0	0.59	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
DW-5	12/9/09	15,000	140	25	200	960	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	1,600	37	2.5	36	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	5/4/10	2,100	69	2.9	41	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5

TABLE E-1

**HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076**

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
DW-5 (cont.)	8/2/10	12,000	240	9.4	350	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	11/2/10	5,000	120	3.6	68	35	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/1/11	3,800	70	2.5	37	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	710	8.0	ND<0.5	4.3	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	6,100	76	3.7	110	97	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
DW-6	12/9/09	6,200	33	4.3	100	43	9.7	ND<1	ND<1	ND<1	10	ND<100	ND<10	ND<1	ND<1
	2/11/10	4,800	18	3.0	44	15	14	ND<0.5	ND<0.5	ND<0.5	9.2	ND<80	ND<10	ND<0.5	ND<0.5
	5/4/10	4,600	13	3.5	29	17	5.6	ND<0.5	ND<0.5	ND<0.5	7.2	ND<80	ND<8	ND<0.5	ND<0.5
	8/2/10	4,500	13	4.4	54	14	5.9	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<8	ND<0.5	ND<0.5
	11/2/10	5,200	20	4.2	47	13	8.9	ND<0.9	ND<0.9	ND<0.9	26	ND<90	ND<9	ND<0.9	ND<0.9
	2/1/11	4,000	11	2.9	32	11	6.0	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	3,100	8.8	2.4	12	8.2	6.2	ND<0.5	ND<0.5	ND<0.5	19	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/11	2,900	4.2	0.95	6.0	4.9	6.5	ND<0.5	ND<0.5	ND<0.5	24	ND<50	ND<8	ND<0.5	ND<0.5
DW-7	12/9/09	10,000	500	20	310	110	160	ND<2	ND<2	ND<2	270	ND<200	ND<20	ND<2	ND<2
	2/12/10	12,000	590	23	440	120	190	ND<2	ND<2	2.4	290	ND<200	ND<20	ND<2	ND<2
	5/4/10	4,100	250	15	89	32	97	ND<0.5	ND<0.5	1.0	160	ND<80	ND<5	ND<0.5	ND<0.5
	8/3/10	3,500	280	13	49	30	130	ND<0.5	ND<0.5	1.3	220	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	660	30	1.2	5.0	3.3	130	ND<0.5	ND<0.5	1.2	220	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	760	43	1.8	9.4	4.0	91	ND<0.5	ND<0.5	0.76	160	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	1,600	120	4.6	4.2	6.7	95	ND<0.5	ND<0.5	1.0	170	ND<200	ND<5	ND<0.5	ND<0.5
	8/4/11	1,400	83	2.5	4.4	5.2	97	ND<0.5	ND<0.5	0.96	160	ND<80	ND<5	ND<0.5	ND<0.5
DW-8	4/28/11	72,000	5,200	10,000	1,900	12,000	ND<10	ND<10	ND<10	ND<10	56	ND<1,000	ND<100	ND<10	ND<10
	8/4/11	65,000	2,900	8,100	650	10,000	ND<20	ND<20	ND<20	ND<20	ND<90	ND<2,000	ND<200	ND<20	ND<20
MW-A	1/17/99	5,800	1,700	85	65	320	ND<5	--	--	--	--	--	--	--	--
MW-B	1/17/99	4,400	240	30	21	39	ND<5	--	--	--	--	--	--	--	--
MW-C	1/17/99	1,800	0.8	ND<0.5	ND<0.5	0.55	ND<5	--	--	--	--	--	--	--	--
MW-D	1/17/99	5,600	1,600	130	66	220	ND<5	--	--	--	--	--	--	--	--
MW-E	1/17/99	5,700	1,600	180	180	310	ND<50	--	--	--	--	--	--	--	--
	6/10/99	5,000	1,300	130	320	450	ND<25	--	--	--	--	--	--	--	--
MW-W	1/17/99	23,000	7,600	760	1,400	5,000	ND<50	--	--	--	--	--	--	--	--
	6/10/99	16,000	4,100	420	1,300	4,000	ND<50	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
IP-1	7/23/08	62,000	2,100	6,800	2,700	11,000	16	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	10/13/08	55,000	3,100	3,300	2,300	7,700	ND<15	ND<15	ND<15	ND<15	98	ND<1,500	ND<150	ND<15	ND<15
	5/5/10 ^(g)	33,000	900	1,500	1,400	5,000	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	4/27/11	24,000	750	2,200	420	4,800	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
IP-2	7/23/08	5,500	160	43	130	350	10	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	13,000	1,900	58	600	630	180	ND<0.9	ND<0.9	9.4	46	ND<90	ND<20	ND<0.9	ND<0.9
	5/5/10 ^(g)	2,700	66	220	61	240	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/26/11	350	8.9	1.7	4.7	5.7	0.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-3	7/23/08	1,100	23	14	7.5	90	32	ND<0.5	ND<0.5	ND<0.5	32	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	1,700	83	4.7	11	54	72	ND<0.5	ND<0.5	0.84	71	ND<50	ND<8	ND<0.5	ND<0.5
	5/5/10 ^(g)	430 ^(h)	6.4	22	4.9	21	3.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-4	7/23/08	7,600	130	45	240	750	940	ND<1.5	ND<1.5	6.9	890	ND<150	ND<15	ND<1.5	ND<1.5
	10/13/08	4,200	110	11	78	310	3,700	ND<1.5	ND<1.5	7.1	15,000	ND<2,000	ND<15	ND<1.5	ND<1.5
	5/6/10 ^(g)	190	5.4	25	6.9	29	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-5	7/23/08	2,000 ^(h)	3.0	17	5.1	31	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	720	14	13	8.7	32	19	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
	5/6/10 ^(g)	270	5.7	25	5.9	29	20	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.72	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-6	7/23/08	4,400	260	78	98	340	180	ND<0.5	ND<0.5	1.6	190	ND<80	ND<9	ND<0.5	ND<0.5
	10/13/08	1,400	150	1.6	1.5	3.5	7.4	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<50	ND<0.5	ND<0.5
	5/5/10 ^(g)	8,000 ^(h)	24	100	18	98	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	1.1	0.66	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-7	7/23/08	4,200	190	12	99	190	49	ND<0.9	ND<0.9	1.1	58	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	6,000	350	6.6	150	60	97	ND<0.9	ND<0.9	2.5	76	ND<90	ND<50	ND<0.9	ND<0.9
	5/5/10 ^(g)	33,000	49	62	38	69	14	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<9.0	ND<0.9	ND<0.9
	4/27/11	220	8.1	0.69	3.4	1.5	0.95	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-8	12/16/08	120,000	7,800	20,000	3,500	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	5/5/10 ^(g)	83,000	3,900	13,000	2,400	14,000	ND<25	ND<25	ND<25	ND<25	ND<150	ND<2,500	ND<250	ND<25	ND<25
	4/28/11	13,000	620	2,000	240	2,200	ND<3	ND<3	ND<3	ND<3	27	ND<300	ND<30	ND<3	ND<3

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date ^(a)	TPHg ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
IP-9	12/16/08	110,000	7,800	23,000	2,800	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	5/5/10 ^(g)	92,000	6,000	19,000	2,500	14,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	4/28/11	38,000	1,400	4,300	860	6,000	ND<6	ND<6	ND<6	ND<6	38	ND<600	ND<60	ND<6	ND<6
IP-10	2/11/09	8,100	29	58	170	1,200	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5
	5/3/10 ^(g)	3,600	73	80	140	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	4/26/11	4,300	28	140	110	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<8	ND<0.5	ND<0.5

- (a) Samples collected before July 2005 collected by others; data provided by Delta Environmental Consultants, Inc., Second Quarter 2005 Groundwater Monitoring Report dated 31 July 2005.
- (b) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) analyzed by EPA Method 8260; reported in micrograms per liter (µg/l).
- (c) ND - Not detected at the reporting limit listed.
- (d) "--" Not analyzed.
- (e) NS - Not sampled.
- (f) TBA results may be biased slightly high. A fraction of MTBE (typically less than 10 percent) converts to TBA during the analysis of water samples. This conversion effect is considered to be mathematically significant in samples that contain MTBE/TBA ratios of over 20:1.
- (g) Baseline remediation system values.
- (h) Primarily compounds not found in typical Gasoline.

ATTACHMENT F

**LABORATORY ANALYTICAL REPORTS AND
CHAIN-OF-CUSTODY FORMS**



Laboratory Results

Matt Nelson
Orion Environmental
3450 East Spring Street, Suite 212
Long Beach, CA 90806

Subject : 12 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Nelson,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed. Testing procedures comply with the 2003 NELAC standard. All soil samples are reported on a total weight (wet weight) basis unless noted otherwise in the case narrative. Laboratory results relate only to the samples tested. This report may be freely reproduced in full, but may only be reproduced in part with the express permission of Kiff Analytical, LLC. Kiff Analytical, LLC is certified by the State of California under the National Environmental Laboratory Accreditation Program (NELAP), lab # 08263CA. If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,



Joel Kiff

Subject : 12 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Case Narrative

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for samples DW-2, DW-7, MW-2 and MW-6.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for samples DW-2, DW-5 and DW-6.

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-1**

Matrix : Water

Lab Number : 78345-01

Sample Date :08/03/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	2.0	0.50	ug/L	EPA 8260B	08/05/11 12:32
Toluene	15	0.50	ug/L	EPA 8260B	08/05/11 12:32
Ethylbenzene	44	0.50	ug/L	EPA 8260B	08/05/11 12:32
Total Xylenes	86	0.50	ug/L	EPA 8260B	08/05/11 12:32
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 12:32
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 12:32
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 12:32
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 12:32
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 12:32
Methanol	< 50	50	ug/L	EPA 8260B	08/05/11 12:32
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 12:32
TPH as Gasoline	1500	50	ug/L	EPA 8260B	08/05/11 12:32
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 12:32
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 12:32
1,2-Dichloroethane-d4 (Surr)	97.4		% Recovery	EPA 8260B	08/05/11 12:32
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	08/05/11 12:32

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-3**

Matrix : Water

Lab Number : 78345-02

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 13:03
Methanol	< 50	50	ug/L	EPA 8260B	08/05/11 13:03
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 13:03
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/05/11 13:03
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:03
1,2-Dichloroethane-d4 (Surr)	99.4		% Recovery	EPA 8260B	08/05/11 13:03
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	08/05/11 13:03

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-3**

Matrix : Water

Lab Number : 78345-03

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 13:34
Methanol	< 50	50	ug/L	EPA 8260B	08/05/11 13:34
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 13:34
TPH as Gasoline	310	50	ug/L	EPA 8260B	08/05/11 13:34
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 13:34
1,2-Dichloroethane-d4 (Surr)	97.4		% Recovery	EPA 8260B	08/05/11 13:34
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	08/05/11 13:34

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-2**

Matrix : Water

Lab Number : 78345-04

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	420	1.5	ug/L	EPA 8260B	08/08/11 14:26
Toluene	10	0.50	ug/L	EPA 8260B	08/05/11 14:06
Ethylbenzene	24	0.50	ug/L	EPA 8260B	08/05/11 14:06
Total Xylenes	13	0.50	ug/L	EPA 8260B	08/05/11 14:06
Methyl-t-butyl ether (MTBE)	160	0.50	ug/L	EPA 8260B	08/05/11 14:06
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:06
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:06
Tert-amyl methyl ether (TAME)	2.1	0.50	ug/L	EPA 8260B	08/05/11 14:06
Tert-Butanol	500	5.0	ug/L	EPA 8260B	08/05/11 14:06
Methanol	< 100	100	ug/L	EPA 8260B	08/05/11 14:06
Ethanol	< 10	10	ug/L	EPA 8260B	08/05/11 14:06
TPH as Gasoline	4400	150	ug/L	EPA 8260B	08/08/11 14:26
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:06
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:06
1,2-Dichloroethane-d4 (Surr)	90.2		% Recovery	EPA 8260B	08/05/11 14:06
Toluene - d8 (Surr)	93.6		% Recovery	EPA 8260B	08/05/11 14:06

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-5**

Matrix : Water

Lab Number : 78345-05

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	76	0.50	ug/L	EPA 8260B	08/05/11 14:37
Toluene	3.7	0.50	ug/L	EPA 8260B	08/05/11 14:37
Ethylbenzene	110	0.50	ug/L	EPA 8260B	08/05/11 14:37
Total Xylenes	97	0.50	ug/L	EPA 8260B	08/05/11 14:37
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:37
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:37
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:37
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:37
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 14:37
Methanol	< 50	50	ug/L	EPA 8260B	08/05/11 14:37
Ethanol	< 20	20	ug/L	EPA 8260B	08/05/11 14:37
TPH as Gasoline	6100	150	ug/L	EPA 8260B	08/08/11 15:01
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:37
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 14:37
1,2-Dichloroethane-d4 (Surr)	89.9		% Recovery	EPA 8260B	08/05/11 14:37
Toluene - d8 (Surr)	92.6		% Recovery	EPA 8260B	08/05/11 14:37

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-6**

Matrix : Water

Lab Number : 78345-06

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	4.2	0.50	ug/L	EPA 8260B	08/05/11 15:09
Toluene	0.95	0.50	ug/L	EPA 8260B	08/05/11 15:09
Ethylbenzene	6.0	0.50	ug/L	EPA 8260B	08/05/11 15:09
Total Xylenes	4.9	0.50	ug/L	EPA 8260B	08/05/11 15:09
Methyl-t-butyl ether (MTBE)	6.5	0.50	ug/L	EPA 8260B	08/05/11 15:09
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:09
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:09
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:09
Tert-Butanol	24	5.0	ug/L	EPA 8260B	08/05/11 15:09
Methanol	< 50	50	ug/L	EPA 8260B	08/05/11 15:09
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	08/05/11 15:09
TPH as Gasoline	2900	50	ug/L	EPA 8260B	08/05/11 15:09
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:09
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:09
1,2-Dichloroethane-d4 (Surr)	92.8		% Recovery	EPA 8260B	08/05/11 15:09
Toluene - d8 (Surr)	96.1		% Recovery	EPA 8260B	08/05/11 15:09

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-7**

Matrix : Water

Lab Number : 78345-07

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	83	0.50	ug/L	EPA 8260B	08/05/11 15:40
Toluene	2.5	0.50	ug/L	EPA 8260B	08/05/11 15:40
Ethylbenzene	4.4	0.50	ug/L	EPA 8260B	08/05/11 15:40
Total Xylenes	5.2	0.50	ug/L	EPA 8260B	08/05/11 15:40
Methyl-t-butyl ether (MTBE)	97	0.50	ug/L	EPA 8260B	08/05/11 15:40
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:40
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:40
Tert-amyl methyl ether (TAME)	0.96	0.50	ug/L	EPA 8260B	08/05/11 15:40
Tert-Butanol	160	5.0	ug/L	EPA 8260B	08/05/11 15:40
Methanol	< 80	80	ug/L	EPA 8260B	08/05/11 15:40
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 15:40
TPH as Gasoline	1400	50	ug/L	EPA 8260B	08/05/11 15:40
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:40
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 15:40
1,2-Dichloroethane-d4 (Surr)	97.7		% Recovery	EPA 8260B	08/05/11 15:40
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	08/05/11 15:40

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-1**

Matrix : Water

Lab Number : 78345-08

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	0.57	0.50	ug/L	EPA 8260B	08/05/11 16:11
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 16:11
Ethylbenzene	0.92	0.50	ug/L	EPA 8260B	08/05/11 16:11
Total Xylenes	1.2	0.50	ug/L	EPA 8260B	08/05/11 16:11
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 16:11
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 16:11
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 16:11
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 16:11
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 16:11
Methanol	< 50	50	ug/L	EPA 8260B	08/05/11 16:11
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/11 16:11
TPH as Gasoline	55	50	ug/L	EPA 8260B	08/05/11 16:11
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 16:11
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/11 16:11
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	08/05/11 16:11
Toluene - d8 (Surr)	99.8		% Recovery	EPA 8260B	08/05/11 16:11

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-8**

Matrix : Water

Lab Number : 78345-09

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	2900	20	ug/L	EPA 8260B	08/05/11 15:55
Toluene	8100	20	ug/L	EPA 8260B	08/05/11 15:55
Ethylbenzene	650	20	ug/L	EPA 8260B	08/05/11 15:55
Total Xylenes	10000	20	ug/L	EPA 8260B	08/05/11 15:55
Methyl-t-butyl ether (MTBE)	< 20	20	ug/L	EPA 8260B	08/05/11 15:55
Diisopropyl ether (DIPE)	< 20	20	ug/L	EPA 8260B	08/05/11 15:55
Ethyl-t-butyl ether (ETBE)	< 20	20	ug/L	EPA 8260B	08/05/11 15:55
Tert-amyl methyl ether (TAME)	< 20	20	ug/L	EPA 8260B	08/05/11 15:55
Tert-Butanol	< 90	90	ug/L	EPA 8260B	08/05/11 15:55
Methanol	< 2000	2000	ug/L	EPA 8260B	08/05/11 15:55
Ethanol	< 200	200	ug/L	EPA 8260B	08/05/11 15:55
TPH as Gasoline	65000	2000	ug/L	EPA 8260B	08/05/11 15:55
1,2-Dichloroethane	< 20	20	ug/L	EPA 8260B	08/05/11 15:55
1,2-Dibromoethane	< 20	20	ug/L	EPA 8260B	08/05/11 15:55
1,2-Dichloroethane-d4 (Surr)	94.6		% Recovery	EPA 8260B	08/05/11 15:55
Toluene - d8 (Surr)	99.7		% Recovery	EPA 8260B	08/05/11 15:55

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-2**

Matrix : Water

Lab Number : 78345-10

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	1900	3.0	ug/L	EPA 8260B	08/05/11 14:05
Toluene	200	3.0	ug/L	EPA 8260B	08/05/11 14:05
Ethylbenzene	430	3.0	ug/L	EPA 8260B	08/05/11 14:05
Total Xylenes	820	3.0	ug/L	EPA 8260B	08/05/11 14:05
Methyl-t-butyl ether (MTBE)	660	3.0	ug/L	EPA 8260B	08/05/11 14:05
Diisopropyl ether (DIPE)	< 3.0	3.0	ug/L	EPA 8260B	08/05/11 14:05
Ethyl-t-butyl ether (ETBE)	< 3.0	3.0	ug/L	EPA 8260B	08/05/11 14:05
Tert-amyl methyl ether (TAME)	5.7	3.0	ug/L	EPA 8260B	08/05/11 14:05
Tert-Butanol	420	15	ug/L	EPA 8260B	08/05/11 14:05
Methanol	< 1500	1500	ug/L	EPA 8260B	08/05/11 14:05
Ethanol	< 30	30	ug/L	EPA 8260B	08/05/11 14:05
TPH as Gasoline	16000	300	ug/L	EPA 8260B	08/05/11 14:05
1,2-Dichloroethane	< 3.0	3.0	ug/L	EPA 8260B	08/05/11 14:05
1,2-Dibromoethane	< 3.0	3.0	ug/L	EPA 8260B	08/05/11 14:05
1,2-Dichloroethane-d4 (Surr)	89.0		% Recovery	EPA 8260B	08/05/11 14:05
Toluene - d8 (Surr)	95.4		% Recovery	EPA 8260B	08/05/11 14:05

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-11**

Matrix : Water

Lab Number : 78345-11

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	96	4.0	ug/L	EPA 8260B	08/05/11 14:43
Toluene	370	4.0	ug/L	EPA 8260B	08/05/11 14:43
Ethylbenzene	240	4.0	ug/L	EPA 8260B	08/05/11 14:43
Total Xylenes	2800	4.0	ug/L	EPA 8260B	08/05/11 14:43
Methyl-t-butyl ether (MTBE)	< 4.0	4.0	ug/L	EPA 8260B	08/05/11 14:43
Diisopropyl ether (DIPE)	< 4.0	4.0	ug/L	EPA 8260B	08/05/11 14:43
Ethyl-t-butyl ether (ETBE)	< 4.0	4.0	ug/L	EPA 8260B	08/05/11 14:43
Tert-amyl methyl ether (TAME)	< 4.0	4.0	ug/L	EPA 8260B	08/05/11 14:43
Tert-Butanol	< 20	20	ug/L	EPA 8260B	08/05/11 14:43
Methanol	< 400	400	ug/L	EPA 8260B	08/05/11 14:43
Ethanol	< 40	40	ug/L	EPA 8260B	08/05/11 14:43
TPH as Gasoline	15000	400	ug/L	EPA 8260B	08/05/11 14:43
1,2-Dichloroethane	< 4.0	4.0	ug/L	EPA 8260B	08/05/11 14:43
1,2-Dibromoethane	< 4.0	4.0	ug/L	EPA 8260B	08/05/11 14:43
1,2-Dichloroethane-d4 (Surr)	95.7		% Recovery	EPA 8260B	08/05/11 14:43
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	08/05/11 14:43

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-6**

Matrix : Water

Lab Number : 78345-12

Sample Date :08/04/2011

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	600	1.5	ug/L	EPA 8260B	08/08/11 15:35
Toluene	17	1.5	ug/L	EPA 8260B	08/08/11 15:35
Ethylbenzene	58	1.5	ug/L	EPA 8260B	08/08/11 15:35
Total Xylenes	16	1.5	ug/L	EPA 8260B	08/08/11 15:35
Methyl-t-butyl ether (MTBE)	650	1.5	ug/L	EPA 8260B	08/08/11 15:35
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	08/08/11 15:35
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	08/08/11 15:35
Tert-amyl methyl ether (TAME)	7.8	1.5	ug/L	EPA 8260B	08/08/11 15:35
Tert-Butanol	1000	7.0	ug/L	EPA 8260B	08/08/11 15:35
Methanol	< 600	600	ug/L	EPA 8260B	08/05/11 15:19
Ethanol	< 15	15	ug/L	EPA 8260B	08/08/11 15:35
TPH as Gasoline	6300	150	ug/L	EPA 8260B	08/08/11 15:35
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	08/08/11 15:35
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	08/08/11 15:35
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	08/08/11 15:35
Toluene - d8 (Surr)	94.6		% Recovery	EPA 8260B	08/08/11 15:35

QC Report : Method Blank DataProject Name : **Tesoro - Livermore**Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/2011	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/2011
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
Methanol	< 50	50	ug/L	EPA 8260B	08/05/2011	Methanol	< 50	50	ug/L	EPA 8260B	08/05/2011
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/2011	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/05/2011
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/05/2011	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/05/2011
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/05/2011
1,2-Dichloroethane-d4 (Surr)	96.6		%	EPA 8260B	08/05/2011	1,2-Dichloroethane-d4 (Surr)	97.7		%	EPA 8260B	08/05/2011
Toluene - d8 (Surr)	101		%	EPA 8260B	08/05/2011	Toluene - d8 (Surr)	104		%	EPA 8260B	08/05/2011
Benzene	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
Toluene	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/2011						
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	08/08/2011						
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	08/08/2011						
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	08/08/2011						
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	08/08/2011						
Toluene - d8 (Surr)	99.4		%	EPA 8260B	08/08/2011						

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Tesoro - Livermore**Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
1,2-Dibromoethane	78311-06	<0.50	39.3	39.5	36.2	38.8	ug/L	EPA 8260B	8/5/11	92.2	98.2	6.30	80-120	25
1,2-Dichloroethane	78311-06	<0.50	39.4	39.7	37.5	38.8	ug/L	EPA 8260B	8/5/11	95.1	97.7	2.70	75.7-122	25
Benzene	78311-06	<0.50	39.4	39.7	39.0	39.1	ug/L	EPA 8260B	8/5/11	98.9	98.6	0.289	80-120	25
Diisopropyl ether	78311-06	<0.50	39.1	39.3	35.5	36.6	ug/L	EPA 8260B	8/5/11	90.9	93.2	2.50	80-120	25
Ethanol	78311-06	<5.0	98.4	98.9	147	122	ug/L	EPA 8260B	8/5/11	149	124	18.6	55.1-159	25
Ethyl-tert-butyl ether	78311-06	<0.50	39.4	39.6	34.7	34.5	ug/L	EPA 8260B	8/5/11	88.1	87.2	0.987	76.5-120	25
Ethylbenzene	78311-06	<0.50	39.4	39.7	40.6	40.9	ug/L	EPA 8260B	8/5/11	103	103	0.190	80-120	25
Methanol	78311-06	<50	984	990	1040	892	ug/L	EPA 8260B	8/5/11	106	90.2	15.7	53.2-147	25
Methyl-t-butyl ether	78311-06	6.3	39.6	39.9	42.0	43.4	ug/L	EPA 8260B	8/5/11	90.1	92.9	3.02	69.7-121	25
P + M Xylene	78311-06	<0.50	39.4	39.7	38.6	38.8	ug/L	EPA 8260B	8/5/11	97.7	97.7	0.0554	76.8-120	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Tesoro - Livermore**Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Tert-Butanol	78311-06	<5.0	191	192	197	198	ug/L	EPA 8260B	8/5/11	103	103	0.302	80-120	25
Tert-amyl-methyl ether	78311-06	<0.50	39.3	39.6	35.7	36.9	ug/L	EPA 8260B	8/5/11	90.7	93.1	2.60	78.9-120	25
Toluene	78311-06	<0.50	39.4	39.7	39.2	39.1	ug/L	EPA 8260B	8/5/11	99.2	98.5	0.771	80-120	25
1,2-Dibromoethane	78344-06	<0.50	39.8	39.8	40.2	40.5	ug/L	EPA 8260B	8/8/11	101	102	0.776	80-120	25
1,2-Dichloroethane	78344-06	<0.50	40.0	40.0	39.2	39.2	ug/L	EPA 8260B	8/8/11	98.0	97.9	0.0811	75.7-122	25
Benzene	78344-06	<0.50	40.0	40.0	39.8	39.3	ug/L	EPA 8260B	8/8/11	99.4	98.2	1.26	80-120	25
Diisopropyl ether	78344-06	<0.50	39.6	39.6	40.2	39.8	ug/L	EPA 8260B	8/8/11	102	100	1.00	80-120	25
Ethanol	78344-06	<5.0	99.7	99.7	99.4	101	ug/L	EPA 8260B	8/8/11	99.7	101	1.41	55.1-159	25
Ethyl-tert-butyl ether	78344-06	<0.50	39.9	39.9	37.8	37.6	ug/L	EPA 8260B	8/8/11	94.7	94.3	0.422	76.5-120	25

QC Report : Matrix Spike/ Matrix Spike DuplicateProject Name : **Tesoro - Livermore**Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ethylbenzene	78344-06	<0.50	40.0	40.0	41.3	40.1	ug/L	EPA 8260B	8/8/11	103	100	2.95	80-120	25
Methyl-t-butyl ether	78344-06	<0.50	40.2	40.2	36.5	36.4	ug/L	EPA 8260B	8/8/11	90.9	90.5	0.458	69.7-121	25
P + M Xylene	78344-06	<0.50	40.0	40.0	40.5	39.5	ug/L	EPA 8260B	8/8/11	101	98.8	2.42	76.8-120	25
Tert-Butanol	78344-06	<5.0	193	193	195	196	ug/L	EPA 8260B	8/8/11	101	102	0.769	80-120	25
Tert-amyl-methyl ether	78344-06	<0.50	39.9	39.9	39.3	39.1	ug/L	EPA 8260B	8/8/11	98.6	98.1	0.480	78.9-120	25
Toluene	78344-06	<0.50	40.0	40.0	39.8	39.3	ug/L	EPA 8260B	8/8/11	99.5	98.2	1.40	80-120	25
1,2-Dibromoethane	78344-09	<0.50	39.8	39.8	40.3	40.4	ug/L	EPA 8260B	8/5/11	101	101	0.0796	80-120	25
1,2-Dichloroethane	78344-09	<0.50	40.0	40.0	40.4	40.5	ug/L	EPA 8260B	8/5/11	101	101	0.311	75.7-122	25
Benzene	78344-09	<0.50	40.0	40.0	37.3	36.7	ug/L	EPA 8260B	8/5/11	93.2	91.8	1.47	80-120	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Tesoro - Livermore**Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Diisopropyl ether	78344-09	<0.50	39.6	39.6	36.6	35.9	ug/L	EPA 8260B	8/5/11	92.3	90.5	1.88	80-120	25
Ethanol	78344-09	<5.0	99.7	99.7	83.8	82.8	ug/L	EPA 8260B	8/5/11	84.0	83.0	1.22	55.1-159	25
Ethyl-tert-butyl ether	78344-09	<0.50	39.9	39.9	36.8	38.0	ug/L	EPA 8260B	8/5/11	92.1	95.1	3.22	76.5-120	25
Ethylbenzene	78344-09	<0.50	40.0	40.0	39.0	38.7	ug/L	EPA 8260B	8/5/11	97.5	96.8	0.761	80-120	25
Methanol	78344-09	<50	998	998	856	834	ug/L	EPA 8260B	8/5/11	85.8	83.6	2.59	53.2-147	25
Methyl-t-butyl ether	78344-09	<0.50	40.2	40.2	35.8	36.5	ug/L	EPA 8260B	8/5/11	89.1	90.9	1.98	69.7-121	25
P + M Xylene	78344-09	<0.50	40.0	40.0	37.3	37.3	ug/L	EPA 8260B	8/5/11	93.3	93.2	0.178	76.8-120	25
Tert-Butanol	78344-09	<5.0	193	193	186	184	ug/L	EPA 8260B	8/5/11	96.2	94.9	1.41	80-120	25
Tert-amyl-methyl ether	78344-09	<0.50	39.9	39.9	38.7	39.1	ug/L	EPA 8260B	8/5/11	96.9	98.0	1.09	78.9-120	25
Toluene	78344-09	<0.50	40.0	40.0	38.5	37.6	ug/L	EPA 8260B	8/5/11	96.2	94.1	2.23	80-120	25

QC Report : Laboratory Control Sample (LCS)Project Name : **Tesoro - Livermore**Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	8/5/11	88.3	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	8/5/11	90.6	75.7-122
Benzene	40.0	ug/L	EPA 8260B	8/5/11	92.5	80-120
Diisopropyl ether	39.6	ug/L	EPA 8260B	8/5/11	86.7	80-120
Ethanol	99.7	ug/L	EPA 8260B	8/5/11	138	55.1-159
Ethyl-tert-butyl ether	39.9	ug/L	EPA 8260B	8/5/11	80.8	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	8/5/11	100	80-120
Methanol	998	ug/L	EPA 8260B	8/5/11	88.7	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	8/5/11	83.9	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	8/5/11	94.0	76.8-120
Tert-Butanol	193	ug/L	EPA 8260B	8/5/11	95.8	80-120
Tert-amyl-methyl ether	39.9	ug/L	EPA 8260B	8/5/11	87.0	78.9-120
Toluene	40.0	ug/L	EPA 8260B	8/5/11	95.1	80-120
1,2-Dibromoethane	39.7	ug/L	EPA 8260B	8/8/11	98.6	80-120
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	8/8/11	95.4	75.7-122
Benzene	39.9	ug/L	EPA 8260B	8/8/11	97.0	80-120
Diisopropyl ether	39.5	ug/L	EPA 8260B	8/8/11	99.8	80-120
Ethanol	99.5	ug/L	EPA 8260B	8/8/11	104	55.1-159
Ethyl-tert-butyl ether	39.8	ug/L	EPA 8260B	8/8/11	93.2	76.5-120
Ethylbenzene	39.9	ug/L	EPA 8260B	8/8/11	101	80-120
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	8/8/11	89.6	69.7-121
P + M Xylene	39.9	ug/L	EPA 8260B	8/8/11	101	76.8-120

QC Report : Laboratory Control Sample (LCS)Project Name : **Tesoro - Livermore**Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
TPH as Gasoline	504	ug/L	EPA 8260B	8/8/11	93.9	70.0-130
Tert-Butanol	193	ug/L	EPA 8260B	8/8/11	99.8	80-120
Tert-amyl-methyl ether	39.8	ug/L	EPA 8260B	8/8/11	97.3	78.9-120
Toluene	39.9	ug/L	EPA 8260B	8/8/11	98.3	80-120
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	8/5/11	102	80-120
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	8/5/11	101	75.7-122
Benzene	40.2	ug/L	EPA 8260B	8/5/11	94.7	80-120
Diisopropyl ether	39.8	ug/L	EPA 8260B	8/5/11	91.1	80-120
Ethanol	100	ug/L	EPA 8260B	8/5/11	92.6	55.1-159
Ethyl-tert-butyl ether	40.1	ug/L	EPA 8260B	8/5/11	95.1	76.5-120
Ethylbenzene	40.2	ug/L	EPA 8260B	8/5/11	99.2	80-120
Methanol	1000	ug/L	EPA 8260B	8/5/11	97.6	53.2-147
Methyl-t-butyl ether	40.4	ug/L	EPA 8260B	8/5/11	88.7	69.7-121
P + M Xylene	40.2	ug/L	EPA 8260B	8/5/11	95.6	76.8-120
TPH as Gasoline	502	ug/L	EPA 8260B	8/5/11	96.8	70.0-130
Tert-Butanol	194	ug/L	EPA 8260B	8/5/11	97.7	80-120
Tert-amyl-methyl ether	40.1	ug/L	EPA 8260B	8/5/11	96.5	78.9-120
Toluene	40.2	ug/L	EPA 8260B	8/5/11	97.9	80-120

Project Contact (Hardcopy or PDF To): Matthew Nelson
 California EDF Report? Yes No
 Company / Address: 3450 E. Spring St. Suite 212 Long Beach, CA 90806
 Sampling Company Log Code: EFSP
 Phone Number: 562-988-2755
 Global ID: T060010410
 Fax Number: 562-988-2754
 EDF Deliverable To (Email Address): MNELSON@ORIONENV.COM
 Project #: 0166 P.O. #:
 Bill to: Jeff Baker
 Project Name: Tesoro - Livermore
 Sampler Print Name: Chris Arroyo EFS
 Sampler Signature: [Signature]

Chain-of-Custody Record and Analysis Request

Project Address: <u>1619 1st Street Livermore, CA</u>	Sampling		Container				Preservative			Matrix			Analysis Request													TAT						
	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar	HCl	HNO ₃	None	Water	Soil	Air	MTBE @ 0.5 ppb (EPA 8260B)	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (MTBE, DIPE, ETBE, TAME, TBA) (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	CAM 17 Metals (EPA 200.7 / 6010)	5 Waste Oil Metals (Cd, Cr, Ni, Pb, Zn) (EPA 200.7 / 6010)	Mercury (EPA 245.1 / 7470 / 7471)	Total Lead (EPA 200.7 / 6010)	W.E.T. Lead (STLC)	For Lab Use Only		
<u>MW-1</u>	<u>8-3-11</u>	<u>1122</u>	<u>3</u>					<u>X</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																<input type="checkbox"/> 12 hr
<u>MW-3</u>	<u>8-4-11</u>	<u>0740</u>	<u>3</u>					<u>X</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																<input type="checkbox"/> 24 hr
<u>DW-3</u>	<u>8-4-11</u>	<u>0925</u>	<u>3</u>					<u>3</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																<input type="checkbox"/> 48 hr
<u>DW-2</u>	<u>8-4-11</u>	<u>0935</u>	<u>3</u>					<u>3</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																<input type="checkbox"/> 72 hr
<u>DW-5</u>	<u>8-4-11</u>	<u>1015</u>	<u>3</u>					<u>3</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																<input checked="" type="checkbox"/> 1 wk
<u>DW-6</u>	<u>8-4-11</u>	<u>1110</u>	<u>3</u>					<u>3</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																
<u>DW-7</u>	<u>8-4-11</u>	<u>1230</u>	<u>3</u>					<u>3</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																
<u>DW-1</u>	<u>8-4-11</u>	<u>1345</u>	<u>3</u>					<u>3</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																
<u>DW-8</u>	<u>8-4-11</u>	<u>1415</u>	<u>3</u>					<u>3</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																
<u>MW-2</u>	<u>8-4-11</u>	<u>1500</u>	<u>3</u>					<u>3</u>			<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>																

Relinquished by: [Signature] Date: 8-4-11 Time: 1600
 Received by: _____
 Relinquished by: _____ Date: _____ Time: _____
 Received by: _____
 Relinquished by: _____ Date: 080411 Time: 1600
 Received by Laboratory: [Signature] KIFF Analytical LLC

Remarks:



2795 2nd Street, Suite 300
 Davis, CA 95618
 Lab: 530.297.4800
 Fax: 530.297.4802

SRG # / Lab No.

78345

Page 2 of 2

Project Contact (Hardcopy or PDF To): Matthew Nelson
 California EDF Report? Yes No

Company / Address: 3150 E. Spring St., Suite 212 Long Beach, CA 90806
 Sampling Company Log Code: EFSP

Phone Number: 562-988-2755
 Global ID: 70600101410

Fax Number: 562-988-2759
 EDF Deliverable To (Email Address): maelson@ofionenv.com

Project #: 01LV P.O. #:
 Bill to: JEFF Baker

Project Name: Tesoro - Livermore
 Sampler Print Name: Chris Arroyo EFS
 Sampler Signature: [Signature]

Chain-of-Custody Record and Analysis Request

Project Address: <u>1619 1st street Livermore, CA</u>	Sampling		Container				Preservative			Matrix			
	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar	HCl	HNO ₃	None	Water	Soil	Air
<u>MW-11</u>	<u>8-4-11</u>	<u>1510</u>	<input checked="" type="checkbox"/>					<u>3</u>			<input checked="" type="checkbox"/>		
<u>MW-6</u>	<u>8-4-11</u>	<u>1548</u>	<input checked="" type="checkbox"/>					<u>3</u>			<input checked="" type="checkbox"/>		

Analysis Request												TAT		
CIRCLE METHOD												<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12 hr
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	48 hr
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	72 hr
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 wk

Relinquished by: [Signature] Date: 8-4-11 Time: 1600 Received by: _____

Relinquished by: _____ Date: _____ Time: _____ Received by: _____

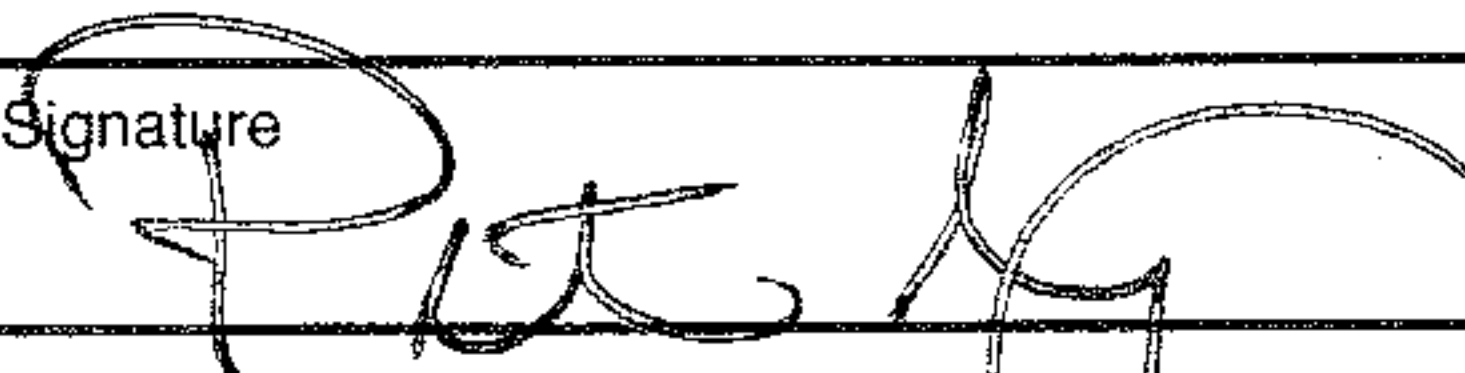
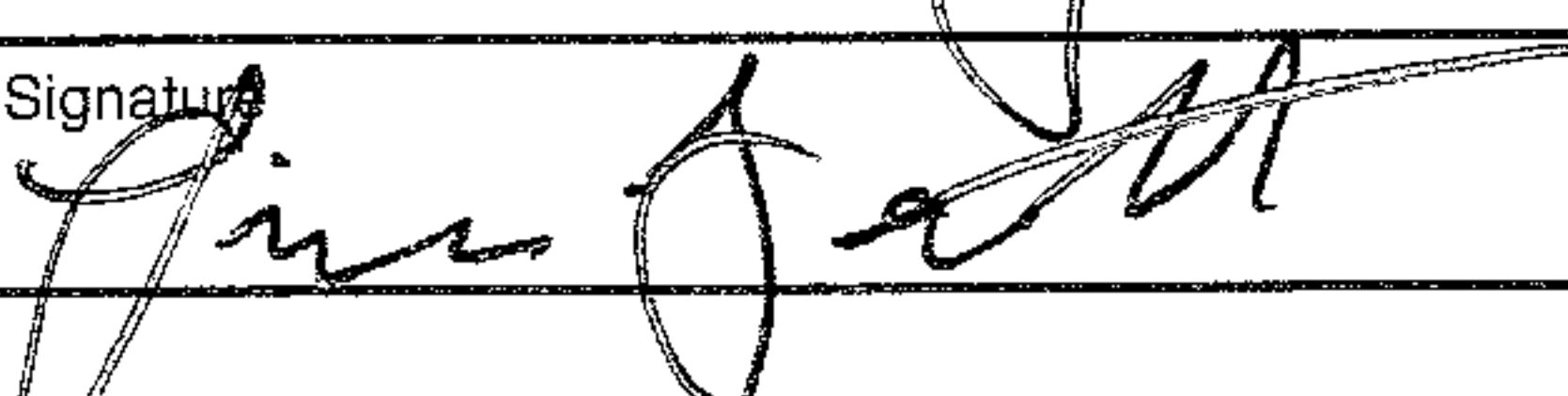
Relinquished by: _____ Date: 080411 Time: 1600 Received by Laboratory: [Signature] KIFF Analytical LLC

Remarks:

ATTACHMENT G
WASTE MANIFESTS

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. N/A		Manifest Document No. 19052	2. Page 1 of 1
3. Generator's Name and Mailing Address Tesoro Environmental Resource Company 3450 S. 344th Way Auburn, WA 98001				Tesoro # 67076 1619 FIRST STREET Livermore, CA	
4. Generator's Phone ()				A. State Transporter's ID	
5. Transporter 1 Company Name EXCEL Environmental Services		6. US EPA ID Number CAL 000209350		B. Transporter 1 Phone 800-376-6008	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID	
9. Designated Facility Name and Site Address ROT 5300 CLAUD RD. RIVERBANK, CA 95367		10. US EPA ID Number CAL 000190816		D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone 209-863-8181	
11. WASTE DESCRIPTION			12. Containers		13. Total Quantity
			No.	Type	14. Unit Wt./Vol.
a. NON HAZARDOUS WASTE WATER			001	TL	540 GAL. G
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above Non - HAZ WATER				H. Handling Codes for Wastes Listed Above	
15. Special Handling Instructions and Additional Information Gloves ERG 171					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Peter Arayo				Signature 	
				Date 8 4 11	
17. Transporter 1 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name Lin Liggett				Signature 	
				Date 8 4 11	
18. Transporter 2 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name				Signature	
				Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name				Signature	
				Date	
				Month Day Year	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

