TESORO

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11 March, 2011

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

Subject: **Fourth Quarter 2010 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,

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

Attachments

CC: Arctos – Matthew Nelson

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ARCTOS

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11 March 2011
Project No. 01LV

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

Subject: Fourth Quarter 2010 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 fourth quarter 2010 at the subject site (Figure 1).

Executive Summary

Quarterly groundwater monitoring was conducted at the site on 2 through 4 November 2010. There was an average 2.5-foot decrease in water levels since the third quarter 2010. Concentrations of total petroleum hydrocarbons as gasoline (TPHg) and benzene in downgradient well DW-7 have decreased approximately 90 percent since the well was installed in 2009. Concentrations of methyl tert-butyl ether (MTBE) have remained stable since 2009.

During the fourth quarter 2010, the soil vapor extraction (SVE) system operated at approximately 35 percent uptime due to equipment repairs. During operation, 1,250 pounds (lbs) of petroleum hydrocarbons were removed through volatilization and an estimated 3,200 lbs were removed through biodegradation.

The oxygen injection system was started up on 18 October 2010. Dissolved oxygen (DO) increased to above 10 milligrams per liter (mg/l) in monitoring wells located within 10 feet of active injection wells. Concentrations of TPHg, benzene, MTBE, and tert-butyl alcohol (TBA) decreased below the Environmental Screening Levels (ESLs) at well DW-1 with a corresponding increase in dissolved oxygen concentrations.

ARCTOS

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 groundwater monitoring on 2 through 4 November 2010. Samples were collected from wells MW-1 through MW-11, DW-1 through DW-7, TP-1, and TP-2 (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 429 to 438 feet above mean sea level (36 to 41 feet below ground surface). Water levels decreased an average of 2.5 feet compared to the August 2010 event (Table 1). The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.020 (1 foot/49 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment D).

The highest TPHg and benzene concentrations of 59,000 and 2,100 micrograms per liter (µg/l), respectively, were at well MW-11, which is located in the southwest portion of the site adjacent to the underground storage tanks (USTs). The highest MTBE concentration of 4,500 µg/l was at well TP-1. The highest TBA concentration of 14,000 µg/l was at well TP-2. TP-1 and TP-2 are located in the northwest portion of the site, downgradient of the current dispenser islands.

In November 2010, TPHg, benzene, and MTBE were detected in downgradient well DW-7 at concentrations of 660, 30, and 130 µg/l, respectively. TPHg and benzene concentrations in well DW-7 are approximately 90 percent less than when it was installed in November 2009. MTBE and TBA concentrations have remained stable since the well

was installed in 2009. Additional monitoring will be conducted at well DW-7 to perform a trend analysis and evaluate if additional downgradient delineation is required.

TPHg, benzene, MTBE, and TBA concentrations have decreased below ESLs at onsite well DW-1 with a corresponding increase in oxygen levels from the oxygen injection system. TPHg, benzene, and MTBE have also reduced to historically low concentrations at shallow well TP-2, located adjacent to well DW-1, with increasing oxygen levels. TBA concentrations have remained stable at well TP-2. The oxygen injection system is described below.

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 to assist with groundwater remediation. The operating SVE wells were adjusted and optimized based on water elevations measured throughout the fourth quarter. The depth to water was approximately 37.5 feet in the beginning of October, and decreased to approximately 29.5 feet by the end of December. At least 3 feet of well screen must be exposed for a well to be included in the SVE well field, so by the end of December, VW-2 was the only well with sufficient exposed screen for operation. The SVE wells are described below.

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

The SVE system influent was monitored frequently with a field photoionization detector (PID) and 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.

TPHg concentrations ranged from 2,500 (8 December) to 150 parts per million by volume (ppmv; 29 December). During the fourth quarter 2010, the system operated at an average

flow rate of 50 standard cubic feet per minute (scfm) and an average vacuum of 2.6 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 (EPA) 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 fourth quarter 2010:

Operation Period	Operating Wells	Operating Time (days)	Average Mass Removal Rate (pounds/day)	Mass Removed[a] (pounds)
10/1 to 10/7	MW-11, TP-1, TP-2, and VW-2	7	30	210
10/7 to 10/14	MW-1, MW-11, TP-1, TP-2, and VW-2	3	16	48
10/14 to 12/8	System down			
12/8 to 12/29	MW-11, TP-1, TP-2, and VW-2	21	47	987
12/29 to 12/31	VW-2	2	2	4

(a) Mass removed by volatilization only.

It was discovered in October that excessive vibration of the SVE unit had caused damage to a heat exchanger. The system was shut down for repairs between 14 October and 8 December 2010.

Mass removal in the first half of October decreased due to mechanical and electrical issues with the SVE unit. These issues were solved by repairing the heat exchanger and installing an electrical transformer. The mass removal rate increased when the system was restarted in December, then decreased in the final days of the quarter when only well VW-2 was available for operation due to an increase in water levels. During the fourth quarter 2010, approximately 1,250 pounds of hydrocarbons were removed by the SVE system through volatilization and up to 3,200 pounds of hydrocarbons were estimated to have been degraded by biodegradation. The total hydrocarbon mass removed by the SVE system is estimated to be 20,210 pounds or approximately 3,100 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 was started up on 18 October 2010 at wells IP-1, IP-3, IP-6, IP-7, and IP-9. The system delivers oxygen to the subsurface in pulsed intervals to increase oxygen levels while decreasing the potential for "pushing" dissolved hydrocarbons away from injection wells. Oxygen was injected into wells IP-1, IP-3, and IP-9 for 30 minutes at a time at a flow rate of approximately 15 standard cubic feet per hour (scfh), and wells IP-6 and IP-7 for 50 minutes at a time at a flow rate of approximately 15 scfh. Dissolved oxygen was monitored in the operating injection wells, as well as wells IP-2, IP-4, IP-5, IP-8, IP-10, DW-1, MW-1, MW-2, MW-11, TP-1, and TP-2. Dissolved oxygen readings increased from background readings of less than 1 mg/l to above 10 mg/l at wells MW-11, TP-2, and DW-1. Dissolved oxygen readings are summarized in Table 5.

The oxygen purity ranged from approximately 78 to 82 percent at the manifold at start-up. In December, Arctos discovered that one of the two air compressors had been damaged and oxygen purity decreased to between 51 and 58 percent with corresponding decreases of dissolved oxygen in monitoring wells. The air compressor was repaired and reinstalled in January 2011.

Some of the injection well screens have become obstructed by fine-grained sediment. The injection wells will be re-developed during the first quarter 2011 to improve oxygen injection. After the wells are developed, Arctos will start injecting at all 10 injection wells.

Conclusions

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

1. Dissolved oxygen increases were measured in groundwater monitoring wells within 10 feet of active injection wells

2. Groundwater concentrations have decreased on site with corresponding dissolved oxygen increases for wells near active injection wells

3. If water levels drop at the site, the number of operating SVE wells and system vacuum could be increased to increase flow rates and mass removal.

Recommendations

Based on the activities proposed in the IRAP and the results of the groundwater monitoring, Arctos recommends the following tasks during the first quarter of 2011:

- Continue operation of the SVE and oxygen injection systems
- Conduct quarterly sampling at deep wells DW-5 to DW-7 to confirm initial concentrations and collect data for trend analyses
- Re-develop the oxygen injection wells.

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	12/8/09	39.87	474.29	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
MW-2	12/8/09	40.82	472.98	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
MW-3	12/8/09	39.50	473.37	433.87
	2/11/10	35.19		438.18
	5/3/10	31.39		441.98
	8/2/10	34.61		438.76
	11/2/10	37.20		436.17
MW-4	12/8/09	39.46	473.64	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
MW-5	12/8/09	39.92	472.67	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
MW-6	12/8/09	43.02	471.93	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
MW-7	12/17/09	39.26	472.33	433.07
	2/11/10	36.18		436.15
	5/3/10	31.80		440.53

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	8/2/10	34.31	472.33	438.02
(cont.)	11/2/10	36.68		435.65
MW-8	12/17/09	39.92	471.18	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
MW-9	12/8/09	43.61	470.78	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
MW-10	12/8/09	42.80	471.63	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
MW-11	12/8/09	40.25	473.26	433.01
	2/11/10	NM[d]		NM
	5/3/10	31.36		441.90
	8/2/10	31.94	472.96[c]	441.02
	11/2/10	36.98		435.98
VW-2	12/8/09	DRY[e]	473.28	NM
	2/11/10	NM		NM
	5/3/10	31.84		441.44
	8/2/10	33.15	472.57[c]	439.42
	11/2/10	DRY		NM
VW-3	12/8/09	DRY	474.38	NM
	2/11/10	DRY		NM
	5/3/10	31.85		442.53
	8/2/10	34.72		439.66
	11/2/10	DRY		NM

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	12/8/09	41.39	472.82	431.43
	2/11/10	NM		NM
	5/3/10	32.32		440.50
	8/2/10	33.96		438.86
	11/2/10	37.46		435.36
TP-2	12/8/09	40.08	472.93	432.85
	2/11/10	NM		NM
	5/3/10	31.85		441.08
	8/2/10	33.57	472.78[(c)]	439.21
	11/2/10	37.35		435.43
DW-1	12/8/09	39.79	472.85	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
DW-2	12/8/09	42.88	471.61	428.73
	2/11/10	38.63		432.98
	5/3/10	34.46		437.15
	8/2/10	37.72		433.89
	11/2/10	40.50		431.11
DW-3	12/8/09	42.92	470.33	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
DW-4	12/8/09	42.26	468.48	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
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

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	8/2/10	37.56	471.86	434.30
(cont.)	11/2/10	40.00		431.86
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
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

(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) NM - Not measured.

(e) 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	12/8/09	3,200	16	18	81	110	ND<0.5[b]	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
MW-2	12/8/09	24,000	3,100	200	1,200	830	520	ND<7	ND<7	8.0	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	8.0	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
MW-3	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
MW-4	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[c]	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
	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
MW-5	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
MW-6	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	1000	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

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	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
(cont.)	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
MW-7	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
	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
	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
MW-8	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<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	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
	11/3/10	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
MW-9	12/9/09	1,200	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
	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
	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
MW-10	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
	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
MW-11	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

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)
VW-2	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
VW-3	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<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
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	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
TP-2	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
DW-1	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	0.90	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
DW-2	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

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
(cont.)	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
DW-3	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
DW-4	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	0.70	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
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
	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
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

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	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

(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	TPH[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

(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 (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Oxygen (%)	Mass Rate Removed (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	2,412	101	150	0.35	49	4.1	41	2	19.2	38

(a) "--" not sampled, analyzed, or collected.
(b) An average flow rate was used due to inaccurate system parameter readings.
(c) NA - not applicable.

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
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
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
IP-4	10/15/2010	0.01	NM
	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
IP-5	10/15/2010	0.02	NM
	10/18/2010	NM	NM
	10/22/2010	0.04	NM

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-5	10/25/2010	0.09	82.2
(cont.)	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
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
IP-7	10/15/2010	0.01	NM
	10/18/2010	NM	NM
	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
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
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

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

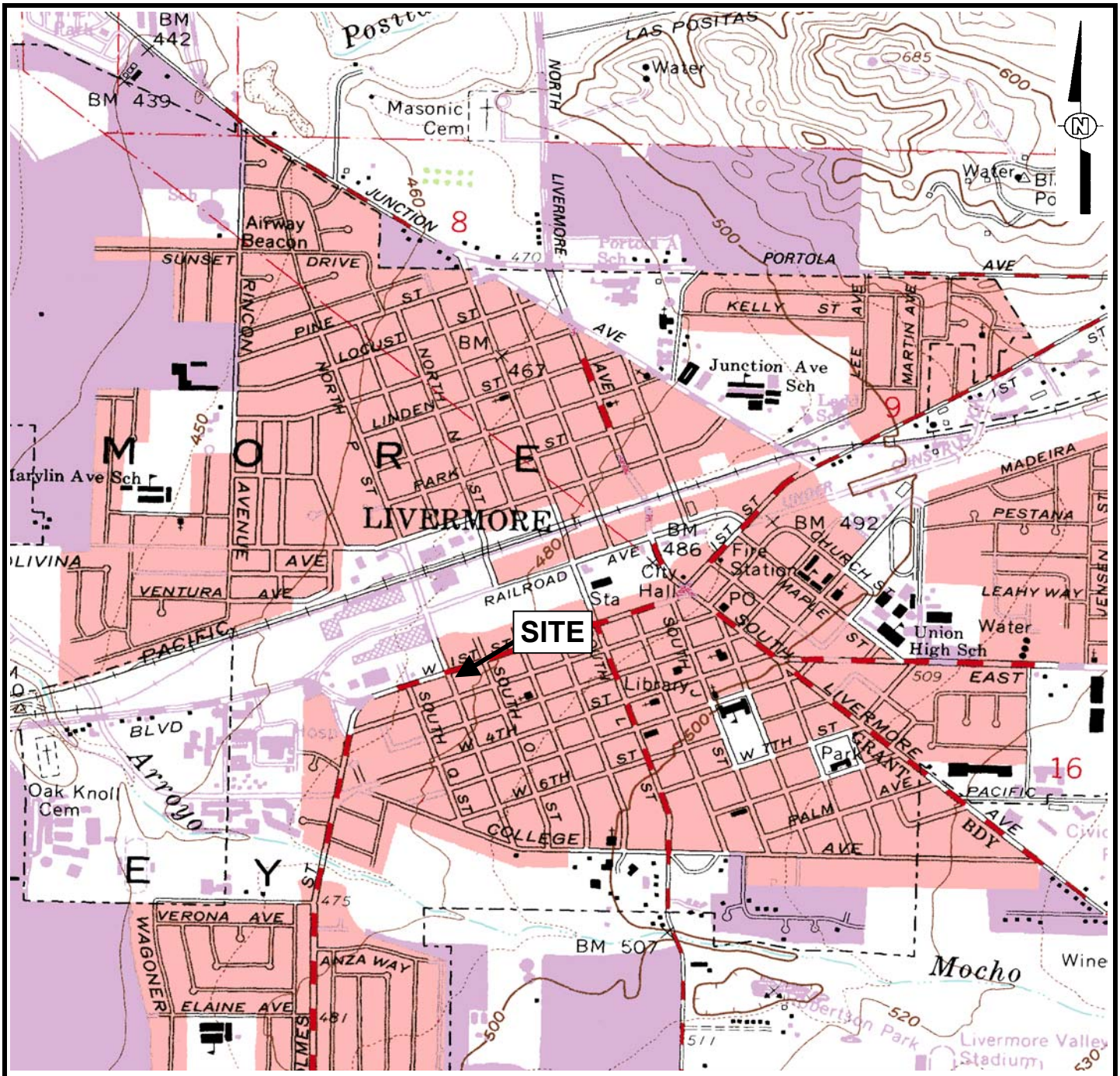
Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-9	12/9/2010	31.42	51.3
(cont.)	12/14/2010	33.16	53.3
	12/23/2010	31.77	58.1
IP-10	10/15/2010	0.11	NM
	10/18/2010	NM	NM
	10/22/2010	0.07	NM
	10/25/2010	5.33	82.2
	11/1/2010	8.48	77.7
	12/9/2010	0.25	51.3
	12/14/2010	0.3	53.3
	12/23/2010	0.04	58.1
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
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
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
	11/1/2010	32.42	77.7
	12/9/2010	5.07	51.3

TABLE 5

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-11	12/14/2010	13.39	53.3
(cont.)	12/23/2010	11.87	58.1
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
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
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
	12/9/2010	6.03	51.3
	12/14/2010	5.12	53.3
	12/23/2010	0.63	58.1

(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.



SCALE

0 2000 4000 FEET

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	

Legend

- MW-7 ⊕ Groundwater Monitoring Well With Groundwater Elevation (Feet, MSL) Measured 2 November 2010
- DW-1 ⊞ Deep Groundwater Monitoring Well with Groundwater Elevation (Feet, MSL) Measured 2 November 2010
- IP-1 ✦ Injection Well
- IP-6 △ Angled Injection Well Screen Location
- VW-2 ⊞ Vapor Extraction Well with Groundwater Elevation (Feet, MSL) Measured 2 November 2010
- TP-2 ⊗ Monitoring Well/Vapor Extraction Well with Groundwater Elevation (Feet, MSL) Measured 2 November 2010
- 436 Goundwater Elevation Contour
- NM Groundwater Elevation Not Measured

0 30' 60'
SCALE

REVISION 10

REVISIONS			
NO.	BY	DATE	DESCRIPTION
5	MY	11/19/09	Third Quarter 2009 Monitoring Report
6	MY	2/19/10	Fourth Quarter 2009 Monitoring Report
7	MY	5/19/10	First Quarter 2010 Monitoring Report
8	MY	8/19/10	Second Quarter 2010 Monitoring Report
9	MY	11/19/10	Third Quarter 2010 Monitoring Report
10	MY	3/11/11	Fourth Quarter 2010 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

GROUNDWATER ELEVATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

FILE NO. 01LV11B-20410.DWG

FIGURE 2

01LV11B-20410.dwg 3/11/2011 11:35AM

Legend

- MW-7 ⊕ Groundwater Monitoring Well with 2 and 3 August and 2 to 4 November 2010 Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
- DW-1 ⊞ Deep Groundwater Monitoring Well with 2 and 3 August and 2 to 4 November 2010 TPHg Results in µg/L
- IP-1 ▲ Injection Well
- IP-6 △ Angled Injection Well Screen Location
- VW-2 ⊞ Vapor Extraction Well with 2 and 3 August and 2 to 4 November 2010 TPHg Results in µg/L
- TP-2 ⊗ Monitoring Well/Vapor Extraction Well with 2 and 3 August and 2 to 4 November 2010 TPHg Results in µg/L
- 1000 TPHg Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (110/1,200) Previous Quarter/Current Quarter TPHg Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
10	6	MY	2/19/10	Fourth Quarter 2009 Monitoring Report
	7	MY	5/19/10	First Quarter 2010 Monitoring Report
	8	MY	8/19/10	Second Quarter 2010 Monitoring Report
	9	MY	11/19/10	Third Quarter 2010 Monitoring Report
	10	MY	3/11/11	Fourth Quarter 2010 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

TPHg CONCENTRATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

FILE NO. 01LV11B-20510.DWG

FIGURE 3

3/10/2011 5:12PM 01LV11B-20510.dwg

Legend

MW-7 ⊕ Groundwater Monitoring Well with 2 and 3 August and 2 to 4 November 2010 Benzene Results in µg/L

DW-1 ⊞ Deep Groundwater Monitoring Well with 2 and 3 August and 2 to 4 November 2010 Benzene Results in µg/L

IP-1 ▲ Injection Well

IP-6 △ Angled Injection Well Screen Location

VW-2 ⊞ Vapor Extraction Well with 2 and 3 August and 2 to 4 November 2010 Benzene Results in µg/L

TP-2 ⊗ Monitoring Well/Vapor Extraction Well with 2 and 3 August and 2 to 4 November 2010 Benzene Results in µg/L

1,000 Benzene Concentration Contour (µg/L), Queried Where Uncertain

ND Not Detected

NS Not Sampled

(2.2/2.4) Previous Quarter/Current Quarter Benzene Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
10	6	MY	2/19/10	Fourth Quarter 2009 Monitoring Report
	7	MY	5/19/10	First Quarter 2010 Monitoring Report
	8	MY	8/19/10	Second Quarter 2010 Monitoring Report
	9	MY	11/19/10	Third Quarter 2010 Monitoring Report
	10	MY	3/11/11	Fourth Quarter 2010 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

BENZENE CONCENTRATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

FILE NO. 01LV11B-20610.DWG

FIGURE 4

3/10/2011 5:10PM 01LV11B-20610.dwg

DW-4 (NS/ND<0.5)
DW-7 (130/130)
DW-6 (5.9/8.9)
MW-8 (NS/ND<0.5)
Hollywood Video
100
Safeway Parking Lot
South P Street
MW-9 (NS/4.4)
DW-3 (0.59/ND<0.5)
DW-2 (300/300)
MW-5 (NS/ND<0.5)
TP-2 (NS/980)
MW-4 (NS/ND<0.5)
DW-1 (8.5/0.54)
IP-5
Driveway
MW-3 (ND<0.5/ND<0.5)
DW-5 (ND<0.5/ND<0.5)
MW-6 (730/240)
IP-7
IP-6
1,000
Driveway
IP-4
Canopy
Air/Water
Dispenser Islands
MW-2 (280/540)
TP-1 (NS/4,500)
IP-3
VW-2 (NS/NS)
VW-3 (NS/NS)
IP-2
USTs
Planter
MW-10 (NS/ND<0.5)
Fosters Freeze Restaurant
IP-1
Station Building
MW-7 (NS/ND<0.5)
IP-8
IP-10
MW-11 (ND<15/ND<15)
MW-1 (ND<0.5/ND<0.5)
Residence
IP-9
1st Street
N

Legend

MW-7 — Groundwater Monitoring Well with 2 and 3 August and 2 to 4 November 2010 Methyl Tert-Butyl Ether (MTBE) Results in µg/L

DW-1 — Deep Groundwater Monitoring Well with 2 and 3 August and 2 to 4 November 2010 MTBE Results in µg/L

IP-1 — Injection Well

IP-6 △ — Angled Injection Well Screen Location

VW-2 — Vapor Extraction Well with 2 and 3 August and 2 to 4 November 2010 MTBE Results in µg/L

TP-2 ⊗ — Monitoring Well/Vapor Extraction Well with 2 and 3 August and 2 to 4 November 2010 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

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
10	6	MY	2/19/10	Fourth Quarter 2009 Monitoring Report
	7	MY	5/19/10	First Quarter 2010 Monitoring Report
	8	MY	8/19/10	Second Quarter 2010 Monitoring Report
	9	MY	11/19/10	Third Quarter 2010 Monitoring Report
	10	MY	3/11/11	Fourth Quarter 2010 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

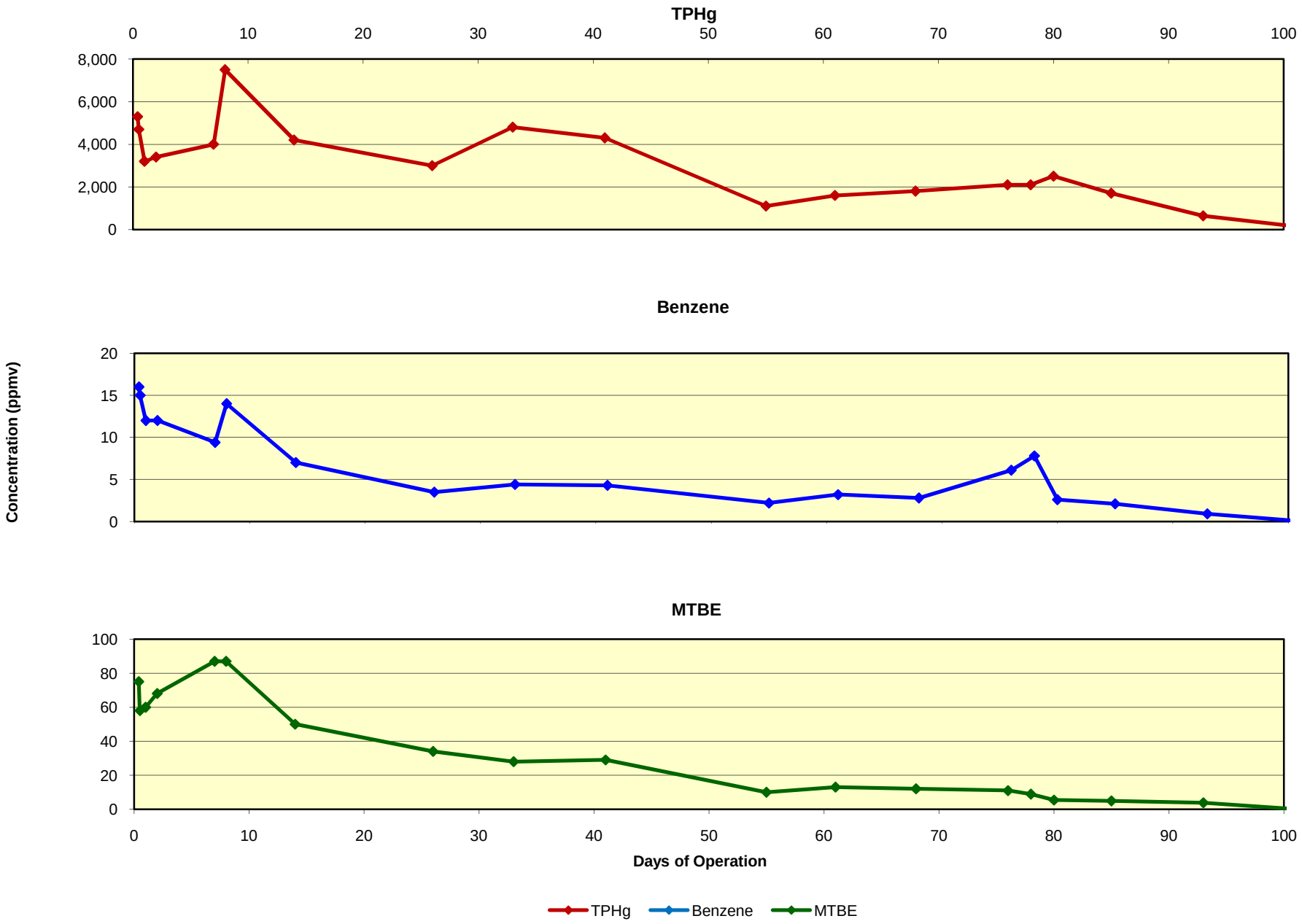
MTBE CONCENTRATION CONTOURS

PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MP	JPG

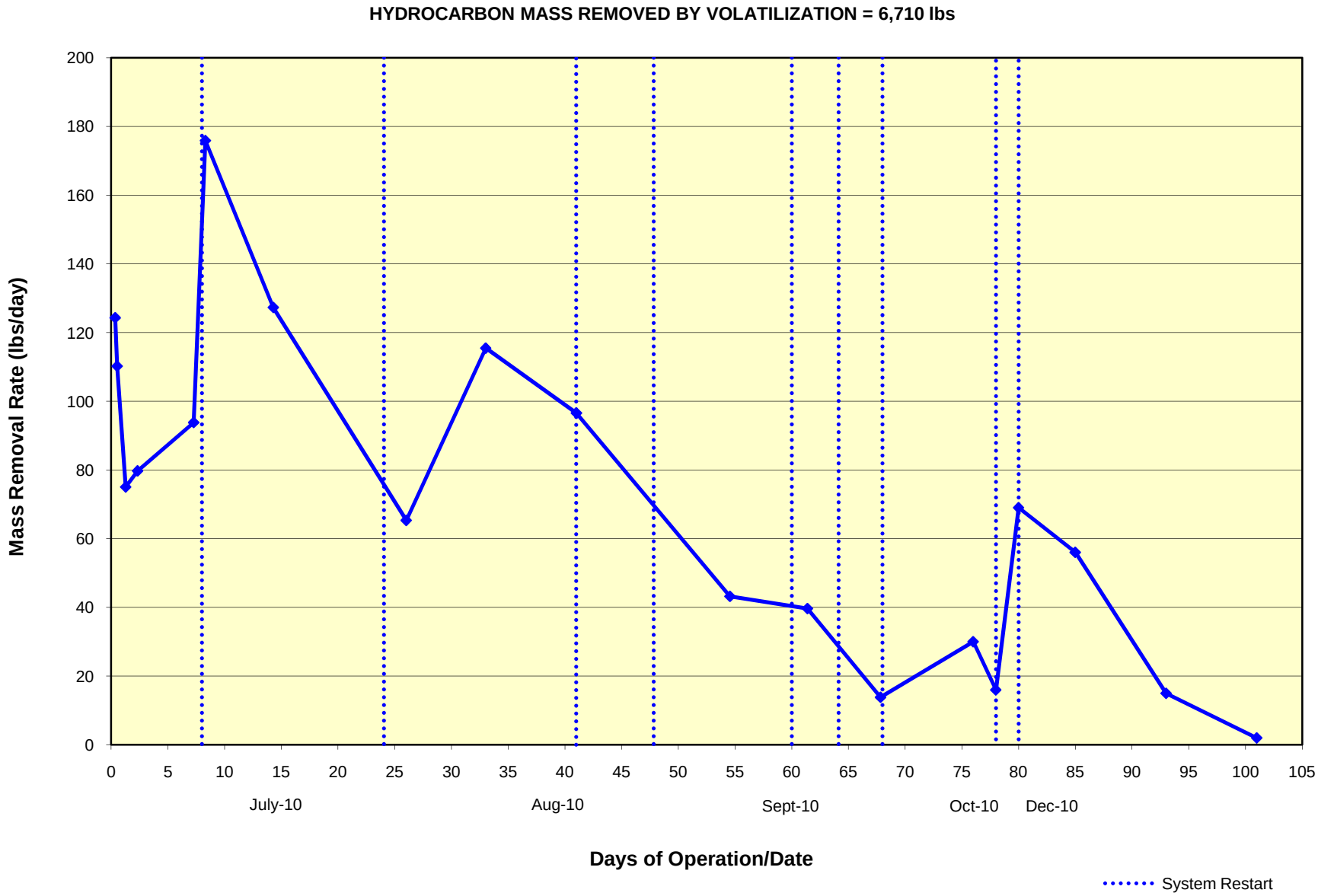
FILE NO. 01LV11B-20710.DWG

FIGURE 5

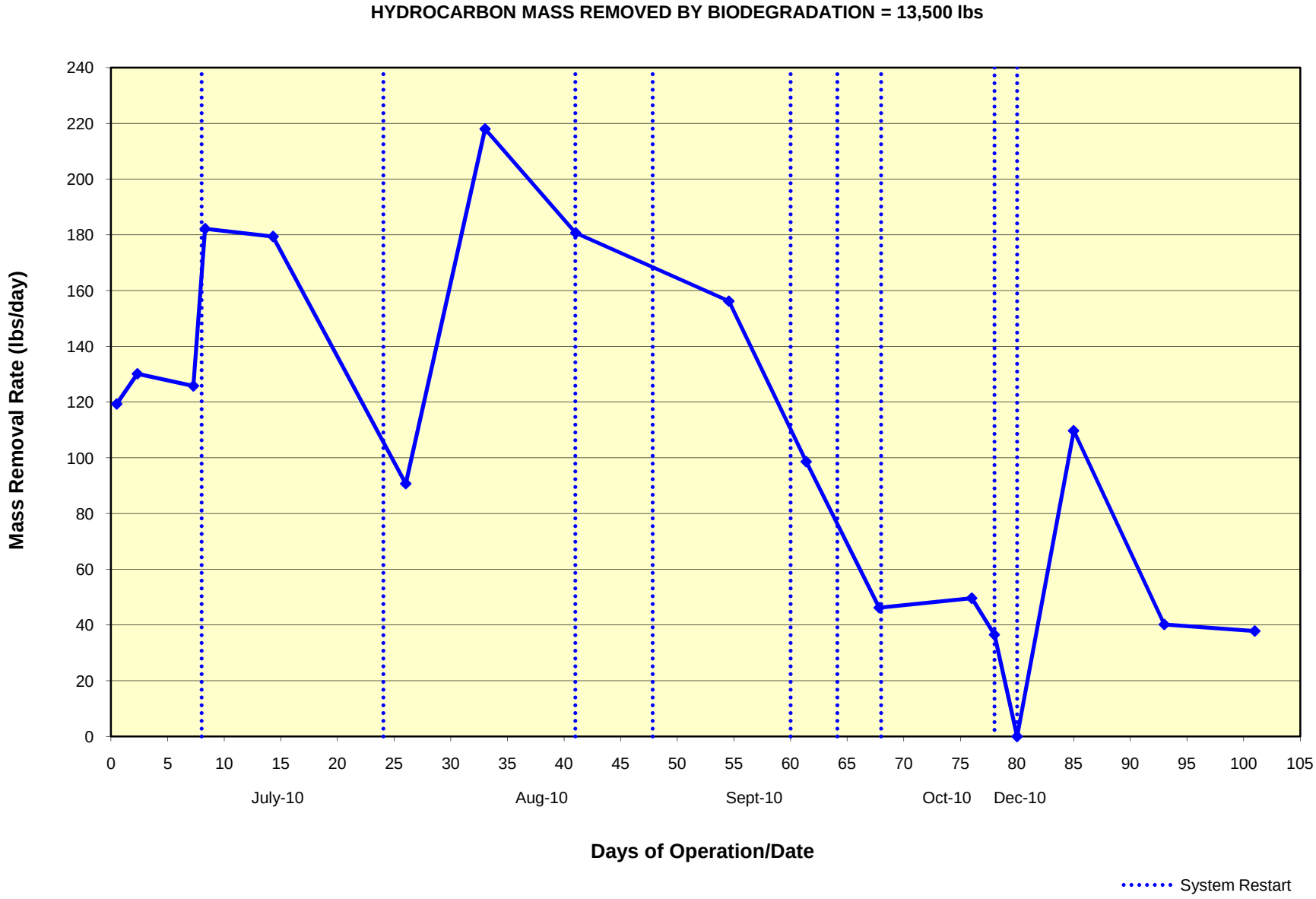
01LV11B-20710.dwg 5:33PM 2/23/2011



ARCTOS Arctos Environmental	Tesoro - Livermore	SOIL VAPOR INFLUENT CONCENTRATIONS	Figure 6
4Q10 System Graphs.xlsx | 3/11/2011			



ARCTOS Arctos Environmental	Tesoro - Livermore	MASS REMOVAL BY VOLATILIZATION	Figure 7
4Q10 System Graphs.xlsx | 3/11/2011			



ARCTOS Arctos Environmental	Tesoro - Livermore	MASS REMOVAL BY BIODEGRADATION	Figure 8
4Q10 System Graphs.xlsx | 3/11/2011			

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, 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 (Kiff), a State-certified laboratory in Davis, California, for total petroleum hydrocarbons as gasoline (TPHg); benzene, toluene, ethylbenzene, and total xylenes (BTEX); methyl tert-butyl ether (MTBE); 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 State Water Resources Control Board (SWRCB). The data were submitted in the State-mandated Electronic Data Format (EDF), in accordance with Assembly Bill 2886 requirements for underground storage tank (UST) 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 Quality Assurance/Control (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 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 health and safety plan (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: 11/2/2010 Project Name: Tesoro #67076 Project Number: 01LV

Technician: R. Holland/A.Pantoja Location: Livermore, CA Global ID : T0600101410

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
MW-1	4"	54.55	-	37.04	-	
MW-2	4"	54.1	-	38.15	-	
MW-3	4"	52.9	-	37.2	-	
MW-4	2"	46.8	-	37.55	-	
MW-5	2"	46.27	-	38.75	-	
MW-6	2"	47.65	-	40.45	-	
MW-7	2"	46.8	-	36.68	-	
MW-8	2"	44.5	-	38.44	-	
MW-9	2"	44.58	-	40.3	-	
MW-10	2"	45.1	-	38.3	-	
MW-11	4"	42.85	-	36.98	-	
DW-1	4"	64.75	-	37.49	-	
DW-2	4"	59.84	-	40.5	-	
DW-3	4"	59.74	-	40	-	
DW-4	4"	70.04	-	39.5	-	
DW-5	4"	59.8	-	40	-	
DW-6	4"	60.15	-	40.09	-	
DW-7	4"	65.2	-	40.42	-	
TP-1	2"	43.22	-	37.46	-	
TP-2	2"	41.21	-	37.35	-	
VW-2	2"	36.78	-	~~36.6~~	DRY	not enough water to sample
VW-3	2"	36.34	-	~~36.28~~	DRY	not enough water to sample

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	MW-1	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-		=		X	0.38		=
4		54.55		37.04		17.51	0.66		11.55
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.	8:40	386	440	-112.9	56.4	8.24	59.58
1	12	8:49	372	441	-61.8	29.8	7.46	66.34
2	24	9:00	189	450	-112.2	15.2	7.6	66.98
3	36	9:11	192	456	-111.4	15.9	7.42	67.49
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.04	
(P) After Purging	43.5	
P- 0.8(P-i) =	38.33	80% Recovery
(S) Before Sampling	38.23	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 11:10 **Turbidity (NTU):** 4.66

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/4/10
Well Number:	MW-2	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-	=		X		0.38	=	
4		54.1		38.15		15.95	0.66		10.52
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.	11:00	459	607	-216.9	61.7	7.75	72.13
1	11	11:09	417	554	-270.5	22.3	7.25	70.89
2	22	11:20	404	526	-282.8	9.2	7.9	71.2
3	33	11:33	402	515	-278.1	11.4	7.6	71.72
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	38.15	
(P) After Purging	39.29	
P- 0.8(P-I) =	38.37	80% Recovery
(S) Before Sampling	38.35	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
250 ml polypropylene	3	None
Poly 1 liter(L)	1	None
40ml VOA	5	HCL
250 ml glass	2	H2S04
125 ml polypropylene		

Sample Date : 11/4/10 **Time:** 12:15 **Turbidity (NTU):** 5.76

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	MW-3	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17	
3		-		=		X	0.38	=
4		52.9		37.2		15.7	0.66	10.36
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.	9:48	196	471	-153.6	21.9	7.92	63.92
1	11	9:54	388	478	-181	12.6	7.51	67.69
2	22	10:02	193	493	-180.1	10.4	7.53	63.75
3	33	10:10	194	485	-174.7	8.9	8.1	67.65
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.2	
(P) After Purging	38.32	
P- 0.8(P-I) =	37.42	80% Recovery
(S) Before Sampling	37.2	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 10:30 **Turbidity (NTU):** 117

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	MW-4	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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	46.8	-	37.55	=	9.25	0.17	1.57
3		-		=	X	0.38	=
4						0.66	
4.5		-		=	X	0.83	=
6		-		=	X	1.5	=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** None **Odor:** No

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.	10:35	197.4	526	-120.4	94.9	7.8	68.98
1	2	10:38	195.5	538	-97.2	56.6	7.54	68.87
2	4	10:41	195.1	541	-90.4	14.1	7.53	68.8
3	6	10:45	196.2	563	-84.1	9.2	7.46	69.18
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.55	
(P) After Purging	41.3	
P- 0.8(P-i) =	38.3	80% Recovery
(S) Before Sampling	38	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
250 ml polypropylene	3	
Poly 1 liter(L)	1	
40ml VOA	5	HCL
250 ml glass	2	H2SO4
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 12:45 **Turbidity (NTU):** 782

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2./10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	MW-5	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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		46.27		38.75		7.52	0.17		1.27
3		-		=		X	0.38		=
4							0.66		
4.5		-		=		X	0.83		=
6		-		=		X	1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** None **Odor:** No

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.	13:18	483	629	-55.2	16.9	7.41	70.04
1	1.5	13:22	446	649	-100.3	15.3	7.11	70.14
2	3	13:25	199.9	658	-133.7	11.4	7.08	69.81
3	4.5	13:29	446	661	-143.1	11.5	7.07	69.74
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	38.75	
(P) After Purging	40.75	
P- 0.8(P-I) =	39.15	80% Recovery
(S) Before Sampling	39.09	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 13:55 **Turbidity (NTU):** 527

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/2/10
Well Number:	MW-6	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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	47.65	40.45	7.2	0.17	1.22
3	-	=	X	0.38	=
4				0.66	
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.	12:45	458	605	-278	11.9	7.36	74.62
1	1.5	12:49	462	657	-278	11.2	7.02	70.87
2	3	12:54	460	648	-270.7	18.7	7.03	70.38
3	4.5	13:00	463	651	-279.7	11.1	7	70.1
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.45	
(P) After Purging	41.22	
P- 0.8(P-I) =	40.6	80% Recovery
(S) Before Sampling	40.45	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
250 ml polypropylene	3	Ice
Poly 1 liter(L)		
40ml VOA	3	HCL
250 ml glass	2	H2504
125 ml polypropylene		

Sample Date : 11/2/10 **Time:** 13:10 **Turbidity (NTU):** <1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	MW-7	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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	46.77	-	36.68	=	10.09	X 0.17	=	1.71
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:** 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.	6:56	421	557	-266.7	15.4	7.96	68.08
1	2	6:59	193	604	-273.6	9	7.25	62.49
2	4	7:03	194.5	560	-266	46.1	7.16	68.5
3	6	7:06	193.4	557	-253	29.5	7.14	68.6
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	36.68	
(P) After Purging	42.2	
P- 0.8(P-I) =	37.78	80% Recovery
(S) Before Sampling	36.68	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 8:32 **Turbidity (NTU):** 237

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	MW-8	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**Ambient Conditions:**	Clear

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	44.52	-	38.44	=	6.08	X 0.17	=	1.03
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:** 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.	7:12	405	493	-122.3	31.8	7.51	68.25
1	1	7:15	415	529	-169.2	63.4	7.36	68.91
2	2	7:20	409	534	-166.2	19.3	7.28	69.09
3	3	7:24	411	537	-168.8	24.1	7.25	68.58
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	38.44	
(P) After Purging	41.1	
P- 0.8(P-I) =	38.97	80% Recovery
(S) Before Sampling	38.44	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 8:51 **Turbidity (NTU):** 899

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	MW-9	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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	44.58	-	40.3	=	4.28	0.17	X	0.72
3	-		=		X	0.38		=
4						0.66		
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.	14:18	498	804	-81.7	13.3	7.41	72
1	1	14:20	498	861	-112.6	16.9	7.2	71.56
2	2	14:23	498	864	-140.9	13.5	7.15	71.45
3	3	14:26	495	859	-161.8	3.3	7.13	71.33
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.3	
(P) After Purging	42.81	
P- 0.8(P-I) =	40.8	80% Recovery
(S) Before Sampling	40.8	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
250 ml polypropylene	3	
1 liter(L), amber glass		
40ml VOA	5	HCL
250 ml glass	2	H2S04
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 15:20 **Turbidity (NTU):** 395

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/2/10
Well Number:	MW-10	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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	45.1	38.3	6.8	0.17	1.15
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:** 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.	15:40	466	687	-286.5	19.3	8.1	71.08
1	1.5	15:43	472	699	-154.5	42.8	7.75	71.16
2	3	15:46	471	699	-138.4	15.7	7.72	70.39
3	4.5	15:50	469	700	-132.4	15.9	7.73	69.92
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	38.3	
(P) After Purging	42.52	
P- 0.8(P-I) =	39.14	80% Recovery
(S) Before Sampling	39.14	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/2/10 **Time:** 17:00 **Turbidity (NTU):** 7.19

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/4/10
Well Number:	MW-11	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-		=		X	0.38		=
4		**42.85**		**36.98**		**5.87**	**0.66**		**3.87**
4.5		-		=		X	0.83		=
6		-		=		X	1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** None **Odor:** No

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.	9:00	446	629	-26.7	223.5	7.99	66.91
1	4	9:05	448	647	14	234.7	7.6	67.18
2	8	9:11	392	664	12.4	187.2	7.35	64.92
3	12	9:20	405	669	-45.5	159.5	8.06	62.69
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	36.98	
(P) After Purging	40.97	
P- 0.8(P-I) =	37.77	80% Recovery
(S) Before Sampling	38.01	
Sampled 80% - 100%	No	

Sample Containers:

	No.	Preservation
250 ml polypropylene	3	None
Poly 1 liter (L)	1	None
40ml VOA	5	HCL
250 ml glass	2	H2S04
125 ml polypropylene		

Sample Date : 11/4/10 **Time:** 11:20 **Turbidity (NTU):** 895

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

well did not recover to 80% in 2 hours

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/4/10
Well Number:	DW-1	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-	=		X		0.38	=	
4		**64.75**		**37.49**		**27.26**	**0.66**		**17.99**
4.5		-	=		X		0.83	=	
6		-	=		X		1.5	=	

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** None **Odor:** No

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.	6:54	589	497	-72.6	72.1	8.29	60.85
1	18	7:06	420	523	-20.6	29.6	7.61	59.15
2	36	7:20	406	495	-36.6	23.6	7.48	66.98
3	54	7:35	394	480	-21.6	29.01	7.58	67.32
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.49	
(P) After Purging	39.97	
P- 0.8(P-I) =	37.99	80% Recovery
(S) Before Sampling	37.49	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
250 ml polypropylene	3	None
Poly 1 liter(L)	1	None
40ml VOA	3	HCL
250 ml glass	2	H2S04
125 ml polypropylene		

Sample Date : 11/4/10 **Time:** 9:40 **Turbidity (NTU):** 121

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/2/10
Well Number:	DW-2	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-		=		X	0.38		=
4		59.84		40.5		19.34	0.66		12.76
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.	10:50	577	469	-345	17.6	7.79	67.84
1	13	11:00	542	467	-335	13	7.08	68.96
2	26	11:10	540	553	-315	10.1	6.99	70.41
3	39	11:24	445	556	-332	8.8	7.17	72.19
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.5	
(P) After Purging	40.85	
P- 0.8(P-I) =	40.57	80% Recovery
(S) Before Sampling	40.5	
Sampled 80% - 100%	100%	

Sample Containers:

	No.	Preservation
250 ml polypropylene		
Poly 1 liter(L)		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/2/10 **Time:** 11:40 **Turbidity (NTU):** 3.88

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	DW-3	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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	59.74		40		19.74	0.66	13.02
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.	14:39	401	530	-130.2	24.1	7.67	75.19
1	13	14:49	408	535	-188.8	10.8	7.44	73
2	26	14:58	407	535	-206.2	8.3	7.39	72.91
3	39	15:05	405	533	-224.3	7.3	7.99	72.79
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40	
(P) After Purging	40.93	
P- 0.8(P-I) =	40.19	80% Recovery
(S) Before Sampling	40	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 15:15 **Turbidity (NTU):** 1.28

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	DW-4	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-		=		X	0.38		=
4		70.04		39.5		30.54	0.66		20.15
4.5		-		=		X	0.83		=
6		-		=		X	1.5		=

Groundwater Surface Inspection

Floating Product (ft)(in.): None **Sheen/Iridescence:** None **Odor:** No

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.	11:22	386	448	-62.6	25.9	7.94	71.37
1	20	11:36	191.1	452	-54.9	12.2	7.45	71.26
2	40	11:55	191	452	-174.8	10.2	7.42	70.87
3	60	12:10	192.7	453	-93.6	9	7.4	71.43
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.5	
(P) After Purging	40.9	
P- 0.8(P-I) =	39.78	80% Recovery
(S) Before Sampling	39.78	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 12:25 **Turbidity (NTU):** 2.39

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/2/10
Well Number:	DW-5	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-		=		X	0.38		=
4		59.8		40		19.8	0.66		13.06
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.	14:40	395	501	-184.8	24.9	8.01	76.97
1	13	14:50	399	497	-242.1	13.3	7.37	72.47
2	26	15:00	400	493	-291.2	8.8	7.59	72.18
3	39	15:10	398	497	-383.2	9.3	7.26	71.48
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40	
(P) After Purging	41.92	
P- 0.8(P-I) =	40.38	80% Recovery
(S) Before Sampling	40.38	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
Poly 1 liter(L)		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/2/10 **Time:** 14:17 **Turbidity (NTU):** 681

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/2/10
Well Number:	DW-6	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-		=		X	0.38		=
4		60.15		40.09		20.06	0.66		13.23
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.	13:44	409	514	-275	3	7.99	77.53
1	13	13:53	408	504	-276	53	7.26	74.33
2	26	14:05	408	508	-257	10.4	7.25	73.62
3	39	14:15	408	512	-259	68.2	7.23	73.93
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.09	
(P) After Purging	41.58	
P- 0.8(P-I) =	40.39	80% Recovery
(S) Before Sampling	40.09	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
Poly 1 liter(L)		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/2/10 **Time:** 14:25 **Turbidity (NTU):** 8.66

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/4/10
Well Number:	DW-7	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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							0.17		
3		-	=		X		0.38	=	
4		65		40.42		24.58	0.66		16.22
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.	8:00	406	469	-88.2	69.9	8.64	58.33
1	17	8:10	415	547	-166.8	13.7	7.24	69.58
2	34	8:20	420	560	-194.7	7.6	7.45	69.88
3	51	8:33	419	558	-198.9	7.15	7.15	70.04
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.42	
(P) After Purging	40.86	
P- 0.8(P-I) =	40.51	80% Recovery
(S) Before Sampling	40.42	
Sampled 80% - 100%	100%	

Sample Containers:

	No.	Preservation
250 ml polypropylene	3	None
Poly 1 liter(L)	1	None
40ml VOA	5	HCL
250 ml glass	2	H2504
125 ml polypropylene		

Sample Date : 11/4/10 **Time:** 10:12 **Turbidity (NTU):** 5.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	TP-1	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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	43.22	-	37.46	=	5.76	0.17	0.97
3		-		=	X	0.38	=
4						0.66	
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.	16:31	478	684	13.8	89.3	7.36	70.83
1	1	16:35	455	691	1.5	77.3	6.85	70.11
2	2	16:39	451	690	-1.2	115.4	6.83	69.63
3	3	16:42	199.1	691	-14.1	90.8	6.8	69.55
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.46	
(P) After Purging	40.62	
P- 0.8(P-I) =	38.09	80% Recovery
(S) Before Sampling	38.09	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
Poly 1 liter(L)		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/3/10 **Time:** 17:20 **Turbidity (NTU):** 613

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/4/10
Well Number:	TP-2	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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		41.21		37.35		3.86	0.17	0.65
3		-		=		X	0.38	=
4							0.66	
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.	7:10	483	688	-1.2	244.1	7.57	58.19
1	1	7:13	476	707	10.8	201.2	7.29	58.72
2	2	7:16	466	643	-30.5	125.9	7.34	56.1
3	3	7:19	463	350	-28.2	39.3	7.2	62.79
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	37.35	
(P) After Purging	40.18	
P- 0.8(P-i) =	37.91	80% Recovery
(S) Before Sampling	37.35	
Sampled 80% - 100%	YES	

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : 11/4/10 **Time:** 9:20 **Turbidity (NTU):** <1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 11/2/10

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	VW-2	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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		36.78		35.6			0.17	Unable to Sample
3		-		=		X	0.38	=
4							0.66	
4.5		-		=		X	0.83	=
6		-		=		X	1.5	=

Groundwater Surface Inspection

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

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.							
1	*No Purge		Samples*					
2								
3								
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	36.6	
(P) After Purging		
P- 0.8(P-I) =		80% Recovery
(S) Before Sampling		
Sampled 80% - 100%		

Sample Containers:

	No.	Preservation
500 ml polypropylene		
Poly 1 liter(L)		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : **Time:** **Turbidity (NTU):**

Sampling Equipment : Disposable Bailer

Calibrate Date:

Comments: Not enough Water to Sample

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	11/3/10
Well Number:	VW-3	**Well Integrity:**	Good
Technician:	R. Holland / A. Pantoja	**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		36.34		36.28				0.17		
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.							
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)		
(I) Initially			
(P) After Purging			
P- 0.8(P-I) =		80% Recovery	
(S) Before Sampling			
Sampled 80% - 100%			

Sample Containers:

	No.	Preservation
500 ml polypropylene		
1 liter(L), amber glass		
40ml VOA	3	HCL
250 ml glass		
125 ml polypropylene		

Sample Date : **Time:** **Turbidity (NTU):**

Sampling Equipment : Disposable Bailer

Calibrate Date:

Comments: *No Purge Sample (Not enough water to sample)

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 ¼-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 (in. wc) 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 (Kiff), a State-certified laboratory in Davis, California, and analyzed for the following parameters:

- Total petroleum hydrocarbons as gasoline (TPHg); benzene, toluene, ethylbenzene, and total xylenes (BTEX); methyl tert-butyl ether (MTBE); and other oxygenates using Environmental Protection Agency (EPA) Method 8260B

- Fixed gases (oxygen, nitrogen, methane, and carbon dioxide) by American Society for Testing and Materials (ASTM) 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		437.58
	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
MW-2	6/1/93	38.02	472.98	434.96
	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
	12/1/97	35.94		437.04
	3/19/98	20.34		452.64
	5/29/98	22.63		450.35

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.)	9/15/98	32.30	472.98	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
	7/19/05	30.11		442.87
	11/21/05	32.04		440.94
	2/9/06	27.11		445.87

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-2 (cont.)	5/17/06	25.18	472.98	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
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
	8/12/94	41.72		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

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.)	3/21/96	15.85	473.37	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
	6/5/02	35.35		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

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.)	12/23/03	30.47	473.37	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
	2/11/10	35.19		438.18
	5/3/10	31.39		441.98
	8/2/10	34.61		438.76
	11/2/10	37.20		436.17
MW-4	3/30/94	31.56	473.64	442.08
	4/25/94	32.73		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-4 (cont.)	8/12/94	41.61	473.64	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
	3/13/00	24.35		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

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.)	6/5/02	35.68	473.64	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
	11/12/07	DRY[d]		NM[e]
	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		NM
	2/11/09	DRY		NM
	4/27/09	40.64		433.00
	8/4/09	DRY		NM
	12/8/09	39.46		434.18

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-4 (cont.)	2/11/10	35.31	473.64	438.33
	5/3/10	31.55		442.09
	8/2/10	35.15		438.49
	11/2/10	37.55		436.09
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
	3/19/98	20.93		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

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.)	3/27/01	30.57	472.67	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
	11/21/05	32.35		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		NM
	2/14/08	35.66		437.01
	5/8/08	36.60		436.07
	7/23/08	DRY		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-5 (cont.)	10/13/08	DRY	472.67	NM
	2/11/09	DRY		NM
	4/27/09	42.50		430.17
	8/4/09	DRY		NM
	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
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
	12/15/95	30.32		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

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.)	9/7/99	33.94	471.93	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		NM
	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
	9/9/03	37.66		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

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.)	5/17/07	36.50	471.93	435.43
	8/2/07	42.24		429.69
	11/12/07	DRY		NM
	2/14/08	38.67		433.26
	5/8/08	38.50		433.43
	7/23/08	DRY		NM
	10/13/08	DRY		NM
	2/11/09	DRY		NM
	4/27/09	44.87		427.06
	8/4/09	DRY		NM
	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
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

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.)	3/19/98	20.33	472.33	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
	6/30/01	37.50		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

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.)	11/21/05	30.42	472.33	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		NM
	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		NM
	2/11/09	DRY		NM
	4/27/09	41.80		430.53
	8/4/09	DRY		NM
	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
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

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.)	5/16/06	25.60	471.18	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		NM
	2/14/08	35.55		435.63
	5/8/08	36.64		434.54
	7/23/08	DRY		NM
	10/13/08	DRY		NM
	2/11/09	DRY		NM
	4/27/09	DRY		NM
	8/4/09	DRY		NM
	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
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

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.)	2/14/07	34.00	470.78	436.78
	5/17/07	36.88		433.90
	8/2/07	44.11		426.67
	11/12/07	DRY		NM
	2/14/08	39.32		431.46
	5/8/08	38.90		431.88
	7/23/08	DRY		NM
	10/13/08	DRY		NM
	2/11/09	DRY		NM
	4/27/09	43.79		426.99
	8/4/09	DRY		NM
	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
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

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.)	8/2/07	43.46	471.63	428.17
	11/12/07	DRY		NM
	2/14/08	39.71		431.92
	5/8/08	37.55		434.08
	7/23/08	DRY		NM
	10/13/08	DRY		NM
	2/11/09	DRY		NM
	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
MW-11	12/16/08	DRY	473.26	NM
	2/11/09	DRY		NM
	4/27/09	DRY		NM
	8/4/09	DRY		NM
	12/8/09	40.25		433.01
	2/11/10	NM		NM
	5/3/10	31.36		441.90
	8/2/10	31.94	472.96[(c)]	441.02
	11/2/10	36.98		435.98
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
	2/9/06	27.21		446.07
	5/17/06	25.26		448.02

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.)	8/9/06	31.74	473.28	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		NM
	2/14/08	35.55		437.73
	5/8/08	35.31		437.97
	7/23/08	DRY		NM
	10/13/08	DRY		NM
	2/11/09	DRY		NM
	4/27/09	DRY		NM
	8/4/09	DRY		NM
	12/8/09	DRY		NM
	2/11/10	NM		NM
	5/3/10	31.84		441.44
	8/2/10	33.15	472.57[(c)]	439.42
	11/2/10	DRY		NM
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
	8/9/06	30.53		443.85
	11/8/06	31.62		442.76
	2/14/07	30.48		443.90
	5/17/07	31.70		442.68

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.)	8/2/07	35.55	474.38	438.83
	11/12/07	DRY		NM
	2/14/08	DRY		NM
	5/8/08	34.80		439.58
	7/23/08	DRY		NM
	10/13/08	DRY		NM
	2/11/09	DRY		NM
	4/27/09	DRY		NM
	8/4/09	DRY		NM
	12/8/09	DRY		NM
	2/11/10	DRY		NM
	5/3/10	31.85		442.53
	8/2/10	34.72		439.66
	11/2/10	DRY		NM
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		NM
	2/14/08	36.17		436.65
	5/8/08	36.17		436.65
	7/23/08	DRY		NM
	10/13/08	DRY		NM
	2/11/09	DRY		NM
	4/27/09	DRY		NM
	8/4/09	DRY		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)
TP-1 (cont.)	12/8/09	41.39	472.82	431.43
	2/11/10	NM		NM
	5/3/10	32.32		440.50
	8/2/10	33.96		438.86
	11/2/10	37.46		435.36
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		NM
	2/14/08	35.62		437.31
	5/8/08	36.62		436.31
	7/23/08	DRY		NM
	10/13/08	DRY		NM
	2/11/09	DRY		NM
	4/27/09	DRY		NM
	8/4/09	DRY		NM
	12/8/09	40.08		432.85
	2/11/10	NM		NM
	5/3/10	31.85		441.08
	8/2/10	33.57	472.78[(c)]	439.21
	11/2/10	37.35		435.43
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

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-1 (cont.)	4/27/09	41.74	472.85	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
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
	5/3/10	34.46		437.15
	8/2/10	37.72		433.89
	11/2/10	40.50		431.11
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

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	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
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
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
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
MW-A	1/17/99	30.13	NM	NM
MW-B	1/17/99	30.29	NM	NM
MW-C	1/17/99	30.60	NM	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-D	1/17/99	31.32	NM	NM
MW-E	1/17/99	31.36	NM	NM
MW-W	1/17/99	30.91	NM	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
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
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
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
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
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
IP-7	7/23/08	51.45	472.86	421.41
	10/13/08	57.23		415.63
	5/3/10[(f)]	35.75		437.11
IP-8	12/16/08	50.48	473.13	422.65
	5/3/10[(f)]	33.34		439.79
IP-9	12/16/08	52.51	473.47	420.96
	5/3/10[(f)]	31.79		441.68

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-10	2/11/09	48.77	473.78	425.01
	5/3/10[(f)]	32.23		441.55

(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

HISTOTICAL 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	1000	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	--	--	--	--	--	--	--	--

TABLE E-1

HISTOTICAL 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.)	12/13/99	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	--	--	--	--	--	--	--	--
	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

TABLE E-1

HISTOTICAL 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.)	4/27/09	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
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	--	--	--	--	--	--	--	--

TABLE E-1

HISTOTICAL 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.)	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	--	--	--	--	--	--	--	--
	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
	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

TABLE E-1

HISTOTICAL 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.)	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
	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	8.0	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	8.0	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

TABLE E-1

HISTOTICAL 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	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
	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

TABLE E-1

HISTOTICAL 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.)	7/23/08	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	0.64	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	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
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	--	--	--	--	--	--	--	--	--
	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

TABLE E-1

HISTOTICAL 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.)	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	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
	2/11/09	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
	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
	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
	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
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	--	--	--	--	--	--	--	--

TABLE E-1

HISTOTICAL 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.)	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	--	--	--	--	--	--	--	--
	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

TABLE E-1

HISTOTICAL 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.)	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
	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

TABLE E-1

HISTOTICAL 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	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
(cont.)	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
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	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--

TABLE E-1

HISTOTICAL 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.)	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<20	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<5	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<5	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<10	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<20	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<10	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<5	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<4	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<4	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<10	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<2.5	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<1	ND<1
	2/9/06	7,100	340	11	370	360	910	ND<2	ND<2	9.3	120	ND<200	ND<20	ND<2	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<2	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<2	ND<2

TABLE E-1

HISTOTICAL 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
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	--	--	--	--	--	--	--	--

TABLE E-1

HISTOTICAL 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.)	9/16/96	7,800	140	43	440	590	ND<25	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--

TABLE E-1

HISTOTICAL 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.)	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
	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
	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
	2/11/09	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

TABLE E-1

HISTOTICAL 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	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
(cont.)	2/11/10	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
	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
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
	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

TABLE E-1

HISTOTICAL 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.)	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	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
	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
	11/3/10	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
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	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
	11/12/07	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

TABLE E-1

HISTOTICAL 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	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
(cont.)	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	1,200	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
	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
	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
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

TABLE E-1

HISTOTICAL 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.)	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
	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
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

TABLE E-1

HISTOTICAL 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	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
	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

TABLE E-1

HISTOTICAL 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	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
	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<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
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE E-1

HISTOTICAL 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	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
	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
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

TABLE E-1

HISTOTICAL 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.)	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
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

TABLE E-1

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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-1 (cont.)	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	0.90	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
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
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

TABLE E-1

HISTOTICAL 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-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	0.50	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	0.70	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
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
	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
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
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

TABLE E-1

HISTOTICAL 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-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	--	--	--	--	--	--	--	--
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
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<5.0	ND<50	ND<5.0	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<5.0	ND<80	ND<5.0	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<5.0	ND<50	ND<5.0	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<5.0	ND<80	ND<5.0	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<5.0	ND<80	ND<5.0	ND<0.5	ND<0.5

TABLE E-1

HISTOTICAL 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-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
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
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
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<5.0	ND<50	ND<20	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

KIFF Analytical LLC

Report Number : 75190
Date : 11/08/2010

Laboratory Results

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

Subject : 4 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

KIFF Analytical LLC

Report Number : 75190
Date : 11/08/2010

Subject : 4 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 sample DW-2.

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

California Laboratory Services provided analytical testing associated with these samples, but is not accredited by the National Environmental Laboratory Accreditation Program (NELAP).

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-2 and MW-6 for the analyte Nitrate as N were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with sample MW-6 for the analytes Benzene, Ethylbenzene, and P + M Xylene were affected by the analyte concentrations already present in the un-spiked sample.

KIFF Analytical LLC

Report Number : 75190
Date : 11/08/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **DW-2** Matrix : Water Lab Number : 75190-01
Sample Date :11/02/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Sulfate	**2.2**	0.50	mg/L	EPA 300.0	11/03/10 10:09
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/03/10 10:09
Benzene	**230**	0.50	ug/L	EPA 8260B	11/04/10 02:35
Toluene	**7.0**	0.50	ug/L	EPA 8260B	11/04/10 02:35
Ethylbenzene	**11**	0.50	ug/L	EPA 8260B	11/04/10 02:35
Total Xylenes	**4.0**	0.50	ug/L	EPA 8260B	11/04/10 02:35
Methyl-t-butyl ether (MTBE)	**300**	0.50	ug/L	EPA 8260B	11/04/10 02:35
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:35
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:35
Tert-amyl methyl ether (TAME)	**3.3**	0.50	ug/L	EPA 8260B	11/04/10 02:35
Tert-Butanol	**660**	5.0	ug/L	EPA 8260B	11/04/10 02:35
Methanol	< 300	300	ug/L	EPA 8260B	11/04/10 02:35
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	11/04/10 02:35
TPH as Gasoline	**2600**	50	ug/L	EPA 8260B	11/04/10 02:35
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:35
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:35
1,2-Dichloroethane-d4 (Surr)	97.8		% Recovery	EPA 8260B	11/04/10 02:35
Toluene - d8 (Surr)	97.8		% Recovery	EPA 8260B	11/04/10 02:35

KIFF Analytical LLC

Report Number : 75190
Date : 11/08/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **MW-6** Matrix : Water Lab Number : 75190-02
Sample Date :11/02/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Sulfate	**1.7**	0.50	mg/L	EPA 300.0	11/03/10 12:06
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/03/10 12:06
Benzene	**1600**	2.5	ug/L	EPA 8260B	11/05/10 15:52
Toluene	**57**	2.5	ug/L	EPA 8260B	11/05/10 15:52
Ethylbenzene	**410**	2.5	ug/L	EPA 8260B	11/05/10 15:52
Total Xylenes	**120**	2.5	ug/L	EPA 8260B	11/05/10 15:52
Methyl-t-butyl ether (MTBE)	**240**	2.5	ug/L	EPA 8260B	11/05/10 15:52
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	11/05/10 15:52
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	11/05/10 15:52
Tert-amyl methyl ether (TAME)	**2.7**	2.5	ug/L	EPA 8260B	11/05/10 15:52
Tert-Butanol	**160**	15	ug/L	EPA 8260B	11/05/10 15:52
Methanol	< 250	250	ug/L	EPA 8260B	11/04/10 12:46
Ethanol	< 25	25	ug/L	EPA 8260B	11/04/10 12:46
TPH as Gasoline	**12000**	250	ug/L	EPA 8260B	11/05/10 15:52
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	11/05/10 15:52
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	11/05/10 15:52
1,2-Dichloroethane-d4 (Surr)	95.6		% Recovery	EPA 8260B	11/05/10 15:52
Toluene - d8 (Surr)	96.9		% Recovery	EPA 8260B	11/05/10 15:52

KIFF Analytical LLC

Report Number : 75190
Date : 11/08/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **DW-6** Matrix : Water Lab Number : 75190-03
Sample Date :11/02/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**20**	0.90	ug/L	EPA 8260B	11/03/10 13:08
Toluene	**4.2**	0.90	ug/L	EPA 8260B	11/03/10 13:08
Ethylbenzene	**47**	0.90	ug/L	EPA 8260B	11/03/10 13:08
Total Xylenes	**13**	0.90	ug/L	EPA 8260B	11/03/10 13:08
Methyl-t-butyl ether (MTBE)	**8.9**	0.90	ug/L	EPA 8260B	11/03/10 13:08
Diisopropyl ether (DIPE)	< 0.90	0.90	ug/L	EPA 8260B	11/03/10 13:08
Ethyl-t-butyl ether (ETBE)	< 0.90	0.90	ug/L	EPA 8260B	11/03/10 13:08
Tert-amyl methyl ether (TAME)	< 0.90	0.90	ug/L	EPA 8260B	11/03/10 13:08
Tert-Butanol	**26**	5.0	ug/L	EPA 8260B	11/03/10 13:08
Methanol	< 90	90	ug/L	EPA 8260B	11/03/10 13:08
Ethanol	< 9.0	9.0	ug/L	EPA 8260B	11/03/10 13:08
TPH as Gasoline	**5200**	90	ug/L	EPA 8260B	11/03/10 13:08
1,2-Dichloroethane	< 0.90	0.90	ug/L	EPA 8260B	11/03/10 13:08
1,2-Dibromoethane	< 0.90	0.90	ug/L	EPA 8260B	11/03/10 13:08
1,2-Dichloroethane-d4 (Surr)	84.4		% Recovery	EPA 8260B	11/03/10 13:08
Toluene - d8 (Surr)	83.9		% Recovery	EPA 8260B	11/03/10 13:08

KIFF Analytical LLC

Report Number : 75190
Date : 11/08/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **DW-5** Matrix : Water Lab Number : 75190-04
Sample Date :11/02/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**120**	0.50	ug/L	EPA 8260B	11/04/10 02:00
Toluene	**3.6**	0.50	ug/L	EPA 8260B	11/04/10 02:00
Ethylbenzene	**68**	0.50	ug/L	EPA 8260B	11/04/10 02:00
Total Xylenes	**35**	0.50	ug/L	EPA 8260B	11/04/10 02:00
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:00
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:00
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:00
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:00
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 02:00
Methanol	< 50	50	ug/L	EPA 8260B	11/04/10 02:00
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	11/04/10 02:00
TPH as Gasoline	**5000**	50	ug/L	EPA 8260B	11/04/10 02:00
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:00
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:00
1,2-Dichloroethane-d4 (Surr)	93.8		% Recovery	EPA 8260B	11/04/10 02:00
Toluene - d8 (Surr)	93.2		% Recovery	EPA 8260B	11/04/10 02:00

Report Number : 75190

Date : 11/08/2010

QC Report : Method Blank Data

Project Name : **TESORO LIVERMORE**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/2010
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Methanol	< 50	50	ug/L	EPA 8260B	11/03/2010
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/2010
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/03/2010
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
1,2-Dichloroethane-d4 (Surr)	99.8		%	EPA 8260B	11/03/2010
Toluene - d8 (Surr)	93.0		%	EPA 8260B	11/03/2010
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/2010
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/04/2010
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/2010
1,2-Dichloroethane-d4 (Surr)	99.6		%	EPA 8260B	11/04/2010
Toluene - d8 (Surr)	94.3		%	EPA 8260B	11/04/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/2010
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Methanol	< 50	50	ug/L	EPA 8260B	11/03/2010
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/2010
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/03/2010
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
1,2-Dichloroethane-d4 (Surr)	98.9		%	EPA 8260B	11/03/2010
Toluene - d8 (Surr)	99.3		%	EPA 8260B	11/03/2010
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/03/2010
Sulfate	< 0.50	0.50	mg/L	EPA 300.0	11/03/2010

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

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
Nitrate as N														
	75190-01	< 0.10	0.500	0.500	0.386	0.425	mg/L	EPA 300.0	11/3/10	**70.6**	**78.5**	9.77	85.0-115	10
Sulfate														
	75190-01	2.2	2.50	2.50	4.57	4.66	mg/L	EPA 300.0	11/3/10	95.6	99.3	2.01	85.0-115	10
1,2-Dibromoethane														
	75104-09	<0.50	39.8	39.8	36.5	35.4	ug/L	EPA 8260B	11/3/10	91.8	89.0	3.20	80-120	25
1,2-Dichloroethane														
	75104-09	<0.50	39.8	39.8	32.3	32.2	ug/L	EPA 8260B	11/3/10	81.3	81.0	0.313	75.7-122	25
Benzene														
	75104-09	<0.50	39.8	39.8	39.9	39.3	ug/L	EPA 8260B	11/3/10	100	98.9	1.45	80-120	25
Diisopropyl ether														
	75104-09	<0.50	39.9	39.9	40.3	40.1	ug/L	EPA 8260B	11/3/10	101	101	0.424	80-120	25
Ethanol														
	75104-09	<5.0	99.9	99.9	83.5	88.5	ug/L	EPA 8260B	11/3/10	83.6	88.6	5.91	55.1-159	25
Ethyl-tert-butyl ether														
	75104-09	<0.50	39.8	39.8	37.4	37.8	ug/L	EPA 8260B	11/3/10	93.9	94.9	1.13	76.5-120	25
Ethylbenzene														
	75104-09	<0.50	39.8	39.8	41.0	41.4	ug/L	EPA 8260B	11/3/10	103	104	1.07	80-120	25

KIFF ANALYTICAL, LLC
2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 75190

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/08/2010

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
Methanol														
	75104-09	<50	995	995	818	819	ug/L	EPA 8260B	11/3/10	82.2	82.3	0.0937	53.2-147	25
Methyl-t-butyl ether														
	75104-09	<0.50	39.8	39.8	38.7	38.8	ug/L	EPA 8260B	11/3/10	97.4	97.6	0.232	69.7-121	25
P + M Xylene														
	75104-09	<0.50	39.8	39.8	40.6	41.0	ug/L	EPA 8260B	11/3/10	102	103	0.896	76.8-120	25
Tert-Butanol														
	75104-09	<5.0	199	199	191	191	ug/L	EPA 8260B	11/3/10	96.0	95.9	0.108	80-120	25
Tert-amyl-methyl ether														
	75104-09	<0.50	40.0	40.0	36.9	37.3	ug/L	EPA 8260B	11/3/10	92.3	93.4	1.13	78.9-120	25
Toluene														
	75104-09	<0.50	39.8	39.8	38.1	37.8	ug/L	EPA 8260B	11/3/10	95.8	95.1	0.791	80-120	25
1,2-Dibromoethane														
	75210-05	<0.50	39.6	38.0	34.8	35.3	ug/L	EPA 8260B	11/4/10	87.9	92.9	5.53	80-120	25
1,2-Dichloroethane														
	75210-05	<0.50	39.6	38.0	31.6	30.4	ug/L	EPA 8260B	11/4/10	79.8	80.2	0.515	75.7-122	25
Benzene														
	75210-05	950	39.6	38.0	984	922	ug/L	EPA 8260B	11/4/10	95.0	**0.00**	**200**	80-120	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

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														
	75210-05	<0.50	39.7	38.0	39.0	35.9	ug/L	EPA 8260B	11/4/10	98.1	94.3	3.98	80-120	25
Ethyl-tert-butyl ether														
	75210-05	<0.50	39.7	38.0	35.9	33.7	ug/L	EPA 8260B	11/4/10	90.5	88.7	2.00	76.5-120	25
Ethylbenzene														
	75210-05	140	39.6	38.0	166	165	ug/L	EPA 8260B	11/4/10	**68.8**	**69.8**	1.54	80-120	25
Methyl-t-butyl ether														
	75210-05	<0.50	39.6	37.9	37.2	35.6	ug/L	EPA 8260B	11/4/10	94.0	93.8	0.213	69.7-121	25
P + M Xylene														
	75210-05	330	39.6	38.0	344	343	ug/L	EPA 8260B	11/4/10	**33.2**	**31.0**	6.74	76.8-120	25
Tert-Butanol														
	75210-05	18	198	190	217	203	ug/L	EPA 8260B	11/4/10	100	97.3	2.98	80-120	25
Tert-amyl-methyl ether														
	75210-05	<0.50	39.8	38.2	36.5	34.8	ug/L	EPA 8260B	11/4/10	91.7	91.3	0.490	78.9-120	25
Toluene														
	75210-05	76	39.6	38.0	108	106	ug/L	EPA 8260B	11/4/10	82.0	80.0	2.48	80-120	25
1,2-Dibromoethane														
	75205-03	<0.50	40.0	40.0	39.3	38.6	ug/L	EPA 8260B	11/3/10	98.4	96.6	1.85	80-120	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/08/2010

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-Dichloroethane														
	75205-03	<0.50	40.0	40.0	38.4	37.4	ug/L	EPA 8260B	11/3/10	96.0	93.6	2.44	75.7-122	25
Benzene														
	75205-03	<0.50	40.0	40.0	40.0	38.3	ug/L	EPA 8260B	11/3/10	100	95.7	4.40	80-120	25
Diisopropyl ether														
	75205-03	<0.50	40.1	40.1	40.0	38.7	ug/L	EPA 8260B	11/3/10	99.9	96.5	3.40	80-120	25
Ethanol														
	75205-03	16	100	100	113	116	ug/L	EPA 8260B	11/3/10	96.1	99.1	3.07	55.1-159	25
Ethyl-tert-butyl ether														
	75205-03	<0.50	40.1	40.1	39.8	39.4	ug/L	EPA 8260B	11/3/10	99.2	98.3	0.964	76.5-120	25
Ethylbenzene														
	75205-03	<0.50	40.0	40.0	40.8	38.7	ug/L	EPA 8260B	11/3/10	102	96.8	5.14	80-120	25
Methanol														
	75205-03	<50	1000	1000	1120	1110	ug/L	EPA 8260B	11/3/10	112	111	0.491	53.2-147	25
Methyl-t-butyl ether														
	75205-03	<0.50	40.0	40.0	38.9	38.3	ug/L	EPA 8260B	11/3/10	97.3	95.7	1.70	69.7-121	25
P + M Xylene														
	75205-03	<0.50	40.0	40.0	40.5	38.8	ug/L	EPA 8260B	11/3/10	101	97.1	4.25	76.8-120	25
Tert-Butanol														
	75205-03	<5.0	200	200	201	198	ug/L	EPA 8260B	11/3/10	101	98.8	1.89	80-120	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 75190

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/08/2010

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-amyl-methyl ether														
	75205-03	<0.50	40.2	40.2	40.1	39.4	ug/L	EPA 8260B	11/3/10	99.6	98.0	1.67	78.9-120	25
Toluene														
	75205-03	<0.50	40.0	40.0	40.4	38.7	ug/L	EPA 8260B	11/3/10	101	96.7	4.31	80-120	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

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	40.0	ug/L	EPA 8260B	11/3/10	87.7	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	11/3/10	78.8	75.7-122
Benzene	40.0	ug/L	EPA 8260B	11/3/10	100	80-120
Diisopropyl ether	40.1	ug/L	EPA 8260B	11/3/10	102	80-120
Ethanol	100	ug/L	EPA 8260B	11/3/10	88.6	55.1-159
Ethyl-tert-butyl ether	40.1	ug/L	EPA 8260B	11/3/10	93.0	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	11/3/10	103	80-120
Methanol	1000	ug/L	EPA 8260B	11/3/10	82.8	53.2-147
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	11/3/10	94.7	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	11/3/10	102	76.8-120
Tert-Butanol	200	ug/L	EPA 8260B	11/3/10	94.6	80-120
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	11/3/10	90.8	78.9-120
Toluene	40.0	ug/L	EPA 8260B	11/3/10	95.9	80-120
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	11/4/10	94.8	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	11/4/10	83.0	75.7-122
Benzene	40.0	ug/L	EPA 8260B	11/4/10	101	80-120
Diisopropyl ether	40.1	ug/L	EPA 8260B	11/4/10	102	80-120
Ethyl-tert-butyl ether	40.1	ug/L	EPA 8260B	11/4/10	97.3	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	11/4/10	104	80-120
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	11/4/10	100	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	11/4/10	101	76.8-120
Tert-Butanol	200	ug/L	EPA 8260B	11/4/10	96.5	80-120

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
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	11/4/10	95.2	78.9-120
Toluene	40.0	ug/L	EPA 8260B	11/4/10	98.7	80-120
1,2-Dibromoethane	39.9	ug/L	EPA 8260B	11/3/10	97.1	80-120
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	11/3/10	94.6	75.7-122
Benzene	39.9	ug/L	EPA 8260B	11/3/10	98.3	80-120
Diisopropyl ether	40.0	ug/L	EPA 8260B	11/3/10	97.9	80-120
Ethanol	100	ug/L	EPA 8260B	11/3/10	116	55.1-159
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	11/3/10	98.1	76.5-120
Ethylbenzene	39.9	ug/L	EPA 8260B	11/3/10	100	80-120
Methanol	999	ug/L	EPA 8260B	11/3/10	121	53.2-147
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	11/3/10	95.2	69.7-121
P + M Xylene	39.9	ug/L	EPA 8260B	11/3/10	99.4	76.8-120
TPH as Gasoline	504	ug/L	EPA 8260B	11/3/10	98.5	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	11/3/10	99.4	80-120
Tert-amyl-methyl ether	40.1	ug/L	EPA 8260B	11/3/10	98.0	78.9-120
Toluene	39.9	ug/L	EPA 8260B	11/3/10	99.0	80-120
Nitrate as N	0.500	mg/L	EPA 300.0	11/3/10	89.2	85.0-115
Sulfate	2.50	mg/L	EPA 300.0	11/3/10	93.3	85.0-115

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

KIFF Analytical LLC

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Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 75190

Page ___ of ___

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): MATHEW NELSON	California EDF Report? ☐ Yes ☐ No
Company / Address:	Sampling Company Log Code: EFSP
Phone Number: 562-988-2755	Global ID: T0600101410
Fax Number:	EDF Deliverable To (Email Address):
Project #: / P.O. #:	Bill to: MATHEW NELSON
Project Name: TESORO LIVERMORE	Sampler Print Name: RICK HOLLAND
	Sampler Signature:
Project Address: 1619 1st STREET LIVERMORE CA.	

Sample Designation	Sampling Date	Sampling Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Container:	Preservative: HCl	Preservative: ~~H2SO4~~	Preservative: None	Preservative:	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air	Matrix:	Matrix:
DW-2	11.2	11:40	X		X	X			X	X				X				
MW-6	11.2	13:10	X		X	X			X	X				X				
DW-6	11.2	14:25	X						X					X				
DW-5	11.2	15:17	X						X					X				

Analysis Request — CIRCLE METHOD

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)~~ MET+ANS RSK 175M	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)	~~WET Lead (STLC)~~ NITRATE SULFATE	COD - SM5220D	TOC SM5310	FERROUS IRON SM3500 FeD	TOTAL ALKALINITY SM 2320 B	
X	X	X		X	X				X						X	X	X	X	X
X	X	X		X	X				X						X	X	X	X	X
X	X	X		X	X														
X	X	X		X	X														

TAT: ☐ 12 hr ☐ 24 hr ☐ 48hr ☐ 72hr ☐ 1 wk

For Lab Use Only: 01 02 03 04

Relinquished by:	Date	Time	Received by:
	11-2-10	15:21	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	110210	1521	Kiff Analytical

Remarks:

Page 15 of 16

Distribution: White - Lab; Pink - Originator
Rev: 060409

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER LDR Initials

SRG#: 75190 Date: 110210

Project ID: TESORO LIVERMORE

Method of Receipt: ☒ Courier ☐ Over-the-counter ☐ Shipper

COC Inspection

Is COC present?	☒ Yes	☐ No	
Custody seals on shipping container?	☐ Intact	☐ Broken	☐ Not present ☒ N/A
Is COC Signed by Relinquisher? ☒ Yes ☐ No	Dated? ☒ Yes	☐ No	
Is sampler name legibly indicated on COC?	☒ Yes	☐ No	
Is analysis or hold requested for all samples	☒ Yes	☐ No	
Is the turnaround time indicated on COC?	☒ Yes	☐ No	
Is COC free of whiteout and uninitialed cross-outs?	☐ Yes	☐ No, Whiteout	☒ No, Cross-outs

Sample Inspection

Coolant Present: ☒ Yes ☐ No (includes water)

Temperature °C 3.6 Therm. ID# IR-5 Initial LDR Date/Time 110210/1758 ☐ N/A

Are there custody seals on sample containers?	☐ Intact	☐ Broken	☒ Not present
Do containers match COC? ☒ Yes ☐ No	☐ No, COC lists absent sample(s)	☐ No, Extra sample(s) present	
Are there samples matrices other than soil, water, air or carbon?	☐ Yes	☒ No	
Are any sample containers broken, leaking or damaged?	☐ Yes	☒ No	
Are preservatives indicated? ☐ Yes, on sample containers	☒ Yes, on COC	☐ Not indicated	☐ N/A
Are preservatives correct for analyses requested?	☒ Yes	☐ No	☐ N/A
Are samples within holding time for analyses requested?	☒ Yes	☐ No	
Are the correct sample containers used for the analyses requested?	☒ Yes	☐ No	
Is there sufficient sample to perform testing?	☒ Yes	☐ No	

Does any sample contain product, have strong odor or are otherwise suspected to be hot? ☐ Yes ☒ No

Receipt Details

Matrix WA	Container type VOA	# of containers received 16
Matrix WA	Container type glass	# of containers received 4
Matrix WA	Container type poly	# of containers received 6

Date and Time Sample Put into Temp Storage Date: 110210 Time: 1801

Quicklog

Are the Sample ID's indicated:	☐ On COC	☐ On sample container(s)	☒ On Both	☐ Not indicated
If Sample ID's are listed on both COC and containers, do they all match?	☒ Yes	☐ No		☐ N/A
Is the Project ID indicated:	☐ On COC	☐ On sample container(s)	☒ On Both	☐ Not indicated
If project ID is listed on both COC and containers, do they all match?	☒ Yes	☐ No		☐ N/A
Are the sample collection dates indicated:	☐ On COC	☐ On sample container(s)	☒ On Both	☐ Not indicated
If collection dates are listed on both COC and containers, do they all match?	☒ Yes	☐ No		☐ N/A
Are the sample collection times indicated:	☒ On COC	☐ On sample container(s)	☐ On Both	☐ Not indicated
If collection times are listed on both COC and containers, do they all match?	☐ Yes	☐ No		☒ N/A

COMMENTS:

Leaders in Analytical Science and Service

KIFF Analytical LLC

Subcontract Laboratory Report Attachments

2795 Second Street, Suite 300 Davis, CA 95618
tel 530.297.4800 fax 530.297.4808
www.kiffanalytical.com

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

November 10, 2010

CLS Work Order #: CTK0128
COC #: 75190

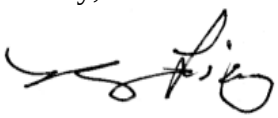
Scott Forbes
KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project Name: Tesoro Livermore

Enclosed are the results of analyses for samples received by the laboratory on 11/03/10 08:30. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: [none]
Project Manager: Scott Forbes

CLS Work Order #: CTK0128
COC #: 75190

CTK0128

KIFF Analytical LLC

2795 Second Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4808

California Laboratory Services
3249 Fitzgerald Road
Rancho Cordova, CA 95742
916-638-7301

COC No. 75190 Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes
Company/Address: Kiff Analytical
Phone No.: 530-297-4800
FAX No.: 530-297-4808
Project Number:
P.O. No.: 75190
Project Name: TESORO LIVERMORE
Project Address:

EDF Report? NO

Recommended but not mandatory to complete this section:
Sampling Company Log Code: EFSP
Global ID: T0600101410
Deliverables to (Email Address): inbox@kiffanalytical.com

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 250ml Poly None	Matrix: Water	Analysis Request: Iron, Ferrous	TAT: Standard	For Lab Use Only
DW-2	11/02/10	11:40	1	X	X	X	
MW-6	11/02/10	13:10	1	X	X	X	

Relinquished by:	Date	Time	Received by:
[signature]	11/3/10	0830	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory: Jon R 11-3-10 8:30

Remarks: 5.1°C

Bill to: Accounts Payable

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: [none]
Project Manager: Scott Forbes

CLS Work Order #: CTK0128
COC #: 75190

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DW-2 (CTK0128-01) Water	**Sampled: 11/02/10 11:40**	**Received: 11/03/10 08:30**							
Ferrous Iron	ND	0.10	mg/L	1	CT08147	11/03/10	11/03/10	SM3500-Fe D	
MW-6 (CTK0128-02) Water	**Sampled: 11/02/10 13:10**	**Received: 11/03/10 08:30**							
Ferrous Iron	**0.50**	0.10	mg/L	1	CT08147	11/03/10	11/03/10	SM3500-Fe D	

CALIFORNIA LABORATORY SERVICES

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: [none]
Project Manager: Scott Forbes

CLS Work Order #: CTK0128
COC #: 75190

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CT08147 - General Preparation										
Blank (CT08147-BLK1)				Prepared & Analyzed: 11/03/10						
Ferrous Iron	ND	0.10	mg/L							
LCS (CT08147-BS1)				Prepared & Analyzed: 11/03/10						
Ferrous Iron	0.260	0.10	mg/L	0.250		104	80-120			
LCS Dup (CT08147-BSD1)				Prepared & Analyzed: 11/03/10						
Ferrous Iron	0.271	0.10	mg/L	0.250		108	80-120	4	25	
Matrix Spike (CT08147-MS1)		**Source: CTK0128-01**		Prepared & Analyzed: 11/03/10						
Ferrous Iron	0.282	0.10	mg/L	0.250	0.00300	112	75-125			
Matrix Spike Dup (CT08147-MSD1)		**Source: CTK0128-01**		Prepared & Analyzed: 11/03/10						
Ferrous Iron	0.265	0.10	mg/L	0.250	0.00300	105	75-125	6	30	

KIFF Analytical	Project: Tesoro Livermore	
2795 Second St. Suite 300	Project Number: [none]	**CLS Work Order #: CTK0128**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 75190

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Calscience Environmental Laboratories, Inc.

November 09, 2010

Joel Kiff
Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Subject: **Calscience Work Order No.: 10-11-0214**
Client Reference: Tesoro - Livermore

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/3/2010 and analyzed in accordance with the attached chain-of-custody.

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Wendy Hsiao for

Calscience Environmental
Laboratories, Inc.
Amanda Porter
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Kiff Analytical		Date Received:	11/03/10
2795 2nd Street, Suite 300		Work Order No:	10-11-0214
Davis, CA 95616-6593		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-2	**10-11-0214-1-A**	**11/02/10 11:40**	**Aqueous**	**GC 52**	**N/A**	**11/03/10 00:00**	**101103L01**

Parameter	Result	RL	DF	Qual	Units
Methane	2070	20.0	20		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	**10-11-0214-2-A**	**11/02/10 13:10**	**Aqueous**	**GC 52**	**N/A**	**11/03/10 00:00**	**101103L01**

Parameter	Result	RL	DF	Qual	Units
Methane	2960	20.0	20		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-1,133**	**N/A**	**Aqueous**	**GC 52**	**N/A**	**11/03/10 00:00**	**101103L01**

Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: 11/03/10
Work Order No: 10-11-0214

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-2	**10-11-0214-1**	**11/02/10**	**Aqueous**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	78	20	1		mg/L	11/06/10	11/06/10	EPA 410.4
Alkalinity, Total (as CaCO3)	466	5.00	1		mg/L	N/A	11/08/10	SM 2320B
Carbon, Total Organic	7.5	0.50	1		mg/L	N/A	11/03/10	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-6	**10-11-0214-2**	**11/02/10**	**Aqueous**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	130	20	1		mg/L	11/06/10	11/06/10	EPA 410.4
Alkalinity, Total (as CaCO3)	568	5.00	1		mg/L	N/A	11/08/10	SM 2320B
Carbon, Total Organic	6.7	0.50	1		mg/L	N/A	11/03/10	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank		**N/A**	**Aqueous**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	ND	20	1		mg/L	11/06/10	11/06/10	EPA 410.4
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	11/08/10	SM 2320B
Carbon, Total Organic	ND	0.50	1		mg/L	N/A	11/03/10	SM 5310 D

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0214

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	SM 5310 D	10-11-0266-5	11/03/10	N/A	94	93	75-125	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0214

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	SM 2320B	10-10-2342-3	11/08/10	874	875	0	0-25	
Chemical Oxygen Demand	EPA 410.4	DW-2	11/06/10	78	75	4	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0214
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,133	**Aqueous**	**GC 52**	**N/A**	**11/03/10**	**101103L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	98	97	79-109	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0214

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Carbon, Total Organic	SM 5310 D	099-05-097-4,060	11/03/10	N/A	5.000	4.800	96	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 10-11-0214

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.

KIFF Analytical LLC

2795 Second Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4808

Calscience
7440 Lincoln Way
Garden Grove, CA 92841-1427
714-895-5494

0214

COC No. ~~75190~~

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? NO

Company/Address: Kiff Analytical

Recommended but not mandatory to complete this section:

Sampling Company Log Code: EFSP

Phone No.: 530-297-4800 | FAX No.: 530-297-4808

Global ID: T0600101410

Project Number: | P.O. No.: 75190

Deliverables to (Email Address): inbox@kiffanalytical.com

Project Name: TESORO LIVERMORE

Project Address:

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 250ml Glass H2SO4	250ml Poly None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Chemical Oxygen Demand	Hydrocarbons in Water by RSK 175 (1)	Total Organic Carbon	TAT: 4-Days	For Lab Use Only
DW-2	11/02/10	11:40	2	1	2	X	X	X	X	X	X	1
MW-6	11/02/10	13:10	2	1	2	X	X	X	X	X	X	2

Relinquished by:	Date	Time	Received by:
Kiff Analytical	110210	1900	
Relinquished by:	Date	Time	Received by:
Relinquished by: ONTRAC	Date 11/03/10	Time 0815	Received by Laboratory: WCpatn CA

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

0214

Test Detail for Kiff Work Order: 75190

Alkalinity SM 2320 (1)
Alkalinity, Total (as CaCO3)

Hydrocarbons in Water by RSK 175 (1)
Methane

0214

OnTrac
On Time Delivery For Less

800.334.5000
ontrac.com

Date Printed 11/2/2010

Tracking#D10010328032878

Shipped From:
KIFF ANALYTICAL
2795 2ND STREET 300
DAVIS, CA 95616

Sent By: SAMPLE RECEIVING
Phone#: (530)297-4800
wgt(lbs): 10
Reference: SUB SAMPLES
Reference 2:

Ship To Company:	*Service:* **S**
CALSCIENCE ENVIRONMENTAL LABS **7440 LINCOLN WAY** **GARDEN GROVE, CA 92841** **SAMPLE RECEIVING (714)895-5494**	*Sort Code:* **ORG** *Special Services:* **Signature Required**

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 10-11-0214

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Kiff Analytical DATE: 11/03/10

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 2.5 °C + 0.5 °C (CF) = 3.0 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature: ☐ Air ☐ Filter Initial: WB

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A Initial: WB

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: WB

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☐	☐	☑
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Residual Chlorine / Dissolved Sulfide received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☑	☐	☐ WB 11/3/10
Tedlar bag(s) free of condensation	☐	☐	☐

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☑VOA**h** (2) ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☑250CGB**s** (2) ☐1PB ☐500PB ☐500PB**na**

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☑250PJ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** WB

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** MC

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:** $Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **znna:** $ZnAc_2$+NaOH **f:** Field-filtered **Scanned by:** MC

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Laboratory Results

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

Subject : 10 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

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Subject : 10 Water Samples
Project Name : TESORO LIVERMORE
Project Number : 01LV

Case Narrative

California Laboratory Services provided analytical testing associated with these samples, but is not accredited by the National Environmental Laboratory Accreditation Program (NELAP).

Matrix Spike/Matrix Spike Duplicate results associated with samples MW-4 and MW-9 for the analyte Nitrate as N were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with samples MW-10, MW-7, MW-8, MW-3, MW-1, DW-4, MW-4, MW-5, DW-3, and MW-9 for the analyte Ethanol were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

KIFF Analytical LLC

Report Number : 75212

Date : 11/05/2010

Project Name : **TESORO LIVERMORE**

Project Number : **01LV**

Sample : **MW-10** Matrix : Water Lab Number : 75212-01

Sample Date :11/02/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/10 22:44
Methanol	< 50	50	ug/L	EPA 8260B	11/03/10 22:44
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/10 22:44
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/03/10 22:44
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 22:44
1,2-Dichloroethane-d4 (Surr)	98.7		% Recovery	EPA 8260B	11/03/10 22:44
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	11/03/10 22:44

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **MW-7** Matrix : Water Lab Number : 75212-02
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**4.6**	0.50	ug/L	EPA 8260B	11/03/10 23:16
Toluene	**1.3**	0.50	ug/L	EPA 8260B	11/03/10 23:16
Ethylbenzene	**16**	0.50	ug/L	EPA 8260B	11/03/10 23:16
Total Xylenes	**3.3**	0.50	ug/L	EPA 8260B	11/03/10 23:16
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:16
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:16
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:16
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:16
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/10 23:16
Methanol	< 50	50	ug/L	EPA 8260B	11/03/10 23:16
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/10 23:16
TPH as Gasoline	**2100**	50	ug/L	EPA 8260B	11/03/10 23:16
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:16
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:16
1,2-Dichloroethane-d4 (Surr)	97.8		% Recovery	EPA 8260B	11/03/10 23:16
Toluene - d8 (Surr)	98.4		% Recovery	EPA 8260B	11/03/10 23:16

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **MW-8** Matrix : Water Lab Number : 75212-03
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/10 23:47
Methanol	< 50	50	ug/L	EPA 8260B	11/03/10 23:47
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/10 23:47
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/03/10 23:47
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/10 23:47
1,2-Dichloroethane-d4 (Surr)	99.0		% Recovery	EPA 8260B	11/03/10 23:47
Toluene - d8 (Surr)	98.3		% Recovery	EPA 8260B	11/03/10 23:47

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **MW-3** Matrix : Water Lab Number : 75212-04
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:19
Toluene	**2.5**	0.50	ug/L	EPA 8260B	11/04/10 00:19
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:19
Total Xylenes	**3.8**	0.50	ug/L	EPA 8260B	11/04/10 00:19
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:19
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:19
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:19
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:19
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 00:19
Methanol	< 50	50	ug/L	EPA 8260B	11/04/10 00:19
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 00:19
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/04/10 00:19
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:19
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:19
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	11/04/10 00:19
Toluene - d8 (Surr)	99.1		% Recovery	EPA 8260B	11/04/10 00:19

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **MW-1** Matrix : Water Lab Number : 75212-05
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**7.3**	0.50	ug/L	EPA 8260B	11/04/10 00:50
Toluene	**34**	0.50	ug/L	EPA 8260B	11/04/10 00:50
Ethylbenzene	**18**	0.50	ug/L	EPA 8260B	11/04/10 00:50
Total Xylenes	**67**	0.50	ug/L	EPA 8260B	11/04/10 00:50
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:50
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:50
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:50
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:50
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 00:50
Methanol	< 50	50	ug/L	EPA 8260B	11/04/10 00:50
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 00:50
TPH as Gasoline	**1100**	50	ug/L	EPA 8260B	11/04/10 00:50
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:50
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 00:50
1,2-Dichloroethane-d4 (Surr)	97.9		% Recovery	EPA 8260B	11/04/10 00:50
Toluene - d8 (Surr)	98.5		% Recovery	EPA 8260B	11/04/10 00:50

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **DW-4** Matrix : Water Lab Number : 75212-06
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**0.70**	0.50	ug/L	EPA 8260B	11/04/10 01:21
Toluene	**4.0**	0.50	ug/L	EPA 8260B	11/04/10 01:21
Ethylbenzene	**0.59**	0.50	ug/L	EPA 8260B	11/04/10 01:21
Total Xylenes	**5.9**	0.50	ug/L	EPA 8260B	11/04/10 01:21
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:21
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:21
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:21
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:21
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 01:21
Methanol	< 50	50	ug/L	EPA 8260B	11/04/10 01:21
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 01:21
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/04/10 01:21
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:21
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:21
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	11/04/10 01:21
Toluene - d8 (Surr)	98.4		% Recovery	EPA 8260B	11/04/10 01:21

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **MW-4** Matrix : Water Lab Number : 75212-07
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	**2.8**	0.20	mg/L	EPA 300.0	11/03/10 20:52
Sulfate	**66**	1.0	mg/L	EPA 300.0	11/03/10 20:52
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 01:53
Methanol	< 50	50	ug/L	EPA 8260B	11/04/10 01:53
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 01:53
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/04/10 01:53
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 01:53
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	11/04/10 01:53
Toluene - d8 (Surr)	98.6		% Recovery	EPA 8260B	11/04/10 01:53

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **MW-5** Matrix : Water Lab Number : 75212-08
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 02:24
Methanol	< 50	50	ug/L	EPA 8260B	11/04/10 02:24
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 02:24
TPH as Gasoline	**100**	50	ug/L	EPA 8260B	11/04/10 02:24
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:24
1,2-Dichloroethane-d4 (Surr)	99.3		% Recovery	EPA 8260B	11/04/10 02:24
Toluene - d8 (Surr)	99.3		% Recovery	EPA 8260B	11/04/10 02:24

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **DW-3** Matrix : Water Lab Number : 75212-09
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**0.85**	0.50	ug/L	EPA 8260B	11/04/10 02:56
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:56
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:56
Total Xylenes	**0.59**	0.50	ug/L	EPA 8260B	11/04/10 02:56
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:56
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:56
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:56
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:56
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 02:56
Methanol	< 50	50	ug/L	EPA 8260B	11/04/10 02:56
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 02:56
TPH as Gasoline	**170**	50	ug/L	EPA 8260B	11/04/10 02:56
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:56
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 02:56
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	11/04/10 02:56
Toluene - d8 (Surr)	99.6		% Recovery	EPA 8260B	11/04/10 02:56

KIFF Analytical LLC

Report Number : 75212
Date : 11/05/2010

Project Name : **TESORO LIVERMORE**
Project Number : **01LV**

Sample : **MW-9** Matrix : Water Lab Number : 75212-10
Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/03/10 21:21
Sulfate	**51**	1.0	mg/L	EPA 300.0	11/03/10 23:42
Benzene	**1.1**	0.50	ug/L	EPA 8260B	11/04/10 03:27
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 03:27
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 03:27
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 03:27
Methyl-t-butyl ether (MTBE)	**4.4**	0.50	ug/L	EPA 8260B	11/04/10 03:27
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 03:27
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 03:27
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 03:27
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 03:27
Methanol	< 50	50	ug/L	EPA 8260B	11/04/10 03:27
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/04/10 03:27
TPH as Gasoline	**430**	50	ug/L	EPA 8260B	11/04/10 03:27
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 03:27
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/04/10 03:27
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	11/04/10 03:27
Toluene - d8 (Surr)	99.3		% Recovery	EPA 8260B	11/04/10 03:27

Report Number : 75212

Date : 11/05/2010

QC Report : Method Blank Data

Project Name : **TESORO LIVERMORE**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/2010
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Methanol	< 50	50	ug/L	EPA 8260B	11/03/2010
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/03/2010
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/03/2010
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/03/2010
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	11/03/2010
Toluene - d8 (Surr)	99.7		%	EPA 8260B	11/03/2010
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/03/2010
Sulfate	< 0.50	0.50	mg/L	EPA 300.0	11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/05/2010

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
Nitrate as N														
	75190-01	< 0.10	0.500	0.500	0.386	0.425	mg/L	EPA 300.0	11/3/10	**70.6**	**78.5**	9.77	85.0-115	10
Sulfate														
	75190-01	2.2	2.50	2.50	4.57	4.66	mg/L	EPA 300.0	11/3/10	95.6	99.3	2.01	85.0-115	10
1,2-Dibromoethane														
	75205-04	<0.50	40.0	40.0	40.3	40.4	ug/L	EPA 8260B	11/3/10	101	101	0.0936	80-120	25
1,2-Dichloroethane														
	75205-04	<0.50	40.0	40.0	39.1	38.3	ug/L	EPA 8260B	11/3/10	97.8	95.8	2.08	75.7-122	25
Benzene														
	75205-04	<0.50	40.0	40.0	38.2	37.6	ug/L	EPA 8260B	11/3/10	95.6	94.0	1.58	80-120	25
Diisopropyl ether														
	75205-04	<0.50	40.1	40.1	38.9	38.5	ug/L	EPA 8260B	11/3/10	97.1	96.0	1.10	80-120	25
Ethanol														
	75205-04	5.5	100	100	239	242	ug/L	EPA 8260B	11/3/10	**233**	**236**	1.35	55.1-159	25
Ethyl-tert-butyl ether														
	75205-04	<0.50	40.1	40.1	38.6	39.3	ug/L	EPA 8260B	11/3/10	96.4	98.2	1.85	76.5-120	25
Ethylbenzene														
	75205-04	<0.50	40.0	40.0	39.5	38.7	ug/L	EPA 8260B	11/3/10	98.7	96.8	1.94	80-120	25

Report Number : 75212

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/05/2010

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
Methanol														
	75205-04	<50	1000	1000	1030	1000	ug/L	EPA 8260B	11/3/10	103	100	3.04	53.2-147	25
Methyl-t-butyl ether														
	75205-04	<0.50	40.0	40.0	39.0	38.8	ug/L	EPA 8260B	11/3/10	97.4	97.0	0.469	69.7-121	25
P + M Xylene														
	75205-04	<0.50	40.0	40.0	39.5	39.2	ug/L	EPA 8260B	11/3/10	98.7	98.0	0.727	76.8-120	25
Tert-Butanol														
	75205-04	<5.0	200	200	188	188	ug/L	EPA 8260B	11/3/10	93.8	93.8	0.0427	80-120	25
Tert-amyl-methyl ether														
	75205-04	<0.50	40.2	40.2	40.4	39.9	ug/L	EPA 8260B	11/3/10	100	99.2	1.12	78.9-120	25
Toluene														
	75205-04	<0.50	40.0	40.0	39.0	37.9	ug/L	EPA 8260B	11/3/10	97.5	94.8	2.82	80-120	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

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	40.1	ug/L	EPA 8260B	11/3/10	99.5	80-120
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	11/3/10	95.6	75.7-122
Benzene	40.1	ug/L	EPA 8260B	11/3/10	94.5	80-120
Diisopropyl ether	40.2	ug/L	EPA 8260B	11/3/10	97.3	80-120
Ethanol	101	ug/L	EPA 8260B	11/3/10	91.4	55.1-159
Ethyl-tert-butyl ether	40.2	ug/L	EPA 8260B	11/3/10	96.7	76.5-120
Ethylbenzene	40.1	ug/L	EPA 8260B	11/3/10	95.8	80-120
Methanol	1000	ug/L	EPA 8260B	11/3/10	94.4	53.2-147
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	11/3/10	96.1	69.7-121
P + M Xylene	40.1	ug/L	EPA 8260B	11/3/10	96.2	76.8-120
TPH as Gasoline	505	ug/L	EPA 8260B	11/3/10	91.5	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	11/3/10	95.7	80-120
Tert-amyl-methyl ether	40.3	ug/L	EPA 8260B	11/3/10	97.8	78.9-120
Toluene	40.1	ug/L	EPA 8260B	11/3/10	95.4	80-120
Nitrate as N	0.500	mg/L	EPA 300.0	11/3/10	89.2	85.0-115
Sulfate	2.50	mg/L	EPA 300.0	11/3/10	93.3	85.0-115

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

KIFF Analytical LLC

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

SRG # / Lab No. 75212

Page ___ of ___

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): MATHEW NELSON	California EDF Report? ☐ Yes ☐ No
Company / Address: Peralta Ave, Berkley CA.	Sampling Company Log Code: EFSP
Phone Number: 562-988-2755	Global ID: T0600101410
Fax Number:	EDF Deliverable To (Email Address):
Project #: / P.O. #:	Bill to: MATHEW NELSON
Project Name: TESORO LIVERMORE	Sampler Print Name: RICH [illegible]
	Sampler Signature:
Project Address: 1649 11TH STREET LIVERMORE CA	

Sample Designation	Date	Time	Container: 40 ml VOA	Sleeve	Poly	Glass	Tedlar	Preservative: HCl	HNO_3 H_2SO_4	None	Matrix: 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)~~ METHANE RSK 175M	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)~~ TOC SM-5310C	~~W.E.T. Lead (STLC)~~ NITRATE SULFATE EPA 300	LOD 410.4	BOD SM-5210B	FERROUS IRON-SM 3500-Fe D	TOTAL ALKALINITY SM-2320B	TAT: ☐ 12 hr ☐ 24 hr ☐ 48hr ☐ 72hr ☒ 1 wk	For Lab Use Only
MW-10	11-2	17:02	X					X			X			X	X	X		X	X																01
MW-7	11-3	8:32	X					X			X			X	X	X		X	X																02
MW-8	11-3	8:51	X					X			X			X	X	X		X	X																03
MW-3	11-3	10:30	X					X			X			X	X	X		X	X																04
MW-1	11-3	11:10	X					X			X			X	X	X		X	X																05
DW-4	11-3	12:25	X					X			X			X	X	X		X	X																06
MW-4	11-3	12:45	X		X	X		X	X		X			X	X	X		X	X										X	X	X	X	X	X		07
MW-5	11-3	13:55	X					X			X			X	X	X		X	X																08
DW-3	11-3	15:15	X					X			X			X	X	X		X	X																09
MW-9	11-3	15:20	X		X	X		X	X		X			X	X	X		X	X										X	X	X	X	X	X		10

	Date	Time	
Relinquished by: [signature]	11-3-10	15:35	Received by: [signature]
Relinquished by: [signature]	Date	Time	Received by: [signature]
Relinquished by: [signature]	Date 110310	Time 1535	Received by Laboratory: [signature] KIFF Analytical

Remarks:

Distribution: White - Lab; Pink - Originator
Rev: 060409

Page 17 of 18

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER LJR Initials

SRG#: LJR 110310 ~~7520~~ 75212 Date: 110310

Project ID: TESORO LIVERMORE

Method of Receipt: ☒ Courier ☐ Over-the-counter ☐ Shipper

COC Inspection

Is COC present?	☒ Yes	☐ No		
Custody seals on shipping container?	☐ Intact	☐ Broken	☐ Not present	☒ N/A
Is COC Signed by Relinquisher? ☒ Yes ☐ No Dated?	☒ Yes	☐ No		
Is sampler name legibly indicated on COC?	☒ Yes	☐ No		
Is analysis or hold requested for all samples	☒ Yes	☐ No		
Is the turnaround time indicated on COC?	☒ Yes	☐ No		
Is COC free of whiteout and uninitialed cross-outs?	☐ Yes	☐ No, Whiteout	☒ No, Cross-outs	

Sample Inspection

Coolant Present: ☒ Yes ☐ No (includes water)

Temperature °C 5.6 Therm. ID# IR-5 Initial LJR Date/Time 110310/1848 ☐ N/A

Are there custody seals on sample containers?	☐ Intact	☐ Broken	☒ Not present	
Do containers match COC? ☒ Yes ☐ No ☐ No, COC lists absent sample(s)	☐ No, Extra sample(s) present			
Are there samples matrices other than soil, water, air or carbon?	☐ Yes	☒ No		
Are any sample containers broken, leaking or damaged?	☐ Yes	☒ No		
Are preservatives indicated? ☐ Yes, on sample containers	☒ Yes, on COC	☐ Not indicated	☐ N/A	
Are preservatives correct for analyses requested?	☒ Yes	☐ No	☐ N/A	
Are samples within holding time for analyses requested?	☒ Yes	☐ No		
Are the correct sample containers used for the analyses requested?	☒ Yes	☐ No		
Is there sufficient sample to perform testing?	☒ Yes	☐ No		

Does any sample contain product, have strong odor or are otherwise suspected to be hot? ☐ Yes ☒ No

Receipt Details

Matrix WA	Container type VOA	# of containers received 34
Matrix WA	Container type poly	# of containers received 8
Matrix WA	Container type glass	# of containers received 4

Date and Time Sample Put into Temp Storage Date: 110310 Time: 1858

Quicklog

Are the Sample ID's indicated:	☐ On COC	☐ On sample container(s)	☒ On Both	☐ Not indicated
If Sample ID's are listed on both COC and containers, do they all match?	☒ Yes	☐ No	☐ N/A	
Is the Project ID indicated:	☐ On COC	☐ On sample container(s)	☒ On Both	☐ Not indicated
If project ID is listed on both COC and containers, do they all match?	☒ Yes	☐ No	☐ N/A	
Are the sample collection dates indicated:	☐ On COC	☐ On sample container(s)	☒ On Both	☐ Not indicated
If collection dates are listed on both COC and containers, do they all match?	☒ Yes	☐ No	☐ N/A	
Are the sample collection times indicated:	☐ On COC	☐ On sample container(s)	☒ On Both	☐ Not indicated
If collection times are listed on both COC and containers, do they all match?	☒ Yes	☐ No	☐ N/A	

COMMENTS:

Leaders in Analytical Science and Service

KIFF Analytical LLC

Subcontract Laboratory Report Attachments

2795 Second Street, Suite 300 Davis, CA 95618
tel 530.297.4800 fax 530.297.4808
www.kiffanalytical.com

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

November 11, 2010

CLS Work Order #: CTK0196
COC #: 75212

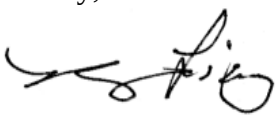
Scott Forbes
KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project Name: Tesoro Livermore

Enclosed are the results of analyses for samples received by the laboratory on 11/04/10 08:35. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: [none]
Project Manager: Scott Forbes

CLS Work Order #: CTK0196
COC #: 75212

CTK0196

KIFF Analytical LLC
2795 Second Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4808

California Laboratory Services
3249 Fitzgerald Road
Rancho Cordova, CA 95742
916-638-7301 COC No. 75212 Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes
Company/Address: Kiff Analytical
Phone No.: 530-297-4800
FAX No.: 530-297-4808
Project Number:
P.O. No.: 75212
Project Name: TESORO LIVERMORE
Project Address:

EDF Report? YES

Recommended but not mandatory to complete this section:
Sampling Company Log Code: EFSP
Global ID: T0600101410
Deliverables to (Email Address): inbox@kiffanalytical.com

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	Matrix: Water	Analysis Request: Biochemical Oxygen Demand	Iron, Ferrous	TAT: Standard	For Lab Use Only
MW-4	11/03/10	12:45	1	1	X	X	X	X	
MW-9	11/03/10	15:20	1	1	X	X	X	X	

Relinquished by:	Date	Time	Received by:
	110411	0835	
Relinquished by:	Date	Time	Received by:
Relinquished by: 11/4/10 0835	Date	Time	Received by/Laboratory:

Remarks:

Bill to: Accounts Payable

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: [none]
Project Manager: Scott Forbes

CLS Work Order #: CTK0196
COC #: 75212

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4 (CTK0196-01) Water	**Sampled: 11/03/10 12:45**	**Received: 11/04/10 08:35**							
Biochemical Oxygen Demand	ND	3.0	mg/L	1	CT08223	11/05/10	11/10/10	SM5210B	
Ferrous Iron	ND	0.10	"	"	CT08169	11/04/10	11/04/10	SM3500-Fe D	
MW-9 (CTK0196-02) Water	**Sampled: 11/03/10 15:20**	**Received: 11/04/10 08:35**							
Biochemical Oxygen Demand	ND	3.0	mg/L	1	CT08223	11/05/10	11/10/10	SM5210B	
Ferrous Iron	ND	0.10	"	"	CT08169	11/04/10	11/04/10	SM3500-Fe D	

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: [none]
Project Manager: Scott Forbes

CLS Work Order #: CTK0196
COC #: 75212

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CT08169 - General Preparation										
Blank (CT08169-BLK1)				Prepared & Analyzed: 11/04/10						
Ferrous Iron	ND	0.10	mg/L							
LCS (CT08169-BS1)				Prepared & Analyzed: 11/04/10						
Ferrous Iron	0.243	0.10	mg/L	0.250		97	80-120			
LCS Dup (CT08169-BSD1)				Prepared & Analyzed: 11/04/10						
Ferrous Iron	0.243	0.10	mg/L	0.250		97	80-120	0	25	
Matrix Spike (CT08169-MS1)		**Source: CTK0181-03**		Prepared & Analyzed: 11/04/10						
Ferrous Iron	0.243	0.10	mg/L	0.250	0.0141	92	75-125			
Matrix Spike Dup (CT08169-MSD1)		**Source: CTK0181-03**		Prepared & Analyzed: 11/04/10						
Ferrous Iron	0.243	0.10	mg/L	0.250	0.0141	92	75-125	0	30	
Batch CT08223 - General										
Blank (CT08223-BLK1)				Prepared: 11/05/10 Analyzed: 11/10/10						
Biochemical Oxygen Demand	ND	3.0	mg/L							
LCS (CT08223-BS1)				Prepared: 11/05/10 Analyzed: 11/10/10						
Biochemical Oxygen Demand	201	3.0	mg/L	167		121	83-138			
LCS Dup (CT08223-BSD1)				Prepared: 11/05/10 Analyzed: 11/10/10						
Biochemical Oxygen Demand	204	3.0	mg/L	167		122	83-138	1	21	

CALIFORNIA LABORATORY SERVICES

11/11/10 12:32

KIFF Analytical	Project: Tesoro Livermore	
2795 Second St. Suite 300	Project Number: [none]	**CLS Work Order #: CTK0196**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 75212

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Calscience Environmental Laboratories, Inc.

November 10, 2010

Joel Kiff
Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Subject: **Calscience Work Order No.: 10-11-0365**
Client Reference: Tesoro - Livermore

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/4/2010 and analyzed in accordance with the attached chain-of-custody.

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Wendy Hsiao for

Calscience Environmental
Laboratories, Inc.
Amanda Porter
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Kiff Analytical		Date Received:	11/04/10
2795 2nd Street, Suite 300		Work Order No:	10-11-0365
Davis, CA 95616-6593		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	**10-11-0365-1-A**	**11/03/10 12:45**	**Aqueous**	**GC 33**	**N/A**	**11/04/10 00:00**	**101104L01**

Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-9	**10-11-0365-2-A**	**11/03/10 15:20**	**Aqueous**	**GC 33**	**N/A**	**11/04/10 00:00**	**101104L01**

Parameter	Result	RL	DF	Qual	Units
Methane	142	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-1,135**	**N/A**	**Aqueous**	**GC 33**	**N/A**	**11/04/10 00:00**	**101104L01**

Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: 11/04/10
Work Order No: 10-11-0365

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-4	**10-11-0365-1**	**11/03/10**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	36	20	1		mg/L	11/09/10	11/09/10	EPA 410.4
Alkalinity, Total (as CaCO3)	412	5.00	1		mg/L	N/A	11/10/10	SM 2320B
Carbon, Total Organic	1.0	0.50	1		mg/L	N/A	11/04/10	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-9	**10-11-0365-2**	**11/03/10**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	96	20	1		mg/L	11/09/10	11/09/10	EPA 410.4
Alkalinity, Total (as CaCO3)	513	5.00	1		mg/L	N/A	11/10/10	SM 2320B
Carbon, Total Organic	3.4	2.5	5		mg/L	N/A	11/04/10	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank		**N/A**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	ND	20	1		mg/L	11/09/10	11/09/10	EPA 410.4
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	11/10/10	SM 2320B
Carbon, Total Organic	ND	0.50	1		mg/L	N/A	11/04/10	SM 5310 D

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0365

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	SM 5310 D	10-11-0361-1	11/04/10	N/A	92	92	75-125	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0365

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	SM 2320B	10-11-0361-1	11/10/10	515	514	0	0-25	
Chemical Oxygen Demand	EPA 410.4	10-11-0760-1	11/09/10	83	80	4	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0365
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,135	**Aqueous**	**GC 33**	**N/A**	**11/04/10**	**101104L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	96	96	79-109	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0365

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Carbon, Total Organic	SM 5310 D	099-05-097-4,062	11/04/10	N/A	5.000	4.730	95	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 10-11-0365

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.

KIFF Analytical LLC

2795 Second Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4808

Calscience
7440 Lincoln Way
Garden Grove, CA 92841-1427
714-895-5494

(036)

COC No. **75212** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Company/Address: Kiff Analytical

Recommended but not mandatory to complete this section:

Sampling Company Log Code: EFSP

Phone No.: 530-297-4800 | FAX No.: 530-297-4808

Global ID: T0600101410

Project Number: | P.O. No.: 75212

Deliverables to (Email Address): inbox@kiffanalytical.com

Project Name: TESORO LIVERMORE

Project Address:

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 250ml Glass H2SO4	250ml Poly None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Chemical Oxygen Demand	Hydrocarbons in Water by RSK 175 (1)	Total Organic Carbon	TAT: 4-Days	For Lab Use Only
MW-4	11/03/10	12:45	2	1	2	X	X	X	X	X	X	1
MW-9	11/03/10	15:20	2	1	2	X	X	X	X	X	X	2

Relinquished by:	Date	Time	Received by:
Kiff Analytical	11/03/10	1900	
Relinquished by:	Date	Time	Received by:
Relinquished by: Ontrac	Date 11/4/10	Time 1000	Received by Laboratory:

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

0365

Test Detail for Kiff Work Order: 75212

Alkalinity SM 2320 (1)
Alkalinity, Total (as CaCO3)

Hydrocarbons in Water by RSK 175 (1)
Methane

0360

OnTrac
On Time Delivery For Less

800.334.5000
ontrac.com

D10010328433894

Date Printed 11/3/2010

Tracking#D10010328433894

Shipped From:
KIFF ANALYTICAL
2795 2ND STREET 300
DAVIS, CA 95616

Sent By: SAMPLE RECEIVING
Phone#: (530)297-4800
wgt(lbs): 1
Reference: SUB
Reference 2:

Ship To Company:	*Service:* **S**
CALSCIENCE ENVIRONMENTAL **7440 LINCOLN WAY** **GARDEN GROVE, CA 92841** **RECEIVING (714)895-5494** **B10207210772**	*Sort Code:* **ORG** *Special Services:* **Signature Required**

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 10-11-0365

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: KIFF ANALYTICAL DATE: 11/04/10

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 2.6 °C + 0.5 °C (CF) = 3.1 °C ☐ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature: ☐ Air ☐ Filter Initial: WB

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A Initial: WB

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: _____

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☐	☐	☑
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Residual Chlorine / Dissolved Sulfide received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☑	☐	☐
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☑VOA^{2}**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☑250CGB^{2}**s** ☐1PB ☐500PB ☐500PB**na**

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☑250 PJ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** _____

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope **Reviewed by:** _____

Preservative: h: HCL n: HNO_3 na$_2$:$Na_2S_2O_3$ na: NaOH p: H_3PO_4 s: H_2SO_4 znna: $ZnAc_2$+NaOH f: Field-filtered **Scanned by:** _____

KIFF Analytical LLC

Report Number : 75226
Date : 11/11/2010

Laboratory Results

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

Subject : 6 Water Samples
Project Name : TESORO LIVERMORE
Project Number : O1LV

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

KIFF Analytical LLC

Report Number : 75226
Date : 11/11/2010

Subject : 6 Water Samples
Project Name : TESORO LIVERMORE
Project Number : O1LV

Case Narrative

California Laboratory Services provided analytical testing associated with these samples, but is not accredited by the National Environmental Laboratory Accreditation Program (NELAP).

KIFF Analytical LLC

Report Number : 75226

Date : 11/11/2010

Project Name : **TESORO LIVERMORE**

Project Number : **O1LV**

Sample : **TP-1** Matrix : Water Lab Number : 75226-01

Sample Date :11/03/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**1000**	8.0	ug/L	EPA 8260B	11/06/10 01:49
Toluene	**270**	8.0	ug/L	EPA 8260B	11/06/10 01:49
Ethylbenzene	**280**	8.0	ug/L	EPA 8260B	11/06/10 01:49
Total Xylenes	**1600**	8.0	ug/L	EPA 8260B	11/06/10 01:49
Methyl-t-butyl ether (MTBE)	**4500**	8.0	ug/L	EPA 8260B	11/06/10 01:49
Diisopropyl ether (DIPE)	< 8.0	8.0	ug/L	EPA 8260B	11/06/10 01:49
Ethyl-t-butyl ether (ETBE)	< 8.0	8.0	ug/L	EPA 8260B	11/06/10 01:49
Tert-amyl methyl ether (TAME)	**28**	8.0	ug/L	EPA 8260B	11/06/10 01:49
Tert-Butanol	**4800**	40	ug/L	EPA 8260B	11/06/10 01:49
Methanol	< 800	800	ug/L	EPA 8260B	11/06/10 01:49
Ethanol	< 80	80	ug/L	EPA 8260B	11/06/10 01:49
TPH as Gasoline	**14000**	800	ug/L	EPA 8260B	11/06/10 01:49
1,2-Dichloroethane	< 8.0	8.0	ug/L	EPA 8260B	11/06/10 01:49
1,2-Dibromoethane	< 8.0	8.0	ug/L	EPA 8260B	11/06/10 01:49
1,2-Dichloroethane-d4 (Surr)	97.9		% Recovery	EPA 8260B	11/06/10 01:49
Toluene - d8 (Surr)	94.0		% Recovery	EPA 8260B	11/06/10 01:49

KIFF Analytical LLC

Report Number : 75226
Date : 11/11/2010

Project Name : **TESORO LIVERMORE**
Project Number : **O1LV**

Sample : **TP-2** Matrix : Water Lab Number : 75226-02
Sample Date :11/04/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**230**	5.0	ug/L	EPA 8260B	11/09/10 17:12
Toluene	**82**	5.0	ug/L	EPA 8260B	11/09/10 17:12
Ethylbenzene	**150**	5.0	ug/L	EPA 8260B	11/09/10 17:12
Total Xylenes	**630**	5.0	ug/L	EPA 8260B	11/09/10 17:12
Methyl-t-butyl ether (MTBE)	**980**	5.0	ug/L	EPA 8260B	11/09/10 17:12
Diisopropyl ether (DIPE)	< 5.0	5.0	ug/L	EPA 8260B	11/09/10 17:12
Ethyl-t-butyl ether (ETBE)	< 5.0	5.0	ug/L	EPA 8260B	11/09/10 17:12
Tert-amyl methyl ether (TAME)	**6.3**	5.0	ug/L	EPA 8260B	11/09/10 17:12
Tert-Butanol	**14000**	25	ug/L	EPA 8260B	11/09/10 17:12
Methanol	< 500	500	ug/L	EPA 8260B	11/09/10 17:12
Ethanol	< 50	50	ug/L	EPA 8260B	11/09/10 17:12
TPH as Gasoline	**4900**	500	ug/L	EPA 8260B	11/09/10 17:12
1,2-Dichloroethane	< 5.0	5.0	ug/L	EPA 8260B	11/09/10 17:12
1,2-Dibromoethane	< 5.0	5.0	ug/L	EPA 8260B	11/09/10 17:12
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	11/09/10 17:12
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	11/09/10 17:12

KIFF Analytical LLC

Report Number : 75226
Date : 11/11/2010

Project Name : **TESORO LIVERMORE**
Project Number : **O1LV**

Sample : **DW-1** Matrix : Water Lab Number : 75226-03
Sample Date :11/04/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	**1.1**	0.20	mg/L	EPA 300.0	11/04/10 22:05
Sulfate	**59**	1.0	mg/L	EPA 300.0	11/04/10 22:05
Benzene	**0.90**	0.50	ug/L	EPA 8260B	11/06/10 00:07
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:07
Ethylbenzene	**0.70**	0.50	ug/L	EPA 8260B	11/06/10 00:07
Total Xylenes	**1.3**	0.50	ug/L	EPA 8260B	11/06/10 00:07
Methyl-t-butyl ether (MTBE)	**0.54**	0.50	ug/L	EPA 8260B	11/06/10 00:07
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:07
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:07
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:07
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/06/10 00:07
Methanol	< 50	50	ug/L	EPA 8260B	11/06/10 00:07
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/06/10 00:07
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/06/10 00:07
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:07
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:07
1,2-Dichloroethane-d4 (Surr)	95.1		% Recovery	EPA 8260B	11/06/10 00:07
Toluene - d8 (Surr)	95.1		% Recovery	EPA 8260B	11/06/10 00:07

KIFF Analytical LLC

Report Number : 75226
Date : 11/11/2010

Project Name : **TESORO LIVERMORE**
Project Number : **O1LV**

Sample : **DW-7** Matrix : Water Lab Number : 75226-04
Sample Date :11/04/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/04/10 22:39
Sulfate	**1.3**	0.50	mg/L	EPA 300.0	11/04/10 22:39
Benzene	**30**	0.50	ug/L	EPA 8260B	11/06/10 00:43
Toluene	**1.2**	0.50	ug/L	EPA 8260B	11/06/10 00:43
Ethylbenzene	**5.0**	0.50	ug/L	EPA 8260B	11/06/10 00:43
Total Xylenes	**3.3**	0.50	ug/L	EPA 8260B	11/06/10 00:43
Methyl-t-butyl ether (MTBE)	**130**	0.50	ug/L	EPA 8260B	11/06/10 00:43
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:43
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:43
Tert-amyl methyl ether (TAME)	**1.2**	0.50	ug/L	EPA 8260B	11/06/10 00:43
Tert-Butanol	**220**	5.0	ug/L	EPA 8260B	11/06/10 00:43
Methanol	< 50	50	ug/L	EPA 8260B	11/06/10 00:43
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/06/10 00:43
TPH as Gasoline	**660**	50	ug/L	EPA 8260B	11/06/10 00:43
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:43
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/06/10 00:43
1,2-Dichloroethane-d4 (Surr)	94.6		% Recovery	EPA 8260B	11/06/10 00:43
Toluene - d8 (Surr)	91.7		% Recovery	EPA 8260B	11/06/10 00:43

KIFF Analytical LLC

Report Number : 75226
Date : 11/11/2010

Project Name : **TESORO LIVERMORE**
Project Number : **O1LV**

Sample : **MW-11** Matrix : Water Lab Number : 75226-05
Sample Date :11/04/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	11/05/10 03:06
Sulfate	**54**	1.0	mg/L	EPA 300.0	11/05/10 17:35
Benzene	**2100**	15	ug/L	EPA 8260B	11/06/10 02:25
Toluene	**5400**	15	ug/L	EPA 8260B	11/06/10 02:25
Ethylbenzene	**1400**	15	ug/L	EPA 8260B	11/06/10 02:25
Total Xylenes	**12000**	15	ug/L	EPA 8260B	11/06/10 02:25
Methyl-t-butyl ether (MTBE)	< 15	15	ug/L	EPA 8260B	11/06/10 02:25
Diisopropyl ether (DIPE)	< 15	15	ug/L	EPA 8260B	11/06/10 02:25
Ethyl-t-butyl ether (ETBE)	< 15	15	ug/L	EPA 8260B	11/06/10 02:25
Tert-amyl methyl ether (TAME)	< 15	15	ug/L	EPA 8260B	11/06/10 02:25
Tert-Butanol	< 70	70	ug/L	EPA 8260B	11/06/10 02:25
Methanol	< 1500	1500	ug/L	EPA 8260B	11/06/10 02:25
Ethanol	< 150	150	ug/L	EPA 8260B	11/06/10 02:25
TPH as Gasoline	**59000**	1500	ug/L	EPA 8260B	11/06/10 02:25
1,2-Dichloroethane	< 15	15	ug/L	EPA 8260B	11/06/10 02:25
1,2-Dibromoethane	< 15	15	ug/L	EPA 8260B	11/06/10 02:25
1,2-Dichloroethane-d4 (Surr)	97.5		% Recovery	EPA 8260B	11/06/10 02:25
Toluene - d8 (Surr)	93.5		% Recovery	EPA 8260B	11/06/10 02:25

KIFF Analytical LLC

Report Number : 75226
Date : 11/11/2010

Project Name : **TESORO LIVERMORE**
Project Number : **O1LV**

Sample : **MW-2** Matrix : Water Lab Number : 75226-06
Sample Date :11/04/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/05/10 03:39
Sulfate	**36**	5.0	mg/L	EPA 300.0	11/05/10 13:27
Benzene	**2000**	4.0	ug/L	EPA 8260B	11/06/10 01:15
Toluene	**160**	4.0	ug/L	EPA 8260B	11/06/10 01:15
Ethylbenzene	**420**	4.0	ug/L	EPA 8260B	11/06/10 01:15
Total Xylenes	**390**	4.0	ug/L	EPA 8260B	11/06/10 01:15
Methyl-t-butyl ether (MTBE)	**540**	4.0	ug/L	EPA 8260B	11/06/10 01:15
Diisopropyl ether (DIPE)	< 4.0	4.0	ug/L	EPA 8260B	11/06/10 01:15
Ethyl-t-butyl ether (ETBE)	< 4.0	4.0	ug/L	EPA 8260B	11/06/10 01:15
Tert-amyl methyl ether (TAME)	**5.7**	4.0	ug/L	EPA 8260B	11/06/10 01:15
Tert-Butanol	**510**	20	ug/L	EPA 8260B	11/06/10 01:15
Methanol	< 400	400	ug/L	EPA 8260B	11/06/10 01:15
Ethanol	< 40	40	ug/L	EPA 8260B	11/06/10 01:15
TPH as Gasoline	**13000**	400	ug/L	EPA 8260B	11/06/10 01:15
1,2-Dichloroethane	< 4.0	4.0	ug/L	EPA 8260B	11/06/10 01:15
1,2-Dibromoethane	< 4.0	4.0	ug/L	EPA 8260B	11/06/10 01:15
1,2-Dichloroethane-d4 (Surr)	93.7		% Recovery	EPA 8260B	11/06/10 01:15
Toluene - d8 (Surr)	90.9		% Recovery	EPA 8260B	11/06/10 01:15

Report Number : 75226

Date : 11/11/2010

QC Report : Method Blank Data

Project Name : **TESORO LIVERMORE**

Project Number : **O1LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/05/2010
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
Methanol	< 50	50	ug/L	EPA 8260B	11/05/2010
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/05/2010
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/05/2010
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/05/2010
1,2-Dichloroethane-d4 (Surr)	99.8		%	EPA 8260B	11/05/2010
Toluene - d8 (Surr)	93.3		%	EPA 8260B	11/05/2010
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/09/2010
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
Methanol	< 50	50	ug/L	EPA 8260B	11/09/2010
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/09/2010
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/09/2010
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/09/2010
1,2-Dichloroethane-d4 (Surr)	99.1		%	EPA 8260B	11/09/2010
Toluene - d8 (Surr)	98.6		%	EPA 8260B	11/09/2010

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/04/2010
Sulfate	< 0.50	0.50	mg/L	EPA 300.0	11/04/2010
Sulfate	< 0.50	0.50	mg/L	EPA 300.0	11/05/2010

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/11/2010

Project Name : **TESORO LIVERMORE**

Project Number : **O1LV**

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
Nitrate as N														
	74908-05	5.5	0.500	0.500	5.98	5.96	mg/L	EPA 300.0	11/4/10	90.6	87.0	0.305	85.0-115	10
Sulfate														
	74908-05	9.9	2.50	2.50	12.3	12.2	mg/L	EPA 300.0	11/4/10	95.8	92.8	0.625	85.0-115	10
Sulfate														
	74990-06	< 0.50	2.50	2.50	2.27	2.25	mg/L	EPA 300.0	11/5/10	90.9	89.9	1.08	85.0-115	10
1,2-Dibromoethane														
	75229-02	<0.50	39.9	39.4	36.0	38.1	ug/L	EPA 8260B	11/5/10	90.2	96.6	6.88	80-120	25
1,2-Dichloroethane														
	75229-02	<0.50	39.9	39.4	33.5	33.4	ug/L	EPA 8260B	11/5/10	83.9	84.7	0.957	75.7-122	25
Benzene														
	75229-02	<0.50	39.9	39.4	41.4	40.1	ug/L	EPA 8260B	11/5/10	104	102	1.83	80-120	25
Diisopropyl ether														
	75229-02	<0.50	40.0	39.6	41.2	40.7	ug/L	EPA 8260B	11/5/10	103	103	0.0583	80-120	25
Ethanol														
	75229-02	<5.0	100	99.1	92.6	84.0	ug/L	EPA 8260B	11/5/10	92.3	84.8	8.54	55.1-159	25
Ethyl-tert-butyl ether														
	75229-02	<0.50	40.0	39.5	39.8	38.7	ug/L	EPA 8260B	11/5/10	99.4	98.0	1.41	76.5-120	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/11/2010

Project Name : **TESORO LIVERMORE**

Project Number : **O1LV**

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														
	75229-02	<0.50	39.9	39.4	43.4	42.2	ug/L	EPA 8260B	11/5/10	108	107	1.45	80-120	25
Methanol														
	75229-02	<50	999	988	887	735	ug/L	EPA 8260B	11/5/10	88.7	74.5	17.5	53.2-147	25
Methyl-t-butyl ether														
	75229-02	<0.50	39.9	39.4	40.9	40.2	ug/L	EPA 8260B	11/5/10	102	102	0.532	69.7-121	25
P + M Xylene														
	75229-02	<0.50	39.9	39.4	41.7	41.1	ug/L	EPA 8260B	11/5/10	104	104	0.166	76.8-120	25
Tert-Butanol														
	75229-02	<5.0	200	197	195	193	ug/L	EPA 8260B	11/5/10	97.5	97.6	0.105	80-120	25
Tert-amyl-methyl ether														
	75229-02	<0.50	40.1	39.7	39.0	37.6	ug/L	EPA 8260B	11/5/10	97.1	94.9	2.34	78.9-120	25
Toluene														
	75229-02	<0.50	39.9	39.4	39.5	39.0	ug/L	EPA 8260B	11/5/10	99.0	98.8	0.284	80-120	25
1,2-Dibromoethane														
	75276-03	<0.50	40.0	40.0	40.1	40.1	ug/L	EPA 8260B	11/9/10	100	100	0.0658	80-120	25
1,2-Dichloroethane														
	75276-03	<0.50	40.0	40.0	38.8	38.3	ug/L	EPA 8260B	11/9/10	97.1	95.8	1.37	75.7-122	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/11/2010

Project Name : **TESORO LIVERMORE**

Project Number : **O1LV**

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
Benzene														
	75276-03	<0.50	40.0	40.0	41.0	40.0	ug/L	EPA 8260B	11/9/10	102	100	2.41	80-120	25
Diisopropyl ether														
	75276-03	<0.50	40.1	40.1	41.4	41.0	ug/L	EPA 8260B	11/9/10	103	102	0.772	80-120	25
Ethanol														
	75276-03	<5.0	100	100	117	122	ug/L	EPA 8260B	11/9/10	117	121	3.56	55.1-159	25
Ethyl-tert-butyl ether														
	75276-03	<0.50	40.1	40.1	42.0	41.6	ug/L	EPA 8260B	11/9/10	105	104	0.912	76.5-120	25
Ethylbenzene														
	75276-03	<0.50	40.0	40.0	41.7	40.9	ug/L	EPA 8260B	11/9/10	104	102	1.83	80-120	25
Methanol														
	75276-03	<50	1000	1000	1260	1270	ug/L	EPA 8260B	11/9/10	126	127	1.30	53.2-147	25
Methyl-t-butyl ether														
	75276-03	<0.50	40.0	40.0	40.9	41.0	ug/L	EPA 8260B	11/9/10	102	103	0.427	69.7-121	25
P + M Xylene														
	75276-03	<0.50	40.0	40.0	42.3	41.4	ug/L	EPA 8260B	11/9/10	106	104	2.04	76.8-120	25
Tert-Butanol														
	75276-03	<5.0	200	200	205	206	ug/L	EPA 8260B	11/9/10	102	103	0.365	80-120	25
Tert-amyl-methyl ether														
	75276-03	<0.50	40.2	40.2	41.5	41.5	ug/L	EPA 8260B	11/9/10	103	103	0.0626	78.9-120	25

Report Number : 75226

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/11/2010

Project Name : **TESORO LIVERMORE**

Project Number : **O1LV**

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
Toluene														
	75276-03	<0.50	40.0	40.0	41.3	40.7	ug/L	EPA 8260B	11/9/10	103	102	1.55	80-120	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

QC Report : Laboratory Control Sample (LCS)

Project Name : **TESORO LIVERMORE**

Project Number : **O1LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	11/5/10	89.6	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	11/5/10	81.4	75.7-122
Benzene	40.0	ug/L	EPA 8260B	11/5/10	103	80-120
Diisopropyl ether	40.1	ug/L	EPA 8260B	11/5/10	103	80-120
Ethanol	100	ug/L	EPA 8260B	11/5/10	70.4	55.1-159
Ethyl-tert-butyl ether	40.1	ug/L	EPA 8260B	11/5/10	99.3	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	11/5/10	106	80-120
Methanol	1000	ug/L	EPA 8260B	11/5/10	82.7	53.2-147
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	11/5/10	99.8	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	11/5/10	105	76.8-120
Tert-Butanol	200	ug/L	EPA 8260B	11/5/10	98.7	80-120
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	11/5/10	95.2	78.9-120
Toluene	40.0	ug/L	EPA 8260B	11/5/10	99.6	80-120
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	11/9/10	98.8	80-120
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	11/9/10	95.5	75.7-122
Benzene	40.1	ug/L	EPA 8260B	11/9/10	100	80-120
Diisopropyl ether	40.2	ug/L	EPA 8260B	11/9/10	100	80-120
Ethanol	101	ug/L	EPA 8260B	11/9/10	120	55.1-159
Ethyl-tert-butyl ether	40.2	ug/L	EPA 8260B	11/9/10	102	76.5-120
Ethylbenzene	40.1	ug/L	EPA 8260B	11/9/10	104	80-120
Methanol	1000	ug/L	EPA 8260B	11/9/10	128	53.2-147
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	11/9/10	98.8	69.7-121

Report Number : 75226

QC Report : Laboratory Control Sample (LCS)

Date : 11/11/2010

Project Name : **TESORO LIVERMORE**

Project Number : **O1LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
P + M Xylene	40.1	ug/L	EPA 8260B	11/9/10	104	76.8-120
TPH as Gasoline	502	ug/L	EPA 8260B	11/9/10	101	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	11/9/10	100	80-120
Tert-amyl-methyl ether	40.3	ug/L	EPA 8260B	11/9/10	98.6	78.9-120
Toluene	40.1	ug/L	EPA 8260B	11/9/10	102	80-120
Nitrate as N	0.500	mg/L	EPA 300.0	11/4/10	95.7	85.0-115
Sulfate	2.50	mg/L	EPA 300.0	11/4/10	91.8	85.0-115
Sulfate	2.50	mg/L	EPA 300.0	11/5/10	93.1	85.0-115

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

KIFF Analytical LLC

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

SRG # / Lab No. 75226

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): MATTHEW NELSON	California EDF Report? ☐ Yes ☐ No
Company / Address: 3450 E. SPRING ST. LONG BEACH	Sampling Company Log Code: EFSP
Phone Number: (562) 988-2755	Global ID: T0600101410
Fax Number:	EDF Deliverable To (Email Address):
Project #: 01LV / P.O. #:	Bill to: MATTHEW NELSON
Project Name: TESORO LIVERMORE	Sampler Print Name: RICK HOLLAND
	Sampler Signature:
Project Address: 1619 1st ST LIVERMORE CA.	

Sample Designation	Sampling Date	Sampling Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Preservative: HCl	Preservative: HNO3 H2SO4	Preservative: None	Matrix: Water	Matrix: Soil	Matrix: 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)~~ METHANE RSK 175M	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)~~ TOC SM 5310D	~~W.E.T. Lead (STLC)~~ NITRATE SULFATE EPA 300	COD 410.4	BOD SM-5210B	FERROUS IRON SM 3500 FED	TOTAL ALKALINITY SM 2320B	TAT: 12 hr ☐ / 24 hr ☐ / 48hr ☐ / 72hr ☐ / 1 wk ☒	For Lab Use Only
TP-1	11-3	17:20	X					X			X			X	X	X		X	X				X						X	X	X	X	X	X	01
TP-2	11.4	9:20	X					X			X			X	X	X		X	X										X	X	X	X	X	X	02
DW-1	11-4	9:40	X		X	X		X	X		X			X	X	X		X	X				X						X	X	X	X	X	X	03
DW-7	11.4	10:12	X		X	X		X	X		X			X	X	X		X	X				X						X	X	X	X	X	X	04
MW-11	11.4	11:20	X		X	X		X	X		X			X	X	X		X	X				X						X	X	X	X	X	X	05
MW-2	11.4	12:15	X		X	X		X	X		X			X	X	X		X	X				X						X	X	X	X	X	X	06

CIRCLE METHOD

Relinquished by: RICK HOLLAND	Date 11-4-10	Time 15:10	Received by:	Remarks:
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date 110410	Time 1510	Received by Laboratory: Kiff Analytical	

Distribution: White - Lab; Pink - Originator
Rev: 060409

Page 10 of 17

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER LJR Initials

SRG#: 75226 Date: 110410

Project ID: TESORO LIVERMORE

Method of Receipt: [X] Courier [ ] Over-the-counter [ ] Shipper

COC Inspection

Is COC present?	[X] Yes	[ ] No	
Custody seals on shipping container?	[ ] Intact	[ ] Broken	[ ] Not present [X] N/A
Is COC Signed by Relinquisher? [X] Yes [ ] No Dated?	[X] Yes	[ ] No	
Is sampler name legibly indicated on COC?	[X] Yes	[ ] No	
Is analysis or hold requested for all samples	[X] Yes	[ ] No	
Is the turnaround time indicated on COC?	[X] Yes	[ ] No	
Is COC free of whiteout and uninitialed cross-outs?	[ ] Yes	[ ] No, Whiteout	[X] No, Cross-outs

Sample Inspection

Coolant Present: [X] Yes [ ] No (includes water)

Temperature °C 5.8 Therm. ID# IR-5 Initial LJR Date/Time 110410/1837 [ ] N/A

Are there custody seals on sample containers?	[ ] Intact	[ ] Broken	[X] Not present
Do containers match COC? [X] Yes [ ] No [ ] No, COC lists absent sample(s)		[ ] No, Extra sample(s) present	
Are there samples matrices other than soil, water, air or carbon?	[ ] Yes	[X] No	
Are any sample containers broken, leaking or damaged?	[ ] Yes	[X] No	
Are preservatives indicated? [ ] Yes, on sample containers	[X] Yes, on COC	[ ] Not indicated	[ ] N/A
Are preservatives correct for analyses requested?	[X] Yes	[ ] No	[ ] N/A
Are samples within holding time for analyses requested?	[X] Yes	[ ] No	
Are the correct sample containers used for the analyses requested?	[X] Yes	[ ] No	
Is there sufficient sample to perform testing?	[X] Yes	[ ] No	

Does any sample contain product, have strong odor or are otherwise suspected to be hot? [ ] Yes [X] No

Receipt Details

Matrix WA Container type VOA # of containers received 26

Matrix WA Container type glass # of containers received 8

Matrix WA Container type poly # of containers received 16

Date and Time Sample Put into Temp Storage Date: 110410 Time: 1837

Quicklog

Are the Sample ID's indicated:	[ ] On COC	[ ] On sample container(s)	[X] On Both	[ ] Not indicated
If Sample ID's are listed on both COC and containers, do they all match?	[X] Yes	[ ] No		[ ] N/A
Is the Project ID indicated:	[ ] On COC	[ ] On sample container(s)	[X] On Both	[ ] Not indicated
If project ID is listed on both COC and containers, do they all match?	[X] Yes	[ ] No		[ ] N/A
Are the sample collection dates indicated:	[ ] On COC	[ ] On sample container(s)	[X] On Both	[ ] Not indicated
If collection dates are listed on both COC and containers, do they all match?	[X] Yes	[ ] No		[ ] N/A
Are the sample collection times indicated:	[ ] On COC	[ ] On sample container(s)	[X] On Both	[ ] Not indicated
If collection times are listed on both COC and containers, do they all match?	[X] Yes	[ ] No		[ ] N/A

COMMENTS:

Leaders in Analytical Science and Service

KIFF Analytical LLC

Subcontract Laboratory Report Attachments

2795 Second Street, Suite 300 Davis, CA 95618
tel 530.297.4800 fax 530.297.4808
www.kiffanalytical.com

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

November 12, 2010

CLS Work Order #: CTK0239
COC #: 75226

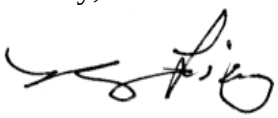
Scott Forbes
KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project Name: Tesoro Livermore

Enclosed are the results of analyses for samples received by the laboratory on 11/05/10 08:29. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

11/12/10 15:13

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: O1LV
Project Manager: Scott Forbes

CLS Work Order #: CTK0239
COC #: 75226

CTK0239

KIFF Analytical LLC

2795 Second Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4808

California Laboratory Services
3249 Fitzgerald Road
Rancho Cordova, CA 95742
916-638-7301

COC No. 75226 Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes
Company/Address: Kiff Analytical
Phone No.: 530-297-4800
FAX No.: 530-297-4808
Project Number: O1LV
P.O. No.: 75226
Project Name: TESORO LIVERMORE
Project Address:

EDF Report? YES

Recommended but not mandatory to complete this section:
Sampling Company Log Code: EFSP
Global ID: T0600101410
Deliverables to (Email Address): inbox@kiffanalytical.com

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	Matrix: Water	Analysis Request: Biochemical Oxygen Demand	Iron, Ferrous	TAT: Standard	For Lab Use Only
DW-1	11/04/10	09:40	1	1	X	X	X	X	
DW-7	11/04/10	10:12	1	1	X	X	X	X	
MW-11	11/04/10	11:20	1	1	X	X	X	X	
MW-2	11/04/10	12:15	1	1	X	X	X	X	

Relinquished by:	Date 110510	Time 0829	Received by:	Remarks:
Relinquished by:	Date	Time	Received by:	
Relinquished by: 11/5/10 0829	Date	Time	Received by Laboratory:	Bill to: Accounts Payable

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: O1LV
Project Manager: Scott Forbes

CLS Work Order #: CTK0239
COC #: 75226

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DW-1 (CTK0239-01) Water Sampled: 11/04/10 09:40 Received: 11/05/10 08:29									
Biochemical Oxygen Demand	ND	3.0	mg/L	1	CT08273	11/06/10	11/11/10	SM5210B	
Ferrous Iron	ND	0.10	"	"	CT08215	11/05/10	11/05/10	SM3500-Fe D	
DW-7 (CTK0239-02) Water Sampled: 11/04/10 10:12 Received: 11/05/10 08:29									
Biochemical Oxygen Demand	ND	3.0	mg/L	1	CT08273	11/06/10	11/11/10	SM5210B	
Ferrous Iron	ND	0.10	"	"	CT08215	11/05/10	11/05/10	SM3500-Fe D	
MW-11 (CTK0239-03) Water Sampled: 11/04/10 11:20 Received: 11/05/10 08:29									
Biochemical Oxygen Demand	**56**	3.0	mg/L	1	CT08273	11/06/10	11/11/10	SM5210B	
Ferrous Iron	ND	0.10	"	"	CT08215	11/05/10	11/05/10	SM3500-Fe D	
MW-2 (CTK0239-04) Water Sampled: 11/04/10 12:15 Received: 11/05/10 08:29									
Biochemical Oxygen Demand	**17**	3.0	mg/L	1	CT08273	11/06/10	11/11/10	SM5210B	
Ferrous Iron	**0.71**	0.10	"	"	CT08215	11/05/10	11/05/10	SM3500-Fe D	

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: Tesoro Livermore
Project Number: O1LV
Project Manager: Scott Forbes

CLS Work Order #: CTK0239
COC #: 75226

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CT08215 - General Preparation										
Blank (CT08215-BLK1)				Prepared & Analyzed: 11/05/10						
Ferrous Iron	ND	0.10	mg/L							
LCS (CT08215-BS1)				Prepared & Analyzed: 11/05/10						
Ferrous Iron	0.288	0.10	mg/L	0.250		115	80-120			
LCS Dup (CT08215-BSD1)				Prepared & Analyzed: 11/05/10						
Ferrous Iron	0.254	0.10	mg/L	0.250		102	80-120	13	25	
Matrix Spike (CT08215-MS1)		**Source: CTK0239-01**		Prepared & Analyzed: 11/05/10						
Ferrous Iron	0.254	0.10	mg/L	0.250	0.00	102	75-125			
Matrix Spike Dup (CT08215-MSD1)		**Source: CTK0239-01**		Prepared & Analyzed: 11/05/10						
Ferrous Iron	0.260	0.10	mg/L	0.250	0.00	104	75-125	2	30	
Batch CT08273 - General										
Blank (CT08273-BLK1)				Prepared: 11/06/10 Analyzed: 11/11/10						
Biochemical Oxygen Demand	ND	3.0	mg/L							
LCS (CT08273-BS1)				Prepared: 11/06/10 Analyzed: 11/11/10						
Biochemical Oxygen Demand	183	3.0	mg/L	167		110	83-138			
LCS Dup (CT08273-BSD1)				Prepared: 11/06/10 Analyzed: 11/11/10						
Biochemical Oxygen Demand	171	3.0	mg/L	167		103	83-138	7	21	

KIFF Analytical	Project: Tesoro Livermore	
2795 Second St. Suite 300	Project Number: O1LV	**CLS Work Order #: CTK0239**
Davis, CA 95616	Project Manager: Scott Forbes	COC #: 75226

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Calscience Environmental Laboratories, Inc.

November 11, 2010

Joel Kiff
Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Subject: **Calscience Work Order No.: 10-11-0494**
Client Reference: Tesoro Livermore

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/5/2010 and analyzed in accordance with the attached chain-of-custody.

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Wendy Hsiao for

Calscience Environmental
Laboratories, Inc.
Amanda Porter
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Kiff Analytical		Date Received:	11/05/10
2795 2nd Street, Suite 300		Work Order No:	10-11-0494
Davis, CA 95616-6593		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-1	**10-11-0494-1-A**	**11/04/10 09:40**	**Aqueous**	**GC 52**	**N/A**	**11/06/10 00:00**	**101106L01**

Parameter	Result	RL	DF	Qual	Units
Methane	3.57	1.00	1		ug/L

DW-7	**10-11-0494-2-A**	**11/04/10 10:12**	**Aqueous**	**GC 52**	**N/A**	**11/06/10 00:00**	**101106L01**

Parameter	Result	RL	DF	Qual	Units
Methane	322	8.00	8		ug/L

MW-11	**10-11-0494-3-A**	**11/04/10 11:20**	**Aqueous**	**GC 52**	**N/A**	**11/06/10 00:00**	**101106L01**

Parameter	Result	RL	DF	Qual	Units
Methane	178	1.00	1		ug/L

MW-2	**10-11-0494-4-A**	**11/04/10 12:15**	**Aqueous**	**GC 52**	**N/A**	**11/06/10 00:00**	**101106L01**

Parameter	Result	RL	DF	Qual	Units
Methane	5300	40.0	40		ug/L

Method Blank	**099-12-663-1,137**	**N/A**	**Aqueous**	**GC 52**	**N/A**	**11/06/10 00:00**	**101106L01**

Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: 11/05/10
Work Order No: 10-11-0494

Project: Tesoro Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-1	**10-11-0494-1**	**11/04/10**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	ND	5.0	1		mg/L	11/09/10	11/09/10	EPA 410.4
Alkalinity, Total (as CaCO3)	320	5.00	1		mg/L	N/A	11/10/10	SM 2320B
Carbon, Total Organic	1.1	0.50	1		mg/L	N/A	11/05/10	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-7	**10-11-0494-2**	**11/04/10**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	15	5.0	1		mg/L	11/09/10	11/09/10	EPA 410.4
Alkalinity, Total (as CaCO3)	270	5.00	1		mg/L	N/A	11/10/10	SM 2320B
Carbon, Total Organic	4.2	0.50	1		mg/L	N/A	11/05/10	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-11	**10-11-0494-3**	**11/04/10**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	210	20	1		mg/L	11/09/10	11/09/10	EPA 410.4
Alkalinity, Total (as CaCO3)	512	5.00	1		mg/L	N/A	11/10/10	SM 2320B
Carbon, Total Organic	29	2.5	5		mg/L	N/A	11/05/10	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-2	**10-11-0494-4**	**11/04/10**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	60	20	1		mg/L	11/09/10	11/09/10	EPA 410.4
Alkalinity, Total (as CaCO3)	450	5.00	1		mg/L	N/A	11/10/10	SM 2320B
Carbon, Total Organic	7.3	2.5	5		mg/L	N/A	11/05/10	SM 5310 D

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank		**N/A**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Chemical Oxygen Demand	ND	20	1		mg/L	11/09/10	11/09/10	EPA 410.4
Chemical Oxygen Demand	ND	5.0	1		mg/L	11/09/10	11/09/10	EPA 410.4
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	11/10/10	SM 2320B
Carbon, Total Organic	ND	0.50	1		mg/L	N/A	11/05/10	SM 5310 D

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0494

Project: Tesoro Livermore

Matrix: Aqueous or Solid

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	SM 5310 D	10-11-0569-1	11/05/10	N/A	112	111	75-125	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0494

Project: Tesoro Livermore

Matrix: Aqueous or Solid

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	SM 2320B	10-10-2399-1	11/10/10	396	396	0	0-25	
Chemical Oxygen Demand	EPA 410.4	10-11-0760-1	11/09/10	83	80	4	0-25	
Chemical Oxygen Demand	EPA 410.4	10-11-0287-1	11/09/10	ND	ND	NA	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0494
Preparation: N/A
Method: RSK-175M

Project: Tesoro Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,137	**Aqueous**	**GC 52**	**N/A**	**11/06/10**	**101106L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	99	99	79-109	0	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: N/A
Work Order No: 10-11-0494

Project: Tesoro Livermore

Matrix: Aqueous or Solid

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Carbon, Total Organic	SM 5310 D	099-05-097-4,064	11/05/10	N/A	5.000	4.810	96	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 10-11-0494

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.

KIFF Analytical LLC

2795 Second Street, Suite 300
Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4808

Calscience
7440 Lincoln Way
Garden Grove, CA 92841-1427
714-895-5494

0494

COC No. **75226** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

Company/Address: Kiff Analytical

Phone No.: 530-297-4800 FAX No.: 530-297-4808

Project Number: O1LV P.O. No.: 75226

Project Name: TESORO LIVERMORE

Project Address:

EDF Report? YES

Recommended but not mandatory to complete this section:

Sampling Company Log Code: EFSP

Global ID: T0600101410

Deliverables to (Email Address): inbox@kiffanalytical.com

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 250ml Glass H2SO4	250ml Poly None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Chemical Oxygen Demand	Hydrocarbons in Water by RSK 175 (1)	Total Organic Carbon	TAT: 4-Days	For Lab Use Only
DW-1	11/04/10	09:40	2	1	2	X	X	X	X	X	X	1
DW-7	11/04/10	10:12	2	1	2	X	X	X	X	X	X	2
MW-11	11/04/10	11:20	2	1	2	X	X	X	X	X	X	3
MW-2	11/04/10	12:15	2	1	2	X	X	X	X	X	X	4

Relinquished by: Kiff Analytical	Date 11/04/10	Time 1900	Received by:	
Relinquished by:	Date	Time	Received by:	
Relinquished by: ONTRAC	Date 11/5/10	Time 1000	Received by Laboratory:	

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

0494

Test Detail for Kiff Work Order: 75226

Alkalinity SM 2320 (1)
Alkalinity, Total (as CaCO3)

Hydrocarbons in Water by RSK 175 (1)
Methane

0494

OnTrac
On Time Delivery For Less

800.334.5000
ontrac.com

D10010328782762

Date Printed 11/4/2010

Tracking#D10010328782762

Shipped From:
KIFF ANALYTICAL
2795 2ND STREET 300
DAVIS, CA 95616

Sent By: SAMPLE RECEIVING
Phone#: (530)297-4800
wgt(lbs): 1
Reference: SUB
Reference 2:

Ship To Company:	*Service:* **S**
CALSCIENCE ENVIRONMENTAL **7440 LINCOLN WAY** **GARDEN GROVE, CA 92841** **RECEIVING (714)895-5494** **B10207210772**	*Sort Code:* **ORG** *Special Services:* **Signature Required**

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 10-11-0494

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: KIFF ANALYTICAL DATE: 11/05/10

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 2.6 °C + 0.5 °C (CF) = 3.1 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: WB

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: WB

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: FS

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☐	☐	☑
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Residual Chlorine / Dissolved Sulfide received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☑	☐	☐
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☑8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☑VOA**h** (2) ☐VOA**na₂** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na₂** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☑250CGB**s** (2) ☐1PB ☐500PB ☐500PB**na**

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na₂** ☑250 RJ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** RJ

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** WSC

Preservative: **h:** HCL **n:** HNO_3 **na₂:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **znna:** $ZnAc_2$+NaOH **f:** Field-filtered **Scanned by:** WSC

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. 18464

2. Page 1 of 1

3. Generator's Name and Mailing Address
Tesoro Environmental Resource Company
3450 S. 344th Way Suite 201
Auburn, WA 98001

4. Generator's Phone ( )

Tesoro Livermore

5. Transporter 1 Company Name
EXCEL Environmental

6. US EPA ID Number
CAL000209350

A. State Transporter's ID

B. Transporter 1 Phone 800-376-6008

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
R.O.T.
5300 Claus Rd
Riverbank, CA 95367

10. US EPA ID Number
CAL000170816

E. State Facility's ID

F. Facility's Phone 209-863-8151

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS Waste Water	1	TT	400	G
b.				
c.				
d.				

GENERATOR

G. Additional Descriptions for Materials Listed Above
Waste Water

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Gloves ERG 171

NON-HAZARDOUS WASTE

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	Signature	Date Month	Day	Year
Peter Arroyo		11	4	10

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Jim Light		11	4	10

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

FACILITY

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

Rev. 3/95