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8:52 am, Feb 22, 2010

Alameda County
Environmental Health

19 February 2010
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 2009 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 Companies, Inc. (Tesoro), has prepared this letter report summarizing project tasks completed during the fourth quarter 2009 at the subject site (Figure 1).

Executive Summary

Arctos conducted semiannual groundwater monitoring at the site on 8, 9, and 17 December 2009. There was an average 12-foot increase in water levels since the third quarter 2009. Third quarter 2009 groundwater elevations were at historical lows since monitoring began at onsite wells in 1993. Due to the significant increase in water levels, 20 of the 22 wells had sufficient water for groundwater monitoring.

Arctos installed three downgradient deep monitoring wells in November 2009 in accordance with a work plan dated 19 May 2009 and approved in a 23 July 2009 letter from Alameda County Environmental Health (ACEH). Baseline sampling of the deep monitoring wells occurred during the semiannual monitoring event in December 2009.

Arctos received conditional approval from the City of Livermore Planning Department on 14 December 2009 for the installation of a source area remediation system. Arctos also received a construction permit from the City of Livermore Building Department on 23 December 2009. Construction of the remediation system is scheduled to begin during the first quarter 2010.

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Site Background

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

Field Activities

Arctos's subcontractor, Environmental Field Services, LLC (EFS), of Patterson, California, performed groundwater monitoring on 8, 9, and 17 December 2009. 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 samples were analyzed in accordance with the analytical plan in Attachment A.

Groundwater Results

Groundwater elevations were approximately 426 to 434 feet above mean sea level (39 to 44 feet below ground surface). Water levels increased an average of 12 feet compared to the August 2009 event (Table 1). During the fourth quarter, 20 of the 22 monitoring wells had sufficient water for groundwater monitoring. The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.016 (1 foot/63 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment C).

The highest total petroleum hydrocarbons as gasoline (TPHg) and benzene concentrations of 100,000 and 6,100 micrograms per liter (µg/l), respectively, were at well MW-11, which is located just west of the underground storage tanks (USTs). The highest methyl tert-butyl ether (MTBE) concentration of 13,000 µg/l was at well TP-2, which is located in the northwest corner of the station downgradient of the dispensers. TPHg and MTBE results in wells MW-11 and TP-2, respectively, further indicate separate releases from the USTs and the dispenser islands. Both wells will be used in the remediation system as SVE wells during periods of low water levels. Well MW-11 was installed on 11 November 2008; however, the fourth quarter 2009 was the first time sufficient water was present for sampling. TPHg and benzene concentrations at well MW-11 are consistent with concentrations reported in November 2008 at injection points IP-8 and IP-9, which are

located within 10 feet of well MW-11 with well screens installed 17 feet below the total depth of well MW-11. Groundwater analytical results are summarized in Table 2.

Elevated TPHg, benzene, and MTBE concentrations in groundwater (15,000, 2,100 and 340 µg/l, respectively) were also present approximately 150 feet downgradient of the site at well MW-6. Figures 3, 4, and 5 show the isoconcentration contours for TPHg, benzene, and MTBE, respectively. Historical analytical results are in Attachment D, and the laboratory report and the chain-of-custody form are in Attachment E.

Remediation System

Source area concentrations indicate that onsite groundwater remediation is required to decrease the mass flux from the source area. Arctos received conditional approval from the City of Livermore Planning Department on 14 December 2009 for the installation of a source area remediation system (Attachment F). Arctos also received a construction permit from the City of Livermore Building Department on 23 December 2009. Cornerstone Environmental Contractors, Inc., of Lafayette, California has been selected by Tesoro to construct the remediation system. System construction will be conducted in two phases, (1) trenching, piping, and wellhead construction, and (2) equipment area construction including SVE and oxygen injection equipment installation and sound barrier wall installation. The construction will occur in two phases so that noise readings can be collected from the equipment after the first phase to assist in the sound barrier wall final design. The first phase of the construction is scheduled to begin during the first quarter 2010.

Well Installation

Arctos installed three deep offsite monitoring wells during the fourth quarter 2009 as described in the work plan dated 19 May 2009 and approved in a 23 July 2009 letter from ACEH. The objective of the three downgradient deep monitoring wells is to assess the downgradient lateral and vertical extent of impacted groundwater. The completed scope of work included the following tasks:

- Obtained permits from Zone 7 Water Agency for the well installation
- Installed three deep offsite monitoring wells, designated as DW-5 to DW-7 (Figure 2)
- Developed the three deep monitoring wells.

Well Installation

Gregg Drilling & Testing, Inc. (Gregg Drilling), of Martinez, California, drilled three soil borings for deep monitoring wells on 23 to 25 November 2009 using a hollow-stem auger

rig. Soil samples were collected at 5 feet below grade and 5-foot intervals thereafter for visual logging and vapor screening.

The deep monitoring wells were designed to monitor the water quality in the lower zones of the aquifer (beneath the existing monitoring well screen intervals and above the regional aquitard). The deep monitoring wells were constructed using 4-inch-diameter, flush-threaded Schedule 40 polyvinyl chloride (PVC) casing. Wells DW-5 and DW-6 were screened from 50 to 60 feet below grade using 0.020-inch slotted screen. Well DW-7 was screened from 55 to 65 feet below grade using 0.020-inch slotted screen. The boring and well construction logs are in Attachment G. Drilling and well installation QA/QC procedures are in Attachment H.

Well Development
Gregg Drilling developed wells DW-5 to DW-7 on 30 November 2009 by surging, bailing, and pumping to (1) remove fines from the filter pack and well screen and (2) reduce sediment in the water. A minimum of 10 casing volumes of water was removed from each well. The well development logs are in Attachment I.

Baseline Sampling
Arctos's subcontractor, EFS, performed baseline sampling of deep monitoring wells DW-5 to DW-7 on 9 December 2009. These wells will be monitored quarterly for the first year to evaluate concentration trends. Groundwater sampling QA/QC procedures and the analytical plan are in Attachment A. Field data sheets are in Attachment B.

Well DW-5 contained the highest TPHg concentration of 15,000 µg/l, and well DW-7 contained the highest benzene and MTBE concentrations of 500 and 160 µg/l, respectively, in the new deep wells. The results suggest additional monitoring is required at well DW-7 to conduct trend analysis and determine if additional downgradient delineation is required. Groundwater analytical results are summarized in Table 3 and are shown on Figures 3, 4, and 5. The laboratory report and the chain-of-custody form are in Attachment E.

Conclusions

Results of the groundwater sampling indicate the following conclusions:

1. Onsite groundwater remediation is required to decrease the mass flux from the source area.

2. An additional deep monitoring well may be required north of deep monitoring well DW-7 to delineate the downgradient extent of impacted groundwater if initial results are confirmed in the first quarter 2010.

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 2010:

- Begin construction of the source area remediation system
- Conduct quarterly sampling at the new deep wells DW-5 to DW-7 to confirm initial concentrations and collect data for trend analyses.

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
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
Attachment A – Groundwater Sampling QA/QC Procedures
Attachment B – Field Data Sheets
Attachment C – Historical Well and Groundwater Elevations
Attachment D – Historical Groundwater Analytical Results
Attachment E – Laboratory Analytical Reports and Chain-of-Custody Forms
Attachment F – City of Livermore Conditions of Approval
Attachment G – Boring and Well Construction Logs
Attachment H – Drilling and Well Installation QA/QC Procedures
Attachment I – Well Development Logs
Attachment J – 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	2/11/09	48.69	474.29	425.60
	4/27/09	41.90		432.39
	8/4/09	51.44		422.85
	12/8/09	39.87		434.42
MW-2	2/11/09	48.90	472.98	424.08
	4/27/09	42.62		430.36
	8/4/09	51.83		421.15
	12/8/09	40.82		432.16
MW-3	2/11/09	47.81	473.37	425.56
	4/27/09	41.18		432.19
	8/4/09	51.89		421.48
	12/8/09	39.50		433.87
MW-4	2/11/09	DRY[(c)]	473.64	--
	4/27/09	40.64		433.00
	8/4/09	DRY		--
	12/8/09	39.46		434.18
MW-5	2/11/09	DRY	472.67	--
	4/27/09	42.50		430.17
	8/4/09	DRY		--
	12/8/09	39.92		432.75
MW-6	2/11/09	DRY	471.93	--
	4/27/09	44.87		427.06
	8/4/09	DRY		--
	12/8/09	43.02		428.91
MW-7	2/11/09	DRY	472.33	--
	4/27/09	41.80		430.53
	8/4/09	DRY		--
	12/17/09	39.26		433.07
MW-8	2/11/09	DRY	471.18	--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	39.92		431.26

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-9	2/11/09	DRY	470.78	--
	4/27/09	43.79		426.99
	8/4/09	DRY		--
	12/8/09	43.61		427.17
MW-10	2/11/09	DRY	471.63	--
	4/27/09	DRY		--
	8/4/09	44.52		427.11
	12/8/09	42.80		428.83
MW-11	2/11/09	DRY	473.26	--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	40.25		433.01
VW-2	2/11/09	DRY	473.28	--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
VW-3	2/11/09	DRY	474.38	--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
TP-1	2/11/09	DRY	472.82	--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	41.43		431.39
TP-2	2/11/09	DRY	472.93	--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	40.08		432.85
DW-1	2/11/09	48.28	472.85	424.57
	4/27/09	41.74		431.11
	8/4/09	52.22		420.63
	12/8/09	39.79		433.06

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-2	2/11/09	51.50	471.61	420.11
	4/27/09	44.71		426.90
	8/4/09	54.67		416.94
	12/8/09	42.88		428.73
DW-3	2/11/09	51.96	470.33	418.37
	4/27/09	45.17		425.16
	8/4/09	56.32		414.01
	12/8/09	42.92		427.41
DW-4	2/11/09	51.71	468.48	416.77
	4/27/09	45.10		423.38
	8/4/09	56.46		412.02
	12/8/09	42.26		426.22
DW-5	12/8/09	43.05	471.86	428.81
DW-6	12/8/09	43.50	471.77	428.27
DW-7	12/8/09	43.01	470.07	427.06

(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) Potentiometric Surface Elevation = (Casing Elevation - Depth to Water)

(c) 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] (ug/l)	Benzene[a] (ug/l)	Toluene[a] (ug/l)	Ethylbenzene[a] (ug/l)	Total Xylenes[a] (ug/l)	MTBE[a] (ug/l)	DIPE[a] (ug/l)	ETBE[a] (ug/l)	TAME[a] (ug/l)	TBA[a] (ug/l)	Methanol[a] (ug/l)	Ethanol[a] (ug/l)	1,2-DCA[a] (ug/l)	EDB[a] (ug/l)
MW-1	2/11/09	2,100	4.1	8.1	18	36	ND<0.5[b]	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	4/27/09	2,800	9.9	34	94	170	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/09	890	ND<0.5	ND<0.5	1.7	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	12/8/09	3,200	16	18	81	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80[c]	ND<20[d]	ND<0.5	ND<0.5
MW-2	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<1000	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
MW-3	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
MW-4	2/11/09	NS[e]	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
MW-5	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
MW-6	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<1000	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[c]	ND<50	ND<5	ND<5
MW-7	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

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[a] (ug/l)	Benzene[a] (ug/l)	Toluene[a] (ug/l)	Ethylbenzene[a] (ug/l)	Total Xylenes[a] (ug/l)	MTBE[a] (ug/l)	DIPE[a] (ug/l)	ETBE[a] (ug/l)	TAME[a] (ug/l)	TBA[a] (ug/l)	Methanol[a] (ug/l)	Ethanol[a] (ug/l)	1,2-DCA[a] (ug/l)	EDB[a] (ug/l)
MW-7	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
MW-8	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
MW-9	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
MW-10	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
MW-11	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[c]	ND<20[d]	ND<0.5	ND<0.5
VW-2	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
VW-3	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

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

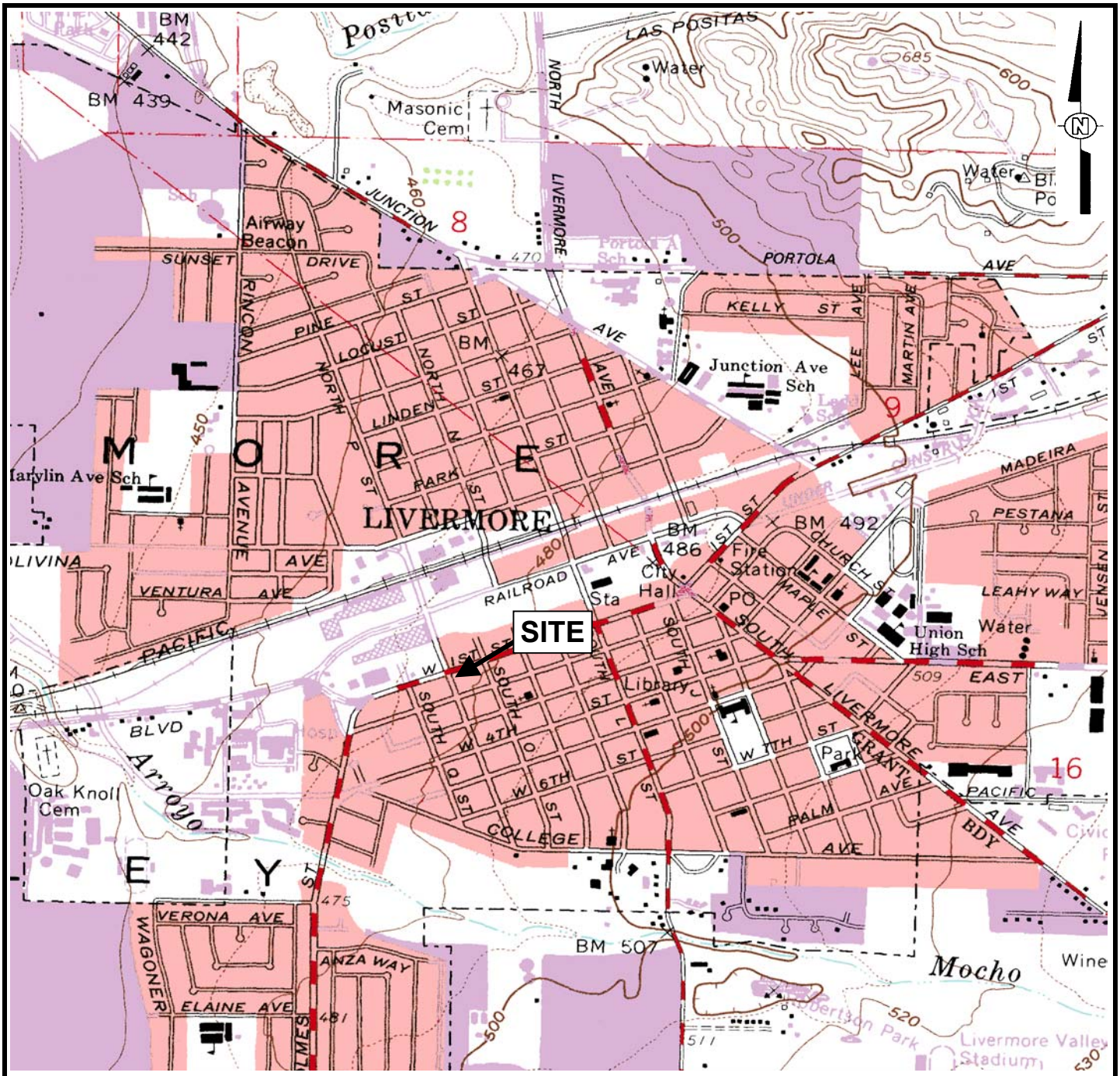
Monitoring Well	Sample Date	TPHg[(a)] (ug/l)	Benzene[(a)] (ug/l)	Toluene[(a)] (ug/l)	Ethylbenzene[(a)] (ug/l)	Total Xylenes[(a)] (ug/l)	MTBE[(a)] (ug/l)	DIPE[(a)] (ug/l)	ETBE[(a)] (ug/l)	TAME[(a)] (ug/l)	TBA[(a)] (ug/l)	Methanol[(a)] (ug/l)	Ethanol[(a)] (ug/l)	1,2-DCA[(a)] (ug/l)	EDB[(a)] (ug/l)
TP-1	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
TP-2	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
DW-1	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
DW-2	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[(c)]	ND<9	ND<0.9	ND<0.9
DW-3	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[(c)]	ND<20[(d)]	ND<0.5	ND<0.5
DW-4	2/11/09	ND<50	0.68	ND<0.5	1.4	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	0.5	ND<0.5	1.1	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/5/09	52	1.7	ND<0.5	1.4	0.83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/9/09	ND<50	3.0	ND<0.5	2.0	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (ug/l)	Benzene[(a)] (ug/l)	Toluene[(a)] (ug/l)	Ethylbenzene[(a)] (ug/l)	Total Xylenes[(a)] (ug/l)	MTBE[(a)] (ug/l)	DIPE[(a)] (ug/l)	ETBE[(a)] (ug/l)	TAME[(a)] (ug/l)	TBA[(a)] (ug/l)	Methanol[(a)] (ug/l)	Ethanol[(a)] (ug/l)	1,2-DCA[(a)] (ug/l)	EDB[(a)] (ug/l)
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
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
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

(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), 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) Method reporting limit for methanol was increased due to the presence of an interferring compound.
(d) Method reporting limit for ethanol was increased due to the presence of an interferring compound.
(e) NS - Not sampled.



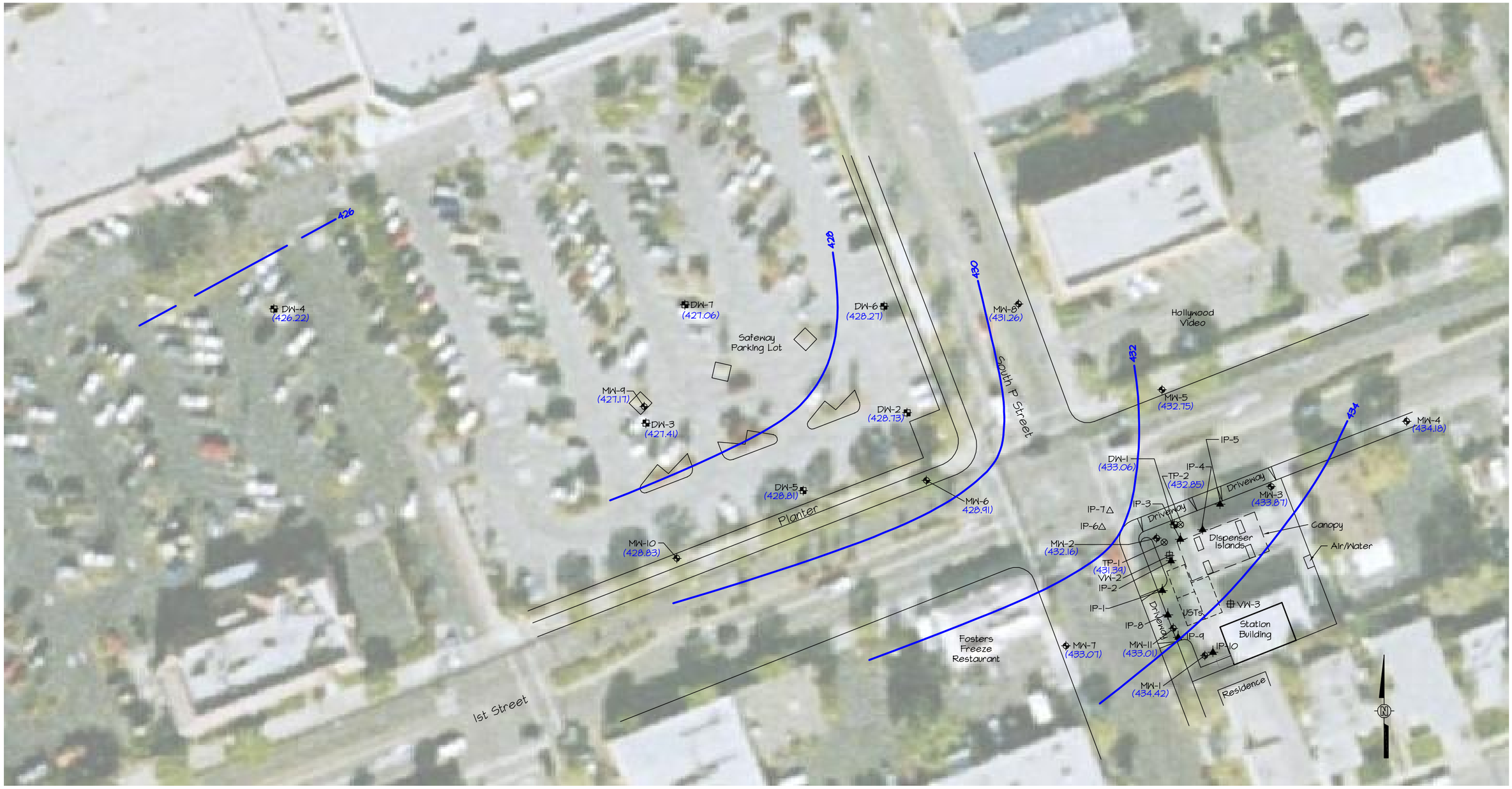
SCALE

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 8 and 17 December 2009

DW-1 ⊞ Deep Groundwater Monitoring Well with Groundwater Elevation (Feet, MSL) Measured 8 and 17 December 2009

IP-1 ▲ Injection Well

IP-6 △ Angled Injection Well Screen Location

VW-2 ⊞ Vapor Extraction Well

TP-2 ⊗ Temporary Monitoring Well

434 Goundwater Elevation Contour

0 30' 60'
SCALE

REVISION 6

NO.	BY	DATE	DESCRIPTION
1	MY	10/31/08	Third Quarter 2008 Monitoring Report
2	MY	1/30/09	Fourth Quarter 2008 Monitoring Report
3	MY	4/30/09	First Quarter 2009 Monitoring Report
4	MY	8/19/09	Second Quarter 2009 Monitoring Report
5	MY	11/19/09	Third Quarter 2009 Monitoring Report
6	MY	2/19/10	Fourth Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

GROUNDWATER ELEVATION CONTOURS

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

FILE NO. 01LV11B-20406.DWG

FIGURE 2

2/11/2010 6:08AM 01LV11B-20406.dwg

Legend

- MW-7 ⊕ Groundwater Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
- DW-1 ⊞ Deep Groundwater Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 TPHg Results in µg/L
- IP-1 ▲ Injection Well
- IP-6 △ Angled Injection Well Screen Location
- VW-2 ⊞ Vapor Extraction Well with 4 to 5 August and 8, 9, and 17 December 2009 TPHg Results in µg/L
- TP-2 ⊗ Temporary Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 TPHg Results in µg/L
- 1000 TPHg Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (890/3,200) Previous Quarter/Current Quarter TPHg Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
6	2	MY	1/30/09	Fourth Quarter 2008 Monitoring Report
	3	MY	4/30/09	First Quarter 2009 Monitoring Report
	4	MY	8/19/09	Second Quarter 2009 Monitoring Report
	5	MY	11/19/09	Third Quarter 2009 Monitoring Report
	6	MY	2/19/10	Fourth Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

TPHg CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20506.DWG

FIGURE 3

2/10/2010 3:55PM 01LV11B-20506.dwg

Legend

- MW-7 ⊕ Groundwater Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 Benzene Results in µg/L
- DW-1 ⊕ Deep Groundwater Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 Benzene Results in µg/L
- IP-1 ▲ Injection Well
- IP-6 △ Angled Injection Well Screen Location
- VW-2 ⊞ Vapor Extraction Well with 4 to 5 August and 8, 9, and 17 December 2009 Benzene Results in µg/L
- TP-2 ⊗ Temporary Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 Benzene Results in µg/L
- 1,000 Benzene Concentration Contour (µg/L), Queried Where Uncertain
- ND Not Detected
- NS Not Sampled
- (ND<0.5/16) Previous Quarter/Current Quarter Benzene Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
6	2	MY	1/30/09	Fourth Quarter 2008 Monitoring Report
	3	MY	4/30/09	First Quarter 2009 Monitoring Report
	4	MY	8/19/09	Second Quarter 2009 Monitoring Report
	5	MY	11/19/09	Third Quarter 2009 Monitoring Report
	6	MY	2/19/10	Fourth Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

BENZENE CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20606.DWG

FIGURE 4

01LV11B-20606.dwg 2/10/2010 3:34PM

DW-4
(ND<0.5/ND<0.5)

DW-7
(NS/160)

DW-6
(NS/4.7)

MW-8
(NS/ND<0.5)

Hollywood
Video

Safeway
Parking Lot

100

South P Street

MW-9
(ND<0.5/1.4)

DW-3
(18/ND<0.5)

DW-2
(200/210)

MW-5
(NS/ND<0.5)

TP-2
(NS/13,000)

MW-4
(NS/ND<0.5)

DW-1
(220/140)

IP-5

DW-5
(NS/ND<2.5)

MW-6
(NS/340)

Driveway

MW-3
(ND<0.5/0.82)

IP-7

IP-6

1,000

Driveway

IP-4

Canopy

Air/Water

Dispenser
Islands

MW-2
(1,400/520)

TP-1
(NS/1,000)

IP-3

Planter

MW-10
(NS/ND<0.5)

VW-2
(NS/NS)

VW-3
(NS/NS)

IP-2

USTs

Driveway

Fosters
Freeze
Restaurant

IP-1

Station
Building

MW-7
(NS/ND<0.5)

IP-8

IP-10

MW-11
(NS/3.3)

MW-1
(ND<0.5/ND<0.5)

Residence

IP-9

1st Street

N

Legend

MW-7 ⊕ Groundwater Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 Methyl Tert-Butyl Ether (MTBE) Results in µg/L

DW-1 ⊞ Deep Groundwater Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 MTBE Results in µg/L

IP-1 ▲ Injection Well

IP-6 △ Angled Injection Well Screen Location

VW-2 ⊞ Vapor Extraction Well with 4 to 5 August and 8, 9, and 17 December 2009 MTBE Results in µg/L

TP-2 ⊗ Temporary Monitoring Well with 4 to 5 August and 8, 9, and 17 December 2009 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
6	2	MY	1/30/09	Fourth Quarter 2008 Monitoring Report
	3	MY	4/30/09	First Quarter 2009 Monitoring Report
	4	MY	8/19/09	Second Quarter 2009 Monitoring Report
	5	MY	11/19/09	Third Quarter 2009 Monitoring Report
	6	MY	2/19/10	Fourth Quarter 2009 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

MTBE CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20706.DWG

FIGURE 5

2/10/2010 4:32PM 01LV11B-20706.dwg

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 ACEH's 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 and MW-3	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, MW-11, 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 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 J.

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: 12/8/09 Project Name: Tesoro - Livermore #67076 Project Number: 01LV

Technician: P.Arroyo/ C. Young Location: Walnut Creek, CA Global ID : T0600101410

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
MW-1	4"	54.55	-	39.87	-	
MW-2	4"	54.1	-	40.82	-	
MW-3	4"	52.9	-	39.5	-	
MW-4	2"	46.8	-	39.46	-	
MW-5	2"	46.27	-	39.92	-	
MW-6	2"	47.65	-	43.02	-	
MW-7	2"	46.8	-	39.26	-	
MW-8	2"	44.5	-	39.92	-	
MW-9	2"	44.58	-	43.61	-	
MW-10	2"	45.1	-	42.8	-	
MW-11	4"	42.85	-	40.25	-	
DW-1	4"	64.75	-	39.79	-	
DW-2	4"	59.84	-	42.88	-	
DW-3	4"	59.74	-	42.92	-	
DW-4	4"	70.04	-	42.26	-	
DW-5	4"	59.8	-	43.05	-	
DW-6	4"	60.15	-	43.5	-	
DW-7	2"	65.2	-	43.01	-	
TP-1	2"	43.22	-	41.43	-	
TP-2	2"	41.21	-	40.08	-	
VW-2	2"	36.78	-	36.35	-	not sampled
VW-3	2"	36.34	-	36.32	-	not sampled

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/8/09
Well Number:	MW-1	**Well Integrity:**	Good
Technician:	C. Young / D. Vargas	**Ambient Conditions:**	Sunny / Cold

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-	=		X	0.17	=			
3		-	=		X	0.38	=			
4		54.55	- 39.87	=	14.68	X	0.66	=		9.69
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.	1227	812	406	-200.6	21.9	7.52	62.91
1	10	1237	776	385	-180.1	19.3	7.4	65.75
2	20	1242	792	396	-174.3	18.9	7.41	66.81
3	30	1250	827	413	-164.7	15.9	7.39	65.88
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.87	
(P) After Purging	54.55	
P- 0.8(P-I) =	42.81	80% Recovery
(S) Before Sampling	42.81	
(P-S) / (P-) X 100 =	80	% Total Recovery

Sample Containers:

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

Sample Date : 12/8/09 **Time:** 14:02 **Turbidity (NTU):** 130.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/8/09
Well Number:	MW-2	**Well Integrity:**	Good
Technician:	C. Young / D. Vargas	**Ambient Conditions:**	Sunny / Cold

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2	-		=		X		0.17		=	
3	-		=		X		0.38		=	
4	54.10	-	40.82	=	13.28	X	0.66			8.76
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.	1119	1082	541	-140.3	3.1	6.95	66.44
1	9	1125	1042	520	-188.6	5.7	6.98	68.07
2	18	1131	1002	499	-217.4	2.3	7.04	68.1
3	27	1139	956	478	-217.7	9	7.1	67.54
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.82	
(P) After Purging	48.16	
P- 0.8(P-I) =	42.29	80% Recovery
(S) Before Sampling	42.29	
(P-S) / (P-) X 100 =	80	% Total Recovery

Sample Containers:

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

Sample Date : 12/8/09 **Time:** 12:12 **Turbidity (NTU):** 117.9

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/8/09
Well Number:	MW-3	**Well Integrity:**	Good
Technician:	C. Young / D. Vargas	**Ambient Conditions:**	Cloudy / Cold

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-	=		X	0.17	=			
3		-	=		X	0.38	=			
4		52.90	- 39.50	=		13.40	X	0.66	=	8.84
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.	1419	884	442	-11.3	21	7.65	56.67
1	9	1423	842	421	-23.5	22.3	7.6	66.87
2	18	1428	846	422	-23.3	18.9	7.54	67.56
3	27	1433	862	431	-16.7	20.7	7.55	67.21
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.5	
(P) After Purging	45.09	
P- 0.8(P-I) =	40.62	80% Recovery
(S) Before Sampling	39.5	
(P-S) / (P-) X 100 =	100	% Total Recovery

Sample Containers:

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

Sample Date : 12/8/09 **Time:** 14:45 **Turbidity (NTU):** 76.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/8/09
Well Number:	MW-4	**Well Integrity:**	Good
Technician:	C. Young / D. Vargas	**Ambient Conditions:**	Cloudy / Cold

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	46.80	-	39.46	=	7.34	X 0.17	1.24
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.	1455	960	481	-81.4	31.8	7.59	66.82
1	1.5	1457	994	496	-57.6	21.9	7.53	67.77
2	3	1501	979	490	-27.5	19.8	7.6	66.73
3	4.5	1504	963	482	-26.2	12.4	7.58	66.52
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.46	
(P) After Purging	44.62	
P- 0.8(P-I) =	40.49	80% Recovery
(S) Before Sampling	41.65	
(P-S) / (P-) X 100 =		% Total Recovery

Sample Containers:

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

Sample Date : 12/8/09 **Time:** 17:00 **Turbidity (NTU):** 81.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments: well did not recover to 80% in 2 hours.

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	MW-5	**Well Integrity:**	Good
Technician:	C. Young / D. Vargas	**Ambient Conditions:**	Sunny / Cold

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-	39.92=	6.35X	0.17	1.07
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.	1357	1109	555	-130.9	15.1	8.15	65.98
1	1.5	1402	1137	568	-99.8	16.1	7.75	66.48
2	3	1406	1176	588	-98.3	16.2	7.67	65.25
3	4.5	1410	1181	590	-116.5	9.1	7.63	66.12
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.92	
(P) After Purging	44.13	
P- 0.8(P-I) =	40.76	80% Recovery
(S) Before Sampling	40.76	
(P-S) / (P-) X 100 =	80	% Total Recovery

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 14:28 **Turbidity (NTU):** 157

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	MW-6	**Well Integrity:**	Good
Technician:	C. Young / D. Vargas	**Ambient Conditions:**	Sunny / Cold

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-	43.02=	4.63X	0.17	0.78
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.	832	1111	556	-130.1	44.9	7.39	66.44
1	1	837	1154	577	-135.8	14.1	7.36	67.37
2	2	840	1182	591	-129.3	13.8	7.38	66.01
3	3	843	1151	575	-126.6	10.8	7.39	67.43
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.02	
(P) After Purging	43.62	
P- 0.8(P-I) =	43.14	80% Recovery
(S) Before Sampling	43.02	
(P-S) / (P-) X 100 =	100	% Total Recovery

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 9:05 **Turbidity (NTU):** 62.4

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/17/09
Well Number:	MW-7	**Well Integrity:**	Good
Technician:	S. Wells / P.Arroyo	**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	46.80-	39.24=	7.54X	0.17	1.28
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:** SLIGHT

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.	1055	1084	542	-157.1	7.6	7.71	69.02
1	1.5	1102	1122	561	-187	0	7.49	69.23
2	3	1107	1078	539	-193.1	0	7.55	69.43
3	4.5	1113	1048	524	-193.6	3.5	7.64	69.38
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)		
(I) Initially	39.26		
(P) After Purging	42.55		
P- 0.8(P-I) =	39.92	80% Recovery	
(S) Before Sampling	39.92		
(P-S) / (P-) X 100 =	80	% Total Recovery	

Sample Containers:

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

Sample Date : 12/17/09 **Time:** 11:20 **Turbidity (NTU):** 43

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/17/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/17/09
Well Number:	MW-8	**Well Integrity:**	Good
Technician:	S. Wells / P.Arroyo	**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	44.50-	39.92=	4.58X	0.17	0.77
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:** SLIGHT

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.	1130	995	498	-93.1	12.7	7.57	68.72
1	1	1134	1053	513	-99.7	13.5	7.63	68.79
2	2	1139	1019	487	-93.8	7	7.51	68.71
3	3	1143	1013	483	-92.7	4.3	7.48	68.73
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.92	
(P) After Purging	44.1	
P- 0.8(P-I) =	40.76	80% Recovery
(S) Before Sampling	40.76	
(P-S) / (P-) X 100 =	80	% Total Recovery

Sample Containers:

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

Sample Date : 12/17/09 **Time:** 11:50 **Turbidity (NTU):** 43.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/17/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	MW-9	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Sunny / Cold

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	-	43.61	=	0.97	X 0.17	0.16
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.	1037	1022	512	-153.2	22.1	8.13	61.35
1	0.5	1042	1161	583	-143.8	24.4	7.92	54.68
2	1	1046	1189	579	-161.3	23.1	7.86	55.73
3	1.5							
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.61	
(P) After Purging	44.58	
P- 0.8(P-I) =	43.8	80% Recovery
(S) Before Sampling	43.8	
(P-S) / (P-) X 100 =	80	% Total Recovery

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 12:35 **Turbidity (NTU):** >1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments: well dry @ 1 Gallon

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	MW-10	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Sunny / Cold

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	45.10	-	42.80	=	2.30	X 0.17	0.39
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.	1154	1221	610	-50.3	33.7	8.32	65.75
1	0.5	1156	1250	625	58.4	28.7	8.15	66.58
2	1	1159	1250	625	69.7	14.2	8.09	64.9
3	1.5							
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)		
(I) Initially	42.8		
(P) After Purging	45.10 (dry)		
P- 0.8(P-I) =	43.26	80% Recovery	
(S) Before Sampling	43.26		
(P-S) / (P-) X 100 =	80	% Total Recovery	

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 13:45 **Turbidity (NTU):** 474

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments: well dry @ 1 Gallon

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/8/09
Well Number:	MW-11	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Cloudy / Cold

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2		-		=	X	0.17	=
3		-		=	X	0.38	=
4	42.85	-	40.25	=	2.60X	0.66	1.71
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.	1311	1682	841	-163.9	26.1	6.99	65.11
1	2	1314	1699	850	-106.6	36.2	7.13	64.05
2	4							
3	6							
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)		Sample Containers:	No.	Preservation
(I) Initially	40.25		250 ml polypropylene		
(P) After Purging	42.85		1 liter(L), amber glass		
P- 0.8(P-I) =	40.77	80% Recovery	40ml VOA	3	HCL
(S) Before Sampling	41.27		250 ml glass		
(P-S) / (P-) X 100 =		% Total Recovery	125 ml polypropylene		

Sample Date : 12/8/09 **Time:** 15:28 **Turbidity (NTU):** 537

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments: well dry @ 3 Gallons, well did not recover to 80% in 2 hours.

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/8/09
Well Number:	DW-1	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Sunny / Cold

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-	=		X	0.17	=			
3		-	=		X	0.38	=			
4		64.75	-	39.79	=	24.96	X	0.66	=	16.47
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.	1026	875	435	-44.4	15.1	7.16	59.29
1	16.5	1034	868	434	-35.4	5.1	7.31	66.48
2	33	1044	862	430	-76.3	6.4	7.45	67.06
3	49.5	1054	867	434	-109.2	6.3	7.48	66.52
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	39.79	
(P) After Purging	50.46	
P- 0.8(P-I) =	41.92	80% Recovery
(S) Before Sampling	41.92	
(P-S) / (P-) X 100 =	80	% Total Recovery

Sample Containers:

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

Sample Date : 12/8/09 **Time:** 11:55 **Turbidity (NTU):** 71.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	DW-2	**Well Integrity:**	Good
Technician:	*C. Young / P.Arroyo*	**Ambient Conditions:**	Sunny / Cold

Well Volume Calculation

Well Casing Diameter (in.)	Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (gal.)
2	-		=	X		0.17	=
3	-		=	X		0.38	=
4	**59.84**	**-**	**42.88**	**=**	**16.96**	**X 0.66**	**= 11.19**
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.	809	942	472	-187.7	30.7	7.42	56.82
1	11.5	815	960	480	-190.9	21	7.45	67.27
2	23	822	958	479	-186.3	33.6	7.51	67.07
3	34.5	828	951	476	-187.4	30.7	7.48	67.03
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)		
(I) Initially	42.88		
(P) After Purging	45.09		
P- 0.8(P-I) =	43.32	80% Recovery	
(S) Before Sampling	42.88		
(P-S) / (P-) X 100 =	100	% Total Recovery	

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 8:55 **Turbidity (NTU):** 33.4

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	DW-3	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Sunny / Cold

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**	-	**42.92**	=	**16.82**	X	**0.66**		**11.1**
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.	957	963	481	-216.3	39.1	8.78	64.53
1	11.5	1003	958	479	-214.8	24	8.27	69.26
2	23	1010	934	468	-197.2	38	8.16	69.14
3	34.5	1016	940	470	-189.5	40.5	8.08	69.08
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	42.92	
(P) After Purging	46.6	
P- 0.8(P-I) =	43.66	80% Recovery
(S) Before Sampling	43.66	
(P-S) / (P-) X 100 =	80	% Total Recovery

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 10:30 **Turbidity (NTU):** 40.5

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	DW-4	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Sunny / Cold

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	70.04	-	42.26	=	27.78	X 0.66	18.33
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.	1305	818	409	-82.4	18.6	8.39	65.35
1	18.5	1312	807	404	-71.9	13.3	7.99	68.39
2	37	1320	809	405	-55	13.4	7.9	69.26
3	55.5	1329	817	408	-69.2	8.6	7.85	69.74
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	42.26	
(P) After Purging	52.85	
P- 0.8(P-I) =	44.38	80% Recovery
(S) Before Sampling	44.38	
(P-S) / (P-) X 100 =	80	% Total Recovery

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 13:35 **Turbidity (NTU):** 17.2

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	DW-5	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Sunny / Cold

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	**59.80**	**-**	**43.05**	**=**	**16.75**	**X**	**0.66**	**=**	**11.05**
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.	744	1010	505	-108	86.6	7.33	53.86
1	11.5	752	921	460	-180.8	18.3	7.56	64.96
2	23	754	915	460	-182.9	42.9	7.62	66.75
3	34.5							
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.05	
(P) After Purging	59.80(dry)	
P- 0.8(P-I) =	46.4	80% Recovery
(S) Before Sampling	43.05	
(P-S) / (P-) X 100 =	100	% Total Recovery

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 8:45 **Turbidity (NTU):** 339

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments: well dry @ 14 gallons

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	DW-6	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Sunny / Cold

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-	=		X	0.17	=			
3		-	=		X	0.38	=			
4		**60.15**	**-**	**43.50**	**=**	**16.65**	**X**	**0.66**	=	**10.98**
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.	907	885	443	-168.1	39.7	8.53	64.51
1	11	918	907	454	-184.7	21.8	7.83	69.21
2	22	925	914	457	-184.9	22.2	7.78	69.04
3	33	931	922	461	-185.9	17.3	7.75	66.68
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.5	
(P) After Purging	45.11	
P- 0.8(P-I) =	43.82	80% Recovery
(S) Before Sampling	43.5	
(P-S) / (P-) X 100 =	100	% Total Recovery

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 9:45 **Turbidity (NTU):** 555

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/9/09
Well Number:	DW-7	**Well Integrity:**	Good
Technician:	C. Young / P.Arroyo	**Ambient Conditions:**	Sunny / Cold

Well Volume Calculation

Well Casing Diameter (in.)		Total Well Depth		Depth To Ground-water (GW)		Linear Feet of GW		Gallons Per Linear Foot		1 Well Volume (gal.)
2		-	=		X	0.17	=			
3		-	=		X	0.38	=			
4		**65.20**	-	**43.01**	=	**22.19**	X	0.66	=	**14.65**
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.	1209	1012	506	-105.3	28.1	7.72	62.04
1	15	1219	960	480	-158.4	20.9	7.64	69.55
2	30	1228	957	479	-156.8	17.9	7.68	69.61
3	45	1237	955	478	-162.7	12.6	7.62	69.85
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	43.01	
(P) After Purging	45.07	
P- 0.8(P-I) =	43.42	80% Recovery
(S) Before Sampling	43.01	
(P-S) / (P-) X 100 =	100	% Total Recovery

Sample Containers:

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

Sample Date : 12/9/09 **Time:** 12:50 **Turbidity (NTU):** 30.4

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/8/09

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/17/09
Well Number:	TP-1	**Well Integrity:**	Good
Technician:	S. Wells / P.Arroyo	***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-	41.43=	1.79X	0.17	0.3
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.	930	1192	596	-178.6	1.1	7.11	66.95
1	0.5	934	1187	571	-168.3	0	7.06	66.91
2	1							
3	1.5							
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)		**Sample Containers:**	No.	Preservation
(I) Initially	41.43		250 ml polypropylene		
(P) After Purging	43.22(dry)		1 liter(L), amber glass		
P- 0.8(P-I) =	41.79	80% Recovery	40ml VOA	3	HCL
(S) Before Sampling	42.35		250 ml glass		
(P-S) / (P-) X 100 =		% Total Recovery	125 ml polypropylene		

Sample Date : 12/17/09 **Time:** 10:20 **Turbidity (NTU):** 113

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/17/09

Comments: Well Dry @ .50 Gallons

Well Did Not Recover To 80%

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	12/17/09
Well Number:	TP-2	**Well Integrity:**	Good
Technician:	S. Wells / P.Arroyo	**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	41.21-	40.08=	1.13X	0.17	0.19
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.	910	1099	549	-159.9	1.1	7.19	66.72
1	0.25	914	1113	563	-161.7	0	7.31	66.74
2	0.5							
3	0.75							
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	40.08	
(P) After Purging	41.21(dry)	
P- 0.8(P-I) =	40.31	80% Recovery
(S) Before Sampling	40.59	
(P-S) / (P-) X 100 =		% Total Recovery

Sample Containers:

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

Sample Date : 12/17/09 **Time:** 10:45 **Turbidity (NTU):** 563

Sampling Equipment : Disposable Bailer

Calibrate Date: 12/17/09

Comments: Well Dry @ .25 Gallons

Well Did Not Recover To 80%

ATTACHMENT C

HISTORICAL WELL AND GROUNDWATER ELEVATIONS

TABLE C-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 C-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	12/31/00	31.71	474.29	442.58
(Cont)	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 C-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	10/13/08	51.00	474.29	423.29
(Cont)	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
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
	9/15/98	32.30		440.68
	11/30/98	36.90		436.08
	1/17/99	30.17		442.81
	6/10/99	29.98		443.00

TABLE C-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	9/7/99	31.85	472.98	441.13
(Cont)	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
	5/17/06	25.18		447.80
	8/9/06	32.69		440.29
	11/8/06	33.21		439.77
	2/14/07	31.27		441.71

TABLE C-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	5/17/07	34.40	472.98	438.58
(Cont)	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
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
	3/21/96	15.85		457.52
	6/13/96	21.31		452.06
	9/16/96	28.62		444.75
	12/2/96	25.55		447.82
	3/7/97	19.77		453.60
	6/12/97	27.67		445.70
	9/29/97	29.60		443.77
	12/1/97	33.37		440.00

TABLE C-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	3/19/98	18.76	473.37	454.61
(Cont)	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
	12/23/03	30.47		442.90
	3/23/04	26.67		446.70
	5/10/04	30.25		443.12
	8/4/04	34.70		438.67
	11/4/04	33.94		439.43
	1/12/05	28.21		445.16
	5/2/05	24.56		448.81
	7/19/05	29.39		443.98

TABLE C-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	11/21/05	31.30	473.37	442.07
(Cont)	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
MW-4	3/30/94	31.56	473.64	442.08
	4/25/94	32.73		440.91
	8/12/94	41.61		432.03
	12/14/94	38.11		435.53
	2/10/95	30.50		443.14
	6/15/95	23.63		450.01
	9/26/95	29.70		443.94
	12/15/95	27.56		446.08
	3/21/96	15.63		458.01
	6/13/96	21.07		452.57
	9/16/96	28.99		444.65
	12/2/96	26.04		447.60
	3/7/97	19.69		453.95
	6/12/97	28.04		445.60

TABLE C-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	9/29/97	29.91	473.64	443.73
(Cont)	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
	6/5/02	35.68		437.96
	8/21/02	36.58		437.06
	12/3/02	35.90		437.74
	3/4/03	32.73		440.91
	6/10/03	31.20		442.44
	9/9/03	34.64		439.00
	12/23/03	31.30		442.34
	3/23/04	26.71		446.93
	5/10/04	30.33		443.31
	8/4/04	34.87		438.77
	11/4/04	34.28		439.36
	1/12/05	28.67		444.97

TABLE C-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	5/2/05	24.46	473.64	449.18
(Cont)	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[c]		--
	2/14/08	34.53		439.11
	5/8/08	35.55		438.09
	7/23/08	43.87		429.77
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	40.64		433.00
	8/4/09	DRY		--
	12/8/09	39.46		434.18
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

TABLE C-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	3/7/97	21.91	472.67	450.76
(Cont)	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
	3/27/01	30.57		442.10
	6/30/01	37.24		435.43
	9/26/01	44.53		428.14
	12/18/01	40.65		432.02
	3/18/02	38.75		433.92
	6/5/02	36.21		436.46
	8/21/02	36.76		435.91
	12/3/02	36.12		436.55
	3/4/03	32.90		439.77
	6/10/03	33.04		439.63
	9/9/03	34.20		438.47
	12/23/03	31.38		441.29
	3/23/04	27.51		445.16
	5/10/04	31.12		441.55
	8/4/04	35.09		437.58
	11/4/04	34.34		438.33

TABLE C-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	1/12/05	29.19	472.67	443.48
(Cont)	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		--
	2/14/08	35.66		437.01
	5/8/08	36.60		436.07
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	42.50		430.17
	8/4/09	DRY		--
	12/8/09	39.92		432.75
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

TABLE C-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	12/2/96	27.42	471.93	444.51
(Cont)	3/7/97	22.13		449.80
	6/12/97	31.02		440.91
	9/29/97	35.77		436.16
	12/1/97	37.14		434.79
	3/19/98	21.10		450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	9/7/99	33.94		437.99
	12/13/99	35.84		436.09
	3/13/00	28.45		443.48
	6/12/00	30.52		441.41
	11/10/00	32.99		438.94
	12/31/00	34.95		436.98
	3/27/01	32.72		439.21
	6/30/01	39.86		432.07
	9/26/01	DRY		--
	12/18/01	43.36		428.57
	3/18/02	41.29		430.64
	6/5/02	38.85		433.08
	8/21/02	39.02		432.91
	12/3/02	38.76		433.17
	3/4/03	35.13		436.80
	6/10/03	34.15		437.78
	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

TABLE C-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	8/4/04	37.02	471.93	434.91
(Cont)	11/4/04	37.03		434.90
	1/12/05	32.01		439.92
	5/2/05	27.30		444.63
	7/19/05	32.27		439.66
	11/21/05	33.23		438.70
	2/9/06	29.07		442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	5/17/07	36.50		435.43
	8/2/07	42.24		429.69
	11/12/07	DRY		--
	2/14/08	38.67		433.26
	5/8/08	38.50		433.43
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	44.87		427.06
	8/4/09	DRY		--
	12/8/09	43.02		428.91
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

TABLE C-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	6/13/96	23.47	472.33	448.86
(Cont)	9/16/96	31.35		440.98
	12/2/96	27.11		445.22
	3/7/97	21.33		451.00
	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
	1/17/99	31.04		441.29
	6/10/99	29.89		442.44
	9/7/99	32.38		439.95
	12/13/99	33.98		438.35
	3/13/00	27.09		445.24
	6/12/00	28.76		443.57
	11/10/00	31.54		440.79
	12/31/00	32.76		439.57
	3/27/01	30.97		441.36
	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

TABLE C-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	3/23/04	26.41	472.33	445.92
(Cont)	5/10/04	29.86		442.47
	8/4/04	34.06		438.27
	11/4/04	34.12		438.21
	1/12/05	28.83		443.50
	5/2/05	24.66		447.67
	7/19/05	29.07		443.26
	11/21/05	30.42		441.91
	2/9/06	26.15		446.18
	5/16/06	24.44		447.89
	8/9/06	31.77		440.56
	11/8/06	31.14		441.19
	2/14/07	30.39		441.94
	5/17/07	33.31		439.02
	8/2/07	37.09		435.24
	11/12/07	DRY		--
	2/14/08	36.51		435.82
	5/8/08	36.00		436.33
	7/23/08	44.42		427.91
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	41.80		430.53
	8/4/09	DRY		--
	12/17/09	39.26		433.07
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

TABLE C-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	7/19/05	30.56	471.18	440.62
(Cont)	11/21/05	32.48		438.70
	2/9/06	27.40		443.78
	5/16/06	25.60		445.58
	8/9/06	32.77		438.41
	11/8/06	32.10		439.08
	2/14/07	30.94		440.24
	5/17/07	34.14		437.04
	8/2/07	41.24		429.94
	11/12/07	DRY		--
	2/14/08	35.55		435.63
	5/8/08	36.64		434.54
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	39.92		431.26
MW-9	12/23/03	34.03	470.78	436.75
	3/23/04	30.01		440.77
	5/10/04	33.61		437.17
	8/4/04	37.47		433.31
	11/4/04	37.44		433.34
	5/2/05	27.73		443.05
	7/19/05	32.90		437.88
	11/21/05	34.15		436.63
	2/9/06	29.44		441.34
	5/16/06	27.50		443.28
	8/9/06	35.85		434.93
	11/8/06	34.18		436.60
	2/14/07	34.00		436.78

TABLE C-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	5/17/07	36.88	470.78	433.90
(Cont)	8/2/07	44.11		426.67
	11/12/07	DRY		--
	2/14/08	39.32		431.46
	5/8/08	38.90		431.88
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	43.79		426.99
	8/4/09	DRY		--
	12/8/09	43.61		427.17
MW-10	12/23/03	33.80	471.63	437.83
	3/23/04	28.68		442.95
	5/10/04	32.15		439.48
	8/4/04	36.40		435.23
	11/4/04	36.21		435.42
	1/12/05	31.64		439.99
	5/2/05	27.01		444.62
	7/19/05	31.59		440.04
	11/21/05	32.96		438.67
	2/9/06	28.56		443.07
	5/16/06	26.83		444.80
	8/9/06	34.37		437.26
	11/8/06	33.41		438.22
	2/14/07	32.81		438.82
	5/17/07	35.85		435.78
	8/2/07	43.46		428.17
	11/12/07	DRY		--
	2/14/08	39.71		431.92
	5/8/08	37.55		434.08
	7/23/08	DRY		--

TABLE C-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	10/13/08	DRY	471.63	--
(Cont)	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	44.52		427.11
	12/8/09	42.80		428.83
MW-11	12/16/08	DRY	473.26	--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	40.25		433.01
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
	8/9/06	31.74		441.54
	11/8/06	33.52		439.76
	2/14/07	30.77		442.51
	5/17/07	33.17		440.11
	8/2/07	36.33		436.95
	11/12/07	DRY		--
	2/14/08	35.55		437.73
	5/8/08	35.31		437.97
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--

TABLE C-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	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
	8/2/07	35.55		438.83
	11/12/07	DRY		--
	2/14/08	DRY		--
	5/8/08	34.80		439.58
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
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

TABLE C-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	8/2/07	40.30	472.82	432.52
(Cont)	11/12/07	DRY		--
	2/14/08	36.17		436.65
	5/8/08	36.17		436.65
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	41.43		431.39
TP-2	7/19/05	29.67	472.93	443.26
	11/21/05	31.43		441.50
	2/9/06	27.27		445.66
	5/17/06	25.00		447.93
	8/9/06	31.74		441.19
	11/8/06	32.80		440.13
	2/14/07	30.32		442.61
	5/17/07	33.28		439.65
	8/2/07	39.35		433.58
	11/12/07	DRY		--
	2/14/08	35.62		437.31
	5/8/08	36.62		436.31
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	40.08		432.85
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

TABLE C-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	2/11/09	48.28	472.85	424.57
(Cont)	4/27/09	41.74		431.11
	8/4/09	52.22		420.63
	12/8/09	39.79		433.06
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
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
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
DW-5	12/8/09	43.05	471.86	428.81
DW-6	12/8/09	43.50	471.77	428.27
DW-7	12/8/09	43.01	470.07	427.06
MW-A	1/17/99	30.13	NM[(d)]	--
MW-B	1/17/99	30.29	NM	--
MW-C	1/17/99	30.60	NM	--

TABLE C-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	--
MW-E	1/17/99	31.36	NM	--
MW-W	1/17/99	30.91	NM	--

(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) Potentiometric Surface Elevation = (Casing Elevation - Depth to Water)

(c) Depth of groundwater assumed to be below screened interval; well had 6 inches or less of water.

(d) NM = Not measured.

ATTACHMENT D

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/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	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-1	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
(cont.)	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	0.8	0.7	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	0.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	2/11/09	2,100	4.1	8.1	18	36	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	4/27/09	2,800	9.9	34	94	170	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/09	890	ND<0.5	ND<0.5	1.7	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	12/8/09	3,200	16	18	81	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80[f]	ND<20[g]	ND<0.5	ND<0.5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-2	6/12/00	56,000	4,000	950	2,300	7,200	ND<50	--	--	--	--	--	--	--	--
(cont.)	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	1000	51	240	290	1,800	ND<5	ND<5	14	ND<50	ND<500	ND<50	ND<5	ND<5
	8/4/04	45,000	7,200	1,900	1,800	5,100	2,500	ND<25	ND<25	31	ND<250	ND<2,500	ND<250	ND<25	ND<25
	11/4/04	27,000	4,400	1,100	840	2,200	3,500	ND<9	ND<9	29	ND<50	ND<900	ND<90	ND<9	ND<9
	1/12/05	16,000	1,900	640	570	1,500	1,900	ND<4	ND<4	19	28[h]	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	1000	1,500	4,400	ND<7	ND<7	32	74[h]	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	1000	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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-2	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	--	--
(cont.)	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<1000	ND<50	ND<5	ND<5
	7/23/08	25,000	3,800	220	1,600	1000	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<1000	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
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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-3	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
(cont.)	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/08	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.83	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	57	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	61	ND<5	ND<0.5	ND<0.5
	2/11/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	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
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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-4	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
(cont.)	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	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
MW-5	3/30/94	7,500	1,300	20	ND<13	160	--	--	--	--	--	--	--	--	--
	4/25/94	6,500	1,100	41	130	740	--	--	--	--	--	--	--	--	--
	8/12/94	4,000	420	2.9	41	98	--	--	--	--	--	--	--	--	--
	12/14/94	4,800	660	ND<2.5	33	13	--	--	--	--	--	--	--	--	--
	2/10/95	5,200	490	ND<13	23	19	--	--	--	--	--	--	--	--	--
	6/15/95	460	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	1,400	61	ND<0.5	3.1	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	2,100	77	1.5	10	1.5	--	--	--	--	--	--	--	--	--
	3/21/96	930	35	2.0	2.0	18	--	--	--	--	--	--	--	--	--
	6/13/96	610	38	0.72	1.9	2.0	ND<5	--	--	--	--	--	--	--	--
	9/16/96	380	29	ND<0.5	0.95	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/2/96	200	1.1	0.64	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
	6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-5	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
(cont.)	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
	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

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-5	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
(cont.)	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	0.6	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
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	--	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-6	12/15/95	61,000	15,000	9,000	2,300	15,000	--	--	--	--	--	--	--	--	--
(cont.)	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	--	--	--	--	--	--	--	--
	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	1000	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-6	12/3/02	16,000	1,700	63	970	630	1,500	--	--	--	--	--	--	--	--
(cont.)	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	1000	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<1000	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<1000	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
	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<1000	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[f]	ND<50	ND<5	ND<5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-7	3/30/94	43,000	7,200	2,400	1,600	11,000	--	--	--	--	--	--	--	--	--
	4/25/94	30,000	3,900	1000	940	6,900	--	--	--	--	--	--	--	--	--
	8/12/94	30,000	3,800	1,400	1,300	7,500	--	--	--	--	--	--	--	--	--
	12/14/94	31,000	3,600	1,200	900	6,400	--	--	--	--	--	--	--	--	--
	2/10/95	27,000	4,000	900	890	5,100	--	--	--	--	--	--	--	--	--
	6/15/95	17,000	920	680	740	4,100	--	--	--	--	--	--	--	--	--
	9/26/95	7,000	200	150	170	810	--	--	--	--	--	--	--	--	--
	12/15/95	11,000	350	170	540	1,900	--	--	--	--	--	--	--	--	--
	3/21/96	12,000	320	100	730	2,500	--	--	--	--	--	--	--	--	--
	6/13/96	5,900	98	19	370	620	ND<50	--	--	--	--	--	--	--	--
	9/16/96	7,800	140	43	440	590	ND<25	--	--	--	--	--	--	--	--
	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	1000	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	--	--	--	--	--	--	--	--

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-7	6/30/01	2,800	10	1.7	75	170	ND<0.5	--	--	--	--	--	--	--	--
(cont.)	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	0.7	85	36	ND<0.5	--	--	--	--	--	--	--	--
	12/3/02	1,700	5.4	ND<0.5	15	5.5	ND<0.5	--	--	--	--	--	--	--	--
	3/4/03	440	1.8	ND<0.5	0.54	2.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/03	550	0.8	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	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 D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-7	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
(cont.)	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
	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
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 D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
MW-8	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
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	0.8	0.8	2.1	ND<0.5	ND<0.5	ND<0.5	5.9	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	760	8.5	ND<0.5	4.9	0.95	18	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	1,100	4.4	ND<0.5	1.3	0.67	11	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	1,200	3.4	0.59	16	7.6	6.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	610	0.52	ND<0.5	1.3	ND<0.5	2.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	1,400	1.6	0.55	5.5	1.1	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	1,500	10	0.55	6.7	1.1	27	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	1,800	5.5	0.69	12	1.6	10	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	1,200	0.94	ND<0.5	1.4	ND<0.5	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	1,200	2.8	0.51	6.4	0.84	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	1,600	3.8	0.57	12	1.8	4.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	760	ND<0.5	ND<0.5	1.0	ND<0.5	2.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	1,700	1.7	0.53	6.7	1.4	1.7	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	1000	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
	5/8/08	1,200	8.2	0.52	4.0	0.74	5.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
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[f]	ND<20[g]	ND<0.5	ND<0.5
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[h]	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[h]	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[h]	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
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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
VW-3	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
(cont.)	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
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	1000	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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/l)
DW-1	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
(cont.)	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
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[f]	ND<9	ND<0.9	ND<0.9
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[f]	ND<20[g]	ND<0.5	ND<0.5
DW-4	5/22/08	1,200	4.2	8.6	16	200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	91	0.79	ND<0.5	6.5	7.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	43	ND<0.5	ND<0.5
	2/11/09	ND<50	0.68	ND<0.5	1.4	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	0.5	ND<0.5	1.1	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/5/09	52	1.7	ND<0.5	1.4	0.83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/9/09	ND<50	3.0	ND<0.5	2.0	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
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
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
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

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (ug/l)	Benzene[b] (ug/l)	Toluene[b] (ug/l)	Ethylbenzene[b] (ug/l)	Total Xylenes[b] (ug/l)	MTBE[b] (ug/l)	DIPE[b] (ug/l)	ETBE[b] (ug/l)	TAME[b] (ug/l)	TBA[b] (ug/l)	Methanol[b] (ug/l)	Ethanol[b] (ug/l)	1,2-DCA[b] (ug/l)	EDB[b] (ug/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	NS	NS	NS	NS	NS	NS	NS	NS
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	NS	NS	NS	NS	NS	NS	NS	NS

(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 (ug/l).

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

(d) "-" Not analyzed.

(e) NS - Not sampled.

(f) Method reporting limit for methanol was increased due to the presence of an interferring compound.

(g) Method reporting limit for ethanol was increased due to the presence of an interferring compound.

(h) 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.

ATTACHMENT E

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

Mike Purchase
Arctos Environmental
1332 Peralta Avenue
Berkeley, CA 94702

Subject : 16 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Purchase,

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.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

Subject : 16 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Case Narrative

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for samples DW-1, MW-1, MW-11, MW-6, DW-2 and DW-3.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for samples DW-1, MW-1, MW-11, MW-3 and DW-3.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-5, MW-6, DW-3, and DW-6 for the analyte Methanol 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 : 71152
Date : 12/15/2009

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

Sample : **DW-1** Matrix : Water Lab Number : 71152-01
Sample Date :12/08/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**560**	1.5	ug/L	EPA 8260B	12/10/2009
Toluene	**63**	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**400**	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**490**	1.5	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**140**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**1.1**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**200**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 200**	200	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 8.0**	8.0	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**6200**	150	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	91.2		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	94.6		% Recovery	EPA 8260B	12/10/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **MW-2** Matrix : Water Lab Number : 71152-02
Sample Date :12/08/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**3100**	7.0	ug/L	EPA 8260B	12/11/2009
Toluene	**200**	7.0	ug/L	EPA 8260B	12/11/2009
Ethylbenzene	**1200**	7.0	ug/L	EPA 8260B	12/11/2009
Total Xylenes	**830**	7.0	ug/L	EPA 8260B	12/11/2009
Methyl-t-butyl ether (MTBE)	**520**	7.0	ug/L	EPA 8260B	12/11/2009
Diisopropyl ether (DIPE)	**< 7.0**	7.0	ug/L	EPA 8260B	12/11/2009
Ethyl-t-butyl ether (ETBE)	**< 7.0**	7.0	ug/L	EPA 8260B	12/11/2009
Tert-amyl methyl ether (TAME)	**8.0**	7.0	ug/L	EPA 8260B	12/11/2009
Tert-Butanol	**250**	40	ug/L	EPA 8260B	12/11/2009
Methanol	**< 700**	700	ug/L	EPA 8260B	12/11/2009
Ethanol	**< 70**	70	ug/L	EPA 8260B	12/11/2009
TPH as Gasoline	**24000**	700	ug/L	EPA 8260B	12/11/2009
1,2-Dichloroethane	**< 7.0**	7.0	ug/L	EPA 8260B	12/11/2009
1,2-Dibromoethane	**< 7.0**	7.0	ug/L	EPA 8260B	12/11/2009
1,2-Dichloroethane-d4 (Surr)	95.1		% Recovery	EPA 8260B	12/11/2009
Toluene - d8 (Surr)	95.4		% Recovery	EPA 8260B	12/11/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **MW-1** Matrix : Water Lab Number : 71152-03
Sample Date :12/08/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**16**	0.50	ug/L	EPA 8260B	12/10/2009
Toluene	**18**	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**81**	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**110**	0.50	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 80**	80	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 20**	20	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**3200**	50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	91.5		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	95.8		% Recovery	EPA 8260B	12/10/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **MW-11** Matrix : Water Lab Number : 71152-04
Sample Date :12/08/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**6100**	25	ug/L	EPA 8260B	12/10/2009
Toluene	**9000**	25	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**3100**	25	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**20000**	25	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**3.3**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**25**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 200**	200	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 20**	20	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**100000**	2500	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	82.7		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	85.8		% Recovery	EPA 8260B	12/10/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **MW-3** Matrix : Water Lab Number : 71152-05
Sample Date :12/08/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**3.6**	0.50	ug/L	EPA 8260B	12/10/2009
Toluene	**1.1**	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**2.4**	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**2.6**	0.50	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**0.82**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 50**	50	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**150**	50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	98.6		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	12/10/2009

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Report Number : 71152
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Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **MW-4** Matrix : Water Lab Number : 71152-06
Sample Date :12/08/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	12/10/2009

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Report Number : 71152
Date : 12/15/2009

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

Sample : **DW-5** Matrix : Water Lab Number : 71152-07
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**140**	2.5	ug/L	EPA 8260B	12/10/2009
Toluene	**25**	2.5	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**200**	2.5	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**960**	2.5	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**< 2.5**	2.5	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 2.5**	2.5	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 2.5**	2.5	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 2.5**	2.5	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**< 15**	15	ug/L	EPA 8260B	12/10/2009
Methanol	**< 250**	250	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 25**	25	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**15000**	250	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 2.5**	2.5	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 2.5**	2.5	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	92.4		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	95.4		% Recovery	EPA 8260B	12/10/2009

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Report Number : 71152
Date : 12/15/2009

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

Sample : **MW-6** Matrix : Water Lab Number : 71152-08
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**2100**	5.0	ug/L	EPA 8260B	12/10/2009
Toluene	**96**	5.0	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**800**	5.0	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**160**	5.0	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**340**	5.0	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**460**	25	ug/L	EPA 8260B	12/10/2009
Methanol	**< 2000**	2000	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 50**	50	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**15000**	500	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	92.7		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	95.9		% Recovery	EPA 8260B	12/10/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **DW-2** Matrix : Water Lab Number : 71152-09
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**450**	0.90	ug/L	EPA 8260B	12/11/2009
Toluene	**14**	0.90	ug/L	EPA 8260B	12/11/2009
Ethylbenzene	**55**	0.90	ug/L	EPA 8260B	12/11/2009
Total Xylenes	**34**	0.90	ug/L	EPA 8260B	12/11/2009
Methyl-t-butyl ether (MTBE)	**210**	0.90	ug/L	EPA 8260B	12/11/2009
Diisopropyl ether (DIPE)	**< 0.90**	0.90	ug/L	EPA 8260B	12/11/2009
Ethyl-t-butyl ether (ETBE)	**< 0.90**	0.90	ug/L	EPA 8260B	12/11/2009
Tert-amyl methyl ether (TAME)	**2.6**	0.90	ug/L	EPA 8260B	12/11/2009
Tert-Butanol	**410**	5.0	ug/L	EPA 8260B	12/11/2009
Methanol	**< 200**	200	ug/L	EPA 8260B	12/11/2009
Ethanol	**< 9.0**	9.0	ug/L	EPA 8260B	12/11/2009
TPH as Gasoline	**6600**	90	ug/L	EPA 8260B	12/11/2009
1,2-Dichloroethane	**< 0.90**	0.90	ug/L	EPA 8260B	12/11/2009
1,2-Dibromoethane	**< 0.90**	0.90	ug/L	EPA 8260B	12/11/2009
1,2-Dichloroethane-d4 (Surr)	83.4		% Recovery	EPA 8260B	12/11/2009
Toluene - d8 (Surr)	87.9		% Recovery	EPA 8260B	12/11/2009

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Report Number : 71152
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Project Name : **Tesoro - Livermore**
Project Number : **01LV**

Sample : **MW-9** Matrix : Water Lab Number : 71152-10
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**1.4**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**1200**	50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	96.6		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	12/10/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **DW-3** Matrix : Water Lab Number : 71152-11
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**24**	0.50	ug/L	EPA 8260B	12/09/2009
Toluene	**5.9**	0.50	ug/L	EPA 8260B	12/09/2009
Ethylbenzene	**56**	0.50	ug/L	EPA 8260B	12/09/2009
Total Xylenes	**29**	0.50	ug/L	EPA 8260B	12/09/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/09/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/09/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/09/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/09/2009
Tert-Butanol	**7.2**	5.0	ug/L	EPA 8260B	12/09/2009
Methanol	**< 300**	300	ug/L	EPA 8260B	12/09/2009
Ethanol	**< 20**	20	ug/L	EPA 8260B	12/09/2009
TPH as Gasoline	**2200**	50	ug/L	EPA 8260B	12/09/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/09/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/09/2009
1,2-Dichloroethane-d4 (Surr)	89.9		% Recovery	EPA 8260B	12/09/2009
Toluene - d8 (Surr)	95.0		% Recovery	EPA 8260B	12/09/2009

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Report Number : 71152
Date : 12/15/2009

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

Sample : **DW-6** Matrix : Water Lab Number : 71152-12
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**33**	1.0	ug/L	EPA 8260B	12/10/2009
Toluene	**4.3**	1.0	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**100**	1.0	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**43**	1.0	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**9.7**	1.0	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 1.0**	1.0	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 1.0**	1.0	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 1.0**	1.0	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**10**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 100**	100	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 10**	10	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**6200**	100	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 1.0**	1.0	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 1.0**	1.0	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	84.4		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	87.5		% Recovery	EPA 8260B	12/10/2009

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Report Number : 71152
Date : 12/15/2009

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

Sample : **DW-7** Matrix : Water Lab Number : 71152-13
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**500**	2.0	ug/L	EPA 8260B	12/11/2009
Toluene	**20**	2.0	ug/L	EPA 8260B	12/11/2009
Ethylbenzene	**310**	2.0	ug/L	EPA 8260B	12/11/2009
Total Xylenes	**110**	2.0	ug/L	EPA 8260B	12/11/2009
Methyl-t-butyl ether (MTBE)	**160**	2.0	ug/L	EPA 8260B	12/11/2009
Diisopropyl ether (DIPE)	**< 2.0**	2.0	ug/L	EPA 8260B	12/11/2009
Ethyl-t-butyl ether (ETBE)	**< 2.0**	2.0	ug/L	EPA 8260B	12/11/2009
Tert-amyl methyl ether (TAME)	**< 2.0**	2.0	ug/L	EPA 8260B	12/11/2009
Tert-Butanol	**270**	9.0	ug/L	EPA 8260B	12/11/2009
Methanol	**< 200**	200	ug/L	EPA 8260B	12/11/2009
Ethanol	**< 20**	20	ug/L	EPA 8260B	12/11/2009
TPH as Gasoline	**10000**	200	ug/L	EPA 8260B	12/11/2009
1,2-Dichloroethane	**< 2.0**	2.0	ug/L	EPA 8260B	12/11/2009
1,2-Dibromoethane	**< 2.0**	2.0	ug/L	EPA 8260B	12/11/2009
1,2-Dichloroethane-d4 (Surr)	88.6		% Recovery	EPA 8260B	12/11/2009
Toluene - d8 (Surr)	92.6		% Recovery	EPA 8260B	12/11/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **MW-10** Matrix : Water Lab Number : 71152-14
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	98.9		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	12/10/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **DW-4** Matrix : Water Lab Number : 71152-15
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**3.0**	0.50	ug/L	EPA 8260B	12/10/2009
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**2.0**	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**1.2**	0.50	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	12/11/2009
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	12/10/2009

KIFF Analytical LLC

Report Number : 71152
Date : 12/15/2009

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

Sample : **MW-5** Matrix : Water Lab Number : 71152-16
Sample Date :12/09/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	12/10/2009
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	**140**	50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	12/10/2009

Report Number : 71152

Date : 12/15/2009

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	12/09/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	12/09/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Methanol	< 50	50	ug/L	EPA 8260B	12/09/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	12/09/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/09/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	12/09/2009
Toluene - d8 (Surr)	100		%	EPA 8260B	12/09/2009
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	12/11/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
Methanol	< 50	50	ug/L	EPA 8260B	12/11/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	12/11/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/11/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	12/11/2009
1,2-Dichloroethane-d4 (Surr)	95.4		%	EPA 8260B	12/11/2009
Toluene - d8 (Surr)	98.9		%	EPA 8260B	12/11/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	12/10/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
Methanol	< 50	50	ug/L	EPA 8260B	12/10/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	12/10/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/10/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	12/10/2009
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	12/10/2009
Toluene - d8 (Surr)	102		%	EPA 8260B	12/10/2009
Methanol	< 50	50	ug/L	EPA 8260B	12/11/2009
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	12/09/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Methanol	< 50	50	ug/L	EPA 8260B	12/09/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	12/09/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/09/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	12/09/2009

KIFF ANALYTICAL, LLC

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

Report Number : 71152

QC Report : Method Blank Data

Date : 12/15/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
1,2-Dichloroethane-d4 (Surr)	99.5		%	EPA 8260B	12/09/2009
Toluene - d8 (Surr)	100		%	EPA 8260B	12/09/2009

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

Report Number : 71152

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 12/15/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
1,2-Dibromoethane														
	71152-11	<0.50	39.3	40.1	38.6	39.1	ug/L	EPA 8260B	12/10/09	98.2	97.4	0.788	80-120	25
1,2-Dichloroethane														
	71152-11	<0.50	38.6	39.3	37.8	38.0	ug/L	EPA 8260B	12/10/09	98.1	96.7	1.43	75.7-122	25
Benzene														
	71152-11	24	39.5	40.3	59.0	60.3	ug/L	EPA 8260B	12/10/09	89.0	90.5	1.59	80-120	25
Diisopropyl ether														
	71152-11	<0.50	38.9	39.7	36.8	38.3	ug/L	EPA 8260B	12/10/09	94.7	96.6	1.91	80-120	25
Ethanol														
	71152-11	14	97.2	99.1	86.2	95.9	ug/L	EPA 8260B	12/10/09	74.2	82.5	10.7	55.1-159	25
Ethyl-tert-butyl ether														
	71152-11	<0.50	39.3	40.0	35.9	36.3	ug/L	EPA 8260B	12/10/09	91.3	90.6	0.798	76.5-120	25
Ethylbenzene														
	71152-11	56	39.3	40.1	92.2	94.1	ug/L	EPA 8260B	12/10/09	91.5	94.4	3.09	80-120	25
Methanol														
	71152-11	300	969	988	819	788	ug/L	EPA 8260B	12/10/09	53.0	48.9	8.12	53.2-147	25
Methyl-t-butyl ether														
	71152-11	<0.50	39.6	40.4	34.5	34.6	ug/L	EPA 8260B	12/10/09	87.0	85.6	1.64	69.7-121	25
P + M Xylene														
	71152-11	22	38.2	39.0	59.1	60.6	ug/L	EPA 8260B	12/10/09	98.2	100	1.91	76.8-120	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
Tert-Butanol														
	71152-11	7.2	197	200	193	201	ug/L	EPA 8260B	12/10/09	94.7	96.6	1.94	80-120	25
Tert-amyl-methyl ether														
	71152-11	<0.50	39.2	40.0	34.6	35.6	ug/L	EPA 8260B	12/10/09	88.2	88.8	0.642	78.9-120	25
Toluene														
	71152-11	5.9	39.3	40.1	42.4	44.0	ug/L	EPA 8260B	12/10/09	92.9	94.9	2.16	80-120	25
1,2-Dibromoethane														
	71166-03	<0.50	40.3	40.0	36.7	40.5	ug/L	EPA 8260B	12/11/09	91.1	101	10.5	80-120	25
1,2-Dichloroethane														
	71166-03	<0.50	39.5	39.3	34.8	36.2	ug/L	EPA 8260B	12/11/09	88.1	92.2	4.61	75.7-122	25
Benzene														
	71166-03	<0.50	40.5	40.2	36.7	36.8	ug/L	EPA 8260B	12/11/09	90.6	91.4	0.824	80-120	25
Diisopropyl ether														
	71166-03	<0.50	39.8	39.6	38.0	38.4	ug/L	EPA 8260B	12/11/09	95.5	96.9	1.44	80-120	25
Ethanol														
	71166-03	75	99.5	98.9	184	165	ug/L	EPA 8260B	12/11/09	110	91.6	18.1	55.1-159	25
Ethyl-tert-butyl ether														
	71166-03	<0.50	40.2	40.0	38.5	38.4	ug/L	EPA 8260B	12/11/09	95.7	96.0	0.248	76.5-120	25

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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
Ethylbenzene														
	71166-03	<0.50	40.2	40.0	38.6	38.1	ug/L	EPA 8260B	12/11/09	95.9	95.3	0.688	80-120	25
Methanol														
	71166-03	340	992	986	1280	1110	ug/L	EPA 8260B	12/11/09	94.5	77.4	19.9	53.2-147	25
Methyl-t-butyl ether														
	71166-03	<0.50	40.6	40.3	37.5	38.9	ug/L	EPA 8260B	12/11/09	92.6	96.6	4.26	69.7-121	25
P + M Xylene														
	71166-03	<0.50	39.2	38.9	37.3	36.8	ug/L	EPA 8260B	12/11/09	95.2	94.4	0.804	76.8-120	25
Tert-Butanol														
	71166-03	<5.0	201	200	194	191	ug/L	EPA 8260B	12/11/09	96.6	95.3	1.36	80-120	25
Tert-amyl-methyl ether														
	71166-03	<0.50	40.2	40.0	35.7	36.2	ug/L	EPA 8260B	12/11/09	88.8	90.6	1.97	78.9-120	25
Toluene														
	71166-03	<0.50	40.2	40.0	37.4	37.8	ug/L	EPA 8260B	12/11/09	92.9	94.6	1.79	80-120	25
1,2-Dibromoethane														
	71152-15	<0.50	40.4	40.4	40.9	41.3	ug/L	EPA 8260B	12/10/09	101	102	0.798	80-120	25
1,2-Dichloroethane														
	71152-15	<0.50	39.6	39.6	38.4	38.8	ug/L	EPA 8260B	12/10/09	97.0	98.0	1.04	75.7-122	25

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QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 12/15/2009

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
Benzene														
	71152-15	3.0	40.6	40.6	40.8	40.7	ug/L	EPA 8260B	12/10/09	93.2	92.9	0.290	80-120	25
Diisopropyl ether														
	71152-15	<0.50	39.9	39.9	39.0	39.6	ug/L	EPA 8260B	12/10/09	97.7	99.3	1.70	80-120	25
Ethanol														
	71152-15	<5.0	99.7	99.7	101	103	ug/L	EPA 8260B	12/10/09	102	104	2.03	55.1-159	25
Ethyl-tert-butyl ether														
	71152-15	<0.50	40.3	40.3	39.9	39.6	ug/L	EPA 8260B	12/10/09	98.9	98.1	0.798	76.5-120	25
Ethylbenzene														
	71152-15	2.0	40.3	40.3	41.5	41.6	ug/L	EPA 8260B	12/10/09	98.0	98.2	0.284	80-120	25
Methanol														
	71152-15	92	994	994	1070	1090	ug/L	EPA 8260B	12/10/09	98.1	100	1.98	53.2-147	25
Methyl-t-butyl ether														
	71152-15	<0.50	40.6	40.6	38.3	38.9	ug/L	EPA 8260B	12/10/09	94.2	95.6	1.54	69.7-121	25
P + M Xylene														
	71152-15	1.2	39.2	39.2	40.6	40.6	ug/L	EPA 8260B	12/10/09	100	100	0.0392	76.8-120	25
Tert-Butanol														
	71152-15	<5.0	202	202	194	196	ug/L	EPA 8260B	12/10/09	96.0	97.1	1.05	80-120	25
Tert-amyl-methyl ether														
	71152-15	<0.50	40.3	40.3	38.6	39.3	ug/L	EPA 8260B	12/10/09	96.0	97.5	1.56	78.9-120	25

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

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 12/15/2009

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
Toluene														
	71152-15	<0.50	40.3	40.3	39.8	39.8	ug/L	EPA 8260B	12/10/09	98.8	98.8	0.0106	80-120	25
Methanol														
	71170-08	<50	994	994	1090	1090	ug/L	EPA 8260B	12/11/09	110	109	0.615	53.2-147	25
1,2-Dibromoethane														
	71139-01	<0.50	40.4	40.4	39.2	38.6	ug/L	EPA 8260B	12/9/09	97.1	95.7	1.51	80-120	25
1,2-Dichloroethane														
	71139-01	<0.50	39.6	39.6	38.7	38.4	ug/L	EPA 8260B	12/9/09	97.9	96.9	0.979	75.7-122	25
Benzene														
	71139-01	<0.50	40.6	40.6	39.6	38.0	ug/L	EPA 8260B	12/9/09	97.7	93.7	4.22	80-120	25
Diisopropyl ether														
	71139-01	<0.50	39.9	39.9	41.2	40.5	ug/L	EPA 8260B	12/9/09	103	102	1.71	80-120	25
Ethanol														
	71139-01	<5.0	99.7	99.7	136	140	ug/L	EPA 8260B	12/9/09	136	141	3.46	55.1-159	25
Ethyl-tert-butyl ether														
	71139-01	<0.50	40.3	40.3	41.0	40.2	ug/L	EPA 8260B	12/9/09	102	99.6	1.99	76.5-120	25
Ethylbenzene														
	71139-01	<0.50	40.3	40.3	39.9	39.0	ug/L	EPA 8260B	12/9/09	99.0	96.7	2.33	80-120	25

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QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 12/15/2009

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														
	71139-01	<50	994	994	1380	1420	ug/L	EPA 8260B	12/9/09	139	143	2.84	53.2-147	25
Methyl-t-butyl ether														
	71139-01	<0.50	40.6	40.6	40.8	40.4	ug/L	EPA 8260B	12/9/09	100	99.5	0.828	69.7-121	25
P + M Xylene														
	71139-01	<0.50	39.2	39.2	38.9	38.3	ug/L	EPA 8260B	12/9/09	99.0	97.7	1.33	76.8-120	25
Tert-Butanol														
	71139-01	<5.0	202	202	198	196	ug/L	EPA 8260B	12/9/09	98.3	97.1	1.24	80-120	25
Tert-amyl-methyl ether														
	71139-01	<0.50	40.3	40.3	40.5	40.0	ug/L	EPA 8260B	12/9/09	100	99.4	1.12	78.9-120	25
Toluene														
	71139-01	<0.50	40.3	40.3	39.8	38.4	ug/L	EPA 8260B	12/9/09	98.6	95.1	3.60	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	40.4	ug/L	EPA 8260B	12/10/09	99.9	80-120
1,2-Dichloroethane	39.6	ug/L	EPA 8260B	12/10/09	100	75.7-122
Benzene	40.6	ug/L	EPA 8260B	12/10/09	98.3	80-120
Diisopropyl ether	39.9	ug/L	EPA 8260B	12/10/09	102	80-120
Ethanol	99.7	ug/L	EPA 8260B	12/10/09	80.9	55.1-159
Ethyl-tert-butyl ether	40.3	ug/L	EPA 8260B	12/10/09	99.2	76.5-120
Ethylbenzene	40.3	ug/L	EPA 8260B	12/10/09	104	80-120
Methanol	994	ug/L	EPA 8260B	12/10/09	61.1	53.2-147
Methyl-t-butyl ether	40.6	ug/L	EPA 8260B	12/10/09	93.1	69.7-121
P + M Xylene	39.2	ug/L	EPA 8260B	12/10/09	102	76.8-120
Tert-Butanol	202	ug/L	EPA 8260B	12/10/09	98.5	80-120
Tert-amyl-methyl ether	40.3	ug/L	EPA 8260B	12/10/09	99.4	78.9-120
Toluene	40.3	ug/L	EPA 8260B	12/10/09	99.0	80-120
1,2-Dibromoethane	40.4	ug/L	EPA 8260B	12/11/09	92.4	80-120
1,2-Dichloroethane	39.6	ug/L	EPA 8260B	12/11/09	87.8	75.7-122
Benzene	40.6	ug/L	EPA 8260B	12/11/09	91.2	80-120
Diisopropyl ether	39.9	ug/L	EPA 8260B	12/11/09	95.1	80-120
Ethanol	99.7	ug/L	EPA 8260B	12/11/09	107	55.1-159
Ethyl-tert-butyl ether	40.3	ug/L	EPA 8260B	12/11/09	95.3	76.5-120
Ethylbenzene	40.3	ug/L	EPA 8260B	12/11/09	95.9	80-120
Methanol	994	ug/L	EPA 8260B	12/11/09	88.2	53.2-147
Methyl-t-butyl ether	40.6	ug/L	EPA 8260B	12/11/09	93.3	69.7-121

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
P + M Xylene	39.2	ug/L	EPA 8260B	12/11/09	94.4	76.8-120
Tert-Butanol	202	ug/L	EPA 8260B	12/11/09	96.1	80-120
Tert-amyl-methyl ether	40.3	ug/L	EPA 8260B	12/11/09	88.0	78.9-120
Toluene	40.3	ug/L	EPA 8260B	12/11/09	93.8	80-120
1,2-Dibromoethane	40.4	ug/L	EPA 8260B	12/10/09	102	80-120
1,2-Dichloroethane	39.7	ug/L	EPA 8260B	12/10/09	98.2	75.7-122
Benzene	40.6	ug/L	EPA 8260B	12/10/09	94.7	80-120
Diisopropyl ether	40.0	ug/L	EPA 8260B	12/10/09	101	80-120
Ethanol	99.9	ug/L	EPA 8260B	12/10/09	103	55.1-159
Ethyl-tert-butyl ether	40.4	ug/L	EPA 8260B	12/10/09	99.8	76.5-120
Ethylbenzene	40.4	ug/L	EPA 8260B	12/10/09	98.5	80-120
Methanol	996	ug/L	EPA 8260B	12/10/09	111	53.2-147
Methyl-t-butyl ether	40.7	ug/L	EPA 8260B	12/10/09	97.3	69.7-121
P + M Xylene	39.3	ug/L	EPA 8260B	12/10/09	102	76.8-120
TPH as Gasoline	509	ug/L	EPA 8260B	12/10/09	96.4	80-120
Tert-Butanol	202	ug/L	EPA 8260B	12/10/09	98.1	80-120
Tert-amyl-methyl ether	40.4	ug/L	EPA 8260B	12/10/09	98.2	78.9-120
Toluene	40.4	ug/L	EPA 8260B	12/10/09	99.5	80-120
Methanol	1000	ug/L	EPA 8260B	12/11/09	93.9	53.2-147

KIFF ANALYTICAL, LLC

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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	40.4	ug/L	EPA 8260B	12/9/09	96.0	80-120
1,2-Dichloroethane	39.6	ug/L	EPA 8260B	12/9/09	97.8	75.7-122
Benzene	40.6	ug/L	EPA 8260B	12/9/09	97.5	80-120
Diisopropyl ether	39.9	ug/L	EPA 8260B	12/9/09	104	80-120
Ethanol	99.7	ug/L	EPA 8260B	12/9/09	130	55.1-159
Ethyl-tert-butyl ether	40.3	ug/L	EPA 8260B	12/9/09	101	76.5-120
Ethylbenzene	40.3	ug/L	EPA 8260B	12/9/09	100	80-120
Methanol	994	ug/L	EPA 8260B	12/9/09	124	53.2-147
Methyl-t-butyl ether	40.6	ug/L	EPA 8260B	12/9/09	99.6	69.7-121
P + M Xylene	39.2	ug/L	EPA 8260B	12/9/09	101	76.8-120
TPH as Gasoline	512	ug/L	EPA 8260B	12/9/09	99.3	80-120
Tert-Butanol	202	ug/L	EPA 8260B	12/9/09	98.6	80-120
Tert-amyl-methyl ether	40.3	ug/L	EPA 8260B	12/9/09	99.8	78.9-120
Toluene	40.3	ug/L	EPA 8260B	12/9/09	98.0	80-120

KIFF Analytical LLC

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Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 71152

Page 1 of 2

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Mike Purchase	California EDF Report? ☐ Yes ☐ No
Company / Address: Orion Environmental, Inc. 1332 Peralta Ave., Berkeley, CA 95702	Sampling Company Log Code:
Phone Number: 510-525-2180	Global ID: T0600101410
Fax Number: 562-988-2759	EDF Deliverable To (Email Address):
Project #: 01LV / P.O. #:	Bill to: Mike Purchase
Project Name: Tesoro - Livermore	Sampler Signature: Pat Ly
Project Address: 1619 1st Street Livermore, CA	

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

Sample Designation	Sampling: Date	Sampling: Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: H_2SO_4	Preservative: $ZnAc_2$ & NaOH	Matrix: Water	Matrix: Soil	Matrix: Air	Analysis Request: BTEX (EPA 8260B)	Analysis Request: TPH Gas (EPA 8260B)	Analysis Request: 7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Analysis Request: Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TAT	For Lab Use Only
DW-1	12/8/09	11:55	3					3					X			X	X	X	X	std	01
MW-2	12/8/09	12:12	3					3					X			X	X	X	X	std	02
MW-1	12/8/09	14:02	3					3					X			X	X	X	X	std	03
MW-11		1528	3					3					X			X	X	X	X		04
MW-3		1445	3					3					X			X	X	X	X		05
MW-4		1700	3					3					X			X	X	X	X		06
DW-5	12/9/09	0945	3					3					X			X	X	X	X		07
MW-6		0905	3					3					X			X	X	X	X		08
DW-2		0855	3					3					X			X	X	X	X		09
MW-9		1235	3					3					X			X	X	X	X		10

Relinquished by:	Date	Time	Received by:
Pat Ly	12/9/09	1443	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	120909	1443	Kiff Analytical

Remarks:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Page 1 of 2

Distribution: White - Lab; Pink - Originator
Rev: 031308

KIFF Analytical LLC

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Davis, CA 95618
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 71152

Page 2 of 2

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Mike Purchase	California EDF Report? ☐ Yes ☐ No
Company / Address: Orion Environmental, Inc. 1332 Peralta Ave., Berkeley, CA 95702	Sampling Company Log Code:
Phone Number: 510-525-2180	Global ID: T0600101410
Fax Number: 562-988-2759	EDF Deliverable To (Email Address):
Project #: 01LV / P.O. #:	Bill to: Mike Purchase
Project Name: Tesoro - Livermore	Sampler Signature:
Project Address: 1619 1st Street Livermore, CA	

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

Sample Designation	Sampling: Date	Sampling: Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: H_2SO_4	Preservative: $ZnAc_2$ & NaOH	Matrix: Water	Matrix: Soil	Matrix: Air	Analysis Request: BTEX (EPA 8260B)	Analysis Request: TPH Gas (EPA 8260B)	Analysis Request: 7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Analysis Request: Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	For Lab Use Only
DW-3	12/9/09	1030	3					3					X			X	X	X	X	11
DW-6		0945	3					3					X			X	X	X	X	12
DW-7		1250	3					3					X			X	X	X	X	13
MW-10		1345	3					3					X			X	X	X	X	14
DW-4		1335	3					3					X			X	X	X	X	15
MW-5	↓	1428	3					3					X			X	X	X	X	16

Relinquished by:	Date	Time	Received by:
	12/9/09	1443	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	120909	1443	Kiff Analytical

Remarks:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev: 031308

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER: LJR (Initials)

SRG#: 71152 Date: 120909

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?	[ ] Yes	[X] 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?	[X] Yes	[ ] No, Whiteout	[ ] No, Cross-outs	

Sample Inspection

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

Temperature °C 4.8 Therm. ID# IR-5 Initial LJR Date/Time 120909/1731 [ ] 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 48
Matrix	Container type	# of containers received
Matrix	Container type	# of containers received

Date and Time Sample Put into Temp Storage Date: 120909 Time: 1740

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:

KIFF Analytical LLC

Report Number : 71297
Date : 12/24/2009

Mike Purchase
Arctos Environmental
1332 Peralta Avenue
Berkeley, CA 94702

Subject : 4 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Purchase,

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.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF Analytical LLC

Report Number : 71297
Date : 12/24/2009

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 MW-7.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for sample MW-7.

KIFF Analytical LLC

Report Number : 71297
Date : 12/24/2009

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

Sample : **TP-1** Matrix : Water Lab Number : 71297-01
Sample Date :12/17/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**690**	2.5	ug/L	EPA 8260B	12/23/2009
Toluene	**19**	2.5	ug/L	EPA 8260B	12/23/2009
Ethylbenzene	**700**	2.5	ug/L	EPA 8260B	12/23/2009
Total Xylenes	**45**	2.5	ug/L	EPA 8260B	12/23/2009
Methyl-t-butyl ether (MTBE)	**1000**	2.5	ug/L	EPA 8260B	12/23/2009
Diisopropyl ether (DIPE)	**< 2.5**	2.5	ug/L	EPA 8260B	12/23/2009
Ethyl-t-butyl ether (ETBE)	**< 2.5**	2.5	ug/L	EPA 8260B	12/23/2009
Tert-amyl methyl ether (TAME)	**8.8**	2.5	ug/L	EPA 8260B	12/23/2009
Tert-Butanol	**2900**	15	ug/L	EPA 8260B	12/23/2009
Methanol	**< 250**	250	ug/L	EPA 8260B	12/23/2009
Ethanol	**< 25**	25	ug/L	EPA 8260B	12/23/2009
TPH as Gasoline	**10000**	250	ug/L	EPA 8260B	12/23/2009
1,2-Dichloroethane	**< 2.5**	2.5	ug/L	EPA 8260B	12/23/2009
1,2-Dibromoethane	**< 2.5**	2.5	ug/L	EPA 8260B	12/23/2009
1,2-Dichloroethane-d4 (Surr)	93.3		% Recovery	EPA 8260B	12/23/2009
Toluene - d8 (Surr)	93.1		% Recovery	EPA 8260B	12/23/2009

KIFF Analytical LLC

Report Number : 71297
Date : 12/24/2009

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

Sample : **TP-2** Matrix : Water Lab Number : 71297-02
Sample Date :12/17/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**950**	25	ug/L	EPA 8260B	12/24/2009
Toluene	**< 25**	25	ug/L	EPA 8260B	12/24/2009
Ethylbenzene	**77**	25	ug/L	EPA 8260B	12/24/2009
Total Xylenes	**< 25**	25	ug/L	EPA 8260B	12/24/2009
Methyl-t-butyl ether (MTBE)	**13000**	25	ug/L	EPA 8260B	12/24/2009
Diisopropyl ether (DIPE)	**< 25**	25	ug/L	EPA 8260B	12/24/2009
Ethyl-t-butyl ether (ETBE)	**< 25**	25	ug/L	EPA 8260B	12/24/2009
Tert-amyl methyl ether (TAME)	**130**	25	ug/L	EPA 8260B	12/24/2009
Tert-Butanol	**20000**	150	ug/L	EPA 8260B	12/24/2009
Methanol	**< 2500**	2500	ug/L	EPA 8260B	12/24/2009
Ethanol	**< 250**	250	ug/L	EPA 8260B	12/24/2009
TPH as Gasoline	**7200**	2500	ug/L	EPA 8260B	12/24/2009
1,2-Dichloroethane	**< 25**	25	ug/L	EPA 8260B	12/24/2009
1,2-Dibromoethane	**< 25**	25	ug/L	EPA 8260B	12/24/2009
1,2-Dichloroethane-d4 (Surr)	97.0		% Recovery	EPA 8260B	12/24/2009
Toluene - d8 (Surr)	95.8		% Recovery	EPA 8260B	12/24/2009

KIFF Analytical LLC

Report Number : 71297
Date : 12/24/2009

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

Sample : **MW-7** Matrix : Water Lab Number : 71297-03
Sample Date :12/17/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**6.7**	0.50	ug/L	EPA 8260B	12/19/2009
Toluene	**3.4**	0.50	ug/L	EPA 8260B	12/19/2009
Ethylbenzene	**27**	0.50	ug/L	EPA 8260B	12/19/2009
Total Xylenes	**8.8**	0.50	ug/L	EPA 8260B	12/19/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/19/2009
Methanol	**< 80**	80	ug/L	EPA 8260B	12/19/2009
Ethanol	**< 8.0**	8.0	ug/L	EPA 8260B	12/19/2009
TPH as Gasoline	**4500**	50	ug/L	EPA 8260B	12/19/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
1,2-Dichloroethane-d4 (Surr)	88.0		% Recovery	EPA 8260B	12/19/2009
Toluene - d8 (Surr)	91.6		% Recovery	EPA 8260B	12/19/2009

KIFF Analytical LLC

Report Number : 71297
Date : 12/24/2009

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

Sample : **MW-8** Matrix : Water Lab Number : 71297-04
Sample Date :12/17/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Diisopropyl ether (DIPE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Ethyl-t-butyl ether (ETBE)	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Tert-amyl methyl ether (TAME)	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
Tert-Butanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/19/2009
Methanol	**< 50**	50	ug/L	EPA 8260B	12/19/2009
Ethanol	**< 5.0**	5.0	ug/L	EPA 8260B	12/19/2009
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	12/19/2009
1,2-Dichloroethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
1,2-Dibromoethane	**< 0.50**	0.50	ug/L	EPA 8260B	12/19/2009
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	12/19/2009
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	12/19/2009

Report Number : 71297

Date : 12/24/2009

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	12/23/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	12/23/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
Methanol	< 50	50	ug/L	EPA 8260B	12/23/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	12/23/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/23/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	12/23/2009
1,2-Dichloroethane-d4 (Surr)	99.1		%	EPA 8260B	12/23/2009
Toluene - d8 (Surr)	99.2		%	EPA 8260B	12/23/2009
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	12/19/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
Methanol	< 50	50	ug/L	EPA 8260B	12/19/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	12/19/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/19/2009
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	12/19/2009
1,2-Dichloroethane-d4 (Surr)	99.1		%	EPA 8260B	12/19/2009
Toluene - d8 (Surr)	100		%	EPA 8260B	12/19/2009

KIFF ANALYTICAL, LLC

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

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 12/24/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
1,2-Dibromoethane	71319-04	<0.50	40.1	39.6	38.8	39.5	ug/L	EPA 8260B	12/23/09	96.7	99.5	2.88	80-120	25
1,2-Dichloroethane	71319-04	<0.50	39.3	38.9	36.2	36.7	ug/L	EPA 8260B	12/23/09	92.0	94.4	2.54	75.7-122	25
Benzene	71319-04	<0.50	40.3	39.8	37.4	37.9	ug/L	EPA 8260B	12/23/09	92.7	95.1	2.61	80-120	25
Diisopropyl ether	71319-04	<0.50	39.7	39.2	37.6	38.6	ug/L	EPA 8260B	12/23/09	94.7	98.5	3.90	80-120	25
Ethanol	71319-04	<5.0	99.1	97.9	132	139	ug/L	EPA 8260B	12/23/09	134	142	6.16	55.1-159	25
Ethyl-tert-butyl ether	71319-04	<0.50	40.0	39.6	34.6	35.3	ug/L	EPA 8260B	12/23/09	86.3	89.2	3.33	76.5-120	25
Ethylbenzene	71319-04	<0.50	40.1	39.6	40.3	41.2	ug/L	EPA 8260B	12/23/09	101	104	3.38	80-120	25
Methanol	71319-04	70	988	976	1160	1170	ug/L	EPA 8260B	12/23/09	110	113	1.99	53.2-147	25
Methyl-t-butyl ether	71319-04	<0.50	40.4	39.9	30.8	31.5	ug/L	EPA 8260B	12/23/09	76.1	78.8	3.50	69.7-121	25
P + M Xylene	71319-04	<0.50	39.0	38.5	37.1	37.7	ug/L	EPA 8260B	12/23/09	95.1	97.8	2.83	76.8-120	25

KIFF ANALYTICAL, LLC

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

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 12/24/2009

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Tert-Butanol														
	71319-04	<5.0	200	198	185	189	ug/L	EPA 8260B	12/23/09	92.2	95.4	3.40	80-120	25
Tert-amyl-methyl ether														
	71319-04	<0.50	40.0	39.6	35.5	36.0	ug/L	EPA 8260B	12/23/09	88.6	91.0	2.64	78.9-120	25
Toluene														
	71319-04	<0.50	40.1	39.6	37.4	38.0	ug/L	EPA 8260B	12/23/09	93.4	95.9	2.63	80-120	25
1,2-Dibromoethane														
	71256-02	<0.50	40.4	40.4	43.5	42.7	ug/L	EPA 8260B	12/19/09	108	106	1.80	80-120	25
1,2-Dichloroethane														
	71256-02	<0.50	39.6	39.6	38.1	37.3	ug/L	EPA 8260B	12/19/09	96.2	94.2	2.06	75.7-122	25
Benzene														
	71256-02	3.6	40.6	40.6	42.7	42.0	ug/L	EPA 8260B	12/19/09	96.2	94.5	1.79	80-120	25
Diisopropyl ether														
	71256-02	1.3	39.9	39.9	40.8	40.5	ug/L	EPA 8260B	12/19/09	98.9	98.2	0.733	80-120	25
Ethanol														
	71256-02	<5.0	99.7	99.7	92.9	95.1	ug/L	EPA 8260B	12/19/09	93.2	95.4	2.40	55.1-159	25
Ethyl-tert-butyl ether														
	71256-02	<0.50	40.3	40.3	39.4	39.0	ug/L	EPA 8260B	12/19/09	97.7	96.7	1.08	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 : 12/24/2009

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
Ethylbenzene														
	71256-02	13	40.3	40.3	53.2	52.8	ug/L	EPA 8260B	12/19/09	100	98.9	1.11	80-120	25
Methanol														
	71256-02	<50	994	994	945	947	ug/L	EPA 8260B	12/19/09	95.0	95.2	0.189	53.2-147	25
Methyl-t-butyl ether														
	71256-02	1.0	40.6	40.6	39.5	39.2	ug/L	EPA 8260B	12/19/09	94.6	94.0	0.669	69.7-121	25
P + M Xylene														
	71256-02	18	39.2	39.2	57.4	56.7	ug/L	EPA 8260B	12/19/09	99.5	97.7	1.86	76.8-120	25
Tert-Butanol														
	71256-02	<5.0	202	202	197	191	ug/L	EPA 8260B	12/19/09	97.8	94.8	3.06	80-120	25
Tert-amyl-methyl ether														
	71256-02	<0.50	40.3	40.3	38.5	38.0	ug/L	EPA 8260B	12/19/09	95.6	94.4	1.28	78.9-120	25
Toluene														
	71256-02	1.3	40.3	40.3	42.0	41.1	ug/L	EPA 8260B	12/19/09	101	98.7	2.12	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	40.4	ug/L	EPA 8260B	12/23/09	95.5	80-120
1,2-Dichloroethane	39.6	ug/L	EPA 8260B	12/23/09	92.7	75.7-122
Benzene	40.6	ug/L	EPA 8260B	12/23/09	95.3	80-120
Diisopropyl ether	39.9	ug/L	EPA 8260B	12/23/09	98.6	80-120
Ethanol	99.7	ug/L	EPA 8260B	12/23/09	157	55.1-159
Ethyl-tert-butyl ether	40.3	ug/L	EPA 8260B	12/23/09	89.2	76.5-120
Ethylbenzene	40.3	ug/L	EPA 8260B	12/23/09	106	80-120
Methanol	994	ug/L	EPA 8260B	12/23/09	127	53.2-147
Methyl-t-butyl ether	40.6	ug/L	EPA 8260B	12/23/09	77.0	69.7-121
P + M Xylene	39.2	ug/L	EPA 8260B	12/23/09	98.2	76.8-120
Tert-Butanol	202	ug/L	EPA 8260B	12/23/09	100	80-120
Tert-amyl-methyl ether	40.3	ug/L	EPA 8260B	12/23/09	89.4	78.9-120
Toluene	40.3	ug/L	EPA 8260B	12/23/09	95.5	80-120
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	12/19/09	101	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	12/19/09	98.9	75.7-122
Benzene	40.0	ug/L	EPA 8260B	12/19/09	98.5	80-120
Diisopropyl ether	39.9	ug/L	EPA 8260B	12/19/09	97.8	80-120
Ethanol	100	ug/L	EPA 8260B	12/19/09	87.7	55.1-159
Ethyl-tert-butyl ether	40.3	ug/L	EPA 8260B	12/19/09	96.4	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	12/19/09	102	80-120
Methanol	1000	ug/L	EPA 8260B	12/19/09	93.3	53.2-147
Methyl-t-butyl ether	40.6	ug/L	EPA 8260B	12/19/09	93.2	69.7-121

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
P + M Xylene	40.0	ug/L	EPA 8260B	12/19/09	98.8	76.8-120
TPH as Gasoline	510	ug/L	EPA 8260B	12/19/09	105	80-120
Tert-Butanol	202	ug/L	EPA 8260B	12/19/09	95.2	80-120
Tert-amyl-methyl ether	40.3	ug/L	EPA 8260B	12/19/09	98.1	78.9-120
Toluene	40.0	ug/L	EPA 8260B	12/19/09	101	80-120

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. 71297

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Mike Purchase	California EDF Report? ☐ Yes ☐ No
Company / Address: 1332 Peralta Ave Berkeley, CA 94702	Sampling Company Log Code:
Phone Number: (510) 525-2180	Global ID: T0600101410
Fax Number: 562-988-2759	EDF Deliverable To (Email Address):
Project #: 01LV / P.O. #:	Bill to: Mike Purchase
Project Name: Tesoro-Livermore	Sampler Print Name: Peter Arroyo
	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: HNO_3	Preservative: None	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air	Matrix:
TP-1	12/17/09	1020	3						3				X			
TP-2	"	1045	3						3				X			
MW-7	"	1120	3						3				X			
MW-8	↓	1150	3						3				X			

Analysis Request

MTBE @ 0.5 ppb (EPA 8260B)	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (MTBE, DIPE, ETBE, TAME, TBA) (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	PLEASE CIRCLE METHOD: CAM 17 Metals (EPA 200.7 / 6010)	5 Waste Oil Metals (Cd,Cr,Ni,Pb,Zn) (EPA 200.7 / 6010)	Mercury (EPA 245.1 / 7470 / 7471)	Total Lead (EPA 200.7 / 6010)	W.E.T. Lead (STLC)						For Lab Use Only
	X	X		X	X																	01
	X	X		X	X																	02
	X	X		X	X																	03
	X	X		X	X																	04

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

Relinquished by:	Date	Time	Received by:
Peter Arroyo	12/17/09		
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	12/18/09	1235	Kiff Analytical

Remarks:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev: 061708

Page 13 of 44

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER ____ Initials

SRG#: 71297 Date: 121809

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 1.2 Therm. ID# IR-5 Initial BAG Date/Time 121809/1655 ☐ 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 12
Matrix ____	Container type ____	# of containers received ____
Matrix ____	Container type ____	# of containers received ____

Date and Time Sample Put into Temp Storage Date: 121809 Time: 1658

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:

Sample labels do not have a project name.
BAG 121809 1658

ATTACHMENT F

CITY OF LIVERMORE CONDITIONS OF APPROVAL

Conditions of Approval

Administrative Design Review
09-019

1619 First Street

Installation of soil vapor extraction equipment with oxygen injection system and new equipment enclosure / noise barrier.

Prepared: December 14, 2009
Approved by Planning Staff: December 14, 2009

PROJECT AUTHORIZATION

1. The project shall be in conformance with all City Ordinances, rules, regulations, and policies. The conditions listed below are particularly pertinent to this permit and shall not be construed to permit violation of other laws and policies not so listed.

2. Approval of this project shall be in conformance with the Downtown Specific Plan (DSP) zoning district, Downtown Boulevard Gateway development standards, and the Livermore Planning and Zoning code (LPZC) as they exist now or may be amended in the future.

3. This Permit shall become effective at the conclusion of a 14-day appeal period.

PROJECT SPECIFIC CONDITIONS

PLANNING DIVISION

1. Development shall conform to the plan set approved by the Planning Division on December 14, 2009.

2. Planning Division Staff may approve minor amendments to the approved site plan provided the site plan is still in substantial conformance with the original permit approval.

3. Location of the equipment and enclosure shall be along the southwestern portion of the existing building, as shown in the approved plans.

4. The equipment enclosure shall be 6 feet from the property line of the resident located at 182 South P Street and 1610 Second Street.

5. The project will include a noise barrier and an equipment enclosure to mitigate for excessive noise levels. Noise levels shall be maintained below 49dBA and shall be subject to a field inspection prior to City approval. Applicant shall provide City inspector proof that noise levels do not exceed 49dBA, noise level will be measured from the source to the property line.

6. The existing masonry wall shall be removed and replaced with the new equipment enclosure. The equipment enclosure shall have a maximum height of 15 feet.

7. The equipment enclosure shall be architecturally compatible to the existing building on site.

8. Equipment shall not exceed the maximum allowable thresholds for Hazardous Materials as described in the Livermore Planning and Zoning Code (LP&ZC) Chapter 3-30 regarding Hazardous Materials.

9. Upon decommissioning of the environmental equipment, the sound barrier and equipment enclosure shall be removed and the site shall be returned to its pre-project condition.

BUILDING DIVISION

1. Building permits shall be obtained prior to the installation of the equipment and the construction of the enclosure.

ATTACHMENT G

BORING AND WELL CONSTRUCTION LOGS

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

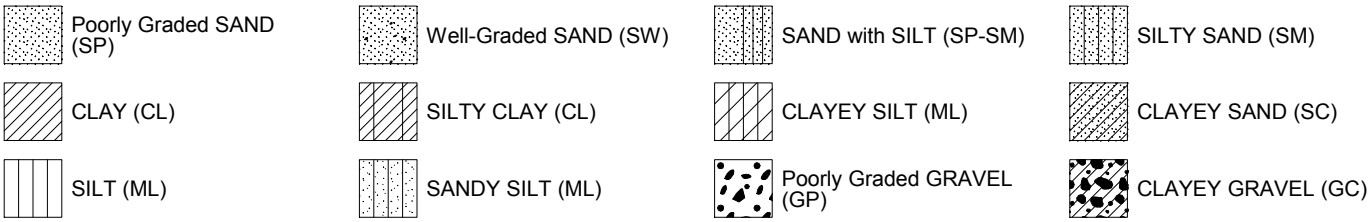
Key to Log of Boring / Well

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12

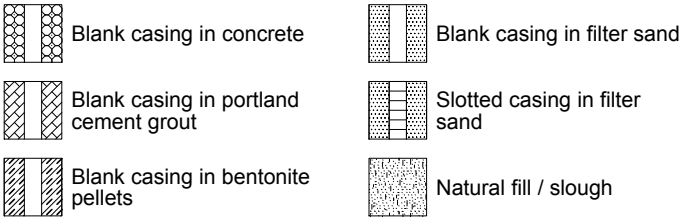
COLUMN DESCRIPTIONS

1. **Elevation:** Elevation in feet relative to mean sea level (MSL).
2. **Depth:** Depth in feet below the ground surface.
3. **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.
4. **Sample Number:** Sample identification number.
5. **Blows / 6 in.:** Number of blows required to advance driven sampler each 6-inch drive interval, or distance noted, using a 140-lb hammer with a 30-inch drop. "-" indicates data not recorded on field log.
6. **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.
7. **Material Description:** Description of material encountered; may include density/consistency, moisture, and color.
8. **Well Completion Diagram:** Well schematic; materials are listed in header block; graphics are explained below.
9. **Headspace PID:** Photoionization device (PID) field sample headspace reading in parts per million (ppm).
10. **Background PID:** Photoionization device (PID) background reading in parts per million (ppm).
11. **Drilling Progress:** Time (in 24-hour clock) at sampling and other events during downhole advance.
12. **Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel.

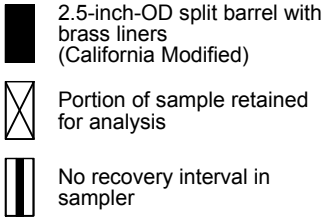
TYPICAL SOIL GRAPHIC SYMBOLS



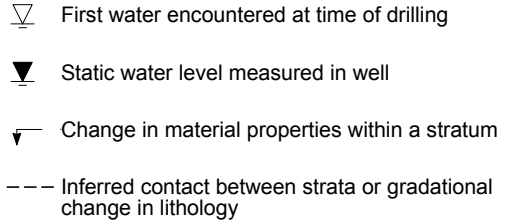
TYPICAL WELL GRAPHIC SYMBOLS



TYPICAL SAMPLER GRAPHIC SYMBOLS



OTHER GRAPHIC SYMBOLS



GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well DW-5

Sheet 1 of 2

Date(s) Drilled	**11/23/09**			Logged By	**M. Nelson**	Checked By	**M. Purchase**
Drilling Method	**Hollow-Stem Auger**			Drill Bit Size/Type	**10-inch-OD auger**	Total Depth of Borehole	**60.0 feet**
Drill Rig Type	**CME 95**			Drilling Contractor	**Gregg Drilling & Testing**	Surface Elevation	**472.36 feet**
Groundwater Level (feet bgs)	First **--**	Completion **--**	Development **43.08**	Sampling Method	**California Modified split spoon**	Top of Casing Elevation	**471.86 feet**
Diameter of Hole (inches)	**10**	Diameter of Well (inches)	**4**	Type of Well Casing	**4-inch-dia. Schedule 40 PVC**	Screen Perforation	**0.020-inch slot (50-60 ft)**
Type of Sand Pack	**#2/12 Monterey (47-60 feet)**			Type and Depth of Seal(s)	**Bentonite pellets 45-47 ft, portland cement grout 2-45 ft, concrete 0-2 ft**		
Comments	**EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete at surface.**						

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	0					Asphalt 4 inches thick				0800	Hand auger first 5 ft.
470											
	5	⊠	DW-5-5	8 26 32		Dense, dry, brown, well-graded SAND with GRAVEL (SW), fine- to coarse-grained sand, fine gravel to 3/4 inch, no odor		1.4	0.0	0810	
465											
	10									0815	No recovery in sampler driven at 8.5 ft; assume material similar to sample above.
460											
	15	⊠	DW-5-15	49 50/5"		Becomes very dense, trace cobbles		749	0.0	0820	
455											
	20	⊠	DW-5-20	16 18 25		Dense, moist, brown, SILTY SAND with GRAVEL (SM), fine- to coarse-grained sand, fine gravel to 3/4 inch, trace orange silt, no odor		1,658	0.0	0827	PID in operator breathing zone (OBZ) = 0.0 ppm
450											
	25	⊠	DW-5-25	10 19 20		Hard, moist, reddish brown, SANDY SILT (ML), fine- to medium-grained sand, no odor		288	0.0	0834	
445											
	30	⊠	DW-5-30	23 24 32		Dense, wet, reddish brown, SILTY SAND (SM), fine- to coarse-grained sand, trace gravel, trace orange silt, no odor		301	0.0	0842	

ORION_1W; TESLVMOR.GPJ-DW-05; 1/4/10

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well DW-5

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	30					Dense, wet, reddish brown, SILTY SAND (SM), fine- to coarse-grained sand, trace gravel, trace orange silt, no odor (continued)					
440											
						Becomes very dense, trace cobbles					
	35	☒	DW-5-35	29 50/5"				112	0.0	0850	
435											
						Becomes dense					
	40	☒	DW-5-40	25 26 27				69	0.0	0858	
430											
						Increase in coarse-grained sand					
	45	☒	DW-5-45	17 28 30				25	0.0	0907	OBZ=0.0 ppm
425											
						Becomes brown; sand grades to medium- to coarse-grained, with trace gravel to 3/4 inch, odor					
	50	☒	DW-5-50	27 29 31				1,057	0.0	0916	
420											
						Dense, wet, grayish brown, poorly graded GRAVEL with SILT (GP-GM), slight odor					
	55	☒	DW-5-55	27 30 26				375	0.0	0924	
415											
	60	☒	DW-5-60	16 21 23				68	0.0	0932	
						Bottom of boring at 60.0 feet					
410											
	65										
405											
	70										

ORION_1W; TESLVMOR.GPJ-DW-05; 1/4/10

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well DW-6

Sheet 1 of 2

Date(s) Drilled	**11/24/09**			Logged By	**M. Nelson**	Checked By	**M. Purchase**
Drilling Method	**Hollow-Stem Auger**			Drill Bit Size/Type	**10-inch-OD auger**	Total Depth of Borehole	**60.0 feet**
Drill Rig Type	**CME 95**			Drilling Contractor	**Gregg Drilling & Testing**	Surface Elevation	**472.05 feet**
Groundwater Level (feet bgs)	First **43**	Completion **--**	Development **43.70**	Sampling Method	**California Modified split spoon**	Top of Casing Elevation	**471.77 feet**
Diameter of Hole (inches)	**10**	Diameter of Well (inches)	**4**	Type of Well Casing	**4-inch-dia. Schedule 40 PVC**	Screen Perforation	**0.020-inch slot (50-60 ft)**
Type of Sand Pack	**#2/12 Monterey (47.7-60 feet)**			Type and Depth of Seal(s)	**Bentonite pellets 46-47.7 ft, portland cement grout 2-46 ft, concrete 0-2 ft**		
Comments	**EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete at surface.**						

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	0					Asphalt 6 inches thick				1040	Hand auger first 5 ft.
470											
	5		DW-6-5	5 18 50		Very dense, dry, brown, well-graded SAND with GRAVEL (SW), fine- to coarse-grained sand, fine gravel to 3/4 inch, no odor		11	0.0	1115	
465											
	10		DW-6-10	16 18 22		Dense, dry, brown, SILTY SAND with GRAVEL (SM), fine- to coarse-grained sand, fine gravel to 3/4 inch, no odor		178	0.0	1119	
460											
	15		DW-6-15	20 27 32				7.8	0.0	1123	
455											
	20		DW-6-20	20 28 30				5.8	0.0	1127	
450											
	25		DW-6-25	5 10 10		Stiff to very stiff, moist, brown, CLAYEY SILT (ML), no odor		5.1	0.0	1132	
445											
	30		DW-6-30	4 4 8				3.3	0.0	1137	

ORION_1W; TESLVMOR.GPJ-DW-06; 1/4/10

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well DW-6

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	30					Stiff to very stiff, moist, brown, CLAYEY SILT (ML), no odor (continued)					
440											
				15 30 22		Dense, wet, reddish brown, SILTY SAND with GRAVEL (SM), fine- to coarse-grained sand, fine gravel to 3/4 inch, trace clay, no odor					
	35	☒	DW-6-35					2.1	0.0	1144	
435											
				15 28 32		Trace orange silt					
	40	☒	DW-6-40					3.1	0.0	1148	
430							▽				
				17 22 28							
	45	☒	DW-6-45					19	0.0	1154	PID in operator breathing zone (OBZ) = 0.0 ppm
425											
				6 7 11		Medium dense, wet, brown, SILTY SAND (SM), fine- to coarse-grained sand, no odor					
	50	☒	DW-6-50					63	0.0	1204	
420											
				27 50/3"		Dense to very dense, wet, grayish brown, well-graded SAND with SILT and GRAVEL (SW-SM), fine- to coarse-grained sand, odor					
	55	☒	DW-6-55					1,210	0.0	1213	
415											
				32 50/2"		Dense to very dense, wet, brown, poorly graded SAND (SP), medium- to coarse-grained sand, odor					
	60	☒	DW-6-60					315	0.0	1219	
						Bottom of boring at 60.0 feet					
410											
	65										
405											
	70										

ORION_1W; TESLVMOR.GPJ-DW-06; 1/4/10

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well DW-7

Date(s) Drilled	**11/25/09**			Logged By	**M. Nelson**	Checked By	**M. Purchase**
Drilling Method	**Hollow-Stem Auger**			Drill Bit Size/Type	**10-inch-OD auger**	Total Depth of Borehole	**65.0 feet**
Drill Rig Type	**CME 95**			Drilling Contractor	**Gregg Drilling & Testing**	Surface Elevation	**470.60 feet**
Groundwater Level (feet bgs)	First **43**	Completion **--**	Development **43.15**	Sampling Method	**California Modified split spoon**	Top of Casing Elevation	**470.07 feet**
Diameter of Hole (inches)	**10**	Diameter of Well (inches)	**4**	Type of Well Casing	**4-inch-dia. Schedule 40 PVC**	Screen Perforation	**0.020-inch slot (55-65 ft)**
Type of Sand Pack	**#2/12 Monterey (53-65 feet)**			Type and Depth of Seal(s)	**Bentonite pellets 51-53 ft, portland cement grout 2-51 ft, concrete 0-2 ft**		
Comments	**EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete at surface.**						

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
470	0					Asphalt 4 inches thick				0945	Hand auger first 5 ft.
465	5	⊠	DW-7-5	22 50/3"		Very dense, dry, brown, well-graded SAND with GRAVEL (SW), fine- to coarse-grained sand, fine gravel to 3/4 inch, trace silt, trace cobbles, no odor		162	0.0	0956	
460	10	⊠	DW-7-10	19 50/2"		Very dense, moist, brown, SILTY SAND with GRAVEL (SM), fine- to coarse-grained sand, fine gravel to 3/4 inch, trace orange silt, trace cobbles, no odor		1,340	0.0	1000	
455	15	⊠	DW-7-15	21 24 30		Becomes dense, with trace clay		517	0.0	1007	
450	20	⊠	DW-7-20	15 21 30				31	0.0	1012	
445	25	⊠	DW-7-25	11 15 10		Becomes medium dense; increase in clay		1.7	0.0	1019	
	30	⊠	DW-7-30	16 21 28		Becomes dense; increase in coarse-grained sand, decrease in clay		7.5	0.0	1024	

ORION_1W; TESLVMOR.GPJ-DW-07; 1/4/10

Project: Tesoro - Livermore
Project Location: 1619 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well DW-7

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows / 6 in.	Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
440	30					Dense, moist, brown, SILTY SAND with GRAVEL (SM), fine- to coarse-grained sand, fine gravel to 3/4 inch, trace clay and orange silt, trace cobbles, no odor (continued)					
435	35	☒	DW-7-35	17 22 23				20	0.0	1034	
430	40	☒	DW-7-40	17 22 25				3.6	0.0	1041	
425	45	☒	DW-7-45	13 19 27		Dense, wet, brown, CLAYEY SAND with GRAVEL (SC), medium- to coarse-grained sand, fine gravel to 3/4 inch, no odor		11	0.0	1049	
420	50	☒	DW-7-50	26 50/6"		Dense to very dense, wet, brown, poorly graded SAND with SILT and GRAVEL (SP-SM), medium- to coarse-grained sand, fine gravel to 3/4 inch, odor		1,211	0.0	1057	
415	55	☒	DW-7-55	4 9 17		Very stiff, wet, brown, CLAYEY SILT (ML), odor		1,279	0.0	1104	
410	60	☒	DW-7-60	16 19 21		Dense, wet, brown, poorly graded SAND (SP), medium- to coarse-grained sand, odor		341	0.0	1110	
405	65	☒	DW-7-65	20 21 24		Dense, wet, brown, poorly graded SAND with GRAVEL (SP), medium- to coarse-grained sand, fine gravel to 3/4 inch, odor		108	0.0	1120	
	70					**Bottom of boring at 65.0 feet**					

ORION_1W; TESLVMOR.GPJ-DW-07; 1/4/10

ATTACHMENT H

DRILLING AND WELL INSTALLATION QA/QC PROCEDURES

ARCTOS

ATTACHMENT H
DRILLING AND WELL INSTALLATION QA/QC PROCEDURES

Hollow-Stem Auger Drilling and Sampling

Before initiating drilling activities, Arctos marked the well locations and contacted underground service alert (USA) to clear the area of subsurface lines and utilities. Arctos also obtained a boring and well permit from Zone 7 Water Agency.

Soil borings were advanced with 6-inch-diameter, hollow-stem, continuous-flight augers. Soil samples were collected using a split-spoon sampler (California-modified or similar) containing three brass tubes, each 2 inches in diameter and 6 inches in length. The sampler was driven to the sampling depth by dropping a 140-pound hammer approximately 30 inches. Samples were collected for visual logging at various depth intervals with the objectives of observing and describing the locations of lithologic units and obtaining representative samples for physical and/or chemical analysis. Soil samples were collected at the ground surface and at 5-foot intervals.

After the sampler was retrieved from the auger, it was placed on a portable field stand near the boring and the tubes were removed. The ends of one of the tubes was covered with Teflon sheeting, capped with PVC end caps, and placed in a sealable plastic bag. A portion of the soil from one of the tubes was extruded and placed in a sealable plastic bag, which was closed and allowed to equilibrate for approximately 10 minutes. The organic vapor levels in the headspace were measured using a field photoionization detector (PID).

The same sample was visually examined and the results of the visual observation and headspace reading were recorded on the boring logs. Soil samples were examined for staining or odors. Soils were classified following the Unified Soil Classification System (USCS).

Equipment Decontamination Procedures

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

- ☐ Rinse with water using a brush to remove soil and mud
- ☐ Wash with non-phosphate detergent and water using a brush
- ☐ Rinse with deionized water
- ☐ Rinse again with deionized water
- ☐ Air dry.

Brass tubes and end caps were new or cleaned using the decontamination procedures described above. Drill augers were steam-cleaned before each boring is drilled.

Management of Drill Cuttings and Wastewater

Drill cuttings were placed in 55-gallon drums that meet U.S. Department of Transportation specifications and stored on site. Each drum was labeled with the date and drum contents. The soil was transported off site by Belshire Environmental Services, Inc., (Belshire), of Lake Forest, California, for recycling as a non-hazardous waste at the TPST Soil Recyclers of California facility in Adelanto, California. Manifests for the soil disposal are included in Attachment J.

Documentation Procedures

Arctos personnel followed documentation procedures developed for site investigation work. The procedures serve to provide a record of the activities performed in the field.

Arctos field personnel were on site to observe the progress of sampling and to log the boring. The information recorded on the boring log included drilling equipment used, boring location, nature of the materials encountered, sampling depth, time of day, and other pertinent data. The boring log was drafted for presentation in this report.

Well Installation

An Arctos registered civil engineer supervised the well construction and installation. Three deep monitoring wells, designated as DW-5 to DW-7, were installed off site in the southeast corner of the Safeway parking lot (Figure 2). The deep monitoring wells were designed to monitor the water quality in the lower zones of the aquifer (beneath the existing monitoring well screen intervals and above the regional aquitard). The soil borings for the installation of deep monitoring wells DW-5 to DW-7 were drilled with a 6-inch-diameter hollow-stem continuous-flight auger to create a pilot hole, and then over drilled with a 10-inch-diameter hollow-stem continuous-flight auger.

The deep monitoring wells were constructed using 4-inch-diameter, flush-threaded Schedule 40 polyvinyl chloride (PVC) casing. Wells DW-5 and DW-6 were screened from 50 to 60 feet below grade using 0.020-inch slotted screen. Well DW-7 was initially designed with the screen from 50 to 60 feet; however visual logging of the soil indicated that there is a clayey silt layer at 55 feet. The boring for well DW-7 was continued to 65 feet and visual logging indicated poorly graded sand and poorly graded sand with gravel at 60 feet and 65 feet, respectively. A field decision was made to drop the screen 5 feet so that the well would not be screened across the clayey silt layer. DW-7 is screened from 55 to 65 feet.

A Monterey #2/12 sand pack filled the annular space around the casings to approximately 2 feet above the screened interval. A 2- to 3-foot thick bentonite seal was placed on top of the sand pack. The remaining annular space was filled with Portland cement slurry.

The deep monitoring wells were completed at the surface with a 12-inch-diameter traffic-rated vault set in concrete. Well construction diagrams are shown in Attachment G.

A licensed surveyor surveyed the elevation and location of the new wells on 2 December 2009 following the requirements of State Assembly Bill 2886. The locations were measured to the nearest 1/10 foot and the elevations to the nearest 1/100 foot relative to mean sea level.

Well Development

The wells were developed approximately 72 hours after installation. Well development activities were recorded on a Daily Field Report and Well Development Log (Attachment I). Immediately before well development commenced, the depth to groundwater and total well depth were measured using an electric water well sounder with an accuracy of 0.01 feet. A Smeal rig outfitted with a surge block continuously swabbed the well screen at 5-foot intervals for 15 minutes. Immediately following surging, a stainless steel bottom bailer was used to remove fines from the water column. After bailing, a stainless steel pump was lowered into the well to rapidly evacuate fines.

Field measurements of the evacuated groundwater were collected at regular intervals including pH, specific conductivity, temperature, and turbidity. Development was considered complete when pH, temperature, and specific conductivity measurements of the evacuated groundwater stabilized to within 10 percent of the previous readings and turbidity readings dropped below 50 Nephelometric Turbidity Units (NTUs).

Wastewater generated during well development was stored on site in 55-gallon drums that meet U.S. Department of Transportation specifications. Belshire transported the wastewater off site for recycling as a non-hazardous waste to the DeMenno Kerdoon facility in Los Angeles, California. Manifests for the soil disposal and wastewater recycling are included in Attachment J.

General Field Quality Assurance/Control (QA/QC) Procedures

See Attachment A for personal decontamination and health and safety procedures.

ATTACHMENT I

WELL DEVELOPMENT LOGS

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☑ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Well Number DW-5
Date 11-30-09
Time Start: 1:30 End: 3:20
Client ARCTOS
Project TESORO - LIVERMORE
Job Number —
Installation Date —
Well Diameter 4"

Borehole Diameter 10"
Screen Length 10'
Measured Depth (pre-development) 60.0
Measured Depth (post-development) 60.0
Static Water Level (ft.) 43.08
Standing Water Column (ft.) 16.92
One Well Volume (gal.) 11.16
One Annulus Vol. (gal.) _____

Qty. of Drilling Fluid Lost Ø
Minimum Gal. to be Purged 125 Gallons
Development Method SURGE, BAIL & PUMP.
Purging Equipment 4" STAINBAKER
Water Level Equipment SOLINST
pH/EC Meter HORIBA U-10
Turbidity Meter " "
Other _____

Time	Amount Purged (gal.)	Field Parameters Measured: pH	EC	Turbidity	D.O.	D.O. Temp.	SAL.	GPM / W.L.	Comments	Field Tech.
1:35	—	SURGING 4" WELL USING A 4" SURGE BLOCK.							HARD BOTTOM	
1:50	—	BAILING							SURGED WELL FOR 15 MIN.	
2:10	20/20	5.10	1.49	999	—	20.1	—	2gpm/	WL= 45.90	
2:18	15/35	5.60	1.32	999	—	20.2	—	2gpm/	WL= 46.16	
2:26	15/50	5.55	1.47	999	—	19.9	—	2gpm/	WL= 46.45	
2:36	15/65	5.54	1.47	999	—	19.9	—	1.5gpm/	WL= 46.68	
2:46	15/80	5.56	1.49	999	—	20.5	—	1.5gpm/	WL= 46.83	
2:56	15/95	5.54	1.46	927	—	21.2	—	1.5gpm/	WL= 46.95	
3:07	15/110	5.56	1.48	436	—	20.9	—	1.5gpm/	WL= 47.12	
3:17	15/125	5.55	1.49	253	—	20.2	—	1.5gpm/	WL= 47.20	

FINAL FIELD PARAMETER MEASUREMENTS

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☑ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Well Number DW-6
Date 11-30-09
Time Start: 10:30 End: 14:40
Client ARCTOS
Project TESORO - LIVERMORE
Job Number —
Installation Date _____
Well Diameter 4"

Borehole Diameter 10"
Screen Length 10'
Measured Depth (pre-development) 60.1
Measured Depth (post-development) 60.1
Static Water Level (ft.) 43.70
Standing Water Column (ft.) 16.40
One Well Volume (gal.) 10.82
One Annulus Vol. (gal.) _____

Qty. of Drilling Fluid Lost 0
Minimum Gal. to be Purged 140 Gallons
Development Method SURGE, BAIL & PUMP
Purging Equipment 4" STAINLESS BAILER
Water Level Equipment SOLINST
pH/EC Meter HORIBA U-10
Turbidity Meter " "
Other _____

Time	Amount Purged (gal.)	Field Parameters Measured: pH	EC	Turbidity	D.O.	D.O. Temp.	SAL.	GPM / W.L.	Comments	Field Tech.
10:45	—	SURGING 4" WELL, USING A 4" SURGE BLOCK.							HARD BOTTOM	
11:00	—	BAILING							SURGED WELL FOR 15 MIN	
11:24	20/20	5.99	1.03	999	—	21.4	—	2gpm	WL=45.32	
11:31	15/35	6.04	0.96	999	—	21.3	—	2gpm	WL=45.51	
11:38	15/50	6.30	0.98	999	—	21.5	—	2gpm	WL=45.62	
11:46	15/65	6.30	0.95	999	—	21.8	—	1.5gpm	WL=45.64	
11:58	15/80	6.29	0.94	936	—	21.7	—	1.5gpm	WL=45.64	
12:08	15/95	6.29	0.95	772	—	22.1	—	1.5gpm	WL=45.64	
12:18	15/110	6.31	0.95	830	—	22.1	—	1.5gpm	WL=45.75	
12:28	15/125	6.28	0.95	763	—	22.1	—	1.5gpm	WL=45.80	
12:38	15/140	6.29	0.96	412	—	22.1	—	1.5gpm	WL=45.80	

FINAL FIELD PARAMETER MEASUREMENTS

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☑ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Well Number DW-7
Date 11-30-09
Time Start: 7:30 End: 10:20
Client ARCTOS
Project TESORO - LIVERMORE
Job Number —
Installation Date _____
Well Diameter 4"

Borehole Diameter 10"
Screen Length 10'
Measured Depth (pre-development) 65.0
Measured Depth (post-development) 65.0
Static Water Level (ft.) 43.15
Standing Water Column (ft.) 21.85
One Well Volume (gal.) 14.42
One Annulus Vol. (gal.) _____

Qty. of Drilling Fluid Lost 0
Minimum Gal. to be Purged 140 Gallons
Development Method SURGE, BAIL & PUMP
Purging Equipment 4" STAINLESS BAILER
Water Level Equipment SOLINST
pH/EC Meter HORIBA U-10
Turbidity Meter " "
Other _____

Time	Amount Purged (gal.)	Field Parameters Measured: pH	EC	Turbidity	D.O.	D.O. Temp.	SAL.	GPM / W.L.	Comments	Field Tech.
7:43	—	SURGING 4" WELL USING A 4" SURGE BLOCK.							HARD BOTTOM	
8:00	—	BAILING							SURGED WELL FOR 17 MIN	
8:35	20/20	4.75	1.21	999	—	18.6	—	2 gpm	WL = 45.9	
8:41	15/35	5.78	1.06	999	—	19.8	—	2 gpm	WL = 45.10	
8:48	15/50	6.00	1.03	999	—	20.6	—	2 gpm	WL = 44.75	
9:04	15/65	6.23	1.05	999	—	21.2	—	1 gpm	WL = 44.75	
9:19	15/80	6.40	1.02	999	—	21.3	—	1 gpm	WL = 44.75	
9:34	15/95	6.40	1.00	904	—	22.0	—	1 gpm	WL = 44.75	
9:50	15/110	6.39	0.99	743	—	21.9	—	1 gpm	WL = 44.75	
10:05	15/125	6.37	1.01	524	—	22.0	—	1 gpm	WL = 44.75	
10:19	15/140	6.34	0.98	320	—	21.9	—	1 gpm	WL = 44.75	

FINAL FIELD PARAMETER MEASUREMENTS

ATTACHMENT J

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. 17019 | 2. Page 1 of 1

3. Generator's Name and Mailing Address Tesoro #67076
1619 First St. Livermore CA.

4. Generator's Phone ( )

5. Transporter 1 Company Name: Excel Environmental | 6. US EPA ID Number: CAD000209350

A. State Transporter's ID

B. Transporter 1 Phone 800-376-6005

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
E.O.T.
5300 Claus Rd
Riverbank CA 95367 | 10. US EPA ID Number: CAL000190816

E. State Facility's ID

F. Facility's Phone 209-863-8181

GENERATOR

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON Hazardous Liquid	1	TT	350	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above: Ground 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	Peter Arroyo	12 / 9 / 09

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month / Day / Year)
Tim Cogan	Tim Cogan	12 / 9 / 09

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

Manifest

TPST Soil Recyclers of CA
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPST:	Load #
/ /		111733	A07	34553	001

Generator's Name and Billing Address:		
TESORO ENVIRONMENTAL RESOURCE COMPANY 3450 S. 344TH WAY, SUITE 201 AUBURN, WA 98001	Generator's Phone #: 253-896-8700	Generator's US EPA ID No.
	Person to Contact:	
	FAX#:	Customer Account Number with TPST:

Consultant's Name and Billing Address:		
	Consultant's Phone #:	
	Person to Contact:	
	FAX#:	Customer Account Number with TPST:

Generation Site (Transport from): *(name & address)*		
TESORO 67076 (FORMER) 1619 FIRST ST. LIVERMORE, CA 94550	Site Phone #:	BTEX Levels
	Person to Contact:	TPH Levels
	FAX#:	AVG. Levels

Designated Facility (Transport to): *(name & address)*		
TPST SOIL RECYCLERS OF CALIFORNIA 12328 HIBISCUS AVENUE ADELANTO, CA 92301	Facility Phone #: (800) 862-8001	Facility Permit Numbers
	Person to Contact: DELLENA JEFFREY	
	FAX#: (760) 246-8004	

Transporter Name and Mailing Address:		
BELSHIRE 25971 TOWNE CENTRE DRIVE FOOTHILL RANCH, CA 92610 BESI: 175276	Transporter's Phone #: 949-460-5200	Transporter's US EPA ID No.: CAR000183913
	Person to Contact: LARRY MOOTHART	Transporter's DOT No.: 450847
	FAX#: 949-460-5210	Customer Account Number with TPST:

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐	27 dms		30900	15360	15540
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					7.77

List any exception to items listed above: Bin # 1261

Scale Ticket# 76744

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐ Larry Moothart of BESI on behalf of generator
Signature and date: Month 12 Day 16 Year 09

Generator and/or Consultant

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: Lukasz Patel
Signature and date: Patel Lukasz Month 12 Day 16 Year 09

Transporter

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: D. JEFFREY/J. PROVANSAL
Signature and date: 12/29/09

Recycling Facility

Please print or type.

TRANSPORTER COPY

NO. 682834

NON-HAZARDOUS WASTE DATA FORM

BESI # 175276

GENERATOR

Generator's Name and Mailing Address

TESORO ENVIRONMENTAL RESOURCE COMPANY
3450 S. 344TH WAY, SUITE 201
AUBURN, WA 98001

Generator's Site Address (if different than mailing address)

TESORO 87076 (FORMER)
1519 FIRST ST.
LIVERMORE, CA 94550

Generator's Phone: 253-896-8708

24-HOUR EMERGENCY PHONE: 949-660-3706

Container type removed from site:

☒ Drums ☐ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck

☐ Other _____

Quantity 10

Container type transported to receiving facility:

☐ Drums ☒ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck

☐ Other _____

Quantity 1 Volume 550 gallons

WASTE DESCRIPTION NON-HAZARDOUS WATER

GENERATING PROCESS WELL PURGING / DECON WATER

COMPONENTS OF WASTE	PPM	%
1. WATER		99-100%
2. TPH		<1%
3.		
4.		

Waste Profile _____ PROPERTIES: pH 7-10 ☐ SOLID ☒ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: WEAR ALL APPROPRIATE PROTECTIVE CLOTHING

Generator Printed/Typed Name: Larry Muethart of BESI on behalf of generator — Signature — Month 12 Day 16 Year 09

The Generator certifies that the waste as described is 100% non-hazardous

TRANSPORTER

Transporter 1 Company Name: BELSHIRE — Phone# 949-460-5200

Transporter 1 Printed/Typed Name: Larry Muethart — Signature — Month 12 Day 16 Year 09

Transporter Acknowledgment of Receipt of Materials

Transporter 2 Company Name: NIETO & SONS TRUCKING, INC. — Phone# 714-990-6855

Transporter 2 Printed/Typed Name: Manuel Lopez — Signature — Month 12 Day 21 Year 09

Transporter Acknowledgment of Receipt of Materials

RECEIVING FACILITY

Designated Facility Name and Site Address

DEMENNO KERDOON
2000 N. ALAMEDA ST.
COMPTON, CA 90222

Phone# 310-537-7100

Printed/Typed Name: SOPHAN P. SVAY — Signature — Month 12 Day 21 Year 09

Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.