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June 14, 2013

Tesoro Refining & Marketing Company LLC
400 Oceangate, Suite 600
Long Beach, California 90802
562 495 6800 Office
562 495 6869 Fax

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

Subject: **First Quarter 2013 Status Report**
1619 1st Street, Livermore, California
Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0434

Dear Mr. Wickham:

Enclosed please find a copy of the ***First Quarter 2013 Status Report*** for the subject site, dated 14 June 2013. This report is submitted by Arctos Environmental on behalf of Tesoro Refining & Marketing Company LLC.

Based on my inquiry of the person or persons directly responsible for gathering the information contained in this report, I believe the information was prepared by qualified personnel who properly gathered and evaluated the information, and that the information submitted is, to the best of my knowledge and belief, true, correct, and complete. Please feel free to call me at 562/495-6916 or Scott Stromberg of Arctos Environmental at 510/525-2180 with questions.

Sincerely,

Paula M. Sime
Manager, Retail Remediation
Tesoro Refining & Marketing Company LLC

Attachments

CC: Arctos – Scott Stromberg

ARCTOS

Arctos Environmental
2332 5th Street, Suite A
Berkeley, CA 94710
510 525-2180 PHONE
510 525-2392 FAX

Main Office
2955 Redondo Avenue
Long Beach, CA 90806
562 988-2755 PHONE
562 988-2759 FAX

14 June 2013
Project No. 01LV

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

Subject: First Quarter 2013 Status Report
1619 1st Street, Livermore, California
Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0434

Dear Mr. Wickham:

Arctos Environmental (Arctos), on behalf of Tesoro Environmental Resources Company (Tesoro), has prepared this letter report summarizing project tasks completed during the first quarter 2013 at the subject site (Figure 1).

Executive Summary

A quarterly groundwater monitoring event was conducted from 12 to 14 February 2013. There was an average 8-foot increase in water levels since the fourth quarter 2012. The highest onsite petroleum hydrocarbon concentrations were at wells MW-2 and DW-8. The highest offsite petroleum hydrocarbon concentrations were at wells MW-6 and DW-2.

Hydrocarbon concentrations rebounded at monitoring wells DW-8 and IP-8, located downgradient and cross gradient of injection well IP-9, respectively, where an in situ chemical oxidation (ISCO) pilot test was conducted during the fourth quarter 2011. Hydrocarbon concentrations at injection well IP-9 remain approximately 70 percent less than concentrations during the pilot test.

The soil vapor extraction (SVE) system remained shut down since November 2012. A soil gas survey was conducted on 28 February to evaluate the effectiveness of the SVE system at remediating the onsite source area since the system started during the second quarter 2010. Hydrocarbon concentrations in soil vapor had decreased by over 90 percent at all SVE wells after the system was off for over 90 days.

The oxygen injection system operated at 97 percent uptime. The system was shut down on 28 March in preparation for an expanded ISCO pilot test. The average dissolved

oxygen (DO) concentration was 21 milligrams per liter (mg/l) at the monitoring wells within 10 feet of the active injection wells.

During the second and third quarters 2013, Tesoro will continue to monitor groundwater wells in the vicinity of the ISCO pilot test and begin an expanded ISCO pilot test on and off site.

Site Background

The site description and background are included in Arctos's "In Situ Chemical Oxidation (ISCO) Pilot Test Report" dated 16 March 2012 (Arctos, 2012).

Groundwater Monitoring

Arctos's subcontractor, Environmental Field Services, LLC (EFS), of Patterson, California, performed a quarterly groundwater monitoring event from 12 to 14 February 2013. Samples were collected from wells MW-1 through MW-3, MW-6, MW-7, MW-11, MW-12, DW-1 through DW-3, and DW-5 through DW-9 (Figure 2) in accordance with the site monitoring plan (Attachment A). Samples were also collected from wells IP-1 and IP-8 through IP-10 in accordance with the ISCO pilot test work plan and from wells TP-1, TP-2, and VW-2 for confirmation of the SVE performance. Groundwater monitoring was performed in accordance with the guidelines of the California Underground Storage Tank Regulations, Title 23, Division 3, Chapter 16, California Code of Regulations. Groundwater sampling quality assurance/quality control (QA/QC) procedures are in Attachment A. Field data sheets are in Attachment B.

Analytical Program

Groundwater and vapor samples were analyzed in accordance with the analytical plans in Attachments A and C, respectively. In addition, groundwater samples collected from wells MW-2, MW-7, MW-11, DW-8, IP-1, and IP-8 through IP-10 were tested for additional analytes in accordance with the ISCO pilot test work plan (Arctos, 2011).

Groundwater Results

Groundwater elevations were approximately 435 to 443 feet above mean sea level (MSL; 30 to 35 feet below ground surface [bgs]). Water levels increased an average of 8 feet compared to the fourth quarter 2012 and were an average of 8 feet higher than water levels in the first quarter 2012 (Table 1). The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.019 (1 foot/53 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment D).

During the first quarter 2013, the highest onsite total petroleum hydrocarbons as gasoline (TPHg) and benzene concentrations of 63,000 and 3,000 micrograms per liter (µg/l), respectively, were at well DW-8, located in P Street downgradient of the underground storage tanks (USTs). The highest onsite methyl tert-butyl ether (MTBE) concentration of 7.5 µg/l was at well MW-2, located downgradient of the current dispenser islands. The highest tert-butyl alcohol (TBA) concentration of 110 µg/l was at well DW-8.

Historically, a direct relationship between dissolved-phase hydrocarbons and water levels has been observed at shallow source area wells and an indirect relationship has historically been observed at deep source area wells. Compared to the second quarter 2010, when water levels were at the same elevation, dissolved-phase hydrocarbon concentrations in both shallow and deep source area wells have decreased by 90 to 99 percent. The reductions in hydrocarbon concentrations for shallow source area wells MW-2, MW-11, TP-1, TP-2, and VW-2, and deep source area well DW-1, are summarized in the following table:

Well ID	Date	Groundwater Elevation (ft. MSL)	Petroleum Hydrocarbon Concentration[a] (µg/l)			Percent Reduction
			TPHg	Benzene	MTBE	
MW-2	5/3/10	440.54	26,000	3,100	530	99
	2/12/13	440.85	270	29	7.5	
MW-11	5/3/10	441.90	62,000	3,600	ND<15[b]	90
	2/12/13	442.32	6,400	28	ND<0.5	
TP-1	5/3/10	440.50	15,000	2,100	3,400	99
	2/12/13	440.68	160	ND<0.5	3.3	
TP-2	5/3/10	441.08	6,400	740	14,000	99
	2/12/13	440.97	ND<50	ND<0.5	0.57	
VW-2	5/3/10	441.44	2,800	130	1,300	99
	2/12/13	440.97	ND<50	ND<0.5	ND<0.5	
DW-1	5/3/10	441.15	1,800	160	21	99
	2/12/13	441.22	ND<50	ND<0.5	ND<0.5	

(a) Dissolved-phase petroleum hydrocarbons as analyzed by EPA Method 8260B and reported in micrograms per liter (µg/l).
(b) ND – Not detected at the reporting limit listed.

The highest offsite TPHg, benzene, and MTBE concentrations of 12,000, 1,400, and 200 µg/l, respectively, were at well MW-6, located northwest of the intersection of 1st Street and P Street. The highest offsite TBA concentration of 510 µg/l was at well DW-2, located near well MW-6.

Wells MW-12 and DW-9 are the farthest downgradient shallow and deep well cluster. TPHg, benzene, MTBE, and TBA were detected in deep well DW-9 at concentrations of

7,800, 150, 45, and 110 µg/l, respectively. TPHg and benzene were detected in shallow well MW-12 at concentrations of 2,500 and 7.6 µg/l, respectively. MTBE and TBA were not detected in well MW-12. All offsite benzene concentrations were below the environmental screening level (ESL) of 1,800 µg/l established by the San Francisco Regional Water Quality Control Board for evaluation of potential vapor intrusion concerns.

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

Expanded ISCO Pilot Test

Arctos conducted an ISCO pilot test at well IP-9 in the fourth quarter 2011. Monitoring results for the first quarter 2013 showed that TPHg and benzene concentrations decreased by over 68 percent at injection well IP-9. ISCO pilot test groundwater monitoring results are summarized in Table 4.

The oxidation process caused an increase in hexavalent chromium concentrations at injection well IP-9. The hexavalent chromium concentration in well IP-9 has decreased from 90 to 30 µg/l since the pilot test. Hexavalent chromium was not detected in any other monitoring wells within the ISCO pilot test area.

As described in the 16 March 2012 pilot test report, changes in groundwater chemistry and hydrocarbon concentrations indicated that the RegenOx™ chemical oxidant was effective at desorbing petroleum hydrocarbons from soil and destroying hydrocarbons in groundwater. On 25 March 2013, Arctos obtained approval from Alameda County Environmental Health for an expanded ISCO pilot test to occur on and off site. The objective of the expanded pilot test will be to further assess the effectiveness of the RegenOx™ chemical oxidant at remediating hydrocarbons in soil and groundwater.

Seven offsite injection wells were installed during April 2013. The expanded ISCO pilot test began in May 2013. Well installation activities will be described in the Second Quarter 2013 Status Report. Results of the expanded ISCO pilot test will be described in a report after the completion of the pilot test.

Source Area Remediation

SVE System

On 17 November 2012, the SVE system shut down because of a system alarm. Water levels on site had increased and insufficient screen was exposed for the SVE wells to operate. The system remained shut down during the first quarter 2013.

A soil gas survey was conducted in June 2010 to establish baseline soil vapor conditions before starting the SVE system. On 28 February 2013, water levels decreased to elevations similar to June 2010 and Arctos conducted a soil gas survey to evaluate the effectiveness of the SVE system after approximately 2.5 years of operation. Concentrations of petroleum hydrocarbons in soil vapor decreased by over 90 percent at all SVE and soil vapor monitoring wells between June 2010 and February 2013. The results of the soil gas survey are summarized below and in Table 5. Soil vapor sampling procedures are in Attachment C and laboratory reports and the chain-of-custody forms are in Attachment F.

Well ID	Screen Interval (feet bgs)	Date	Petroleum Hydrocarbon Concentration[a] (mg/m^3)			Percent Reduction
			TPHg	Benzene	MTBE	
MW-1	34 - 54	6/24/10	NS[b]	NS	NS	NA[c]
		2/28/13	NS	NS	NS	
MW-11	28 - 43	6/24/10	2,300	13	ND<0.10[d]	99
		2/28/13	26	ND<0.20	ND<0.20	
TP-1	28 - 43	6/24/10	350	0.15	ND<0.10	91[e]
		2/28/13	32	ND<0.20	ND<0.20	
TP-2	28 - 43	6/24/10	3,600	24	18	99
		2/28/13	26	ND<0.20	ND<0.20	
VW-2	22 - 37	6/24/10	3,100	0.91	ND<0.10	99[e]
		2/28/13	ND<20	ND<0.20	ND<0.20	
VW-3	21 - 36	6/24/10	120	0.33	ND<0.10	92[e]
		2/28/13	ND<20	ND<0.20	ND<0.20	

(a) Vapor-phase petroleum hydrocarbons as analyzed by EPA Method 8260B and reported in milligrams per cubic meter (mg/m^3).
(b) NS – Not sampled. A sample was not collected because of submerged screen.
(c) NA – Not applicable.
(d) ND – Not detected at the reporting limit listed.
(e) Percent reduction calculated using TPHg concentrations.

During SVE operation from June 2010 through November 2012, hydrocarbon mass was removed from the subsurface through (1) volatilization caused by the SVE system and (2) in situ bioremediation from increased oxygen levels. The daily rate of hydrocarbon mass removal by volatilization was calculated from influent soil gas sample results and

field flow measurements. Mass removal by biodegradation was calculated using equations adapted from a U.S. Environmental Protection Agency guidance document (EPA, 1995). SVE influent soil gas analytical results and SVE system parameters used for these calculations are summarized in Tables 6 and 7, respectively. The total hydrocarbon mass removed by the SVE system to date is estimated to be 38,250 pounds or approximately 5,890 gallons (at a density of 6.5 pounds per gallon).

Figures 6, 7, and 8 show soil vapor influent concentrations, mass removal by volatilization, and mass removal by biodegradation, respectively, during SVE operation.

Oxygen Injection System

The oxygen injection system operated at 97 percent uptime during the first quarter 2013. The system was shut down on 28 March in preparation for the expanded ISCO pilot test. The system delivered oxygen to the subsurface in pulsed intervals to increase oxygen levels while decreasing the potential for "pushing" dissolved hydrocarbons away from injection wells. The oxygen purity was approximately 88 percent and the average flow rate was 35 standard cubic feet per hour.

During the first quarter 2013, oxygen was injected into wells IP-2 through IP-5 for 32-minute intervals and wells IP-6 and IP-7 for 52-minute intervals. Wells IP-1 and IP-8 through IP-10 remained shut down for ISCO pilot test monitoring. DO was monitored in the operating injection wells and monitoring wells DW-1, MW-1, MW-2, MW-11, TP-1, TP-2, and VW-2. Average DO was approximately 21 mg/l at the monitoring wells located within 10 feet of active injection wells, indicating that oxygen demand was met. DO readings are summarized in Attachment G.

Source Area Reduction

Concentrations in groundwater have decreased by over 90 percent in source area wells and the plume has decreased in area. Figures 9A through 9C show onsite concentration contour maps for TPHg, benzene, and MTBE in the second quarter 2010 and in the first quarter 2013. Onsite remediation has effectively reduced the lateral extent of source area petroleum hydrocarbons by over 60 percent. As of 28 March, both the SVE and oxygen injection systems are shut down. Based on the expanded treatment area of the ISCO pilot test and the reduced concentrations in the source area, the source area treatment systems are no longer required for soil and groundwater remediation.

Groundwater samples will be collected from the onsite injection wells during the second quarter 2013. Results will be compared to baseline remediation values from the second quarter 2010 and recent monitoring events to (1) assess the effectiveness of the treatment systems and (2) monitor for rebound outside of the ISCO treatment area. The expanded ISCO pilot test will continue to remediate remaining petroleum hydrocarbons in groundwater on site.

ARCTOS

Conclusions

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

1. Onsite hydrocarbon concentrations in groundwater have decreased following SVE and oxygen injection.

2. Petroleum hydrocarbon concentrations in soil vapor at SVE wells have decreased over 90 percent since the second quarter 2010.

3. Based on the expanded treatment area of the ISCO pilot test and the reduced concentrations in the source area, the source area treatment systems are no longer required for soil and groundwater remediation.

4. Downgradient groundwater concentrations are consistent with the previous results and all offsite benzene concentrations are below the ESL for potential vapor intrusion concerns.

Recommendations

Based on the activities completed during this quarter, Arctos recommends the following tasks during the second quarter 2013 and beyond:

- ☐ Conduct the expanded ISCO pilot test in accordance with the work plan
- ☐ Cease operation of the SVE and oxygen injection systems after the expanded ISCO pilot test.

If you have questions or comments, please call Scott Stromberg or Mike Purchase at 510/525-2180.

Very truly yours,

ARCTOS ENVIRONMENTAL

Scott Stromberg
Senior Staff Geologist

Michael P. Purchase, P.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
MICHAEL P. PURCHASE
NO. C71230
Exp. 6/30/13
CIVIL
STATE OF CALIFORNIA

Copy: Paula M. Sime – Tesoro Refining & Marketing Company LLC
Colleen Winey – Zone 7 Water Agency

Attachments:
Table 1 – Well and Groundwater Elevations
Table 2 – Groundwater Analytical Results
Table 3 – Groundwater Analytical Results – Injection Wells
Table 4 – ISCO Pilot Test General Chemistry Concentrations
Table 5 – Soil Vapor Analytical Results
Table 6 – SVE Influent Analytical Results
Table 7 – SVE System Parameters
Figure 1 – Site Location Map
Figure 2 – Groundwater Elevation Contours
Figure 3 – TPHg Concentration Contours
Figure 4 – Benzene Concentration Contours
Figure 5 – MTBE Concentration Contours
Figure 6 – Soil Vapor Influent Concentrations
Figure 7 – Mass Removal by Volatilization
Figure 8 – Mass Removal by Biodegradation
Figure 9A – Onsite TPHg Concentration Contours
Figure 9B – Onsite Benzene Concentration Contours
Figure 9C – Onsite MTBE Concentration Contours
Attachment A – Groundwater Sampling QA/QC Procedures
Attachment B – Field Data Sheets
Attachment C – Soil Vapor Sampling QA/QC Procedures
Attachment D – Historical Well and Groundwater Elevations
Attachment E – Historical Groundwater Analytical Results
Attachment F – Laboratory Analytical Reports and Chain-of-Custody Forms
Attachment G – Oxygen System Monitoring Results
Attachment H – Waste Manifests

References

Arctos Environmental, 2011. *Work Plan for ISCO Pilot Test, 1619 1st Street, Livermore, California, Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0000434*, 9 September.

Arctos Environmental, 2012. *In Situ Chemical Oxidation (ISCO) Pilot Test Report, Tesoro Site No. 67076 (Former Beacon 3604), 1619 1st Street, Livermore, California*, 16 March.

U.S. Environmental Protection Agency, 1995. *Bioventing Principles and Practice, Volume II: Bioventing Design*.

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	1/31/12	36.11	474.21[c]	438.10
	5/7/12	36.14		438.07
	8/6/12	37.40		436.81
	11/12/12	37.10		437.11
	2/12/13	30.98		443.23
MW-2	1/31/12	39.52	472.98	433.46
	5/7/12	36.89		436.09
	8/6/12	40.95		432.03
	11/12/12	39.03		433.95
	2/12/13	32.13		440.85
MW-3	1/31/12	39.05	473.37	434.32
	5/7/12	36.03		437.34
	8/6/12	40.52		432.85
	11/12/12	39.24		434.13
	2/12/13	31.34		442.03
MW-4	1/31/12	38.91	473.64	434.73
	5/7/12	36.24		437.40
	8/6/12	40.69		432.95
	11/12/12	39.65		433.99
	2/12/13	31.56		442.08
MW-5	1/31/12	39.80	472.67	432.87
	5/7/12	37.29		435.38
	8/6/12	NM[d]		--
	11/12/12	40.72		431.95
	2/12/13	32.68		439.99
MW-6	1/31/12	42.15	471.93	429.78
	5/7/12	39.11		432.82
	8/6/12	43.66		428.27
	11/12/12	42.20		429.73
	2/12/13	34.24		437.69
MW-7	1/31/12	38.74	472.33	433.59
	5/7/12	35.97		436.36
	8/6/12	39.85		432.48

TABLE 1

WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7	11/12/12	38.73	472.33	433.60
(cont.)	2/12/13	31.46		440.87
MW-8	1/31/12	40.08	471.18	431.10
	5/7/12	37.38		433.80
	8/6/12	41.94		429.24
	11/12/12	40.87		430.31
	2/12/13	32.81		438.37
MW-9	1/31/12	42.06	470.78	428.72
	5/7/12	39.43		431.35
	8/6/12	43.51		427.27
	11/12/12	42.66		428.12
	2/12/13	34.70		436.08
MW-10	1/31/12	39.67	471.63	431.96
	5/7/12	38.14		433.49
	8/6/12	40.65		430.98
	11/12/12	40.53		431.10
	2/12/13	33.19		438.44
MW-11	1/31/12	34.36	472.96[(c)]	438.60
	5/7/12	31.61		441.35
	8/6/12	35.20		437.76
	11/12/12	35.34		437.62
	2/12/13	30.64		442.32
MW-12	6/14/12	40.62	469.77	429.15
	8/6/12	43.22		426.55
	11/12/12	41.85		427.92
	2/12/13	34.10		435.67
VW-2	1/31/12	32.19	472.57[(c)]	440.38
	5/7/12	31.50		441.07
	8/6/12	32.64		439.93
	11/12/12	33.90		438.67
	2/12/13	31.60		440.97
VW-3	1/31/12	DRY[(e)]	474.38	--
	5/7/12	DRY		--

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)
VW-3	8/6/12	DRY	474.38	--
(cont.)	11/12/12	DRY		--
	2/12/13	31.70		442.68
TP-1	1/31/12	35.43	472.64[c]	437.21
	5/7/12	34.70		437.94
	8/6/12	36.59		436.05
	11/12/12	37.00		435.64
	2/12/13	31.96		440.68
TP-2	1/31/12	34.32	472.78[c]	438.46
	5/7/12	34.41		438.37
	8/6/12	36.00		436.78
	11/12/12	36.25		436.53
	2/12/13	31.81		440.97
DW-1	1/31/12	39.39	472.85	433.46
	5/7/12	36.35		436.50
	8/6/12	40.60		432.25
	11/12/12	39.29		433.56
	2/12/13	31.63		441.22
DW-2	1/31/12	42.19	471.61	429.42
	5/7/12	39.10		432.51
	8/6/12	43.90		427.71
	11/12/12	42.25		429.36
	2/12/13	34.35		437.26
DW-3	1/31/12	42.10	470.33	428.23
	5/7/12	38.70		431.63
	8/6/12	43.26		427.07
	11/12/12	41.48		428.85
	2/12/13	33.87		436.46
DW-4	1/31/12	42.10	468.48	426.38
	5/7/12	38.26		430.22
	8/6/12	42.80		425.68
	11/12/12	40.86		427.62
	2/12/13	33.29		435.19

TABLE 1

WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-5	1/31/12	42.31	471.86	429.55
	5/7/12	38.98		432.88
	8/6/12	46.32		425.54
	11/12/12	41.65		430.21
	2/12/13	34.10		437.76
DW-6	1/31/12	42.69	471.77	429.08
	5/7/12	39.82		431.95
	8/6/12	44.50		427.27
	11/12/12	42.95		428.82
	2/12/13	34.96		436.81
DW-7	1/31/12	42.35	470.07	427.72
	5/7/12	39.30		430.77
	8/6/12	44.02		426.05
	11/12/12	42.43		427.64
	2/12/13	34.54		435.53
DW-8	1/31/12	38.69	472.31	433.62
	5/7/12	35.52		436.79
	8/6/12	39.61		432.70
	11/12/12	38.00		434.31
	2/12/13	30.46		441.85
DW-9	6/14/12	40.85	469.80	428.95
	8/6/12	43.65		426.15
	11/12/12	42.05		427.75
	2/12/13	34.25		435.55

(a) Elevation of PVC well casing (north edge) surveyed relative to mean sea level (MSL).
Wells were surveyed by Cross Land Surveying, Inc., per AB 2886 requirements.
Benchmark K2-741, elevation is 467.835 feet above MSL.

(b) Water Table Elevation = (Casing Elevation - Depth to Water)

(c) Wells were resurveyed by Cross Land Surveying, Inc., per AB 2886 requirements, on 19 October 2010 after remediation system construction.
Benchmark K2-741, elevation is 467.835 feet above MSL.

(d) NM - Not Measured

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

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[a] (µg/l)	Benzene[a] (µg/l)	Toluene[a] (µg/l)	Ethylbenzene[a] (µg/l)	Total Xylenes[a] (µg/l)	MTBE[a] (µg/l)	DIPE[a] (µg/l)	ETBE[a] (µg/l)	TAME[a] (µg/l)	TBA[a] (µg/l)	Methanol[a] (µg/l)	Ethanol[a] (µg/l)	1,2-DCA[a] (µg/l)	EDB[a] (µg/l)
MW-1	1/31/12	1,700	1.6	11	26	89	ND<0.5[b]	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<100	ND<0.5	ND<0.5
	5/9/12	3,300	2.2	5.5	52	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<100	ND<5	ND<0.5	ND<0.5
	8/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	110	ND<0.5	ND<0.5	1.1	3.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-2	2/1/12	14,000	1,200	130	440	650	340	ND<2.5	ND<2.5	5.4	170	ND<800	ND<25	ND<2.5	ND<2.5
	5/11/12	14,000	1,200	140	490	1,000	220	ND<2.5	ND<2.5	2.7	120	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	15,000	720	120	460	580	140	ND<2.5	ND<2.5	2.6	70	ND<250	ND<25	ND<2.5	ND<2.5
	11/14/12	5,700	480	30	96	300	200	ND<0.9	ND<0.9	1.8	110	ND<200	ND<9	ND<0.9	ND<0.9
	2/13/13	270	29	4.4	8.9	19	7.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-3	1/31/12	ND<50	ND<0.5	0.67	7.1	3.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/7/12	74	ND<0.5	0.56	1.9	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	170	ND<0.5	0.83	4.1	15	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-4	1/31/12	NS[c]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-5	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	1/31/12	5,200	370	6.7	5.1	12	84	ND<0.9	ND<0.9	ND<0.9	1,500	ND<90	ND<10	ND<0.9	ND<0.9
	5/10/12	11,000	1,200	60	140	69	150	ND<0.9	ND<0.9	ND<2	290	ND<250	ND<9	ND<0.9	ND<0.9

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[a] (µg/l)	Benzene[a] (µg/l)	Toluene[a] (µg/l)	Ethylbenzene[a] (µg/l)	Total Xylenes[a] (µg/l)	MTBE[a] (µg/l)	DIPE[a] (µg/l)	ETBE[a] (µg/l)	TAME[a] (µg/l)	TBA[a] (µg/l)	Methanol[a] (µg/l)	Ethanol[a] (µg/l)	1,2-DCA[a] (µg/l)	EDB[a] (µg/l)
MW-6	8/8/12	12,000	1,200	31	69	47	170	ND<2.5	ND<2.5	ND<2.5	440	ND<250	ND<25	ND<2.5	ND<2.5
(cont.)	11/14/12	17,000	1,600	68	120	96	190	ND<2.5	ND<2.5	ND<2.5	86	ND<500	ND<25	ND<2.5	ND<2.5
	2/14/13	12,000	1,400	42	230	56	200	ND<2.5	ND<2.5	2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
MW-7	1/31/12	1,700	1.5	0.55	6.0	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/9/12	1,600	1.4	0.79	1.4	0.95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	1,500	1.0	ND<0.5	0.51	0.65	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/12	690	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	860	1.0	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-8	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	2,500	12	1.1	9.0	3.0	7.4	ND<0.5	ND<0.5	ND<0.5	8.8	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/13/12	740	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	2/1/12	13,000	380	710	83	2,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<50	ND<2.5	ND<2.5
	5/11/12	1,100	3.8	15	6.7	150	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/7/12	10,000	54	83	270	1,400	2.3	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethylbenzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
MW-11	11/13/12	1,100	5.7	4.1	15	86	1.6	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	2/13/13	6,400	28	72	160	860	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
MW-12	6/14/12	6,900	8.5	2.2	96	22	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	8/8/12	6,000	10	2.2	100	12	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	11/14/12	5,500	6.8	2.0	67	13	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	2/13/13	2,500	7.6	1.3	26	3.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
VW-2	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
VW-3	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	590	1.6	ND<0.5	7.1	22	28	ND<0.5	ND<0.5	ND<0.5	27	ND<80	ND<5	ND<0.5	ND<0.5
	8/7/12	2,800	24	3.7	74	68	110	ND<0.5	ND<0.5	0.94	62	ND<400	ND<5	ND<0.5	ND<0.5
	11/13/12	180	2.3	0.63	4.7	2.3	17	ND<0.5	ND<0.5	ND<0.5	9.6	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	160	ND<0.5	ND<0.5	3.6	6.0	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
TP-2	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	59	ND<0.5	ND<0.5	0.59	0.54	2.8	ND<0.5	ND<0.5	ND<0.5	13	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	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

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethylbenzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
DW-1	2/1/12	2,500	23	6.4	85	190	3.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/9/12	2,000	24	5.6	75	160	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	140	1.7	1.0	3.2	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	250	ND<0.5	ND<0.5	2.7	5.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	0.54	0.68	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-2	1/31/12	4,400	220	7.0	15	8.9	130	ND<0.5	ND<0.5	1.2	400	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/12	2,200	140	8.6	0.63	15	98	ND<0.5	ND<0.5	1.1	430	ND<200	ND<8	ND<0.5	ND<0.5
	8/7/12	4,000	360	8.9	14	15	110	ND<0.5	ND<0.5	1.2	380	ND<400	ND<5	ND<0.5	ND<0.5
	11/14/12	4,000	190	7.8	13	13	120	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
	2/13/13	6,400	500	18	60	19	140	ND<0.5	ND<0.5	1.6	510	ND<400	ND<8	ND<0.5	ND<0.5
DW-3	1/31/12	1,300	1.0	ND<0.5	19	15	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	750	1.2	ND<0.5	5.4	4.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/6/12	900	0.56	ND<0.5	7.0	4.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/12	410	ND<0.5	ND<0.5	1.7	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	120	ND<0.5	ND<0.5	1.2	0.50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-4	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	0.70	1.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-5	1/31/12	8,200	130	5.9	170	180	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<200	ND<1.5	ND<1.5
	5/10/12	11,000	100	6.8	320	380	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5
	8/8/12	14,000	84	11	480	590	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	11/14/12	8,800	24	2.5	110	140	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	4,400	65	5.4	110	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
DW-6	1/31/12	4,700	13	2.4	51	12	8.1	ND<0.5	ND<0.5	ND<0.5	28	ND<50	ND<80	ND<0.5	ND<0.5
	5/10/12	2,600	7.8	1.6	12	5.2	4.6	ND<0.5	ND<0.5	ND<0.5	17	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethylbenzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
DW-6	8/6/12	4,500	15	3.2	41	8.3	6.2	ND<0.5	ND<0.5	ND<0.5	20	ND<50	ND<8	ND<0.5	ND<0.5
(cont.)	11/14/12	3,000	5.4	1.8	11	4.7	2.1	ND<0.5	ND<0.5	ND<0.5	6.8	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	4,600	25	4.0	53	8.7	10	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<9	ND<0.5	ND<0.5
DW-7	1/31/12	7,800	380	14	170	59	120	ND<0.5	ND<0.5	1.3	300	ND<150	ND<50	ND<0.5	ND<0.5
	5/10/12	940	47	1.6	6.1	5.2	120	ND<0.5	ND<0.5	1.1	280	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	1,200	33	2.5	8.0	8.4	80	ND<0.5	ND<0.5	0.83	250	ND<300	ND<5	ND<0.5	ND<0.5
	11/13/12	6,500	340	11	45	22	51	ND<0.5	ND<0.5	0.56	160	ND<80	ND<8	ND<0.5	ND<0.5
	2/13/13	970	78	3.0	10	2.7	18	ND<0.5	ND<0.5	ND<0.5	56	ND<50	ND<5	ND<0.5	ND<0.5
DW-8	2/1/12	52,000	2,500	5,200	1,900	8,200	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	5/11/12	11,000	500	1,000	300	1,200	ND<2.5	ND<2.5	ND<2.5	ND<2.5	25	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	52,000	1,900	4,500	1,500	5,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	58	ND<250	ND<25	ND<2.5	ND<2.5
	11/14/12	27,000	580	870	510	3,400	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
	2/14/13	63,000	3,000	5,400	2,000	8,700	ND<5	ND<5	ND<5	ND<5	110	ND<500	ND<150	ND<5	ND<5
DW-9	6/14/12	8,300	89	2.4	21	96	36	ND<1.5	ND<1.5	ND<1.5	80	ND<150	ND<15	ND<1.5	ND<1.5
	8/8/12	12,000	310	11	400	110	35	ND<1.5	ND<1.5	ND<1.5	96	ND<150	ND<15	ND<1.5	ND<1.5
	11/14/12	10,000	210	7.5	230	65	28	ND<1.5	ND<1.5	ND<1.5	94	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	7,800	150	9.4	160	28	45	ND<1.5	ND<1.5	ND<1.5	110	ND<150	ND<15	ND<1.5	ND<1.5

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

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

(c) NS - Not sampled.

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[a] (µg/l)	Benzene[a] (µg/l)	Toluene[a] (µg/l)	Ethylbenzene[a] (µg/l)	Total Xylenes[a] (µg/l)	MTBE[a] (µg/l)	DIPE[a] (µg/l)	ETBE[a] (µg/l)	TAME[a] (µg/l)	TBA[a] (µg/l)	Methanol[a] (µg/l)	Ethanol[a] (µg/l)	1,2-DCA[a] (µg/l)	EDB[a] (µg/l)
IP-1	7/23/08	62,000	2,100	6,800	2,700	11,000	16	ND<15[b]	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	10/13/08	55,000	3,100	3,300	2,300	7,700	ND<15	ND<15	ND<15	ND<15	98	ND<1,500	ND<150	ND<15	ND<15
	5/5/10[c]	33,000	900	1,500	1,400	5,000	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	4/27/11	24,000	750	2,200	420	4,800	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	2/1/12	15,000	370	350	600	1,300	ND<2	ND<2	ND<2	ND<2	16	ND<200	ND<20	NS[d]	NS
	5/9/12	16,000	580	850	800	2,100	ND<2	ND<2	ND<2	ND<2	12	ND<200	ND<20	ND<2	ND<2
	8/8/12	12,000	260	190	470	860	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	11/13/12	9,000	170	74	280	540	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	2/13/13	17,000	480	480	690	2,000	ND<2	ND<2	ND<2	ND<2	20	ND<200	ND<20	ND<2	ND<2
IP-2	7/23/08	5,500	160	43	130	350	10	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	13,000	1,900	58	600	630	180	ND<0.9	ND<0.9	9.4	46	ND<90	ND<20	ND<0.9	ND<0.9
	5/5/10[c]	2,700	66	220	61	240	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/26/11	350	8.9	1.7	4.7	5.7	0.90	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	340	10	4.8	6.3	13	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-3	7/23/08	1,100	23	14	7.5	90	32	ND<0.5	ND<0.5	ND<0.5	32	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	1,700	83	4.7	11	54	72	ND<0.5	ND<0.5	0.84	71	ND<50	ND<8	ND<0.5	ND<0.5
	5/5/10[c]	430[e]	6.4	22	4.9	21	3.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[a] (µg/l)	Benzene[a] (µg/l)	Toluene[a] (µg/l)	Ethylbenzene[a] (µg/l)	Total Xylenes[a] (µg/l)	MTBE[a] (µg/l)	DIPE[a] (µg/l)	ETBE[a] (µg/l)	TAME[a] (µg/l)	TBA[a] (µg/l)	Methanol[a] (µg/l)	Ethanol[a] (µg/l)	1,2-DCA[a] (µg/l)	EDB[a] (µg/l)
IP-3	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-4	7/23/08	7,600	130	45	240	750	940	ND<1.5	ND<1.5	6.9	890	ND<150	ND<15	ND<1.5	ND<1.5
	10/13/08	4,200	110	11	78	310	3,700	ND<1.5	ND<1.5	7.1	15,000	ND<2,000	ND<15	ND<1.5	ND<1.5
	5/6/10[c]	190	5.4	25	6.9	29	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	5.3	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-5	7/23/08	2,000[e]	3.0	17	5.1	31	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	720	14	13	8.7	32	19	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
	5/6/10[c]	270	5.7	25	5.9	29	20	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.72	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-6	7/23/08	4,400	260	78	98	340	180	ND<0.5	ND<0.5	1.6	190	ND<80	ND<9	ND<0.5	ND<0.5
	10/13/08	1,400	150	1.6	1.5	3.5	7.4	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<50	ND<0.5	ND<0.5
	5/5/10[c]	8,000[e]	24	100	18	98	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	1.1	0.66	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[a] (µg/l)	Benzene[a] (µg/l)	Toluene[a] (µg/l)	Ethylbenzene[a] (µg/l)	Total Xylenes[a] (µg/l)	MTBE[a] (µg/l)	DIPE[a] (µg/l)	ETBE[a] (µg/l)	TAME[a] (µg/l)	TBA[a] (µg/l)	Methanol[a] (µg/l)	Ethanol[a] (µg/l)	1,2-DCA[a] (µg/l)	EDB[a] (µg/l)
IP-6	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	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.)	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-7	7/23/08	4,200	190	12	99	190	49	ND<0.9	ND<0.9	1.1	58	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	6,000	350	6.6	150	60	97	ND<0.9	ND<0.9	2.5	76	ND<90	ND<50	ND<0.9	ND<0.9
	5/5/10[c]	33,000	49	62	38	69	14	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<9	ND<0.9	ND<0.9
	4/27/11	220	8.1	0.69	3.4	1.50	0.95	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-8	12/16/08	120,000	7,800	20,000	3,500	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	5/5/10[c]	83,000	3,900	13,000	2,400	14,000	ND<25	ND<25	ND<25	ND<25	ND<150	ND<2,500	ND<250	ND<25	ND<25
	4/28/11	13,000	620	2,000	240	2,200	ND<3	ND<3	ND<3	ND<3	27	ND<300	ND<30	ND<3	ND<3
	2/1/12	67,000	2,900	7,300	1,400	11,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	NS	NS
	5/9/12	50,000	2,400	4,900	790	8,600	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	8/8/12	63,000	3,500	6,700	980	7,400	ND<9	ND<9	ND<9	ND<9	65	ND<900	ND<90	ND<9	ND<9
	11/14/12	33,000	1,000	2,300	260	4,300	ND<7	ND<7	ND<7	ND<7	47	ND<700	ND<70	ND<7	ND<7
	2/14/13	65,000	3,300	7,100	1,600	9,200	ND<7	ND<7	ND<7	ND<7	110	ND<700	ND<150	ND<7	ND<7
IP-9	12/16/08	110,000	7,800	23,000	2,800	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	5/5/10[c]	92,000	6,000	19,000	2,500	14,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	4/28/11	38,000	1,400	4,300	860	6,000	ND<6	ND<6	ND<6	ND<6	38	ND<600	ND<60	ND<6	ND<6
	2/1/12	19,000	180	1,200	640	3,100	ND<3	ND<3	ND<3	ND<3	ND<15	ND<300	ND<30	NS	NS

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethylbenzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
IP-9	5/9/12	10,000	14	180	270	780	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
(cont.)	8/7/12	11,000	22	240	210	880	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	11/13/12	9,800	22	200	150	690	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	12,000	68	560	280	1,300	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
IP-10	2/11/09	8,100	29	58	170	1,200	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5
	5/3/10[(c)]	3,600	73	80	140	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	4/26/11	4,300	28	140	110	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<8	ND<0.5	ND<0.5
	2/1/12	3,200	8.2	4.6	93	2.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	NS	NS
	5/9/12	3,900	24	38	110	58	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	8/7/12	2,700	15	5.8	31	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/12	2,600	12	7.6	4.7	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/12/13	6,500	26	270	180	590	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5

(a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 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) Baseline remediation system values.
(d) NS - Not sampled.
(e) Primarily compounds not found in typical Gasoline.

TABLE 4

ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	Nitrate[a] (mg/l)	Sulfate[a] (mg/l)	Arsenic[b] (mg/l)	Chromium[b] (mg/l)	Iron[b] (mg/l)	Manganese[b] (mg/l)	Sodium[b] (mg/l)	Hex Chrome[c] (µg/l)	Fe(2+)[d] (mg/l)	CO_2[e] (µg/l)	CH_4[e] (µg/l)	Alk[f] (mg/l)	TDS[g] (mg/l)
MW-11	9/20/11	ND<0.1[h]	30	ND<0.015	0.0056	1.8	3.6	67	ND<1	ND<0.1	90,300	36.0	702	840
	10/25/11	ND<0.5	85	ND<0.015	0.011	3.2	2.8	290	ND<1	ND<0.1	60,100	55.1	1,200	1,520
	11/17/11	ND<0.1	170	0.030	0.010	2.9	1.2	740	ND<1	ND<0.15	1,870	6.52	1,630	2,340
	12/14/11	0.12	140	0.021	0.034	9.6	0.84	540	2.6	ND<0.1	29,200	10.1	316	2,270
	2/1/12	ND<0.1	76	0.14	1.6	680	36	470	ND<1	ND<0.1	170[i]	27.4	1,430	1,640
	5/11/12	0.34	14	ND<0.015	0.050	15	2.8	210	ND<1	0.11	140[i]	99.1	771	870
	8/7/12	ND<0.5	51	0.021	0.066	21	3.2	610	ND<1	0.10	110[i]	284	1,760	1,960
	11/13/12	1.2	53	0.10	1.4	410	16	230	ND<1	ND<0.1	34,200	173	730	955
	2/13/13	0.49	95	0.062	0.39	130	5.8	730	ND<1	ND<0.1	64,900	139	1,960	2,380
MW-2	12/15/11	ND<0.1	23	ND<0.015	0.026	7.4	2.2	51	ND<1	ND<0.1	64,200	2,040	574	540
	2/1/12	ND<0.1	7.6	0.030	0.18	55	5.9	52	ND<1	ND<0.1	100[i]	3,080	562	655
	5/11/12	ND<0.1	12	ND<0.015	0.098	29	5.5	46	ND<1	ND<0.1	120[i]	1,670	496	600
	8/8/12	ND<0.5	2.9	ND<0.015	0.092	25	4.2	45	ND<1	ND<0.1	70[i]	2,000	504	525
	11/14/12	ND<0.1	8.3	ND<0.015	0.095	28	3.5	44	ND<1	ND<0.1	51,200	1,190	584	680
	2/13/13	4.0	99	ND<0.015	0.0088	3.2	0.50	54	ND<1	ND<0.1	82,200	94.1	647	915
MW-7	12/15/11	ND<0.1	6.5	ND<0.015	0.32	88	5.4	58	ND<1	ND<0.1	28,100	1,080	433	515
	5/9/12	ND<0.1	7.3	0.037	0.36	110	7.1	59	ND<1	ND<0.1	55[i]	1,210	377	540
	8/7/12	ND<0.5	72	0.031	0.32	84	9.6	68	ND<1	ND<0.1	37[i]	806	416	450
	11/13/12	ND<0.1	81	0.046	0.40	130	12	57	ND<1	ND<0.1	14,000	663	302	620
	2/12/13	ND<0.1	27	ND<0.015	0.10	30	2.7	56	ND<1	ND<0.1	17,500	1,420	366	525
IP-1	9/20/11	ND<0.1	3.9	ND<0.015	ND<0.005	1.3	2.6	34	ND<1	ND<0.1	24,000	474	369	483
	10/25/11	ND<0.5	11	ND<0.015	0.018	2.6	2.4	64	ND<1	ND<0.1	20,600	311	378	557
	11/17/11	ND<0.1	24	0.02	0.012	3.9	3.8	93	ND<1	ND<0.1	34,300	1,180	576	660
	12/15/11	0.20	26	0.015	0.017	5.5	3.3	110	ND<1	0.11	12,800	916	580	620
	2/1/12	ND<0.1	1.2	ND<0.015	ND<0.005	2.0	3.6	73	ND<1	ND<0.1	72[i]	1,130	542	635

TABLE 4

ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	Nitrate[a] (mg/l)	Sulfate[a] (mg/l)	Arsenic[b] (mg/l)	Chromium[b] (mg/l)	Iron[b] (mg/l)	Manganese[b] (mg/l)	Sodium[b] (mg/l)	Hex Chrome[c] (µg/l)	Fe(2+)[d] (mg/l)	CO_2[e] (µg/l)	CH_4[e] (µg/l)	Alk[f] (mg/l)	TDS[g] (mg/l)
IP-1	5/9/12	ND<0.1	ND<0.5	ND<0.015	0.011	5.8	3.7	76	ND<1	ND<0.1	96[i]	1,060	530	650
(cont.)	8/8/12	ND<0.5	ND<0.5	0.023	0.50	140	8.0	71	ND<1	ND<0.1	38[i]	1,570	444	435
	11/13/12	ND<0.1	ND<0.5	ND<0.015	0.028	9.7	3.0	68	ND<1	ND<0.1	22,200	1,070	418	540
	2/13/13	ND<0.1	ND<0.5	ND<0.015	0.056	18	3.6	60	ND<1	0.37	26,000	2,980	406	585
IP-8	9/20/11	0.17	10	ND<0.015	ND<0.005	0.54	2.0	35	ND<1	ND<0.1	6,930	49.6	229	350
	10/25/11	ND<0.5	44	ND<0.015	ND<0.005	1.6	3.8	140	ND<1	ND<0.1	12,300	109	692	1,020
	11/17/11	ND<0.1	69	ND<0.015	0.011	3.2	3.3	160	ND<1	ND<0.1	4,470	184	795	960
	11/22/11	0.31	34	ND<0.015	0.011	2.9	2.4	81	ND<1	ND<0.1	32,800	1,150	562	715
	12/14/11	0.24	52	ND<0.015	0.023	6.2	3.7	110	ND<1	ND<0.1	11,800	80.6	650	920
	2/1/12	ND<0.1	42	ND<0.015	0.036	11	3.0	110	ND<1	ND<0.1	48[i]	262	688	890
	5/9/12	ND<0.1	26	ND<0.015	0.0098	3.1	2.5	100	ND<1	ND<0.1	44[i]	143	686	925
	8/8/12	ND<0.5	15	ND<0.015	0.013	4.4	3.3	110	ND<1	ND<0.1	40[i]	447	664	735
	11/14/12	ND<0.1	1.6	ND<0.015	ND<0.005	0.45	3.0	84	ND<1	ND<0.1	26,400	105	588	710
	2/14/13	0.11	14	ND<0.015	ND<0.005	0.46	3.2	100	ND<1	ND<0.1	30,700	1,550	659	810
IP-9	9/20/11	ND<0.1	11	ND<0.015	ND<0.005	0.34	1.1	41	ND<1	ND<0.1	10,100	64.6	305	413
	10/25/11	ND<2.5	630	0.24	0.21	50	0.92	4,700	84	ND<0.1	935	7.51	9,770	12,200
	11/17/11	2.5	710	0.16	0.15	34	0.54	8,500	79	ND<0.15	14,500	3.88	18,700	21,300
	11/22/11	ND<0.5	300	0.049	0.017	1.8	0.10	1,500	12	ND<0.1	1,080	302	3,010	3,960
	12/14/11	ND<2	1,400	0.42	0.15	30	0.65	18,000	90	ND<0.1	5,130	5.12	35,100	44,300
	2/1/12	0.76	850	0.56	0.074	9.2	0.14	7,200	79	ND<0.1	ND<5[i]	54.0	14,000	20,400
	5/9/12	0.62	620	0.66	0.074	12	0.14	4,600	60	ND<0.1	ND<5[i]	59.4	9,490	7,480
	8/7/12	ND<2.5	810	0.90	0.14	75	0.74	5,900	60	ND<0.1	ND<5[i]	41.0	10,600	13,000
	11/13/12	ND<0.2	580	0.71	0.050	6.3	0.12	4,300	48	ND<0.1	80.6	62.4	8,020	10,200
	2/13/13	ND<0.5	440	0.57	0.039	2.2	0.16	3,000	30	ND>0.1	5,990	112	6,100	7,920
IP-10	9/20/11	ND<0.1	26	ND<0.015	ND<0.005	0.46	1.4	48	ND<1	ND<0.1	5,530	39.0	290	483
	10/25/11	ND<0.5	37	ND<0.015	ND<0.005	0.79	4.2	74	ND<1	ND<0.1	15,500	139	390	625
	11/17/11	ND<0.1	34	ND<0.015	0.015	4.2	2.8	96	ND<1	ND<0.1	26,700	711	458	510

TABLE 4

ISCO PILOT TEST GENERAL CHEMISTRY CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	Nitrate[a] (mg/l)	Sulfate[a] (mg/l)	Arsenic[b] (mg/l)	Chromium[b] (mg/l)	Iron[b] (mg/l)	Manganese[b] (mg/l)	Sodium[b] (mg/l)	Hex Chrome[c] (µg/l)	Fe(2+)[d] (mg/l)	CO_2[e] (µg/l)	CH_4[e] (µg/l)	Alk[f] (mg/l)	TDS[g] (mg/l)
IP-10	12/14/11	ND<0.1	31	ND<0.015	ND<0.01	3.2	3.5	92	ND<1	ND<0.1	14,000	644	455	640
(cont.)	2/1/12	ND<0.1	21	ND<0.015	ND<0.005	0.54	2.8	64	ND<1	ND<0.1	36[i]	237	353	505
	5/9/12	ND<0.1	4.2	ND<0.015	ND<0.005	1.0	3.0	66	ND<1	ND<0.1	46[i]	478	368	530
	8/7/12	ND<0.5	3.2	ND<0.015	ND<0.005	1.4	2.6	60	ND<1	ND<0.1	30[i]	535	335	435
	11/13/12	ND<0.1	0.86	ND<0.015	ND<0.005	1.6	2.8	57	ND<1	ND<0.1	11,900	747	304	445
	2/12/13	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.4	2.7	52	ND<1	0.26	12,600	1,420	311	390
DW-8	9/20/11	ND<0.1	6.7	ND<0.015	ND<0.005	1.9	2.8	45	ND<1	ND<0.1	27,600	1,110	502	615
	10/25/11	ND<0.5	85	ND<0.015	ND<0.005	1.4	1.2	100	ND<1	ND<0.1	16,000	519	564	780
	11/17/11	ND<0.1	48	ND<0.015	ND<0.005	0.76	1.5	92	ND<1	ND<0.1	19,100	140	591	610
	11/22/11	ND<0.1	24	ND<0.015	0.031	9.1	2.4	64	ND<1	0.16	23,200	1,480	498	560
	12/15/11	ND<0.1	36	ND<0.015	ND<0.005	0.88	2.4	78	ND<1	ND<0.1	19,100	1,210	510	560
	2/1/12	ND<0.1	37	ND<0.015	0.0055	1.9	3.0	90	ND<1	ND<0.1	51[i]	1,170	598	795
	5/11/12	ND<0.1	14	ND<0.015	ND<0.005	0.12	0.14	77	2.2	ND<0.1	ND<5[i]	306	195	330
	8/8/12	ND<0.5	14	ND<0.015	0.0057	2.4	2.7	100	ND<1	ND<0.1	38[i]	404	556	600
	11/14/12	ND<0.1	1.6	ND<0.015	ND<0.005	1.2	2.5	91	ND<1	ND<0.1	15,300	632	472	600
	2/14/13	ND<0.1	10	ND<0.015	0.0056	2.4	3.3	150	ND<1	ND<0.1	34,400	1,520	786	930

(a) Nitrate and sulfate analyzed by EPA Method 300.0; reported in milligrams per liter (mg/l).
(b) Arsenic, chromium, iron, manganese, and sodium analyzed by EPA Method 6010B; reported in milligrams per liter (mg/l).
(c) Hexavalent chromium (Hex Chrome) analyzed by EPA Method 7199; reported in micrograms per liter (µg/l).
(d) Ferrous Iron (Fe (2+)) analyzed by Standard Method 3500-Fe D; reported in milligrams per liter (mg/l).
(e) Carbon dioxide (CO_2) and methane (CH_4) analyzed by EPA Method RSK-175M; reported in micrograms per liter (µg/l).
(f) Total alkalinity as CaCO3 analyzed by Standard Method 2320B; reported in milligrams per liter (mg/l).
(g) Total dissolved solids (TDS) analyzed by Standard Method 2540 C; reported in milligrams per liter (mg/l).
(h) ND - Not detected at the reporting limit listed.
(i) CO_2 analyzed by Standard Method 4500 C; reported in milligrams per liter (mg/l).

TABLE 5

SOIL VAPOR ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Sample Location	Sample Date	TPHg[a] (µg/l)	Benzene[a] (µg/l)	Toluene[a] (µg/l)	Ethylbenzene[a] (µg/l)	Total Xylenes[a] (µg/l)	MTBE[a] (µg/l)	TBA[a] (µg/l)	Oxygen[b]	Carbon Dioxide[b]
MW-1	6/24/10	NS[c]	NS	NS	NS	NS	NS	NS	NS	NS
	2/28/13	NS	NS	NS	NS	NS	NS	NS	NA[d]	NA
MW-11	6/24/10	2,300	13	10	7.4	21	ND<0.10[d]	ND<1.0	16	4.29
	2/28/13	26	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA
TP-1	6/24/10	350	0.15	0.25	0.46	1.1	ND<0.10	ND<1.0	21.7	ND<0.5
	2/28/13[e]	32	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA
TP-2	6/24/10	3,600	24	0.59	27	28	18	ND<1.0	20.3	0.93
	2/28/13	26	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA
VW-2	6/24/10	3,100	0.91	0.68	1.8	2.1	ND<0.10	ND<1.0	17	2.96
	2/28/13	ND<20	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA
VW-3	6/24/10[e]	120	0.33	ND<0.20	1.8	2.3	ND<0.10	ND<1.0	21.9	ND<0.5
	2/28/13	ND<20	ND<0.20	ND<0.20	ND<0.25	ND<0.20	ND<0.20	NA	NA	NA

(a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, total xylenes, methyl tert-butyl ether (MTBE), and tert-butyl alcohol (TBA) anaylzed using EPA Method 8260B.
(b) Results are in percent by volume.
(c) NS - Not sampled. A sample was not collected because of submerged screen.
(d) NA - Not analyzed.
(e) ND - Not detected at the reporting limit listed.
(f) Duplicate sample also collected; highest value presented in table (see laboratory report for results).

TABLE 6

SVE INFLUENT ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Sample ID	Date	TPHg[a] (ppmv)	Benzene[a] (ppmv)	Toluene[a] (ppmv)	Ethylbenzene[a] (ppmv)	Xylenes[a] (ppmv)	MTBE[a] (ppmv)	Methane[b] (%)	Carbon Dioxide[b] (%)	Carbon Monoxide[b] (%)	Oxygen[b] (%)	Nitrogen[b] (%)
SVE-Influent-0	6/29/10	5,300	16	20	45	110	75	--[c]	--	--	--	--
SVE-Influent-1	6/29/10	4,700	15	12	36	90	58	0.58	3.6	ND<0.5[d]	16.4	79.4
SVE-Influent	6/30/10	3,200	12	20	30	76	60	--	--	--	--	--
SVE-Influent	7/1/10	3,400	12	22	34	84	68	ND<0.5	4.0	ND<0.5	15.9	80.1
SVE-Influent	7/6/10	4,000	9.4	24	36	92	87	ND<0.5	4.3	ND<0.5	16.1	79.5
SVE-Influent	7/8/10	7,500	14	25	44	110	87	ND<0.5	5.3	ND<0.5	13.5	81.0
SVE-Influent	7/14/10	4,200	7.0	22	29	82	50	ND<0.5	5.5	ND<0.5	15.5	78.9
SVE-Influent	7/28/10	3,000	3.5	15	20	64	34	ND<0.5	4.0	ND<0.5	17.4	78.6
SVE-Manifold	8/5/10	4,800	4.4	12	20	66	28	ND<0.5	5.3	ND<0.5	12.1	82.4
SVE-Manifold	8/18/10	4,300	4.3	12	19	72	29	ND<0.5	5.2	ND<0.5	13.2	81.5
SVE-Manifold	9/7/10	1,100	2.2	6.2	4.8	26	10	ND<0.5	4.1	ND<0.5	17.6	78.3
SVE-Manifold	9/16/10	1,600	3.2	8.3	7.6	44	13	ND<0.5	4.0	ND<0.5	17.6	78.4
SVE-Manifold	9/29/10	1,800	2.8	5.6	6.1	34	12	ND<0.5	3.6	ND<0.5	15.4	81.0
SVE-Manifold	10/7/10	2,100	6.1	8.8	7.3	36	11	ND<0.5	3.6	ND<0.5	18.1	78.2
SVE-Manifold	10/13/10	2,100	7.8	10	6.1	32	8.9	ND<0.5	3.4	ND<0.5	16.8	79.7
SVE-Manifold	12/8/10	2,500	2.6	6.4	4.8	28	5.4	ND<0.5	4.7	ND<0.5	23.8	71.4
SVE-Manifold	12/14/10	1,700	2.1	5.4	5.2	30	4.9	ND<0.5	4.1	ND<0.5	18.3	77.6
SVE-Manifold	12/21/10	640	0.91	4.1	3.9	26	3.8	ND<0.5	2.2	ND<0.5	20.1	77.7
SVE-Manifold	12/29/10	150	ND<0.05	ND<0.05	ND<0.05	0.09	ND<0.05	ND<0.5	2.3	ND<0.5	19.2	78.4
SVE-Manifold	1/12/11	280	ND<0.05	ND<0.05	ND<0.05	0.09	--	ND<0.5	3.5	ND<0.5	18.5	77.9
SVE-Manifold	3/4/11	620	ND<0.1	ND<0.09	ND<0.08	0.1	--	ND<0.5	5.1	ND<0.5	46.6	48.3
SVE-Manifold	3/9/11	440	ND<0.1	ND<0.09	ND<0.08	ND<0.08	ND<0.1	ND<0.5	4.2	ND<0.5	24.6	71.2
SVE-Manifold	3/30/11	5.2	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	3.3	ND<0.5	22.9	73.8
SVE-Manifold	4/19/11	38	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.6	ND<0.5	18.9	76.5
SVE-Manifold	4/28/11	150	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.8	ND<0.5	17.5	77.6
SVE-Manifold	5/12/11	280	ND<0.06	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.7	ND<0.5	17.2	78.1

TABLE 6

SVE INFLUENT ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Sample ID	Date	TPHg[a] (ppmv)	Benzene[a] (ppmv)	Toluene[a] (ppmv)	Ethylbenzene[a] (ppmv)	Xylenes[a] (ppmv)	MTBE[a] (ppmv)	Methane[b] (%)	Carbon Dioxide[b] (%)	Carbon Monoxide[b] (%)	Oxygen[b] (%)	Nitrogen[b] (%)
SVE-Manifold	5/25/11	330	0.15	0.13	ND<0.05	0.10	ND<0.1	ND<0.5	5.1	ND<0.5	16.4	78.5
SVE-Manifold	6/8/11	340	0.082	ND<0.05	ND<0.05	0.084	ND<0.1	ND<0.5	4.5	ND<0.5	15.9	79.6
SVE-Manifold	6/16/11	370	0.12	0.052	0.059	0.15	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	360	0.19	ND<0.07	ND<0.06	0.13	ND<0.1	ND<0.5	5.3	ND<0.5	15.0	79.7
SVE-Manifold	6/16/11	370	0.20	0.083	0.056	0.18	ND<0.1	ND<0.5	4.8	ND<0.5	15.6	79.6
SVE-Manifold	6/27/11	310	0.22	0.11	ND<0.05	0.18	ND<0.1	ND<0.5	4.7	ND<0.5	16.5	78.9
SVE-Manifold	7/711	130	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.5	ND<0.5	18.3	77.2
SVE-Manifold	7/13/11	78	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.9	ND<0.5	18.4	76.7
SVE-Manifold	7/27/11	88	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.4	ND<0.5	19.0	76.6
SVE-Manifold	8/9/11	87	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.2	ND<0.5	19.6	76.2
SVE-Manifold	8/23/11	92	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.3	ND<0.5	19.7	76.0
SVE-Manifold	9/1/11	140	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.2	ND<0.5	19.5	76.3
SVE-Manifold	9/1/11	310	0.086	0.29	0.14	1.5	ND<0.1	ND<0.5	3.6	ND<0.5	22.9	73.5
SVE-Manifold	9/15/11	310	0.32	1.2	0.16	4.3	ND<0.1	ND<0.5	2.8	ND<0.5	20.1	77.1
SVE-Manifold	9/27/11	360	0.24	0.94	0.16	3.4	ND<0.1	ND<0.5	2.7	ND<0.5	20.3	77.1
SVE-Manifold	10/20/11	130	ND<0.05	0.15	0.085	1.3	0.11	ND<0.5	2.7	ND<0.5	21.8	75.5
SVE-Catox Influent[e]	11/10/11	110	ND<0.05	0.10	ND<0.05	0.83	ND<0.1	ND<0.5	2.7	ND<0.5	21.3	76.1
SVE-Manifold	11/21/11	190	ND<0.05	0.071	ND<0.05	0.75	0.10	ND<0.5	2.7	ND<0.5	20.4	76.9
SVE-Manifold	12/7/11	170	ND<0.05	ND<0.05	ND<0.05	0.42	ND<0.1	ND<0.5	2.5	ND<0.5	20.8	76.7
SVE-Manifold	12/19/11	250	ND<0.05	ND<0.05	ND<0.05	0.57	0.12	ND<0.5	2.6	ND<0.5	21.6	75.7
SVE-Manifold	1/5/12	450	0.082	0.063	0.063	1.1	0.23	ND<0.5	2.5	ND<0.5	21.5	76.0
SVE-Manifold	1/23/12	490	0.074	0.051	0.062	1.0	0.36	ND<0.5	2.0	ND<0.5	22.0	75.9
SVE-Manifold	1/26/12	530	0.067	ND<0.05	0.052	0.87	0.34	ND<0.5	1.8	ND<0.5	21.6	76.7
SVE-Manifold	1/26/12	800	0.78	2.0	0.35	3.6	ND<0.1	ND<0.5	1.6	ND<0.5	22.3	76.1
SVE-Manifold	2/2/12	440	0.90	1.9	0.16	4.4	ND<0.1	ND<0.5	0.99	ND<0.5	22.6	76.4
SVE-Manifold	2/16/12	430	0.29	1.2	0.16	4.0	ND<0.1	ND<0.5	0.93	ND<0.5	22.5	76.5

TABLE 6

SVE INFLUENT ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Sample ID	Date	TPHg[(a)] (ppmv)	Benzene[(a)] (ppmv)	Toluene[(a)] (ppmv)	Ethylbenzene[(a)] (ppmv)	Xylenes[(a)] (ppmv)	MTBE[(a)] (ppmv)	Methane[(b)] (%)	Carbon Dioxide[(b)] (%)	Carbon Monoxide[(b)] (%)	Oxygen[(b)] (%)	Nitrogen[(b)] (%)
SVE-Manifold	2/28/12	380	0.11	0.60	0.10	2.7	ND<0.07	ND<0.5	0.96	ND<0.5	22.4	76.6
SVE-Manifold	3/14/12	250	0.056	0.48	0.086	1.8	ND<0.1	ND<0.5	0.82	ND<0.5	22.6	76.6
SVE-Manifold	4/4/12	74	0.060	0.49	0.089	1.6	ND<0.1	ND<0.5	0.51	ND<0.5	21.8	77.7
SVE-Manifold	4/17/12	110	0.19	1.5	0.24	3.9	ND<0.1	ND<0.5	0.60	ND<0.5	21.5	77.9
SVE-Manifold	5/16/12	43	0.056	0.34	0.063	1.5	ND<0.1	ND<0.5	0.55	ND<0.5	21.4	78.0
SVE-Manifold	6/19/12	37	ND<0.05	0.13	ND<0.05	0.99	ND<0.1	ND<0.5	ND<0.5	ND<0.5	21.6	77.9
SVE-Manifold	7/17/12	64	ND<0.05	ND<0.05	ND<0.05	0.56	ND<0.1	ND<0.5	0.54	ND<0.5	21.1	78.3
SVE-Manifold	7/17/12	59	ND<0.05	ND<0.05	ND<0.05	0.39	ND<0.1	ND<0.5	ND<0.5	ND<0.5	21.3	78.4
SVE-Manifold	8/16/12	64	ND<0.05	ND<0.05	ND<0.05	0.29	ND<0.1	ND<0.5	0.82	ND<0.5	21.1	78.1
SVE-Manifold	8/23/12	72	ND<0.05	ND<0.05	ND<0.05	0.27	ND<0.1	ND<0.5	0.77	ND<0.5	21.3	78.0
SVE-Manifold	8/23/12	81	ND<0.05	ND<0.05	ND<0.05	0.15	ND<0.1	ND<0.5	0.86	ND<0.5	21.1	78.0
SVE-Manifold	9/13/12	79	ND<0.05	ND<0.05	ND<0.05	0.09	ND<0.1	ND<0.5	0.85	ND<0.5	21.1	78.0
SVE-Manifold	10/11/12	45	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.84	ND<0.5	21.2	78.0
SVE-Manifold	10/25/12	26	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.51	ND<0.5	21.5	78.0
SVE-Manifold	11/1/12	37	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	0.94	ND<0.5	21.3	77.7

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

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

(c) "--" - Not analyzed.

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

(e) SVE manifold influent vapor sample damaged during shipping to lab. Results of total well inlet and recirculation air used for data analysis.

TABLE 7

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
1	6/29/10	8.7	0.4	5,300	--[a]	--	1.5	63[b]	124	--	NA[c]
2	6/29/10	13	0.5	4,700	--	--	1.3	63[b]	110	3.6	117
3	6/30/10	31	1	3,200	0.03	71	1.5	63[b]	75	--	NA
4	7/1/10	56	2	3,400	0.05	72	1.5	63[b]	80	4.0	130
5	7/6/10	175	7	4,000	0.04	69	1.5	63[b]	94	4.3	139
6	7/8/10	200	8	7,500	0.03	73	1.5	63[b]	176	5.3	171
7	7/14/10	343	14	4,200	1.25	90	1.5	81	127	5.5	230
8	7/28/10	625	26	3,000	0.62	68	1.5	59	65	4.0	122
9	8/5/10	793	33	4,800	0.73	68	1.0	65	115	5.3	177
10	8/18/10	985	41	4,300	0.64	71	1.0	60	97	5.2	162
11	9/7/10	1,309	55	1,100	2.05	75	1.6	106	43	4.1	222
12	9/16/10	1,473	61	1,600	0.81	76	1.4	67	40	4.0	136
13	9/29/10	1,628	68	1,800	0.08	89	1.5	21	14	3.6	38
14	10/7/10	1,821	76	2,100	0.26	69	1.5	38	30	3.6	70
15	10/13/10	1,866	78	2,100	0.09	76	3.3	21	16	3.4	36
16	12/8/10	1,912	80	2,500	1.02	53	2.4	74	69	4.7	178
17	12/14/10	2,051	85	1,700	1.45	58	2.1	89	56	4.1	187
18	12/21/10	2,221	93	640	0.78	59	2.1	65	15	2.2	72
19	12/29/10[d]	2,412	101	150	0.35	49	4.1	41	2.3	2.3	48
20	1/12/11	2,748	115	280	--	54	4.2	14[e]	1.5	3.5	26
21	3/4/11	2,922	122	620	--	63	5.9	15	3.5	5.1	40
22	3/9/11	3,040	127	440	--	68	2.4	13	2.1	4.2	28
23	3/30/11	3,539	147	5.2	--	55	2.4	12	0.02	3.3	20
24	4/19/11	4,020	168	38	--	63	2.3	12	0.2	4.6	29
25	4/28/11	4,238	177	150	--	65	2.3	15	0.9	4.8	38
26	5/12/11	4,570	190	280	--	60	2.4	14	1.5	4.7	34

TABLE 7

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

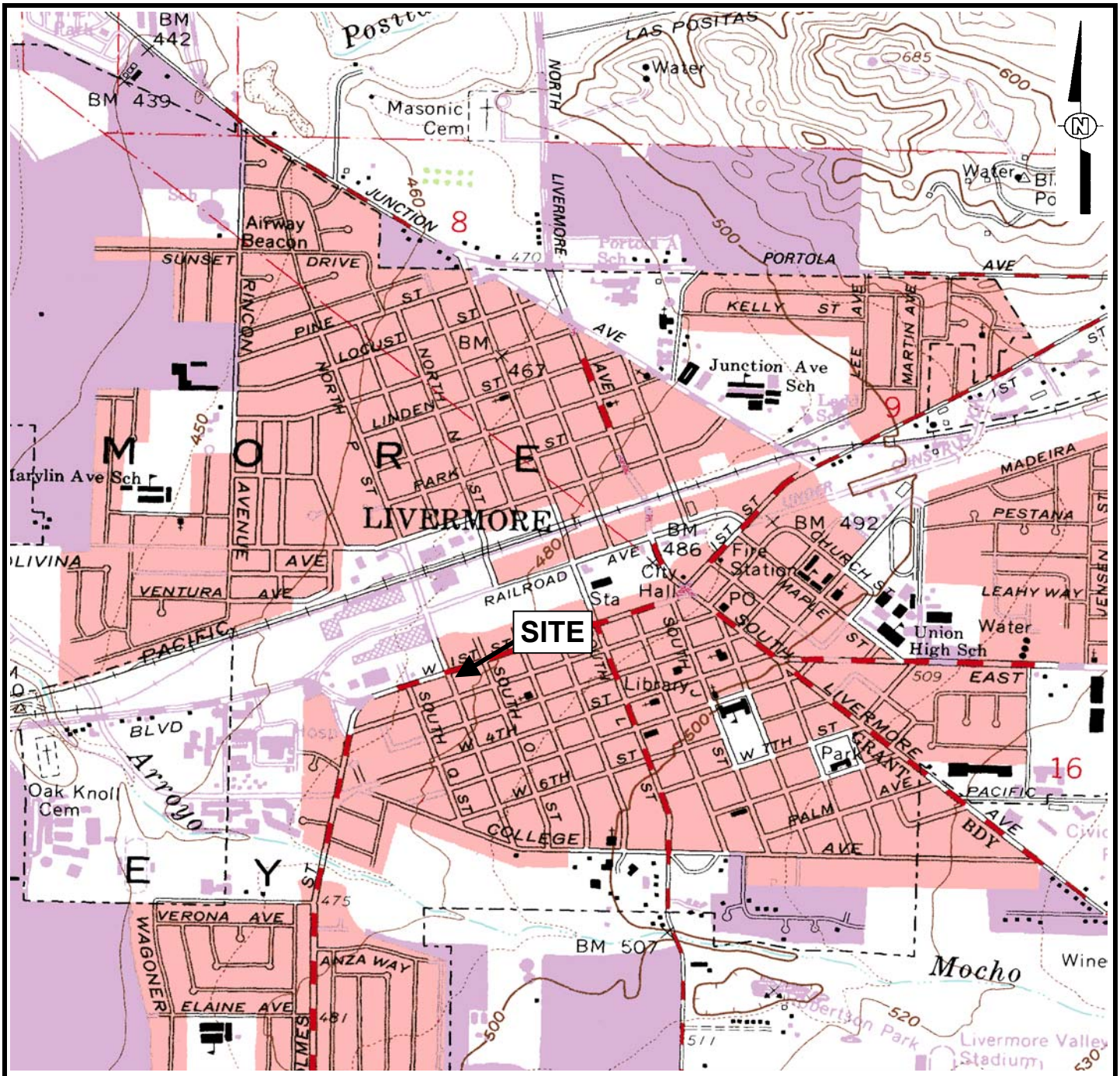
Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
27	5/25/11	4,885	204	330	--	66	2.4	11	1.4	5.1	29
28	6/8/11	5,219	217	340	--	64	2.4	9	1.2	4.5	21
29	6/16/11	5,410	225	370	--	68	2.4	9	1.2	5.3	24
30	6/16/11	5,412	225	360	--	73	4.1	15	2.0	5.3	42
31	6/16/11	5,416	226	370	--	83	4.0	13	1.7	4.8	32
32	6/27/11	5,676	237	310	--	71	4.0	16	1.8	4.7	38
33	7/7/11	5,918	247	130	--	91	4.0	15	0.7	4.5	35
34	7/13/11	6,062	253	78	--	72	4.1	16	0.5	4.9	41
35	7/27/11	6,395	266	88	--	74	4.0	16	0.5	4.4	35
36	8/9/11	6,709	280	87	--	75	4.0	16	0.5	4.2	35
37	8/23/11	7,015	292	92	--	83	4.0	15	0.5	4.3	33
38	9/1/11	7,227	301	140	--	66	4.0	20	1.0	4.2	43
39	9/1/11	7,231	301	310	--	74	3.6	14	1.6	3.6	25
40	9/15/11	7,566	315	310	--	70	3.6	17	2.0	2.8	25
41	9/27/11	7,857	327	360	--	81	3.5	13	1.7	2.7	17
42	10/20/11	8,379	349	130	--	74	3.6	20	1.0	2.7	28
43	11/10/11	8,867	369	110	--	60	3.7	11	0.5	2.7	16
44	11/21/11	9,131	380	190	--	57	3.7	17	1.2	2.7	23
45	12/7/11	9,513	396	170	--	54	3.7	16	1.0	2.5	21
46	12/19/11	9,798	408	250	--	51	3.7	--	--	2.6	26
47	1/5/12	10,208	425	450	--	53	3.6	22	3.6	2.5	28
48	1/23/12	10,638	443	490	--	51	3.4	33	5.9	2.0	34
49	1/26/12	10,710	446	530	--	55	3.6	30	6.0	1.8	27
50	1/26/12	10,711	446	800	--	56	3.6	52	15	1.6	43
51	2/2/12	10,878	453	440	--	52	3.6	51	8.4	1.0	25
52	2/16/12	11,215	467	430	--	56	3.5	54	8.6	0.9	25

TABLE 7

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
53	2/28/12	11,501	479	380	--	56	3.3	54	7.6	1.0	26
54	3/14/12	11,862	494	250	--	60	3.4	51	4.7	0.8	21
55	4/4/12	12,365	515	74	--	57	3.5	50	1.4	0.5	12
56	4/17/12	12,676	528	110	--	60	3.7	26	1.1	0.6	7.7
57	5/16/12	13,378	557	43	--	74	3.4	38	0.6	0.6	10
58	6/19/12	14,189	591	37	--	76	3.2	38	0.5	0.3	4.2
59	7/17/12	14,861	619	64	--	74	3.1	43	1.0	0.5	11
60	7/17/12	14,863	619	59	--	74	3.7	69	1.5	0.3	7.6
61	8/16/12	15,582	649	64	--	80	3.8	59	1.4	0.8	24
62	8/23/12	15,745	656	72	--	74	3.8	56	1.5	0.8	21
63	8/23/12	15,747	656	81	--	73	4.1	49	1.5	0.9	22
64	9/13/12	16,252	677	79	--	75	4.1	50	1.5	0.9	21
65	10/11/12	16,925	705	45	--	62	4.1	56	0.9	0.8	23
66	10/25/12	17,260	719	26	--	66	3.1	57	0.5	0.5	14
67	11/1/12	17,310	721	37	--	66	4.0	55	0.8	0.9	26

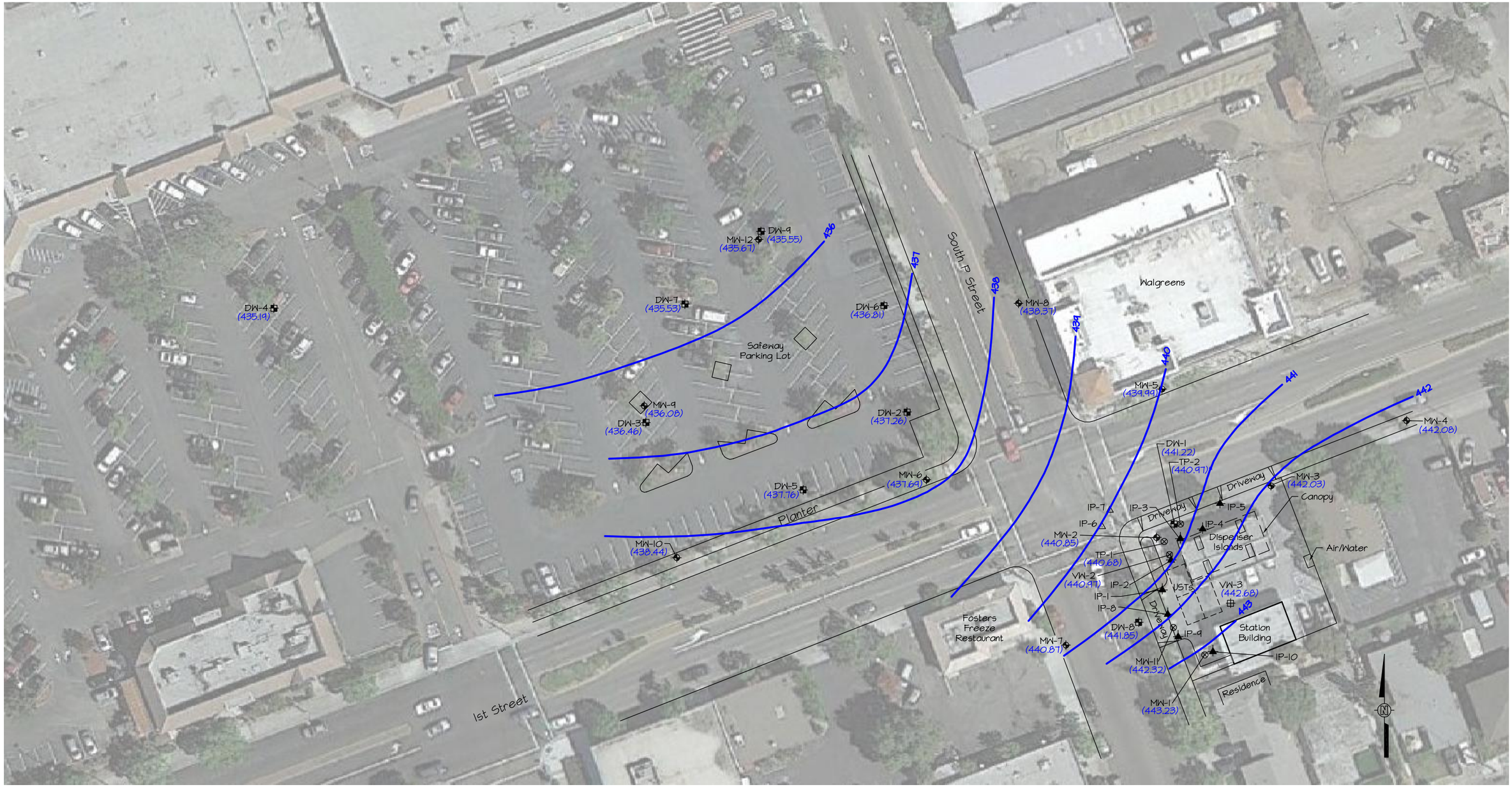
(a) "--" - Not sampled, analyzed, or collected.
(b) An average flow rate was used due to inaccurate system parameter readings.
(c) NA - Not applicable.
(d) Only operating on well VW-2 due to high water levels.
(e) Flow measurements taken with a TSI anemometer for better accuracy at low flow rates.



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-1 — Groundwater Monitoring Well
- DW-1 — Deep Groundwater Monitoring Well
- IP-1 — Injection Well
- IP-6 — Angled Injection Well Screen
- VW-2 — Vapor Extraction Well
- TP-1 — Monitoring Well/Vapor Extraction Well
- (443.23) — Groundwater Elevation (Feet, MSL) Measured 12 February 2013
- 436 — Groundwater Elevation Contour

0 30' 60'

SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
19	14	MY	2/15/12	Fourth Quarter 2011 Monitoring Report
	15	MY	5/15/12	First Quarter 2012 Monitoring Report
	16	MY	8/15/12	Second Quarter 2012 Monitoring Report
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report
	18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
	19	MY	5/15/13	First Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

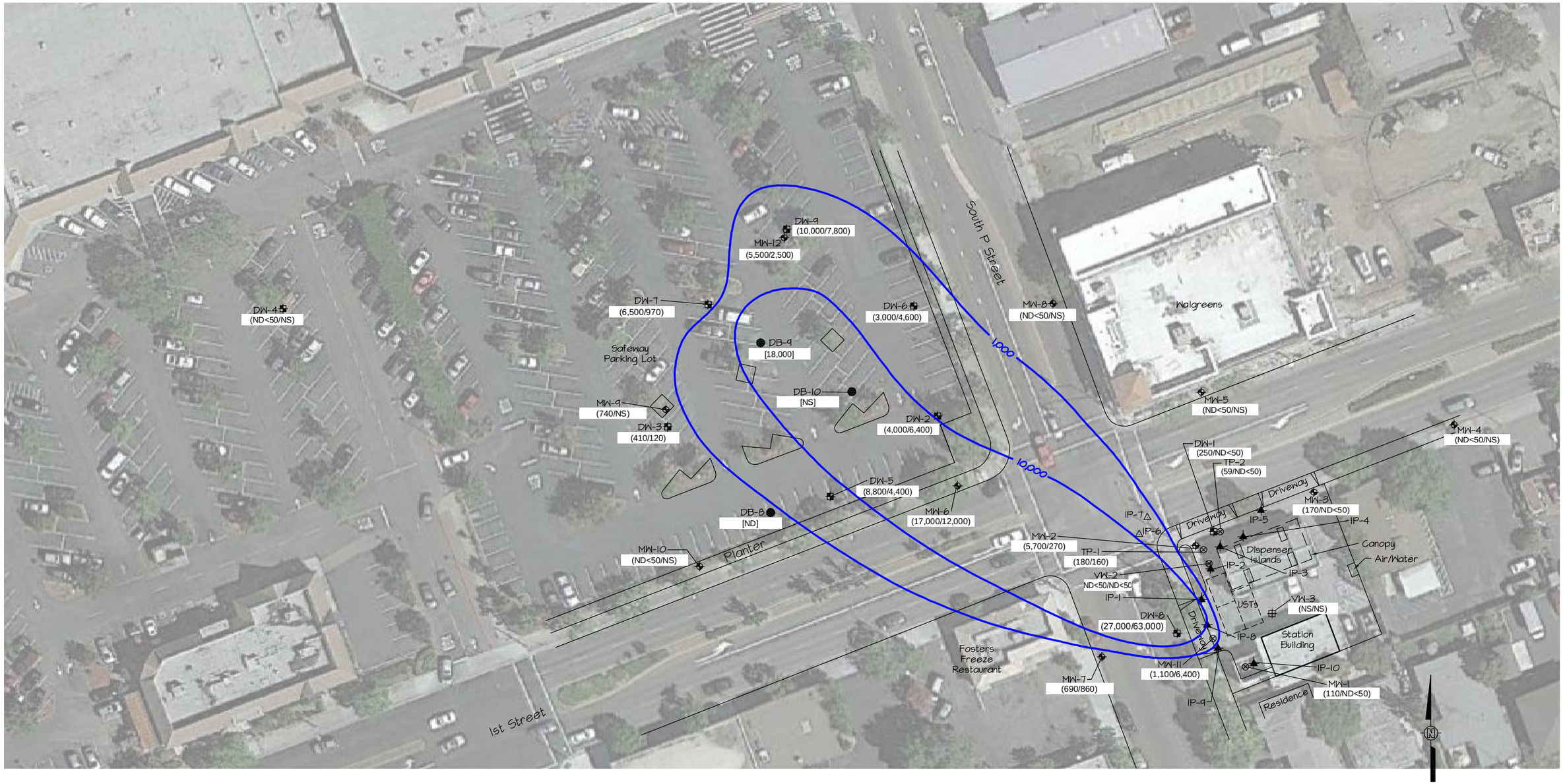
GROUNDWATER ELEVATION CONTOURS

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

FILE NO. 01LV11B-20419.DWG

FIGURE 2

4/24/2013 1:29PM 01LV11B-20419.dwg



Legend

MW-7 ⊕	Groundwater Monitoring Well
DW-1 ⊞	Deep Groundwater Monitoring Well
IP-1 ▲	Injection Well
IP-6 △	Angled Injection Well Screen
VW-3 ⊞	Vapor Extraction Well
TP-1 ⊗	Monitoring Well/Vapor Extraction Well

(110/ND<50)	Previous Quarter/Current Quarter Total Petroleum Hydrocarbons as Gasoline (TPHg) Results in µg/L
1000	TPHg Concentration Contour (µg/L), Queried Where Uncertain
ND	Not Detected at Laboratory Reporting Limit
NS	Not Sampled
DB-8 ● [ND]	June 2012 Soil Boring with 55-Foot Grab Groundwater Sample TPHg Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
19	15	MY	5/15/12	First Quarter 2012 Monitoring Report
	16	MY	8/15/12	Second Quarter 2012 Monitoring Report
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report
	18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
	19	MY	5/15/13	First Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

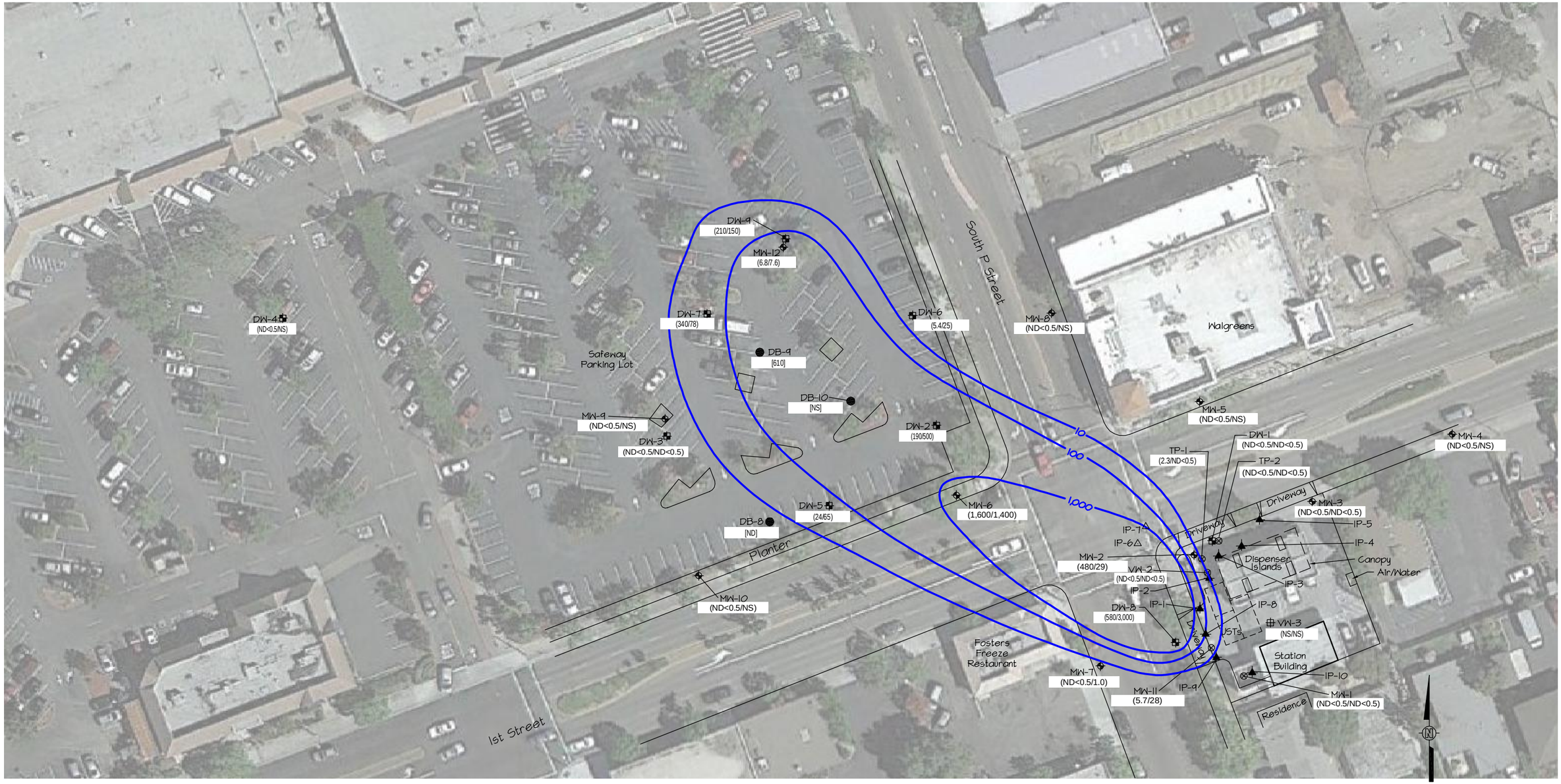
TPHg CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20519.DWG

FIGURE 3

4/24/2013 1:21PM 01LV11B-20519.dwg



Legend

MW-7 ⌖	Groundwater Monitoring Well
DW-1 ⌖	Deep Groundwater Monitoring Well
IP-1 ▲	Injection Well
IP-6 △	Angled Injection Well Screen
VW-3 #	Vapor Extraction Well
TP-1 ⊗	Monitoring Well/Vapor Extraction Well

(ND<0.5/ND<0.5)	Previous Quarter/Current Quarter Benzene Results in µg/L
1000	Benzene Concentration Contour (µg/L), Queried Where Uncertain
ND	Not Detected at Laboratory Reporting Limit
NS	Not Sampled
DB-8 ● [ND]	June 2012 Soil Boring with 55-Foot Grab Groundwater Sample Benzene Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
19	15	MY	5/15/12	First Quarter 2012 Monitoring Report
	16	MY	8/15/12	Second Quarter 2012 Monitoring Report
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report
	18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
	19	MY	5/15/13	First Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

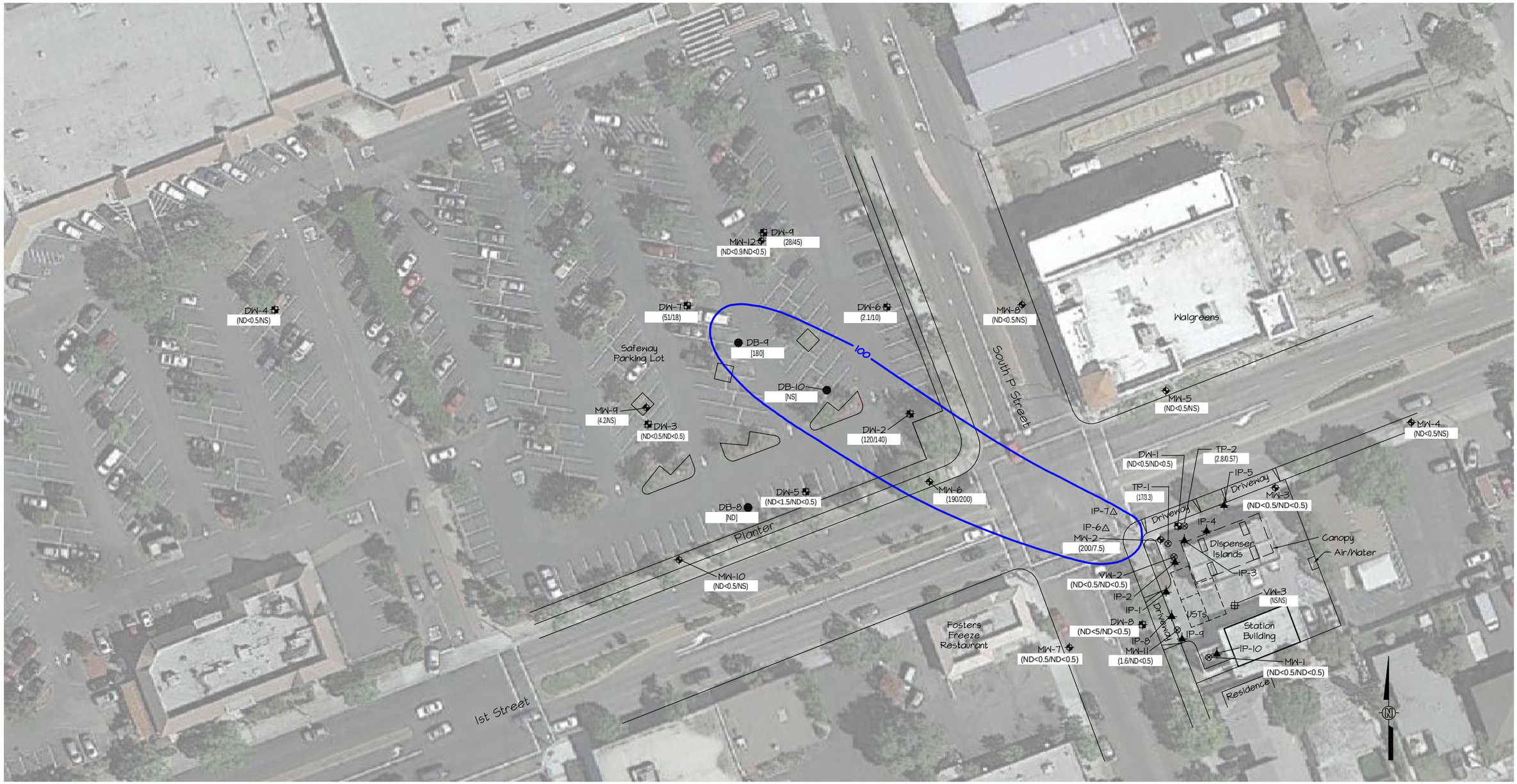
BENZENE CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20619.DWG

FIGURE 4

4/24/2013 1:27PM 01LV11B-20619.dwg



Legend

MW-7	Groundwater Monitoring Well
DW-1	Deep Groundwater Monitoring Well
IP-1	Injection Well
IP-6 △	Angled Injection Well Screen
VW-3	Vapor Extraction Well
TP-1 ⊗	Monitoring Well/Vapor Extraction Well

(ND<0.5/ND<0.5)	Previous Quarter/Current Quarter Methyl Tert-Butyl Ether (MTBE) Results in µg/L
100	MTBE Concentration Contour (µg/L), Queried Where Uncertain
ND	Not Detected at Laboratory Reporting Limit
NS	Not Sampled
DB-8 [ND]	June 2012 Soil Boring with 55-Foot Grab Groundwater Sample MTBE Results in µg/L

0 30' 60'
SCALE

REVISION 19

NO.	BY	DATE	DESCRIPTION
15	MY	5/15/12	First Quarter 2012 Monitoring Report
16	MY	8/15/12	Second Quarter 2012 Monitoring Report
17	MY	11/15/12	Third Quarter 2012 Monitoring Report
18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
19	MY	5/15/13	First Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

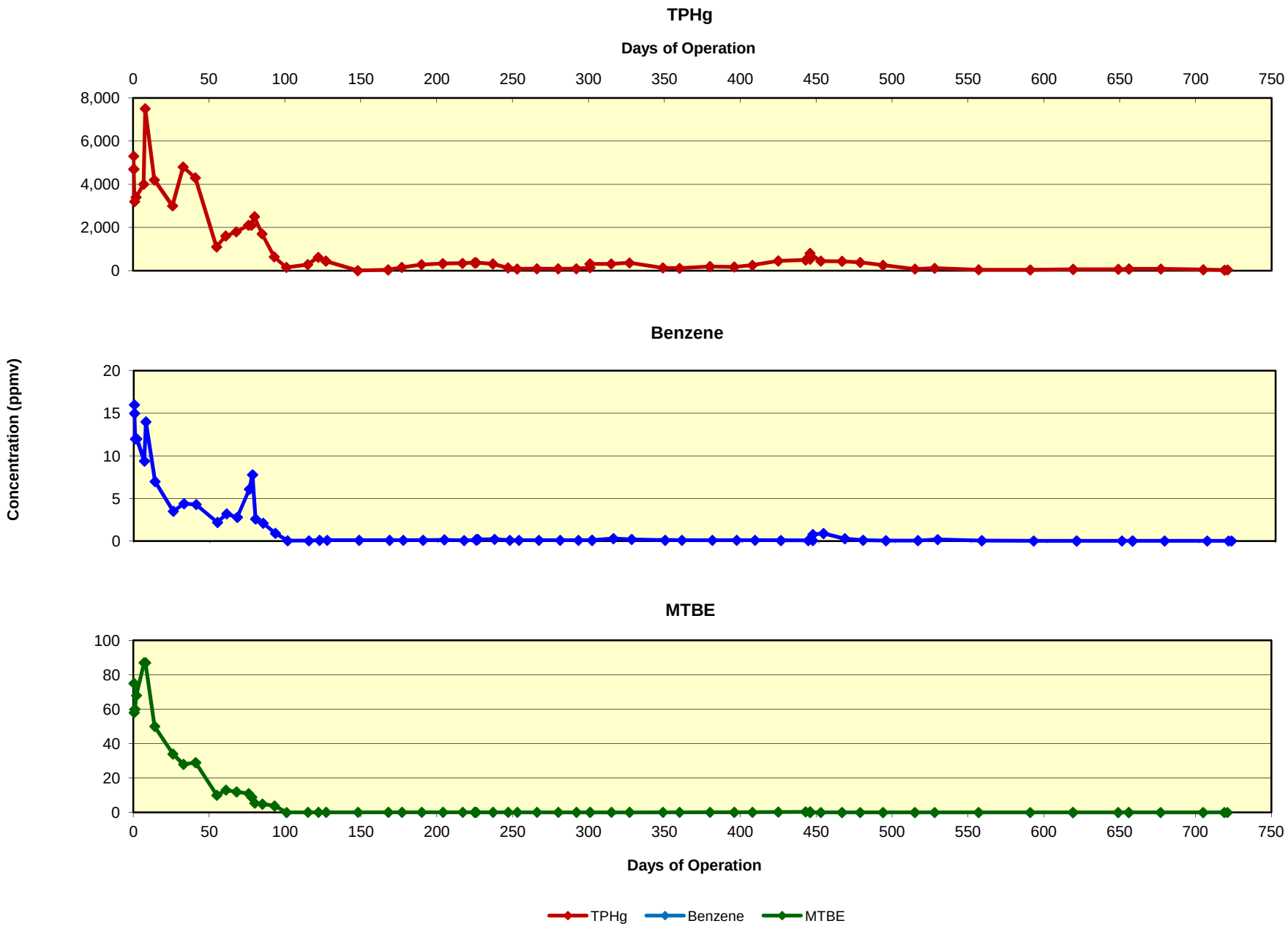
MTBE CONCENTRATION CONTOURS

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

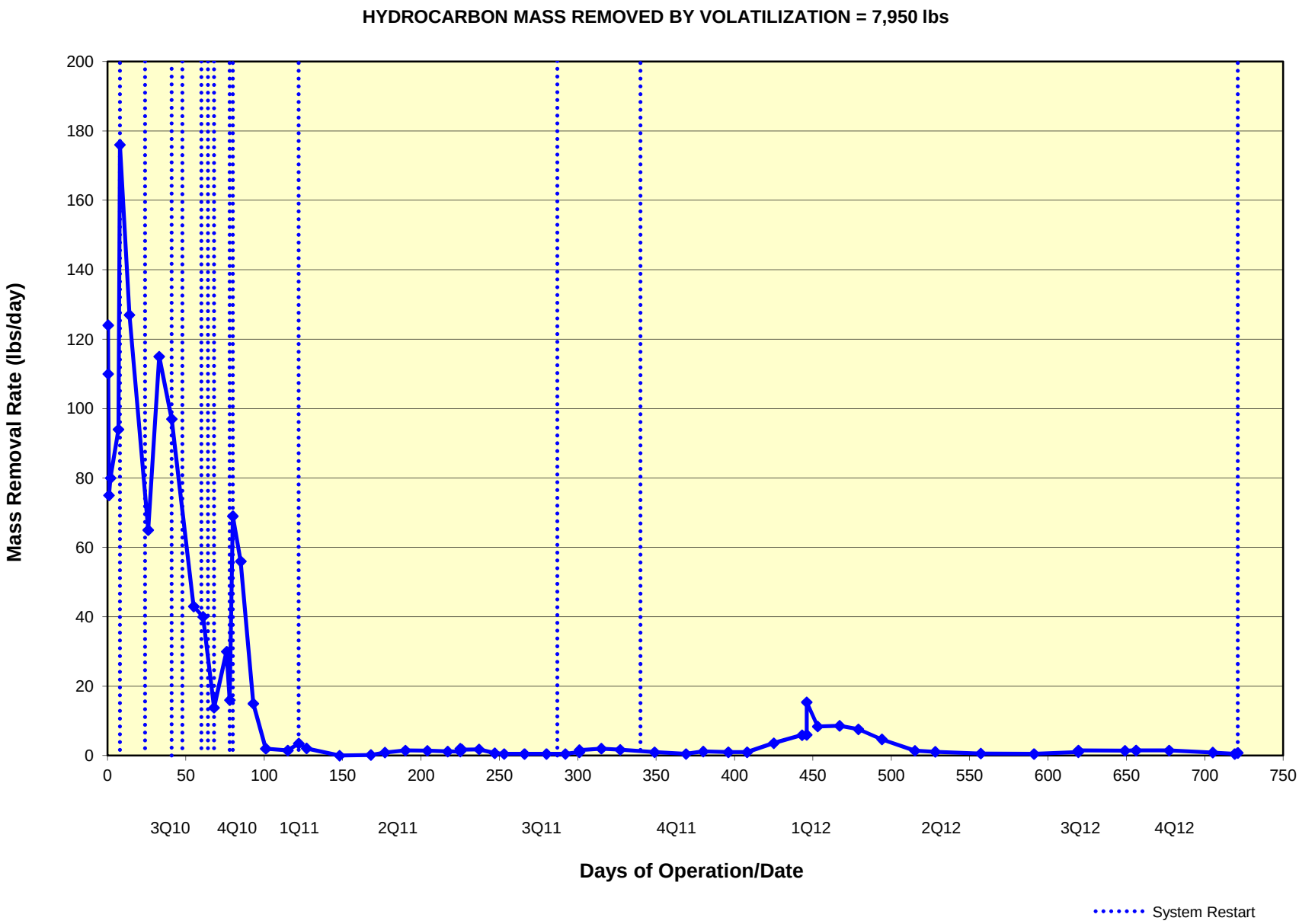
FILE NO. 01LV11B-20719.DWG

FIGURE 5

4/24/2013 12:30PM 01LV11B-20719.dwg

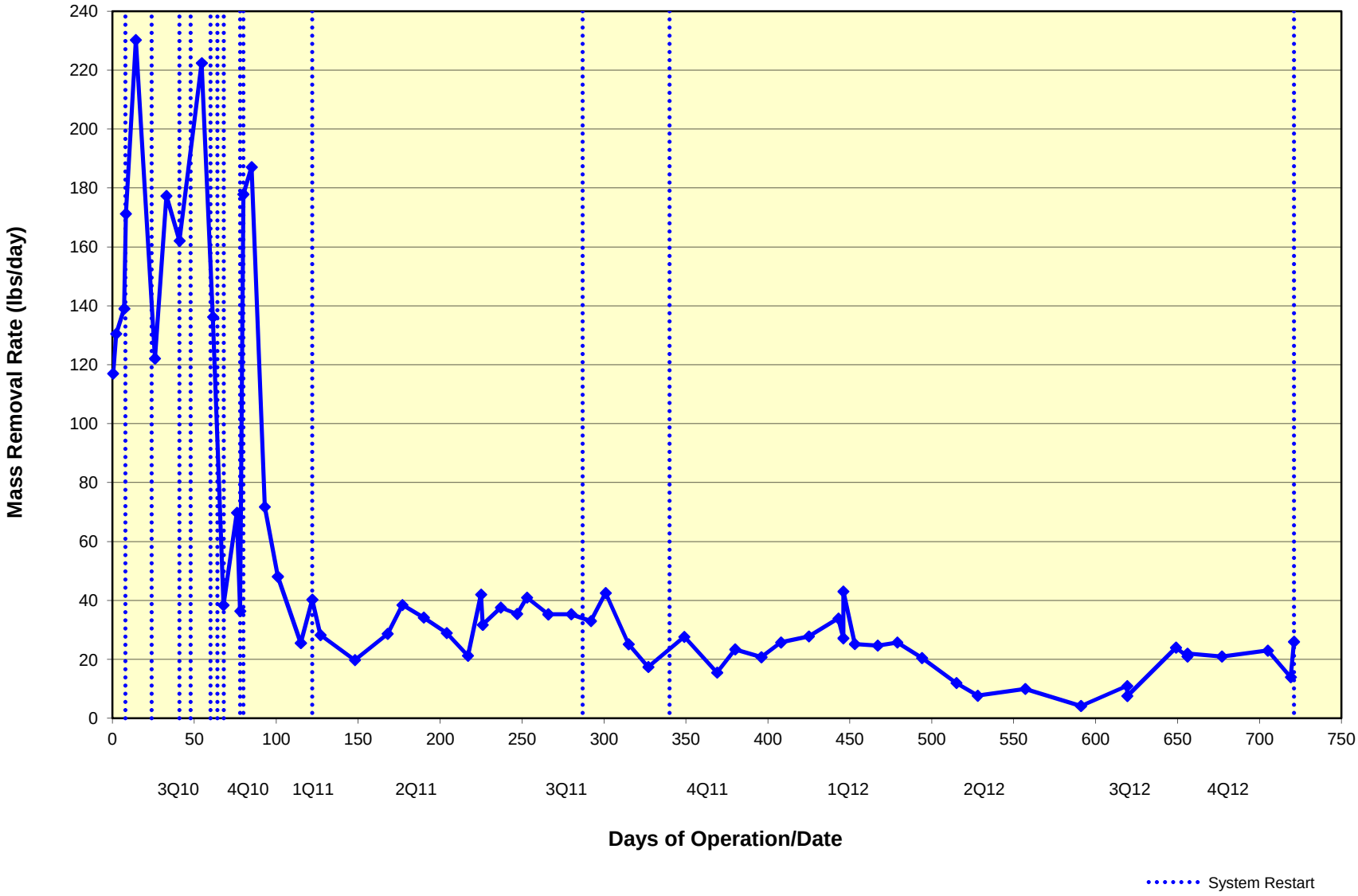


ARCTOS Arctos Environmental	Tesoro - Livermore	SOIL VAPOR INFLUENT CONCENTRATIONS	Figure 6
1Q13 System Graphs.xlsx | 5/31/2013			



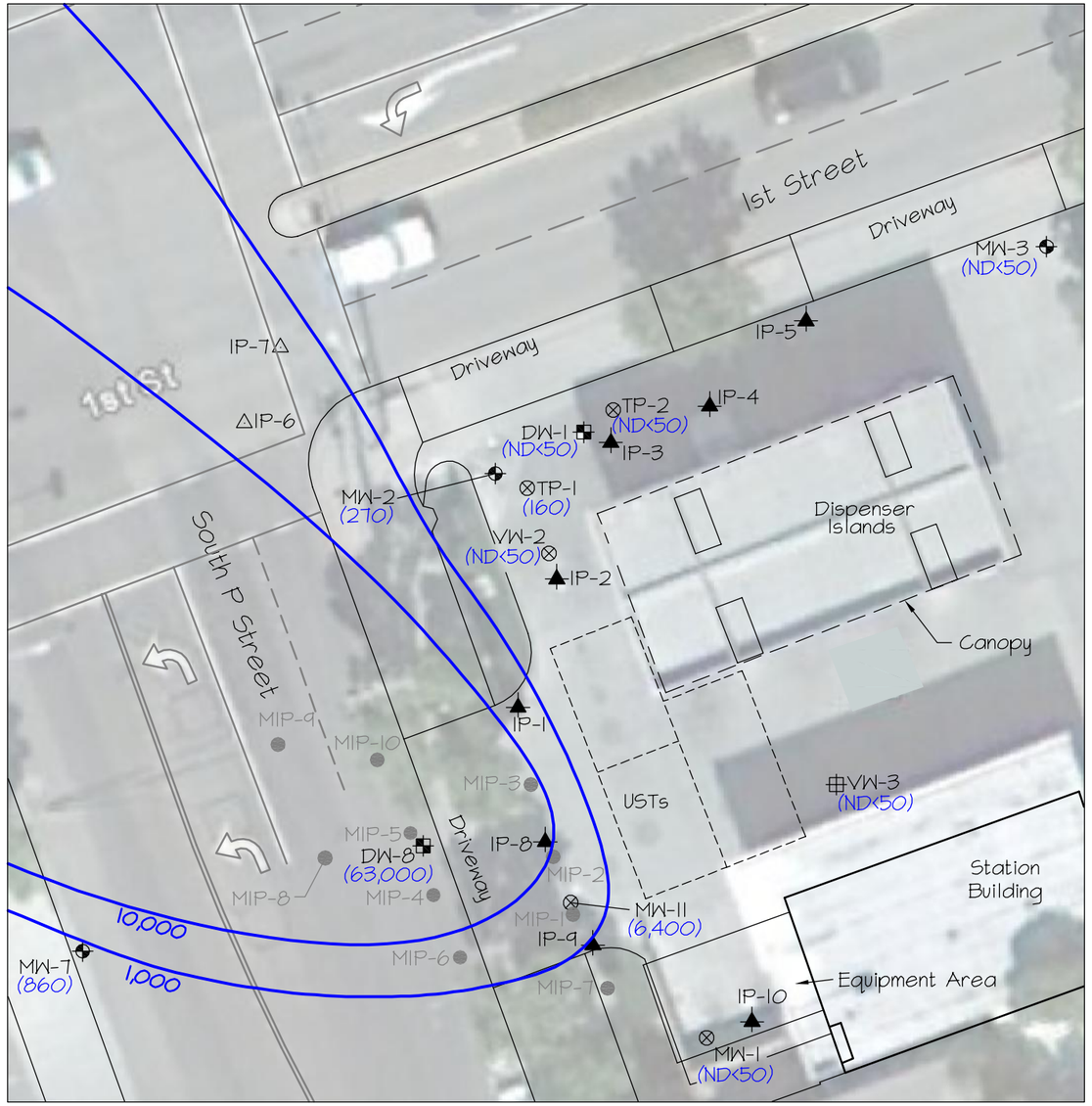
ARCTOS Arctos Environmental	Tesoro - Livermore	MASS REMOVAL BY VOLATILIZATION	Figure 7
1Q13 System Graphs.xlsx | 5/31/2013			

HYDROCARBON MASS REMOVED BY BIODEGRADATION = 30,300 lbs



ARCTOS Arctos Environmental	Tesoro - Livermore	MASS REMOVAL BY BIODEGRADATION	Figure 8
1Q13 System Graphs.xlsx | 5/31/2013			

May 2010



February 2013

Legend

- MW-1 — Groundwater Monitoring Well
- DW-1 — Deep Groundwater Monitoring Well
- IP-1 — Injection Well
- IP-6 △ — Angled Injection Well Screen
- VW-3 — Vapor Extraction Well (Not Connected to System)
- TP-1 — Monitoring Well/Vapor Extraction Well
- MIP-1 — January 2011 Membrane Interface Probe (MIP) Boring
- 1,000 — TPHg Concentration Contour (µg/L), Queried Where Uncertain

N

0 10' 20'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
0	0	MY	5/15/13	First Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

ONSITE TPHg CONCENTRATION CONTOURS

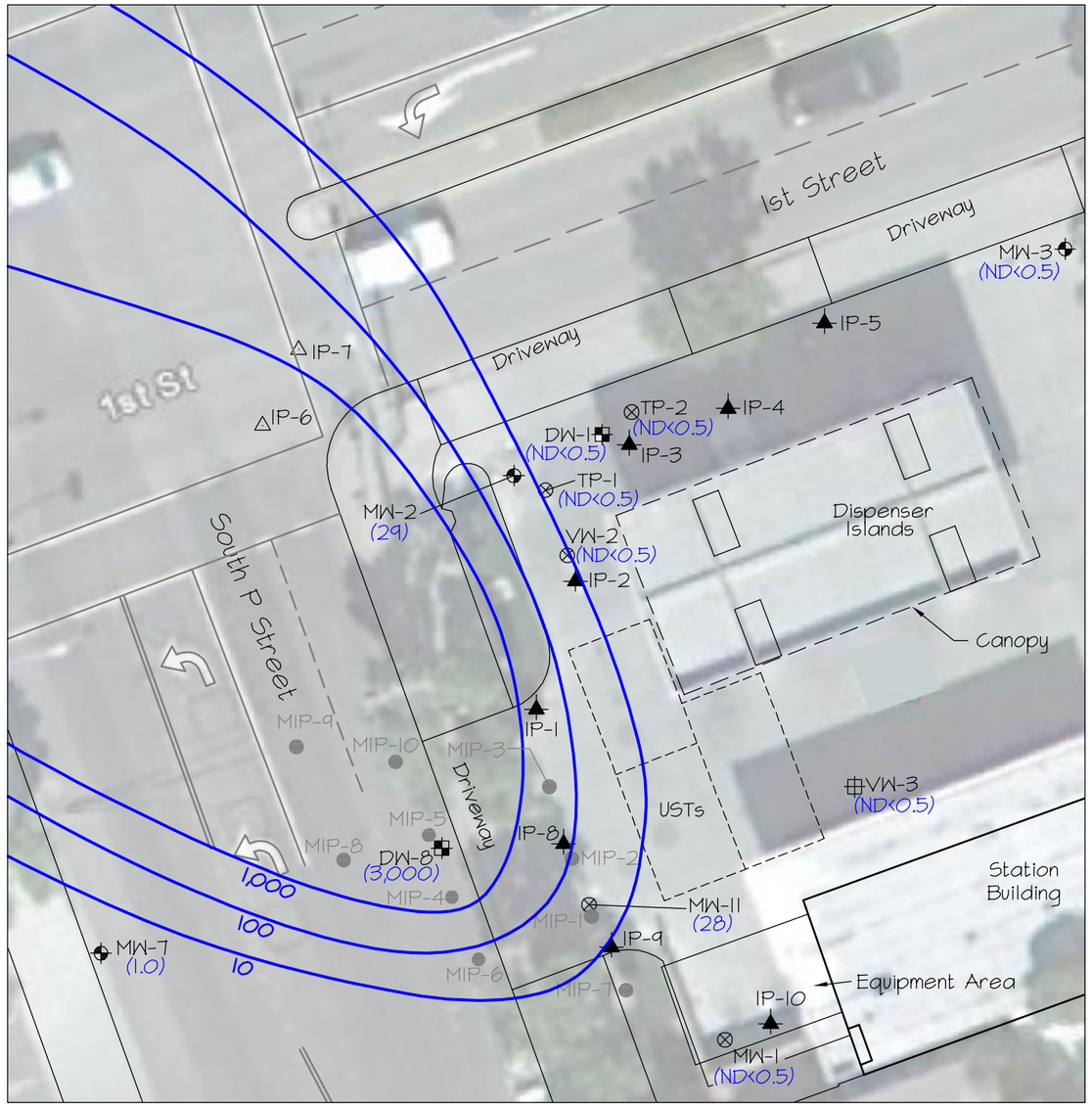
PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MN	JPG

FILE NO. 01LV11B2300.DWG

FIGURE 9A

5/30/2013 9:43AM 01LV11B2300.dwg

May 2010



February 2013

Legend

- MW-1 — Groundwater Monitoring Well
- DW-1 — Deep Groundwater Monitoring Well
- IP-1 — Injection Well
- IP-6 — Angled Injection Well Screen
- VW-3 — Vapor Extraction Well (Not Connected to System)
- TP-1 — Monitoring Well/Vapor Extraction Well
- MIP-1 — January 2011 Membrane Interface Probe (MIP) Boring
- 1000 — Benzene Concentration Contour (µg/L), Queried Where Uncertain

N

0 10' 20'

SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
0	0	MY	5/15/13	First Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

ONSITE BENZENE CONCENTRATION CONTOURS

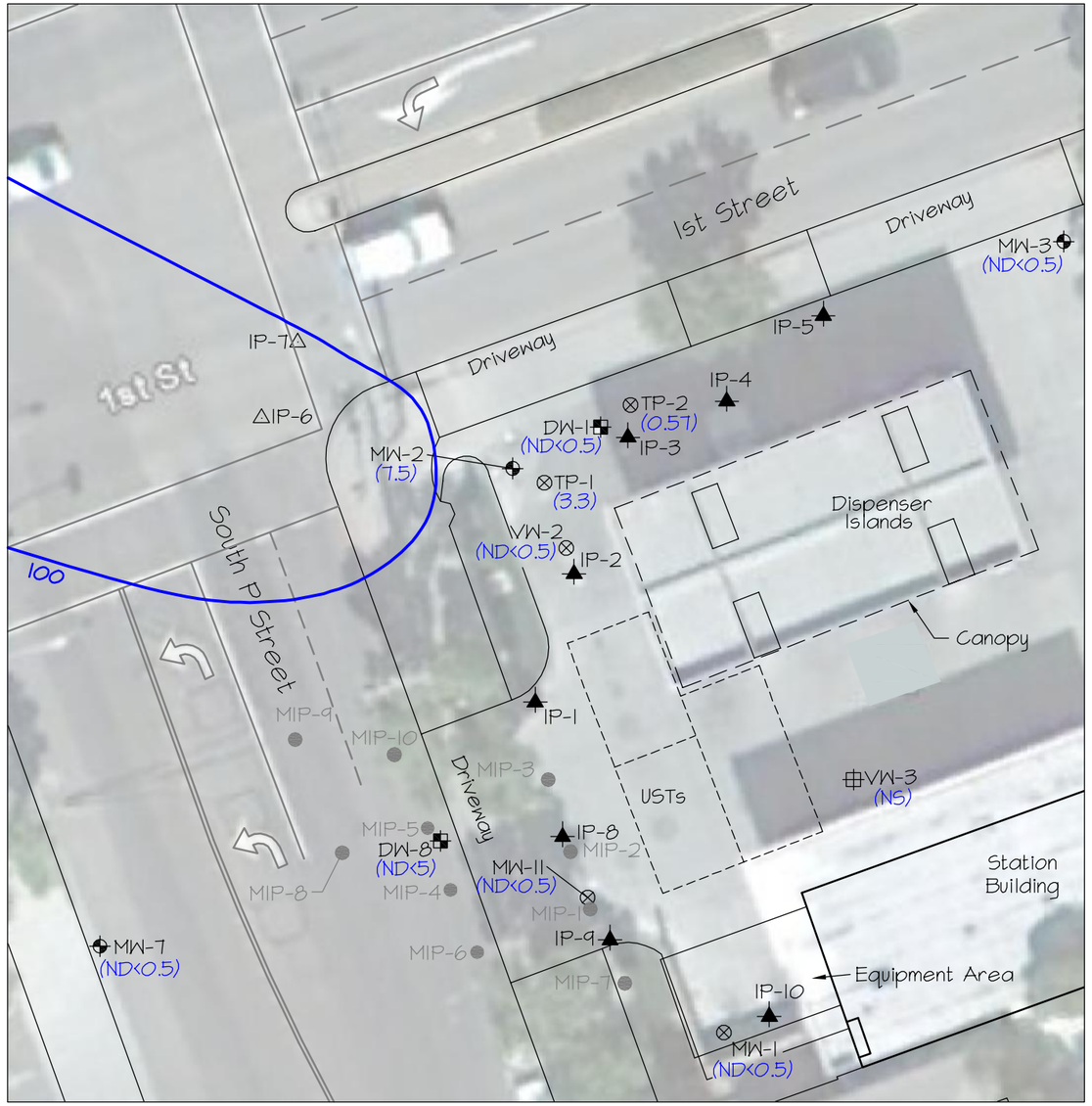
PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
01LV	MY	MN	JPG

FILE NO. 01LV11B2400.DWG

FIGURE 9B

01LV11B2400.dwg 5/30/2013 6:20PM

May 2010



February 2013

Legend

- MW-1 — Groundwater Monitoring Well
- DW-1 — Deep Groundwater Monitoring Well
- IP-1 — Injection Well
- IP-6 — Angled Injection Well Screen
- VW-3 — Vapor Extraction Well (Not Connected to System)
- TP-1 — Monitoring Well/Vapor Extraction Well
- MIP-1 — January 2011 Membrane Interface Probe (MIP) Boring
- 100 — MTBE Concentration Contour (µg/L), Queried Where Uncertain

N

0 10' 20'

SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
0	0	MY	5/15/13	First Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

ONSITE MTBE CONCENTRATION CONTOURS

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

FILE NO. 01LV11B2500.DWG

FIGURE 9C

5/31/2013 12:15PM 01LV11B2500.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 Alameda County Environmental Health's 23 July 2009 letter to Tesoro Environmental Resources Company (Tesoro), Arctos Environmental (Arctos) proposed to reduce the monitoring and sampling frequency to semiannually in the second quarter 2009 status report. Select wells will continue to be monitored quarterly to assess the effectiveness of the groundwater remediation system according to the following groundwater monitoring plan:

Well Designation	Location	Sampling Frequency
MW-1 and MW-3	Upgradient	Quarterly
MW-2, MW-11, and DW-1	Source area	
MW-6, MW-12, DW-2, DW-3, DW-5, DW-6, DW-7, DW-8, and DW-9	Downgradient	
MW-4 and VW-3	Upgradient	Semiannually (2nd and 4th quarters)
TP-1, TP-2, and VW-2	Source area	
MW-5 and MW-7	Cross gradient	
MW-8, MW-9, MW-10, and DW-4	Downgradient	

Analytical Plan

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

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

Purge-and-Bail Sampling Procedures

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

purging, pH, conductivity, turbidity, and temperature were measured and recorded for the evacuated groundwater. These measurements were used to confirm that the well was purged sufficiently. Water samples were generally collected after the measurements of pH, conductivity, and temperature had stabilized to within 10 percent of the previous readings. Copies of the well purging and sampling logs are 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 quality assurance/quality control (QA/QC) procedures, including the use of sample identification labels and chain-of-custody forms, were followed to track sample collection and delivery.

General Field QA/QC Procedures

Chain-of-Custody Records

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

Equipment Decontamination Procedures

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

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

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

1. Wore appropriate gloves.

2. Washed hands thoroughly with soap and water.

3. Avoided unnecessary contact with groundwater.

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

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

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

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

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

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

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

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

ATTACHMENT B

FIELD DATA SHEETS

Field Data Sheet

Date: 2/12/2013 Project Name: Tesoro #67076 Project Number: 01LV

Technician: P. Arroyo Location: Livermore, CA Global ID : T0600101410

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
MW-1	4"	54.55	-	30.98	-	
MW-2	4"	54.10	-	32.13	-	
MW-3	4"	52.90	-	31.34	-	
MW-4	2"	46.80	-	31.56	-	not sampled
MW-5	2"	46.27	-	32.68	-	not sampled
MW-6	2"	47.65	-	34.24	-	
MW-7	2"	46.80	-	31.46	-	
MW-8	2"	44.50	-	32.81	-	not sampled
MW-9	2"	44.58	-	34.70	-	not sampled
MW-10	2"	45.10	-	33.19	-	not sampled
MW-11	4"	42.85	-	30.64	-	
MW-12	4"	44.80		34.10		
DW-1	4"	64.75	-	31.63	-	
DW-2	4"	59.84	-	34.35	-	
DW-3	4"	59.74	-	33.87	-	
DW-4	4"	70.04	-	33.29	-	not sampled
DW-5	4"	59.80	-	34.10	-	
DW-6	4"	60.15	-	34.96	-	
DW-7	4"	65.20	-	34.54	-	
DW-8	4"	64.65	-	30.46	-	
DW-9	4"	59.80		34.25		
TP-1	2"	43.22	-	31.96	-	
TP-2	2"	41.21	-	31.81	-	
VW-2	2"	34.85	-	31.60	-	
VW-3	2"	36.34	-	31.70	-	not sampled

Field Data Sheet

Date: 2-12-13 **Project Name:** Tesoro #67076 **Project Number:** 01LV

Technician: P. Arroyo **Location:** Livermore, CA **Global ID :** T0600101410

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
IP-1	2"	64.45	-	31.25	-	
IP-2	2"	NM	-	NM	-	not gauged or sampled this quarter
IP-3	2"	NM	-	NM	-	not gauged or sampled this quarter
IP-4	2"	NM	-	NM	-	not gauged or sampled this quarter
IP-5	2"	NM	-	NM	-	not gauged or sampled this quarter
IP-6	2"	NM	-	NM	-	not gauged or sampled this quarter
IP-7	2"	NM	-	NM	-	not gauged or sampled this quarter
IP-8	2"	64.45	-	31.59	-	
IP-9	2"	64.75	-	31.25	-	
IP-10	2"	63.02	-	31.18	-	

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	2-12-13
Well Number:	MW-1	**Well Integrity:**	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
(4)	54.55	-	30.98	=	23.57	X	0.66	=	15.55
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	0926	977	17.05	-42.0	1.80	7.70	0.635
1	16	0934	957	16.96	-31.1	1.04	7.44	0.622
2	32	0942	961	17.01	-33.4	1.16	7.39	0.625
3	48	0950	963	17.03	-35.1	1.21	7.37	0.624
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	30.98	
(P) After Purging	34.20	
P- 0.8(P-I) =	31.62	80% Recovery
(S) Before Sampling	30.98	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2-12-13 **Time:** 1000 **Turbidity (NTU):** 35.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2.13.13
Well Number:	MW-2	Well Integrity:	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
(4)	54.10	-	32.13	=	21.97	X	0.66	=	14.50
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1315	1385	19.92	-53.4	4.97	8.64	0.859
1	15	1320	1301	20.80	-42.1	6.76	7.98	0.846
2	30	1325	1307	21.24	-48.7	10.50	7.38	0.850
3	45	1330	1293	21.02	-55.7	11.57	7.36	0.841
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	32.13	
(P) After Purging	35.90	
P- 0.8(P-I) =	32.88	80% Recovery
(S) Before Sampling	32.13	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene	1	None
8 oz, amber glass		
40ml VOA	7	None/HCl
250 ml glass		
250 ml polypropylene	4	None/HNO3

Sample Date : 2.13.13 Time: 1345 Turbidity (NTU): 41.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2·12·13
Well Number:	MW-3	Well Integrity:	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
(4)	52.90	-	31.34	=	21.56	X	0.66	=	14.22
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1014	90.3	15.60	120.3	1.99	7.67	0.587
1	14.5	1020	913	19.40	104.8	1.46	7.64	0.592
2	29	1026	915	19.63	85.5	1.56	7.65	0.595
3	43.5	1032	915	20.50	67.8	1.19	7.62	0.595
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.34	
(P) After Purging	34.90	
P- 0.8(P-I) =	32.05	80% Recovery
(S) Before Sampling	31.34	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2·12·14 Time: 1045 Turbidity (NTU): 44.9

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2/14/13
Well Number:	MW-6	Well Integrity:	Good
Technician:	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)	47.65	-	34.24	=	13.41	X	0.17	=	2.27
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	0820	1160	20.01	-115.1	0.90	7.62	0.758
1	2.5	0825	1160	20.23	-106.2	1.11	7.47	0.754
2	5	0829	1163	20.30	-104.9	0.71	7.39	0.756
3	7.5	0834	1174	20.39	-103.9	0.80	7.35	0.764
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.24	
(P) After Purging	37.80	
P- 0.8(P-I) =	34.95	80% Recovery
(S) Before Sampling	34.37	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2.14.13 Time: 0850 Turbidity (NTU): 423

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2.12.13
Well Number:	MW-7	Well Integrity:	Good
Technician:	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	-	31.46	=	15.34	X	0.17	=	2.60
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1240	856	19.59	-125.4	0.46	7.98	0.557
1	3	1242	881	20.73	-117.3	1.10	7.73	0.573
2	6	1244	895	19.85	-109.1	1.25	7.65	0.582
3	9	1246	895	19.85	-107.4	1.22	7.65	0.582
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.46	
(P) After Purging	34.20	
P- 0.8(P-I) =	32.00	80% Recovery
(S) Before Sampling	31.46	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene	1	None
8 oz, amber glass		
40ml VOA	7	HCL/None
250 ml glass		
250 ml polypropylene	4	None/HNO3

Sample Date : 2.12.13 Time: 1305 Turbidity (NTU): 513

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2·13·13
Well Number:	MW-11	Well Integrity:	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
(4)	42.85	-	30.64	=	12.21	X	0.66	=	8.05
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1150	2714	20.25	-42.6	15.23	7.57	1.764
1	8.5	1154	2680	20.79	-33.5	13.90	7.42	2682
2	17	1158	2698	21.49	-25.2	17.66	7.45	1.756
3	25.5							
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)
(I) Initially	30.64
(P) After Purging	42.85 (Dry)
P- 0.8(P-I) =	33.08 80% Recovery
(S) Before Sampling	31.13
Sampled 80% - 100%	Yes

Sample Containers:

	No.	Preservation
1 liter polypropylene	1	None
8 oz, amber glass		
40ml VOA	7	None / HCl
250 ml glass		
250 ml polypropylene	4	None / HCl

Sample Date : 2·13·13 Time: 1245 Turbidity (NTU): <1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments: Well Dry @ 15 gal.

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2·13·13
Well Number:	MW-12	Well Integrity:	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
4	44.80	-	34.10	=	10.70	X	0.66	=	7.06
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

(Submersible Pump) Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	0848	1002	20.64	-87.7	0.93	7.64	0.651
1	7.5	0852	993	20.96	-97.4	0.61	7.55	0.645
2	15	0855	1008	21.19	-104.7	0.66	7.52	0.655
3	22.5	0859	1016	21.53	-110.8	0.68	7.47	0.661
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.10	
(P) After Purging	37.80	
P- 0.8(P-I) =	37.84	80% Recovery
(S) Before Sampling	34.26	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 2·13·13 Time: 0910 Turbidity (NTU): 23.9

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	2.12.13
Well Number:	DW-1	**Well Integrity:**	Good
Technician:	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		-		=		X	0.17	=
3		-		=		X	0.38	=
(4)	64.75	-	31.63	=	33.12	X	0.66	= 21.85
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1133	903	20.03	-73.5	5.51	7.92	0.587
1	22	1140	897	21.50	-40.2	4.35	7.79	0.583
2	44	1146	895	21.23	-14.8	18.99	7.76	0.582
3	66	1154	896	21.14	7.4	19.12	7.73	0.583
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.63	
(P) After Purging	33.20	
P- 0.8(P-I) =	31.94	80% Recovery
(S) Before Sampling	31.63	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 2.12.13 **Time:** 1220 **Turbidity (NTU):** 28.7

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2.13.13
Well Number:	DW-2	Well Integrity:	Good
Technician:	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	-	34.35	=	25.49 X	0.66	= 16.82
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	0754	1083	18.95	-114.7	0.64	7.50	0.704
1	17	0800	1074	19.87	-117.3	0.67	7.38	0.698
2	34	0807	1079	20.00	-123.3	0.41	7.31	0.701
3	51	0814	1078	20.07	-132.8	0.37	7.28	0.701
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.35	
(P) After Purging	36.80	
P- 0.8(P-I) =	34.84	80% Recovery
(S) Before Sampling	34.35	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2.13.13 Time: 0830 Turbidity (NTU): 1.30

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2.12.13
Well Number:	DW-3	Well Integrity:	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
(4)	59.74	-	3387	=	2587	X	0.66	=	17.07
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1504	739	21.48	-117.9	1.57	8.28	0.480
1	17.5	1510	866	21.81	-99.0	1.03	8.10	0.562
2	35	1516	959	21.12	-92.2	0.64	7.90	0.623
3	52.5	1523	1005	20.76	-94.6	0.63	7.78	0.653
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	3387	
(P) After Purging	40.30	
P- 0.8(P-I) =	35.15	80% Recovery
(S) Before Sampling	34.10	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2.12.13 Time: 1530 Turbidity (NTU): 6.50

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	2.13.13
Well Number:	DW-5	**Well Integrity:**	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
(4)	59.80	-	34.10	=	25.70	X	0.66	=	16.96
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1527	905	20.79	-74.6	0.41	7.86	0.588
1	17	1534	910	21.06	-126.2	0.38	7.63	0.591
2	34	1540	908	20.79	-125.8	0.67	7.62	0.589
3	51	1547	914	20.56	-125.8	0.55	7.52	0.594
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.10	
(P) After Purging	36.80	
P- 0.8(P-I) =	34.64	80% Recovery
(S) Before Sampling	34.10	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2.13.13 **Time:** 1605 **Turbidity (NTU):** 17.8

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	2.12.13
Well Number:	DW-6	**Well Integrity:**	Good
Technician:	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		-	=		X	0.17	=			
3		-	=		X	0.38	=			
(4)		60.15	-	34.96	=	25.19	X	0.66	=	16.62
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1547	973	19.65	-137.9	1.08	7.63	0.633
1	17	1554	972	20.11	-140.2	0.57	7.53	0.632
2	34	1601	981	20.15	-140.6	0.34	7.44	0.637
3	51	1609	979	20.53	-141.1	0.42	7.39	0.637
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.96	
(P) After Purging	37.40	
P- 0.8(P-I) =	35.44	80% Recovery
(S) Before Sampling	35.11	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2.12.13 **Time:** 1625 **Turbidity (NTU):** 32.8

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2-13-13
Well Number:	DW-7	Well Integrity:	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
4	65.20	-	34.54	=	30.66	X	0.66	=	20.23
4.5		-		=		X	0.83	=	
6		-		=		X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

(Submersible Pump) Honda Pump Hand Bail Grab Sample

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1036	1075	20.93	-87.4	1.13	7.43	0.699
1	20.5	1044	1067	21.29	-97.0	0.41	7.31	0.693
2	41	1052	1066	21.20	-106.4	0.37	7.26	0.693
3	61.5	1100	1059	21.32	-101.3	0.42	7.26	0.688
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.54	
(P) After Purging	37.30	
P- 0.8(P-I) =	35.09	80% Recovery
(S) Before Sampling	34.54	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCL
250 ml glass		
250 ml polypropylene		

Sample Date : 2-13-13 Time: 1115 Turbidity (NTU): 3.73

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2.14.13
Well Number:	DW-8	Well Integrity:	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
(4)	64.65	-	30.46	=	34.19	X	0.66	=	22.56
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	0911	541	18.86	-144.8	1.20	11.67	0.351
1	23	0921	469	19.64	-124.4	0.92	11.60	0.305
2	46	0931	1586	19.62	-183.4	0.47	8.14	1.034
3	69	0942	1586	19.70	-173.9	0.74	8.16	1.031
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	30.46	
(P) After Purging	36.80	
P- 0.8(P-I) =	31.72	80% Recovery
(S) Before Sampling	30.46	
Sampled 80% - 100%	yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene	1	None
8 oz, amber glass		
40ml VOA	7	None / HCl
250 ml glass		
250 ml polypropylene	4	None / HNO3

Sample Date : 2.14.13 Time: 1100 Turbidity (NTU): 21.3

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2·13·13
Well Number:	DW-9	Well Integrity:	Good
Technician:	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		-		=		X	0.17	=	
3		-		=		X	0.38	=	
(4)	59.80	-	34.25	=	25.55	X	0.66	=	16.86
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	0923	1003	21.08	-137.2	0.77	7.38	0,652
1	17	0930	1024	20.90	-138.3	0.30	7.29	0.665
2	34	0937	1023	21.02	-134.7	0.43	7.27	0.665
3	51	0945	1022	20.65	-125.1	0.35	7.27	0.664
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	34.25	
(P) After Purging	36.15	
P- 0.8(P-I) =	34.63	80% Recovery
(S) Before Sampling	34.25	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2·13·13 Time: 1005 Turbidity (NTU): 18.9

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	2-13-13
Well Number:	IP-1	**Well Integrity:**	Good
Technician:	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)	64.45	-	31.25	=	33.20	X	0.17	=	5.64
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1354	958	20.64	-90.2	1.17	7.22	0.623
1	6	1356	954	20.87	-105.8	0.63	7.23	0.620
2	12	1358	968	20.56	-117.7	0.63	7.23	0.629
3	18	1401	970	20.51	-135.9	0.73	7.23	0.630
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.25	
(P) After Purging	34.63	
P- 0.8(P-I) =	31.92	80% Recovery
(S) Before Sampling	31.30	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene	1	None
8 oz, amber glass		
40ml VOA	7	None / HCl
250 ml glass		
250 ml polypropylene	4	None / HNO3

Sample Date : 2-13-13 **Time:** 1420 **Turbidity (NTU):** 127

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2.14.13
Well Number:	IP-8	Well Integrity:	Good
Technician:	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)	64.45	-	31.59	=	32.86	X	0.17	=	5.58
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1018	1297	19.39	-38.2	27.60	8.59	0.843
1	6	1021	1372	20.00	-64.5	27.75	8.21	0.892
2	12	1024	1411	19.74	-107.8	6.61	7.90	0.903
3	18	1027	1401	19.75	-111.8	3.60	7.79	0.911
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.59	
(P) After Purging	33.85	
P- 0.8(P-I) =	32.04	80% Recovery
(S) Before Sampling	31.59	
Sampled 80% - 100%	Yes	

Sample Date: 2.14.13 Time: 1130

Sampling Equipment: Disposable Bailer

Calibrate Date: 2/12/13

Sample Containers:

	No.	Preservation
1 liter polypropylene	1	None
8 oz, amber glass		
40ml VOA	7	HCL / None
250 ml glass		
250 ml polypropylene	4	None / HNO_3

Turbidity (NTU): 8.14

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2·13·13
Well Number:	~~IP-9~~ IP-9	Well Integrity:	Good
Technician:	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)	64.75	-	31.25	=	33.50	X	0.17	=	5.69
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1210	10253	19.42	-119.2	1.01	10.44	6.666
1	6	1213	10523	20.11	-126.5	0.72	10.60	6.840
2	12	1216	10615	20.09	-134.2	0.60	10.68	6.900
3	18	1219	10712	20.06	-135.6	0.58	10.73	6.963
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.25	
(P) After Purging	36.73	
P- 0.8(P-I) =	32.34	80% Recovery
(S) Before Sampling	31.47	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene	1	None
8 oz, amber glass		
40ml VOA	7	None / HCl
250 ml glass		
250 ml polypropylene	4	None / HNO3

Sample Date : 2·13·13 Time: 1235 Turbidity (NTU): 23.6

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2.12.13
Well Number:	IP-10	Well Integrity:	Good
Technician:	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)	63.02	-	31.18	=	31.84	X	0.17	=	5.41
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1325	813	18.22	-122.0	0.93	7.81	0.529
1	5.5	1329	809	18.83	-128.9	0.95	7.71	0.526
2	11	1326	827	18.50	-119.7	1.86	7.65	0.537
3	16.5	1334	841	18.29	-122.9	2.38	7.67	0.546
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.18	
(P) After Purging	36.70	
P- 0.8(P-I) =	32.28	80% Recovery
(S) Before Sampling	31.37	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene	1	None
8 oz, amber glass		
40ml VOA	7	None / HCl
250 ml glass		
250 ml polypropylene	4	None / HNO3

Sample Date : 2.12.13 Time: 1400 Turbidity (NTU): 31.0

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2·12·13
Well Number:	TP-1	Well Integrity:	Good
Technician:	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	-	31.96	=	11.26	X	0.17	=	1.91
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	1100	1268	19.99	41.4	18.86	7.21	0.824
1	2	1104	1332	20.54	34.1	20.96	7.07	0.866
2	4	1108	1358	20.82	19.5	20.82	7.04	0.883
3	6	1113	1379	21.11	12.5	18.93	7.04	0.896
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.96	
(P) After Purging	33.00	
P- 0.8(P-I) =	32.16	80% Recovery
(S) Before Sampling	31.96	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2·12·13 Time: 1120 Turbidity (NTU): <1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	Project Number:	01LV
Location:	Livermore, CA	Date:	2·12·13
Well Number:	TP-2	Well Integrity:	Good
Technician:	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	-	31.81	=	9.40	X	0.17	=	1.59
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 (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	0842	1331	18.97	62.3	18.90	7.35	0.886
1	2	0846	1321	20.17	35.1	18.83	7.31	0.859
2	4	0850	1316	20.60	20.3	19.66	7.31	0.856
3	6	0854	1314	20.63	14.9	20.02	7.31	0.855
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.81	
(P) After Purging	32.40	
P- 0.8(P-I) =	31.92	80% Recovery
(S) Before Sampling	31.81	
Sampled 80% - 100%	Yes	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2·12·13 Time: 0900 Turbidity (NTU): <1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Groundwater Sampling Form

Project Name:	Tesoro #67076	**Project Number:**	01LV
Location:	Livermore, CA	**Date:**	2-12-13
Well Number:	VW-2	**Well Integrity:**	Good
Technician:	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)	34.85	-	31.60	=	X		0.17	=	
3		-		=	X		0.38	=	
4		-		=	X		0.66	=	
4.5		-		=	X		0.83	=	
6		-		=	X		1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail (Grab Sample)

Volumes Purged	Volume Purge (gal.)	Time	Conductivity (mS/cm)	Temp.(°C)	ORP	DO mg/l	pH	tds (pHmV)
0	Int.	0820	1205	18.30	71.1	18.19	7.41	0.784
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

	Depth to GW (ft.)	
(I) Initially	31.60	
(P) After Purging	-	
P- 0.8(P-I) =	-	80% Recovery
(S) Before Sampling	-	
Sampled 80% - 100%	-	

Sample Containers:

	No.	Preservation
1 liter polypropylene		
8 oz, amber glass		
40ml VOA	3	HCl
250 ml glass		
250 ml polypropylene		

Sample Date : 2-12-13 **Time:** 0820 **Turbidity (NTU):** >1000

Sampling Equipment : Disposable Bailer

Calibrate Date: 2/12/13

Comments:

Daily Field Report

Date: February 12-14 2013

Company: Orion Environmental

Contact: Scott Stromberg

Project Name: Tesoro #67076

Location: Livermore, Ca

Prepared by:

Environmental Field Services, LLC

Peter Arroyo

227 Palomino Way

Patterson Ca, 95363

(209) 321-6255

Fax: (209) 892-1190

www.environmentalfieldwork.com

Notes:

Wells were gauged using a Solonist water level meter (TD & DTW). (see Field Data Sheet)

YSI meter was calibrated with Quick Cal solution.

All equipment was decontaminated between each use, using water & Alcanox & steam cleaner.

Monitoring wells were purged with a submersible pump, speeds controlled with a VFD for minimum drawdown.

PH, Cond, Temp., DO, ORP & tds readings were taken for each volume of water purged.

Turbidity readings were taken at time of sampling.

Samples were taken using a new disposable bailer for each well. Samples were packed in bubble wrap & zip loc bags that were labeled. Samples were picked up by a Kiff Analytical courier daily.

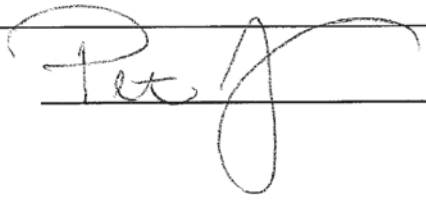
Purge water was stored in self contained tank & was off loaded to Excel Environmental.

A total of 750 gallons was removed from the site this quarter.

Please see groundwater sampling form for each wells data.

All wells secure, no purge water drums on-site, all trash removed before departing site.

IP 2-7 were not gauged or sampled this quarter.

Signature: 

ATTACHMENT C

SOIL VAPOR SAMPLING QA/QC PROCEDURES

ATTACHMENT C
SOIL VAPOR SAMPLING QA/QC PROCEDURES

Vapor Sample Collection

Vapor samples were collected using a vacuum chamber with a Tedlar bag. Sample lines were ¼-inch-diameter Teflon or new vinyl tubing with a length not exceeding 10 feet. Generally, the length of tubing was the minimum necessary to connect the sample source to the sampling apparatus. Samples bags were made of Tedlar film with a minimum thickness of 0.002 inches.

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

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

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

8. Release the vacuum on the chamber by disconnecting the vacuum line.

9. Open the chamber and close the Tedlar bag.

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

Analytical Plan

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

- Total petroleum hydrocarbons as gasoline; benzene, toluene, ethylbenzene, and total xylenes; and methyl tert-butyl ether using Environmental Protection Agency Method 8260B

Analytical Quality Assurance Quality Control (QA/QC) Procedures
Laboratory analytical QA/QC procedures are described in Attachment A.

ATTACHMENT D

HISTORICAL WELL AND GROUNDWATER ELEVATIONS

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-1	6/1/93	37.50	474.29	436.79
	6/22/93	38.46		435.83
	10/6/93	42.22		432.07
	1/13/94	34.52		439.77
	3/30/94	31.93		442.36
	4/25/94	33.49		440.80
	8/12/94	41.03		433.26
	12/14/94	38.63		435.66
	2/10/95	30.80		443.49
	6/15/95	25.46		448.83
	9/26/95	31.05		443.24
	12/15/95	28.11		446.18
	3/21/96	17.67		456.62
	6/13/96	22.86		451.43
	9/16/96	30.04		444.25
	12/2/96	26.74		447.55
	3/7/97	20.84		453.45
	6/12/97	28.71		445.58
	9/29/97	33.91		440.38
	12/1/97	34.88		439.41
	3/19/98	19.83		454.46
	5/29/98	21.57		452.72
	9/15/98	31.68		442.61
	11/30/98	36.80		437.49
	1/17/99	30.02		444.27
	6/10/99	29.30		444.99
	9/7/99	31.41		442.88
	12/13/99	32.95		441.34
	3/13/00	25.74		448.55
	6/12/00	28.24		446.05
	11/10/00	30.56		443.73
	12/31/00	31.71		442.58

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-1	3/27/01	30.43	474.29	443.86
(cont.)	6/30/01	36.61		437.68
	9/26/01	45.10		429.19
	12/18/01	39.39		434.90
	3/18/02	38.24		436.05
	8/21/02	36.71		436.05
	12/3/02	36.85		437.44
	3/4/03	33.72		440.57
	6/10/03	31.31		442.98
	9/9/03	35.05		439.24
	12/23/03	30.15		444.14
	3/23/04	26.61		447.68
	5/10/04	30.31		443.98
	8/4/04	34.77		439.52
	11/4/04	33.93		440.36
	1/12/05	27.82		446.47
	5/2/05	24.87		449.42
	7/19/05	29.26		445.03
	11/21/05	31.15		443.14
	2/9/06	26.24		448.05
	5/16/06	24.87		449.42
	8/9/06	31.64		442.65
	11/8/06	31.16		443.13
	2/14/07	30.00		444.29
	5/17/07	33.75		440.54
	8/2/07	40.00		434.29
	11/12/07	48.55		425.74
	2/14/08	34.74		439.55
	5/8/08	36.15		438.14
	7/23/08	45.76		428.53
	10/13/08	51.00		423.29

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-1	2/11/09	48.69	474.29	425.60
(cont.)	4/27/09	41.90		432.39
	8/4/09	51.44		422.85
	12/8/09	39.87		434.42
	2/11/10	35.20		439.09
	5/3/10	31.23		443.06
	8/2/10	34.56	474.21[(c)]	439.65
	11/2/10	37.04		437.17
	2/1/11	32.51		441.70
	4/25/11	27.73		446.48
	8/3/11	31.57		442.64
	10/10/11	33.12		441.09
	1/31/12	36.11		438.10
	5/7/12	36.14		438.07
	8/6/12	37.40		436.81
	11/12/12	37.10		437.11
	2/12/13	30.98		443.23
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

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-2	9/16/96	31.24	472.98	441.74
(cont.)	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
	9/7/99	31.85		441.13
	12/13/99	33.72		439.26
	3/13/00	26.54		446.44
	6/12/00	28.44		444.54
	11/10/00	31.31		441.67
	12/31/00	32.68		440.30
	3/27/01	30.81		442.17
	6/30/01	37.58		435.40
	9/26/01	44.97		428.01
	12/18/01	40.67		432.31
	3/18/02	38.94		434.04
	6/5/02	36.45		436.53
	8/21/02	37.15		435.83
	12/3/02	36.76		436.22
	3/4/03	33.60		439.38
	6/10/03	32.89		440.09
	9/9/03	35.45		437.53
	12/23/03	31.79		441.19
	3/23/04	28.25		444.73

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-2	5/10/04	30.91	472.98	442.07
(cont.)	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
	5/17/07	34.40		438.58
	8/2/07	41.23		431.75
	11/12/07	48.22		424.76
	2/14/08	36.31		436.67
	5/8/08	36.70		436.28
	7/23/08	45.78		427.20
	10/13/08	51.30		421.68
	2/11/09	48.90		424.08
	4/27/09	42.62		430.36
	8/4/09	51.83		421.15
	12/8/09	40.82		432.16
	2/11/10	36.54		436.44
	5/3/10	32.44		440.54
	8/2/10	35.34		437.64
	11/2/10	38.15		434.83
	2/1/11	33.40		439.58
	4/25/11	28.49		444.49
	8/3/11	32.40		440.58
	10/10/11	33.51		439.47

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-2	1/31/12	39.52	472.98	433.46
(cont.)	5/7/12	36.89		436.09
	8/6/12	40.95		432.03
	11/12/12	39.03		433.95
	2/12/13	32.13		440.85
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
	3/19/98	18.76		454.61
	5/29/98	20.64		452.73
	9/15/98	30.70		442.67
	11/30/98	34.96		438.41
	1/17/99	28.81		444.56
	6/10/99	28.10		445.27

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-3	9/7/99	30.38	473.37	442.99
(cont.)	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
	11/21/05	31.30		442.07
	2/9/06	26.21		447.16
	5/16/06	24.36		449.01
	8/9/06	31.90		441.47
	11/8/06	31.30		442.07
	2/14/07	30.20		443.17

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-3	5/17/07	33.64	473.37	439.73
(cont.)	8/2/07	41.74		431.63
	11/12/07	47.41		425.96
	2/14/08	34.73		438.64
	5/8/08	35.60		437.77
	7/23/08	45.00		428.37
	10/13/08	50.70		422.67
	2/11/09	47.81		425.56
	4/27/09	41.18		432.19
	8/4/09	51.89		421.48
	12/8/09	39.50		433.87
	2/11/10	35.19		438.18
	5/3/10	31.39		441.98
	8/2/10	34.61		438.76
	11/2/10	37.20		436.17
	2/1/11	32.59		440.78
	4/25/11	27.60		445.77
	8/3/11	31.69		441.68
	10/10/11	33.96		439.41
	1/31/12	39.05		434.32
	5/7/12	36.03		437.34
	8/6/12	40.52		432.85
	11/12/12	39.24		434.13
	2/12/13	31.34		442.03
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

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-4	12/15/95	27.56	473.64	446.08
(cont.)	3/21/96	15.63		458.01
	6/13/96	21.07		452.57
	9/16/96	28.99		444.65
	12/2/96	26.04		447.60
	3/7/97	19.69		453.95
	6/12/97	28.04		445.60
	9/29/97	29.91		443.73
	12/1/97	33.88		439.76
	3/19/98	18.67		454.97
	5/29/98	20.16		453.48
	9/15/98	30.46		443.18
	11/30/98	34.50		439.14
	1/17/99	28.30		445.34
	6/10/99	27.60		446.04
	9/7/99	30.79		442.85
	12/13/99	31.60		442.04
	3/13/00	24.35		449.29
	6/12/00	26.91		446.73
	11/10/00	29.71		443.93
	12/31/00	31.79		441.85
	3/27/01	29.98		443.66
	6/30/01	36.88		436.76
	9/26/01	43.87		429.77
	12/18/01	39.30		434.34
	3/18/02	37.75		435.89
	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

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-4	9/9/03	34.64	473.64	439.00
(cont.)	12/23/03	31.30		442.34
	3/23/04	26.71		446.93
	5/10/04	30.33		443.31
	8/4/04	34.87		438.77
	11/4/04	34.28		439.36
	1/12/05	28.67		444.97
	5/2/05	24.46		449.18
	7/19/05	29.36		444.28
	11/21/05	31.80		441.84
	2/9/06	26.34		447.30
	5/16/06	24.30		449.34
	8/9/06	32.05		441.59
	11/8/06	32.85		440.79
	2/14/07	30.46		443.18
	5/17/07	33.92		439.72
	8/2/07	40.68		432.96
	11/12/07	DRY[(d)]		--
	2/14/08	34.53		439.11
	5/8/08	35.55		438.09
	7/23/08	43.87		429.77
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	40.64		433.00
	8/4/09	DRY		--
	12/8/09	39.46		434.18
	2/11/10	35.31		438.33
	5/3/10	31.55		442.09
	8/2/10	35.15		438.49
	11/2/10	37.55		436.09
	2/1/11	32.86		440.78

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-4	4/25/11	28.69	473.64	444.95
(cont.)	8/3/11	32.01		441.63
	10/10/11	34.49		439.15
	1/31/12	38.91		434.73
	5/7/12	36.24		437.40
	8/6/12	40.69		432.95
	11/12/12	39.65		433.99
	2/12/13	31.56		442.08
MW-5	3/30/94	32.07	472.67	440.60
	4/25/94	33.65		439.02
	8/12/94	42.73		429.94
	12/14/94	38.89		433.78
	2/10/95	31.44		441.23
	6/15/95	24.99		447.68
	9/26/95	30.20		442.47
	12/15/95	28.56		444.11
	3/21/96	16.82		455.85
	6/13/96	22.61		450.06
	9/16/96	29.78		442.89
	12/2/96	26.51		446.16
	3/7/97	21.91		450.76
	9/29/97	31.74		440.93
	12/1/97	34.05		438.62
	3/19/98	20.93		451.74
	5/29/98	21.30		451.37
	9/15/98	31.32		441.35
	11/30/98	35.44		437.23
	1/17/99	29.59		443.08
	6/10/99	28.05		444.62
	9/7/99	31.11		441.56
	12/13/99	32.66		440.01

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

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

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
MW-5	11/12/07	DRY	472.67	--
(cont.)	2/14/08	35.66		437.01
	5/8/08	36.60		436.07
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	42.50		430.17
	8/4/09	DRY		--
	12/8/09	39.92		432.75
	2/11/10	36.62		436.05
	5/3/10	32.89		439.78
	8/2/10	36.16		436.51
	11/2/10	38.75		433.92
	2/1/11	32.77		439.90
	4/25/11	29.03		443.64
	8/3/11	33.18		439.49
	10/10/11	35.58		437.09
	1/31/12	39.80		432.87
	5/7/12	37.29		435.38
	8/6/12	NM[e]		--
	11/12/12	40.72		431.95
	2/12/13	32.68		439.99
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

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-6	6/13/96	24.62	471.93	447.31
(cont.)	9/16/96	32.64		439.29
	12/2/96	27.42		444.51
	3/7/97	22.13		449.80
	6/12/97	31.02		440.91
	9/29/97	35.77		436.16
	12/1/97	37.14		434.79
	3/19/98	21.10		450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	9/7/99	33.94		437.99
	12/13/99	35.84		436.09
	3/13/00	28.45		443.48
	6/12/00	30.52		441.41
	11/10/00	32.99		438.94
	12/31/00	34.95		436.98
	3/27/01	32.72		439.21
	6/30/01	39.86		432.07
	9/26/01	DRY		--
	12/18/01	43.36		428.57
	3/18/02	41.29		430.64
	6/5/02	38.85		433.08
	8/21/02	39.02		432.91
	12/3/02	38.76		433.17
	3/4/03	35.13		436.80
	6/10/03	34.15		437.78
	9/9/03	37.66		434.27
	12/23/03	33.43		438.50

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-6	3/23/04	29.96	471.93	441.97
(cont.)	5/10/04	32.98		438.95
	8/4/04	37.02		434.91
	11/4/04	37.03		434.90
	1/12/05	32.01		439.92
	5/2/05	27.30		444.63
	7/19/05	32.27		439.66
	11/21/05	33.23		438.70
	2/9/06	29.07		442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	5/17/07	36.50		435.43
	8/2/07	42.24		429.69
	11/12/07	DRY		--
	2/14/08	38.67		433.26
	5/8/08	38.50		433.43
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	44.87		427.06
	8/4/09	DRY		--
	12/8/09	43.02		428.91
	2/11/10	38.89		433.04
	5/3/10	34.56		437.37
	8/2/10	37.87		434.06
	11/2/10	40.45		431.48
	2/1/11	35.73		436.20
	4/25/11	30.72		441.21
	8/3/11	34.95		436.98

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-6	10/10/11	37.45	471.93	434.48
(cont.)	1/31/12	42.15		429.78
	5/7/12	39.11		432.82
	8/6/12	43.66		428.27
	11/12/12	42.20		429.73
	2/12/13	34.24		437.69
MW-7	3/30/94	31.98	472.33	440.35
	4/25/94	33.56		438.77
	8/12/94	43.35		428.98
	12/14/94	39.34		432.99
	2/10/95	32.11		440.22
	6/15/95	25.51		446.82
	9/26/95	31.43		440.90
	12/15/95	28.97		443.36
	3/21/96	17.36		454.97
	6/13/96	23.47		448.86
	9/16/96	31.35		440.98
	12/2/96	27.11		445.22
	3/7/97	21.33		451.00
	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
	1/17/99	31.04		441.29
	6/10/99	29.89		442.44
	9/7/99	32.38		439.95
	12/13/99	33.98		438.35
	3/13/00	27.09		445.24

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7	6/12/00	28.76	472.33	443.57
(cont.)	11/10/00	31.54		440.79
	12/31/00	32.76		439.57
	3/27/01	30.97		441.36
	6/30/01	37.50		434.83
	9/26/01	45.11		427.22
	12/18/01	41.13		431.20
	3/18/02	39.22		433.11
	6/5/02	36.55		435.78
	8/21/02	36.81		435.52
	12/3/02	36.52		435.81
	3/4/03	32.60		439.73
	6/10/03	31.33		441.00
	9/9/03	34.71		437.62
	12/23/03	30.80		441.53
	3/23/04	26.41		445.92
	5/10/04	29.86		442.47
	8/4/04	34.06		438.27
	11/4/04	34.12		438.21
	1/12/05	28.83		443.50
	5/2/05	24.66		447.67
	7/19/05	29.07		443.26
	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		--

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7	2/14/08	36.51	472.33	435.82
(cont.)	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
	2/11/10	36.18		436.15
	5/3/10	31.80		440.53
	8/2/10	34.31		438.02
	11/2/10	36.68		435.65
	2/1/11	32.66		439.67
	4/25/11	27.75		444.58
	8/3/11	31.36		440.97
	10/10/11	33.63		438.70
	1/31/12	38.74		433.59
	5/7/12	35.97		436.36
	8/6/12	39.85		432.48
	11/12/12	38.73		433.60
	2/12/13	31.46		440.87
MW-8	12/23/03	32.01	471.18	439.17
	3/23/04	28.50		442.68
	5/10/04	31.44		439.74
	8/4/04	35.11		436.07
	11/4/04	34.77		436.41
	1/12/05	29.66		441.52
	5/2/05	25.91		445.27
	7/19/05	30.56		440.62
	11/21/05	32.48		438.70
	2/9/06	27.40		443.78

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-8	5/16/06	25.60	471.18	445.58
(cont.)	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
	2/11/10	36.72		434.46
	5/3/10	32.81		438.37
	8/2/10	36.08		435.10
	11/2/10	38.44		432.74
	2/1/11	34.11		437.07
	4/25/11	28.72		442.46
	8/3/11	33.09		438.09
	10/10/11	35.69		435.49
	1/31/12	40.08		431.10
	5/7/12	37.38		433.80
	8/6/12	41.94		429.24
	11/12/12	40.87		430.31
	2/12/13	32.81		438.37
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

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-9	8/4/04	37.47	470.78	433.31
(cont.)	11/4/04	37.44		433.34
	5/2/05	27.73		443.05
	7/19/05	32.90		437.88
	11/21/05	34.15		436.63
	2/9/06	29.44		441.34
	5/16/06	27.50		443.28
	8/9/06	35.85		434.93
	11/8/06	34.18		436.60
	2/14/07	34.00		436.78
	5/17/07	36.88		433.90
	8/2/07	44.11		426.67
	11/12/07	DRY		--
	2/14/08	39.32		431.46
	5/8/08	38.90		431.88
	7/23/08	DRY		--
	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
	2/11/10	39.48		431.30
	5/3/10	34.96		435.82
	8/2/10	38.00		432.78
	11/2/10	40.30		430.48
	2/1/11	35.97		434.81
	4/25/11	30.64		440.14
	8/3/11	35.17		435.61
	10/10/11	37.64		433.14
	1/31/12	42.06		428.72
	5/7/12	39.43		431.35

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-9	8/6/12	43.51	470.78	427.27
(cont.)	11/12/12	42.66		428.12
	2/12/13	34.70		436.08
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		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	45.10		426.53
	8/4/09	44.52		427.11
	12/8/09	42.80		428.83
	2/11/10	39.74		431.89
	5/3/10	33.97		437.66
	8/2/10	36.12		435.51

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-10	11/2/10	38.30	471.63	433.33
(cont.)	2/1/11	34.63		437.00
	4/25/11	29.63		442.00
	8/3/11	33.26		438.37
	10/10/11	35.62		436.01
	1/31/12	39.67		431.96
	5/7/12	38.14		433.49
	8/6/12	40.65		430.98
	11/12/12	40.53		431.10
	2/12/13	33.19		438.44
MW-11	12/16/08	DRY	473.26	--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	40.25		433.01
	2/11/10	NM[(e)]		--
	5/3/10	31.36		441.90
	8/2/10	31.94	472.96[(c)]	441.02
	11/2/10	36.98		435.98
	2/1/11	32.30		440.66
	4/25/11	27.31		445.65
	8/3/11	31.11		441.85
	10/10/11	33.27		439.69
	1/31/12	34.36		438.60
	5/7/12	31.61		441.35
	8/6/12	35.20		437.76
	11/12/12	35.34		437.62
	2/12/13	30.64		442.32
MW-12	6/14/12	40.62	469.77	429.15
	8/6/12	43.22		426.55

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-12	11/12/12	41.85	469.77	427.92
(cont.)	2/12/13	34.10		435.67
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		--
	2/11/10	NM		--
	5/3/10	31.84		441.44
	8/2/10	33.15	472.57[(c)]	439.42
	11/2/10	DRY		--
	2/1/11	32.80		439.77
	4/25/11	25.43		447.14
	8/3/11	26.82		445.75

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
VW-2	10/10/11	33.29	472.57	439.28
(cont.)	1/31/12	32.19		440.38
	5/7/12	31.50		441.07
	8/6/12	32.64		439.93
	11/12/12	33.90		438.67
	2/12/13	31.60		440.97
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		--
	2/11/10	DRY		--
	5/3/10	31.85		442.53
	8/2/10	34.72		439.66

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
VW-3	11/2/10	DRY	474.38	--
(cont.)	2/1/11	32.56		441.82
	4/25/11	27.81		446.57
	8/3/11	28.93		445.45
	10/10/11	33.66		440.72
	1/31/12	DRY		--
	5/7/12	DRY		--
	8/6/12	DRY		--
	11/12/12	DRY		--
	2/12/13	31.70		442.68
TP-1	7/19/05	29.91	472.82	442.91
	11/21/05	32.28		440.54
	2/9/06	28.02		444.80
	5/17/06	25.18		447.64
	8/9/06	32.81		440.01
	11/8/06	32.02		440.80
	2/14/07	33.59		439.23
	5/17/07	33.52		439.30
	8/2/07	40.30		432.52
	11/12/07	DRY		--
	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		--
	12/8/09	41.39		431.43
	2/11/10	NM		--
	5/3/10	32.32		440.50
	8/2/10	33.96	472.64[(c)]	438.68

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
TP-1	11/2/10	37.46	472.64	435.18
(cont.)	2/1/11	33.01		439.63
	4/25/11	28.23		444.41
	8/3/11	31.85		440.79
	10/10/11	31.60		441.04
	1/31/12	35.43		437.21
	5/7/12	34.70		437.94
	8/6/12	36.59		436.05
	11/12/12	37.00		435.64
	2/12/13	31.96		440.68
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		--
	12/8/09	40.08		432.85
	2/11/10	NM		--
	5/3/10	31.85		441.08
	8/2/10	33.57	472.78[(c)]	439.21

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
TP-2	11/2/10	37.35	472.78	435.43
(cont.)	2/1/11	32.79		439.99
	4/25/11	28.30		444.48
	8/3/11	31.59		441.19
	10/10/11	32.14		440.64
	1/31/12	34.32		438.46
	5/7/12	34.41		438.37
	8/6/12	36.00		436.78
	11/12/12	36.25		436.53
	2/12/13	31.81		440.97
DW-1	5/22/08	37.30	472.85	435.55
	7/23/08	45.55		427.30
	10/13/08	51.40		421.45
	2/11/09	48.28		424.57
	4/27/09	41.74		431.11
	8/4/09	52.22		420.63
	12/8/09	39.79		433.06
	2/11/10	35.57		437.28
	5/3/10	31.70		441.15
	8/2/10	34.76		438.09
	11/2/10	37.49		435.36
	2/1/11	32.83		440.02
	4/25/11	27.96		444.89
	8/3/11	31.96		440.89
	10/10/11	34.40		438.45
	1/31/12	39.39		433.46
	5/7/12	36.35		436.50
	8/6/12	40.60		432.25
	11/12/12	39.29		433.56
	2/12/13	31.63		441.22

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-2	5/22/08	39.80	471.61	431.81
	7/23/08	48.25		423.36
	10/13/08	53.40		418.21
	2/11/09	51.50		420.11
	4/27/09	44.71		426.90
	8/4/09	54.67		416.94
	12/8/09	42.88		428.73
	2/11/10	38.63		432.98
	5/3/10	34.46		437.15
	8/2/10	37.72		433.89
	11/2/10	40.50		431.11
	2/1/11	35.66		435.95
	4/25/11	30.69		440.92
	8/3/11	35.00		436.61
	10/10/11	37.44		434.17
	1/31/12	42.19		429.42
	5/7/12	39.10		432.51
	8/6/12	43.90		427.71
	11/12/12	42.25		429.36
	2/12/13	34.35		437.26
DW-3	5/22/08	40.20	470.33	430.13
	7/23/08	49.09		421.24
	10/13/08	54.62		415.71
	2/11/09	51.96		418.37
	4/27/09	45.17		425.16
	8/4/09	56.32		414.01
	12/8/09	42.92		427.41
	2/11/10	38.75		431.58
	5/3/10	34.51		435.82
	8/2/10	35.59		434.74
	11/2/10	40.00		430.33

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-3	2/1/11	35.50	470.33	434.83
(cont.)	4/25/11	30.45		439.88
	8/3/11	34.71		435.62
	10/10/11	37.00		433.33
	1/31/12	42.10		428.23
	5/7/12	38.70		431.63
	8/6/12	43.26		427.07
	11/12/12	41.48		428.85
	2/12/13	33.87		436.46
DW-4	5/22/08	40.20	468.48	428.28
	7/23/08	49.50		418.98
	10/13/08	54.90		413.58
	2/11/09	51.71		416.77
	4/27/09	45.10		423.38
	8/4/09	56.46		412.02
	12/8/09	42.26		426.22
	2/11/10	37.98		430.50
	5/3/10	34.04		434.44
	8/2/10	36.94		431.54
	11/2/10	39.50		428.98
	2/1/11	35.11		433.37
	4/25/11	30.12		438.36
	8/3/11	34.54		433.94
	10/10/11	36.60		431.88
	1/31/12	42.10		426.38
	5/7/12	38.26		430.22
	8/6/12	42.80		425.68
	11/12/12	40.86		427.62
	2/12/13	33.29		435.19
DW-5	12/8/09	43.05	471.86	428.81
	2/11/10	38.93		432.93

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-5	5/3/10	34.55	471.86	437.31
(cont.)	8/2/10	37.56		434.30
	11/2/10	40.00		431.86
	2/1/11	35.57		436.29
	4/25/11	30.59		441.27
	8/3/11	34.64		437.22
	10/10/11	37.00		434.86
	1/31/12	42.31		429.55
	5/7/12	38.98		432.88
	8/6/12	46.32		425.54
	11/12/12	41.65		430.21
	2/12/13	34.10		437.76
DW-6	12/8/09	43.50	471.77	428.27
	2/11/10	39.22		432.55
	5/3/10	35.15		436.62
	8/2/10	38.35		433.42
	11/2/10	40.09		431.68
	2/1/11	36.35		435.42
	4/25/11	31.32		440.45
	8/3/11	35.63		436.14
	10/10/11	38.09		433.68
	1/31/12	42.69		429.08
	5/7/12	39.82		431.95
	8/6/12	44.50		427.27
	11/12/12	42.95		428.82
	2/12/13	34.96		436.81
DW-7	12/8/09	43.01	470.07	427.06
	2/11/10	38.70		431.37
	5/3/10	34.64		435.43
	8/2/10	37.82		432.25
	11/2/10	40.42		429.65

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-7	2/1/11	35.76	470.07	434.31
(cont.)	4/25/11	30.82		439.25
	8/3/11	35.19		434.88
	10/10/11	37.55		432.52
	1/31/12	42.35		427.72
	5/7/12	39.30		430.77
	8/6/12	44.02		426.05
	11/12/12	42.43		427.64
	2/12/13	34.54		435.53
DW-8	4/25/11	27.23	472.31	445.08
	8/3/11	31.14		441.17
	10/10/11	33.41		438.90
	1/31/12	38.69		433.62
	5/7/12	35.52		436.79
	8/6/12	39.61		432.70
	11/12/12	38.00		434.31
	2/12/13	30.46		441.85
DW-9	6/14/12	40.85	469.80	428.95
	8/6/12	43.65		426.15
	11/12/12	42.05		427.75
	2/12/13	34.25		435.55
MW-A	1/17/99	30.13	NM	--
MW-B	1/17/99	30.29	NM	--
MW-C	1/17/99	30.60	NM	--
MW-D	1/17/99	31.32	NM	--
MW-E	1/17/99	31.36	NM	--
MW-W	1/17/99	30.91	NM	--
IP-1	7/23/08	45.49	473.16	427.67
	10/13/08	51.30		421.86
	5/3/10[(f)]	33.80		439.36
	4/25/11	27.97	473.06[(c)]	445.09

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
IP-1	1/31/12	39.26	473.06	433.80
(cont.)	5/7/12	36.18		436.88
	8/6/12	40.23		432.83
	11/12/12	38.76		434.30
	2/12/13	31.25		441.81
IP-2	7/23/08	46.83	473.21	426.38
	10/13/08	51.40		421.81
	5/3/10[f]	32.00		441.21
	4/25/11	28.04	473.06[c]	445.02
	5/7/12	37.21		435.85
	8/6/12	40.78		432.28
	11/12/12	39.79		433.27
	2/12/13	NM		--
IP-3	7/23/08	45.47	472.97	427.50
	10/13/08	51.11		421.86
	5/3/10[f]	31.68		441.29
	4/25/11	28.07	473.05[c]	444.98
	5/7/12	36.41		436.64
	8/6/12	40.70		432.35
	11/12/12	39.41		433.64
	2/12/13	NM		--
IP-4	7/23/08	44.55	473.02	428.47
	10/13/08	50.89		422.13
	5/3/10[f]	31.61		441.41
	4/25/11	27.93	473.10[c]	445.17
	5/7/12	36.30		436.80
	8/6/12	40.67		432.43
	11/12/12	39.15		433.95
	2/12/13	NM		--
IP-5	7/23/08	44.70	473.06	428.36
	10/13/08	51.06		422.00

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
IP-5	5/3/10[f]	31.60	473.06	441.46
(cont.)	4/25/11	27.80	473.05[c]	445.25
	5/7/12	36.90		436.15
	8/6/12	40.65		432.40
	11/12/12	39.16		433.89
	2/12/13	NM		--
IP-6	7/23/08	49.91	472.73	422.82
	10/13/08	55.63		417.10
	5/3/10[f]	34.98		437.75
	4/25/11	30.60	472.43[c]	441.83
	5/7/12	39.70		432.73
	8/6/12	44.44		427.99
	11/12/12	42.67		429.76
	2/12/13	NM		--
IP-7	7/23/08	51.45	472.86	421.41
	10/13/08	57.23		415.63
	5/3/10[f]	35.75		437.11
	4/25/11	31.51	472.43[c]	440.92
	5/7/12	41.87		430.56
	8/6/12	45.63		426.80
	11/12/12	43.87		428.56
	2/12/13	NM		--
IP-8	12/16/08	50.48	473.13	422.65
	5/3/10[f]	33.34		439.79
	4/25/11	28.07	473.22[c]	445.15
	1/31/12	39.45		433.77
	5/7/12	36.25		436.97
	8/6/12	40.32		432.90
	11/12/12	39.10		434.12
	2/12/13	31.59		441.63

TABLE D-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
IP-9	12/16/08	52.51	473.47	420.96
	5/3/10[f]	31.79		441.68
	4/25/11	27.84	473.35[c]	445.51
	1/31/12	39.37		433.98
	5/7/12	37.03		436.32
	8/6/12	40.30		433.05
	11/12/12	38.77		434.58
	2/12/13	31.25		442.10
IP-10	2/11/09	48.77	473.78	425.01
	5/3/10[f]	32.23		441.55
	4/25/11	27.79	473.88[c]	446.09
	1/31/12	39.24		434.64
	5/7/12	36.24		437.64
	8/6/12	40.36		433.52
	11/12/12	38.99		434.89
	2/12/13	31.18		442.70

(a) Elevation of PVC well casing (north edge) surveyed relative to mean sea level (MSL).
Wells were surveyed by Cross Land Surveying, Inc., per AB 2886 requirements.
Benchmark K2-741, elevation is 467.835 feet above MSL.

(b) Water Table Elevation = (Casing Elevation - Depth to Water)

(c) Wells were resurveyed by Cross Land Surveying, Inc., per AB 2886 requirements, on 19 October 2010 after remediation system construction.
Benchmark K2-741, elevation is 467.835 feet above MSL.

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

(e) NM - Not measured.

(f) Baseline remediation system values.

ATTACHMENT E

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-1	12/8/09	3,200	16	18	81	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<20	ND<0.5	ND<0.5
(cont.)	2/11/10	1,300	3.7	1.7	13	6.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	5/5/10	710	2.2	0.92	5.9	2.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	1,200	2.4	3.7	22	23	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	1,100	7.3	34	18	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	200	ND<0.5	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/25/11	130	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/11	1,500	2.0	15	44	86	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/11/11	2,300	6.0	30	15	64	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<8	ND<0.5	ND<0.5
	1/31/12	1,700	1.6	11	26	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<100	ND<0.5	ND<0.5
	5/9/12	3,300	2.2	5.5	52	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<100	ND<5	ND<0.5	ND<0.5
	8/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	110	ND<0.5	ND<0.5	1.1	3.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-2	6/1/93	170,000	20,000	21,000	3,300	18,000	--	--	--	--	--	--	--	--	--
	6/22/93	160,000	19,000	22,000	3,500	18,000	--	--	--	--	--	--	--	--	--
	10/6/93	110,000	17,000	17,000	3,000	15,000	--	--	--	--	--	--	--	--	--
	1/13/94	93,000	20,000	19,000	2,300	14,000	--	--	--	--	--	--	--	--	--
	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	41,000	9,600	7,300	840	7,800	--	--	--	--	--	--	--	--	--
	8/12/94	59,000	11,000	11,000	2,300	11,000	--	--	--	--	--	--	--	--	--
	12/14/94	63,000	13,000	13,000	2,200	12,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	12,000	12,000	2,200	11,000	--	--	--	--	--	--	--	--	--
	6/15/95	61,000	11,000	12,000	1,900	11,000	--	--	--	--	--	--	--	--	--
	9/26/95	61,000	9,400	11,000	2,300	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	48,000	8,000	8,300	2,200	12,000	--	--	--	--	--	--	--	--	--
	3/21/96	48,000	8,000	7,700	2,400	12,000	--	--	--	--	--	--	--	--	--
	6/13/96	33,000	7,300	8,800	1,900	12,000	ND<250	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-2	9/16/96	8,600	510	640	180	1,300	ND<250	--	--	--	--	--	--	--	--
(cont.)	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	--	--	--	--	--	--	--	--
	6/12/00	56,000	4,000	950	2,300	7,200	ND<50	--	--	--	--	--	--	--	--
	11/10/00	35,000	5,100	850	1,500	3,200	230	--	--	--	--	--	--	--	--
	12/31/00	21,000	3,200	420	1,300	1,200	440	--	--	--	--	--	--	--	--
	3/27/01	3,500	420	64	16	280	120	--	--	--	--	--	--	--	--
	6/30/01	1,200	88	4.5	65	37	29	--	--	--	--	--	--	--	--
	9/26/01	53,000	8,500	1,500	2,400	4,600	270	--	--	--	--	--	--	--	--
	12/18/01	26,000	5,400	900	1,500	2,200	430	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	4,200	240	7.3	200	53	89	--	--	--	--	--	--	--	--
	6/5/02	25,000	3,500	390	1,400	2,400	550	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	32	620	300	160	--	--	--	--	--	--	--	--
	12/3/02	3,700	110	2.5	130	11	29	--	--	--	--	--	--	--	--
	3/4/03	8,700	1,100	77	350	540	230	ND<0.5	ND<0.5	ND<10	21	ND<150	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-2	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
(cont.)	9/9/03	6,900	500	ND<20	360	29	9,500	ND<20	ND<20	60	ND<200	ND<2,000	ND<200	ND<20	ND<20
	12/23/03	22,000	4,900	1,300	720	2,300	1,700	ND<20	ND<20	21	ND<200	ND<2,000	ND<200	ND<20	ND<20
	3/23/04	45,000	5,200	1,500	1,800	5,000	750	ND<20	ND<20	34	ND<200	ND<2,000	ND<200	ND<20	ND<20
	5/10/04	7,300	1,000	51	240	290	1,800	ND<5	ND<5	14	ND<50	ND<500	ND<50	ND<5	ND<5
	8/4/04	45,000	7,200	1,900	1,800	5,100	2,500	ND<25	ND<25	31	ND<250	ND<2,500	ND<250	ND<25	ND<25
	11/4/04	27,000	4,400	1,100	840	2,200	3,500	ND<9	ND<9	29	ND<50	ND<900	ND<90	ND<9	ND<9
	1/12/05	16,000	1,900	640	570	1,500	1,900	ND<4	ND<4	19	28[f]	ND<400	ND<40	ND<4	ND<4
	5/2/05	44,000	5,200	1,100	1,800	4,800	2,200	ND<20	ND<20	30	ND<200	ND<2,000	ND<200	ND<20	ND<20
	7/20/05	21,000	3,000	500	1,000	1,500	4,400	ND<7	ND<7	32	74[f]	ND<700	ND<70	ND<7	ND<7
	11/22/05	33,000	4,400	880	1,200	2,600	2,200	ND<9	ND<9	19	480	ND<900	ND<90	ND<9	ND<9
	2/9/06	25,000	3,300	720	1,300	2,200	2,500	ND<7	ND<7	27	490	ND<700	ND<70	ND<7	ND<7
	5/17/06	22,000	3,200	240	1,200	2,100	4,600	ND<7	ND<7	46	1,000	ND<700	ND<70	ND<7	ND<7
	8/9/06	34,000	4,200	830	1,300	2,400	2,900	ND<9	ND<9	25	1,600	ND<900	ND<90	ND<9	ND<9
	11/8/06	27,000	3,600	300	1,200	1,800	1,500	ND<9	ND<9	15	1,100	ND<900	ND<90	ND<9	ND<9
	2/14/07	36,000	4,600	740	1,600	2,100	1,800	ND<5	ND<5	20	910	ND<700	ND<50	ND<5	ND<5
	5/17/07	37,000	7,400	680	1,900	2,400	3,000	ND<9	ND<9	24	2,600	ND<4,000	ND<90	--	--
	8/2/07	37,000	4,200	500	1,800	2,200	1,300	ND<9	ND<9	18	1,200	ND<2,000	ND<90	ND<9	ND<9
	11/12/07	25,000	5,900	120	1,700	820	1,400	ND<15	ND<15	16	720	ND<1,500	ND<150	ND<15	ND<15
	2/14/08	31,000	5,400	450	1,900	2,000	1,200	ND<15	ND<15	16	410	ND<1,500	ND<150	ND<15	ND<15
	5/8/08	29,000	3,200	620	1,400	1,700	580	ND<5	ND<5	10	210	ND<1,000	ND<50	ND<5	ND<5
	7/23/08	25,000	3,800	220	1,600	1,000	780	ND<5	ND<5	14	470	ND<900	ND<50	ND<5	ND<5
	10/13/08	31,000	7,600	160	1,800	440	1,600	ND<9	ND<9	20	710	ND<1,500	ND<90	ND<9	ND<9
	2/11/09	22,000	4,400	120	1,500	430	650	ND<9	ND<9	12	330	ND<3,000	ND<90	ND<9	ND<9
	4/28/09	28,000	3,400	600	1,500	1,700	380	ND<8	ND<8	8.1	150	ND<1,000	ND<80	ND<8	ND<8
	8/4/09	30,000	5,800	170	1,500	370	1,400	ND<9	ND<9	18	670	ND<3,000	ND<90	ND<9	ND<9
	12/8/09	24,000	3,100	200	1,200	830	520	ND<7	ND<7	8.0	250	ND<700	ND<70	ND<7	ND<7
	2/12/10	19,000	2,900	440	940	1,300	820	ND<7	ND<7	9.5	400	ND<700	ND<70	ND<7	ND<7

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-2	5/3/10	26,000	3,100	870	1,100	2,200	530	ND<7	ND<7	8.0	370	ND<700	ND<70	ND<7	ND<7
(cont.)	8/3/10	19,000	2,000	150	840	730	280	ND<4	ND<4	4.4	200	ND<400	ND<40	ND<4	ND<4
	11/4/10	13,000	2,000	160	420	390	540	ND<4	ND<4	5.7	510	ND<400	ND<40	ND<4	ND<4
	2/2/11	10,000	1,600	130	320	410	410	ND<4	ND<4	4.2	410	ND<400	ND<40	ND<4	ND<4
	4/28/11	13,000	1,400	100	470	670	450	ND<2.5	ND<2.5	4.6	200	ND<250	ND<50	ND<2.5	ND<2.5
	8/4/11	16,000	1,900	200	430	820	660	ND<3	ND<3	5.7	420	ND<1,500	ND<30	ND<3	ND<3
	10/11/11	7,000	810	110	200	430	370	ND<1.5	ND<1.5	3.3	170	ND<250	ND<15	ND<1.5	ND<1.5
	2/1/12	14,000	1,200	130	440	650	340	ND<2.5	ND<2.5	5.4	170	ND<800	ND<25	ND<2.5	ND<2.5
	5/11/12	14,000	1,200	140	490	1,000	220	ND<2.5	ND<2.5	2.7	120	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	15,000	720	120	460	580	140	ND<2.5	ND<2.5	2.6	70	ND<250	ND<25	ND<2.5	ND<2.5
	11/14/12	5,700	480	30	96	300	200	ND<0.9	ND<0.9	1.8	110	ND<200	ND<9	ND<0.9	ND<0.9
	2/13/13	270	29	4.4	8.9	19	7.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
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	0.50	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-3	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
(cont.)	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/08	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.83	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	57	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	61	ND<5	ND<0.5	ND<0.5
	2/11/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	0.64	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/8/09	150	3.6	1.1	2.4	2.6	0.82	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	2/11/10	61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	53	ND<5	ND<0.5	ND<0.5
	5/6/10	ND<50	ND<0.5	1.0	ND<0.5	0.95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	74	2.4	5.5	0.96	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	ND<50	ND<0.5	2.5	ND<0.5	3.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	ND<50	ND<0.5	0.67	7.1	3.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/7/12	74	ND<0.5	0.56	1.9	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-3	11/12/12	170	ND<0.5	0.83	4.1	15	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.)	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-4	3/30/94	120	4.2	15	2.5	26	--	--	--	--	--	--	--	--	--
	4/25/94	65	ND<0.5	1.8	ND<0.5	2.1	--	--	--	--	--	--	--	--	--
	8/12/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/14/94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	2/10/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	6/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	1.8	1.1	1.4	4.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-4	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
(cont.)	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	ND<50	2.4	1.8	2.3	4.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-5	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
(cont.)	6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	540	4.1	ND<0.5	ND<0.5	0.52	ND<5	--	--	--	--	--	--	--	--
	9/15/98	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/30/98	430	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	820	46	1.7	10	21	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	270	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	2,200	42	1.1	25	30	8.6	--	--	--	--	--	--	--	--
	12/31/00	1,300	21	ND<0.5	4.3	2.6	10	--	--	--	--	--	--	--	--
	3/27/01	1,200	11	ND<0.5	2.6	ND<0.5	21	--	--	--	--	--	--	--	--
	6/30/01	1,400	4.8	ND<0.5	1.5	0.56	14	--	--	--	--	--	--	--	--
	9/26/01	660	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	--	--	--	--	--	--	--	--
	12/18/01	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	890	0.65	ND<0.5	ND<0.5	ND<0.5	3.1	--	--	--	--	--	--	--	--
	6/5/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/21/02	2,100	20	ND<0.5	63	4.0	7.0	--	--	--	--	--	--	--	--
	12/3/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/4/03	490	10	ND<0.5	2.2	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-5	12/23/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	3/23/04	440	2.3	ND<0.5	1.0	5.9	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/04	160	ND<0.5	ND<0.5	ND<0.5	0.71	0.94	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	290	0.74	ND<0.5	0.58	1.3	0.61	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	300	ND<0.5	ND<0.5	0.51	1.6	0.73	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	210	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	0.63	1.0	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	220	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	200	ND<0.5	ND<0.5	ND<0.5	1.1	2.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	85	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	980	ND<0.5	ND<0.5	2.1	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	580	ND<0.5	ND<0.5	1.8	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	250	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	220	ND<0.5	ND<0.5	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-5	11/3/10	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	190	ND<0.5	ND<0.5	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	160	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	3/30/94	63,000	21,000	8,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	4/25/94	77,000	22,000	12,000	2,300	16,000	--	--	--	--	--	--	--	--	--
	8/12/94	65,000	12,000	8,100	2,200	16,000	--	--	--	--	--	--	--	--	--
	12/14/94	65,000	18,000	9,500	2,200	14,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	21,000	8,400	2,000	14,000	--	--	--	--	--	--	--	--	--
	6/15/95	75,000	20,000	11,000	2,100	15,000	--	--	--	--	--	--	--	--	--
	9/26/95	62,000	15,000	9,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	61,000	15,000	9,000	2,300	15,000	--	--	--	--	--	--	--	--	--
	3/21/96	65,000	18,000	9,800	2,400	16,000	--	--	--	--	--	--	--	--	--
	6/13/96	29,000	8,600	3,300	2,200	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	42,000	6,400	1,800	2,100	11,000	ND<250	--	--	--	--	--	--	--	--
	12/2/96	28,000	3,000	1,100	970	8,300	ND<500	--	--	--	--	--	--	--	--
	3/7/97	12,000	2,000	190	520	2,300	ND<250	--	--	--	--	--	--	--	--
	6/12/97	37,000	3,900	470	1,600	6,200	ND<100	--	--	--	--	--	--	--	--
	9/29/97	34,000	3,500	370	1,600	5,200	ND<100	--	--	--	--	--	--	--	--
	12/1/97	20,000	2,100	ND<10	1,200	2,200	ND<100	--	--	--	--	--	--	--	--
	3/19/98	24,000	2,900	460	1,100	3,400	ND<100	--	--	--	--	--	--	--	--
	5/29/98	38,000	3,500	700	1,800	5,200	ND<100	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-6	9/15/98	22,000	1,900	110	1,400	3,000	ND<100	--	--	--	--	--	--	--	--
(cont.)	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	1,000	--	--	--	--	--	--	--	--
	12/31/00	12,000	680	8.0	820	190	1,400	--	--	--	--	--	--	--	--
	3/27/01	14,000	330	17	940	670	380	--	--	--	--	--	--	--	--
	6/30/01	750	45	0.93	47	14	54	--	--	--	--	--	--	--	--
	9/26/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/18/01	43,000	3,800	350	1,900	3,000	900	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	33,000	2,600	120	1,800	2,800	740	--	--	--	--	--	--	--	--
	6/5/02	10,000	1,100	16	700	180	600	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	23	710	290	370	--	--	--	--	--	--	--	--
	12/3/02	16,000	1,700	63	970	630	1,500	--	--	--	--	--	--	--	--
	3/4/03	16,000	1,700	25	1,200	40	7,700	ND<20	ND<20	ND<70	ND<200	ND<2,000	ND<200	ND<20	ND<20
	6/10/03	9,500	860	15	380	47	2,600	ND<5	ND<5	18	ND<50	ND<500	ND<50	ND<5	ND<5
	9/9/03	11,000	1,000	16	630	120	2,500	ND<5	ND<5	20	52	ND<500	ND<50	ND<5	ND<5
	12/23/03	18,000	2,100	41	1,100	390	4,900	ND<10	ND<10	42	ND<100	ND<1,000	ND<100	ND<10	ND<10
	3/23/04	24,000	1,400	71	1,500	2,000	7,500	ND<20	ND<20	66	ND<200	ND<2,000	ND<200	ND<20	ND<20
	5/10/04	6,500	550	ND<10	71	43	3,700	ND<10	ND<10	31	ND<100	ND<1,000	ND<100	ND<10	ND<10
	8/4/04	8,200	990	19	300	120	3,300	ND<5	ND<5	23	ND<50	ND<500	ND<50	ND<5	ND<5
	11/4/04	9,600	1,100	30	320	160	2,200	ND<4	ND<4	18	22	ND<400	ND<40	ND<4	ND<4
	1/12/05	12,000	1,100	34	600	500	3,600	ND<4	ND<4	31	30	ND<400	ND<40	ND<4	ND<4

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-6	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
(cont.)	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<1,000	ND<25	ND<2.5	ND<2.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	15,000	2,100	96	800	160	340	ND<5	ND<5	ND<5	460	ND<2,000	ND<50	ND<5	ND<5
	2/12/10	21,000	2,500	140	1,000	240	540	ND<5	ND<5	6.0	460	ND<500	ND<50	ND<5	ND<5
	5/4/10	17,000	2,100	120	780	260	820	ND<5	ND<5	8.6	450	ND<500	ND<50	ND<5	ND<5
	8/3/10	21,000	2,700	120	690	250	730	ND<5	ND<5	7.4	480	ND<500	ND<50	ND<5	ND<5
	11/2/10	12,000	1,600	57	410	120	240	ND<2.5	ND<2.5	2.7	160	ND<250	ND<25	ND<2.5	ND<2.5
	2/2/11	15,000	1,600	89	460	150	350	ND<2.5	ND<2.5	3.7	310	ND<250	ND<25	ND<2.5	ND<2.5
	4/27/11	8,500	870	28	180	67	1,200	ND<2.5	ND<2.5	10	1,100	ND<250	ND<25	ND<2.5	ND<2.5
	8/4/11	6,300	600	17	58	16	650	ND<1.5	ND<1.5	7.8	1,000	ND<600	ND<15	ND<1.5	ND<1.5
	10/11/11	10,000	1,000	60	160	66	370	ND<2.5	ND<2.5	3.1	860	ND<250	ND<25	ND<2.5	ND<2.5
	1/31/12	5,200	370	6.7	5.1	12	84	ND<0.9	ND<0.9	ND<0.9	1,500	ND<90	ND<10	ND<0.9	ND<0.9

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-6	5/10/12	11,000	1,200	60	140	69	150	ND<0.9	ND<0.9	ND<2	290	ND<250	ND<9	ND<0.9	ND<0.9
(cont.)	8/8/12	12,000	1,200	31	69	47	170	ND<2.5	ND<2.5	ND<2.5	440	ND<250	ND<25	ND<2.5	ND<2.5
	11/14/12	17,000	1,600	68	120	96	190	ND<2.5	ND<2.5	ND<2.5	86	ND<500	ND<25	ND<2.5	ND<2.5
	2/14/13	12,000	1,400	42	230	56	200	ND<2.5	ND<2.5	2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
MW-7	3/30/94	43,000	7,200	2,400	1,600	11,000	--	--	--	--	--	--	--	--	--
	4/25/94	30,000	3,900	1,000	940	6,900	--	--	--	--	--	--	--	--	--
	8/12/94	30,000	3,800	1,400	1,300	7,500	--	--	--	--	--	--	--	--	--
	12/14/94	31,000	3,600	1,200	900	6,400	--	--	--	--	--	--	--	--	--
	2/10/95	27,000	4,000	900	890	5,100	--	--	--	--	--	--	--	--	--
	6/15/95	17,000	920	680	740	4,100	--	--	--	--	--	--	--	--	--
	9/26/95	7,000	200	150	170	810	--	--	--	--	--	--	--	--	--
	12/15/95	11,000	350	170	540	1,900	--	--	--	--	--	--	--	--	--
	3/21/96	12,000	320	100	730	2,500	--	--	--	--	--	--	--	--	--
	6/13/96	5,900	98	19	370	620	ND<50	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-7	3/13/00	1,500	7.5	ND<0.5	6.7	2.9	ND<5	--	--	--	--	--	--	--	--
(cont.)	6/12/00	1,200	5.4	ND<0.5	5.2	1.0	ND<5	--	--	--	--	--	--	--	--
	11/10/00	1,000	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	12/31/00	620	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	3/27/01	1,200	4.8	ND<0.5	6.7	0.94	ND<0.5	--	--	--	--	--	--	--	--
	6/30/01	2,800	10	1.7	75	170	ND<0.5	--	--	--	--	--	--	--	--
	9/26/01	1,900	16	0.89	2.3	25	ND<0.5	--	--	--	--	--	--	--	--
	12/18/01	3,000	13	0.88	3.4	3.4	ND<0.5	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	3,100	7.3	1.5	38	110	ND<0.5	--	--	--	--	--	--	--	--
	6/5/02	1,800	7.6	1.0	39	20	ND<0.5	--	--	--	--	--	--	--	--
	8/21/02	3,300	7.6	0.70	85	36	ND<0.5	--	--	--	--	--	--	--	--
	12/3/02	1,700	5.4	ND<0.5	15	5.5	ND<0.5	--	--	--	--	--	--	--	--
	3/4/03	440	1.8	ND<0.5	0.54	2.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/03	550	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	9/9/03	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-7	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
(cont.)	2/14/07	800	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	700	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	3,200	1.3	ND<0.5	50	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	1,600	1.2	ND<0.5	4.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	1,400	2.2	0.74	2.8	0.93	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	2,300	3.9	1.4	8.9	5.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/09	4,500	7.4	3.8	33	7.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	4,500	6.7	3.4	27	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	3,600	7.9	3.6	14	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	2,100	4.6	1.3	16	3.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,200	3.3	0.59	1.6	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	1,900	3.5	1.2	0.79	1.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	1,700	1.5	0.55	6.0	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/9/12	1,600	1.4	0.79	1.4	0.95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	1,500	1.0	ND<0.5	0.51	0.65	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/12	690	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	860	1.0	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
MW-8	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	7.3	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-8	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
(cont.)	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
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-8	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	9/5/03	3,400	23	1.5	110	10	10	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	1,100	2.4	ND<0.5	0.80	0.80	2.1	ND<0.5	ND<0.5	ND<0.5	5.9	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	760	8.5	ND<0.5	4.9	0.95	18	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	1,100	4.4	ND<0.5	1.3	0.67	11	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	1,200	3.4	0.59	16	7.6	6.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	610	0.52	ND<0.5	1.3	ND<0.5	2.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	1,400	1.6	0.55	5.5	1.1	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	1,500	10	0.55	6.7	1.1	27	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	1,800	5.5	0.69	12	1.6	10	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	1,200	0.94	ND<0.5	1.4	ND<0.5	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	1,200	2.8	0.51	6.4	0.84	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	1,600	3.8	0.57	12	1.8	4.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	760	ND<0.5	ND<0.5	1.0	ND<0.5	2.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	1,700	1.7	0.53	6.7	1.4	1.7	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	1,000	ND<0.5	ND<0.5	0.51	ND<0.5	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	870	ND<0.5	ND<0.5	0.54	ND<0.5	0.93	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	3,300	68	2.1	110	7.8	16	ND<0.5	ND<0.5	ND<0.5	13	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-9	5/8/08	1,200	8.2	0.52	4.0	0.74	5.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	1,200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	2,700	120	7.0	35	14	44	ND<0.5	ND<0.5	0.52	31	ND<200	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	430	1.1	ND<0.5	ND<0.5	ND<0.5	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	1,300	14	ND<0.5	2.8	0.71	23	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	470	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	2,500	12	1.1	9.0	3.0	7.4	ND<0.5	ND<0.5	ND<0.5	8.8	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/13/12	740	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-10	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
(cont.)	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/2/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-10	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	12/16/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	100,000	6,100	9,000	3,100	20,000	3.3	ND<0.5	ND<0.5	ND<0.5	25	ND<200	ND<20	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/3/10	62,000	3,600	5,900	2,600	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	8/3/10	53,000	2,800	3,800	2,100	10,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	11/4/10	59,000	2,100	5,400	1,400	12,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	2/2/11	20,000	210	610	560	3,600	ND<5	ND<5	ND<5	ND<5	38	ND<500	ND<50	ND<5	ND<5
	4/28/11	20,000	300	920	450	4,300	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
	8/4/11	15,000	96	370	240	2,800	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	10/25/11	18,000	130	500	319	2,900	ND<0.5	ND<0.5	ND<0.5	ND<0.5	18	ND<50	ND<10	ND<0.5	ND<0.5
	2/1/12	13,000	380	710	83	2,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<50	ND<2.5	ND<2.5
	5/11/12	1,100	3.8	15	6.7	150	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/7/12	10,000	54	83	270	1,400	2.3	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/12	1,100	5.7	4.1	15	86	1.6	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	2/13/13	6,400	28	72	160	860	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
MW-12	6/14/12	6,900	8.5	2.2	96	22	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	8/8/12	6,000	10	2.2	100	12	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	11/14/12	5,500	6.8	2.0	67	13	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	2/13/13	2,500	7.6	1.3	26	3.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	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[f]	ND<500	ND<50	ND<5	ND<5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
VW-2	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
(cont.)	7/20/05	6,200	240	13	290	480	6,600	ND<2	ND<2	56	59[f]	ND<2,000	ND<20	ND<2	ND<2
	11/21/05	3,100	100	ND<9	22	10	5,300	ND<9	ND<9	54	76[f]	ND<900	ND<90	ND<9	ND<9
	2/9/06	3,500	140	ND<25	130	36	12,000	ND<25	ND<25	65	2,800	ND<2,500	ND<250	ND<25	ND<25
	5/17/06	1,800	90	2.6	39	11	1,200	ND<2.5	ND<2.5	12	700	ND<250	ND<25	ND<2.5	ND<2.5
	8/9/06	4,300	86	3.5	200	16	2,500	ND<2.5	ND<2.5	28	2,800	ND<5,000	ND<25	ND<2.5	ND<2.5
	11/8/06	3,200	46	3.1	10	4.8	1,500	ND<3	ND<3	11	7,100	ND<800	ND<30	ND<3	ND<3
	2/14/07	3,300	75	4.6	50	82	580	ND<2	ND<2	7.0	4,100	ND<500	ND<20	ND<2	ND<2
	5/17/07	3,500	51	7.3	17	24	100	ND<2.5	ND<2.5	ND<2.5	7,100	ND<250	ND<25	--	--
	8/2/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	5,700	180	14	150	120	530	ND<2.5	ND<2.5	4.1	5,000	ND<250	ND<25	ND<2.5	ND<2.5
	5/8/08	3,000	40	3.8	32	34	270	ND<1.5	ND<1.5	2.7	4,500	ND<250	ND<15	ND<1.5	ND<1.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	2,800	130	6.1	170	130	1,300	ND<2.5	ND<2.5	12	1,700	ND<250	ND<25	ND<2.5	ND<2.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	0.51	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
VW-2	5/7/12	ND<50	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
(cont.)	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
VW-3	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	1,100
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
VW-3	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-1	7/20/05	42,000	2,800	1,100	1,700	4,800	12,000	ND<20	ND<20	92	130	ND<2,000	ND<200	ND<20	ND<20
	11/22/05	36,000	2,100	290	1,400	2,600	11,000	ND<20	ND<20	70	810	ND<2,000	ND<200	ND<20	ND<20
	2/9/06	19,000	1,400	230	990	1,700	8,900	ND<15	ND<15	72	2,200	ND<1,500	ND<150	ND<15	ND<15
	5/17/06	20,000	1,400	200	920	1,800	9,200	ND<20	ND<20	37	2,500	ND<10,000	ND<200	ND<20	ND<20
	8/9/06	28,000	1,600	150	1,200	2,200	13,000	ND<15	ND<15	84	4,900	ND<2,500	ND<150	ND<15	ND<15
	11/8/06	20,000	1,100	78	990	1,600	6,800	ND<15	ND<15	47	4,400	ND<8,000	ND<150	ND<15	ND<15
	2/14/07	15,000	820	37	810	1,000	8,300	ND<15	ND<15	58	8,500	ND<4,000	ND<150	ND<15	ND<15
	5/17/07	16,000	850	35	810	1,200	6,700	ND<10	ND<10	42	12,000	ND<2,000	ND<100	--	--
	8/2/07	15,000	2,000	100	970	630	3,400	ND<7	ND<7	25	4,000	ND<700	ND<70	ND<7	ND<7
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	18,000	1,100	49	1,200	910	7,000	ND<15	ND<15	58	4,200	ND<1,500	ND<150	ND<15	ND<15
	5/8/08	12,000	890	54	770	380	2,500	ND<5	ND<5	22	3,400	ND<2,500	ND<50	ND<5	ND<5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
TP-1	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
(cont.)	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	15,000	2,100	360	1,100	620	3,400	ND<8	ND<8	27	4,500	ND<800	ND<80	ND<8	ND<8
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	14,000	1,000	270	280	1,600	4,500	ND<8	ND<8	28	4,800	ND<800	ND<80	ND<8	ND<8
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	6,600	350	64	170	730	2,600	ND<5	ND<5	15	1,400	ND<500	ND<50	ND<5	ND<5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	2,000	32	4.3	49	220	1,500	ND<3	ND<3	9.7	1,000	ND<800	ND<30	ND<3	ND<3
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	590	1.6	ND<0.5	7.1	22	28	ND<0.5	ND<0.5	ND<0.5	27	ND<80	ND<5	ND<0.5	ND<0.5
	8/7/12	2,800	24	3.7	74	68	110	ND<0.5	ND<0.5	0.94	62	ND<400	ND<5	ND<0.5	ND<0.5
	11/13/12	180	2.3	0.63	4.7	2.3	17	ND<0.5	ND<0.5	ND<0.5	9.6	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	160	ND<0.5	ND<0.5	3.6	6.0	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
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	28	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

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
TP-2	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	7,200	950	ND<25	77	ND<25	13,000	ND<25	ND<25	130	20,000	ND<2,500	ND<250	ND<25	ND<25
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	6,400	740	ND<25	450	130	14,000	ND<25	ND<25	130	9,900	ND<2,500	ND<250	ND<25	ND<25
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	4,900	230	82	150	630	980	ND<5	ND<5	6.3	14,000	ND<500	ND<50	ND<5	ND<5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/11	130	1.6	ND<0.5	1.5	5.2	350	ND<0.5	ND<0.5	1.3	630	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/11/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	120	ND<0.5	ND<0.5	ND<0.5	380	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	59	ND<0.5	ND<0.5	0.59	0.54	2.8	ND<0.5	ND<0.5	ND<0.5	13	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	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
DW-1	5/22/08	5,100	470	150	210	570	100	ND<0.9	ND<0.9	0.98	76	ND<90	ND<9	ND<0.9	ND<0.9
	7/23/08	560	43	5.2	18	40	16	ND<0.5	ND<0.5	ND<0.5	21	ND<100	ND<5	ND<0.5	ND<0.5
	10/13/08	2,800	370	15	120	78	140	ND<0.5	ND<0.5	1.2	220	ND<300	ND<80	ND<0.5	ND<0.5
	2/11/09	520	45	5.3	32	31	42	ND<0.5	ND<0.5	ND<0.5	43	ND<100	ND<8	ND<0.5	ND<0.5
	4/28/09	2,700	250	36	160	190	86	ND<0.5	ND<0.5	0.84	120	ND<50	ND<5	ND<0.5	ND<0.5
	8/5/09	2,100	330	17	87	53	220	ND<0.5	ND<0.5	2.0	310	ND<50	ND<5	ND<0.5	ND<0.5
	12/8/09	6,200	560	63	400	490	140	ND<0.5	ND<0.5	1.1	200	ND<200	ND<8	ND<0.5	ND<0.5
	2/12/10	2,000	200	36	130	150	49	ND<0.5	ND<0.5	ND<0.5	58	ND<200	ND<5	ND<0.5	ND<0.5
	5/4/10	1,800	160	27	110	140	21	ND<0.5	ND<0.5	ND<0.5	41	ND<100	ND<5	ND<0.5	ND<0.5
	8/2/10	1,400	53	11	67	78	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	ND<50	0.90	ND<0.5	0.70	1.3	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-1	2/2/11	58	1.9	ND<0.5	2.0	2.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	4/28/11	72	2.2	5.7	2.0	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	55	0.57	ND<0.5	0.92	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/11/11	180	3.0	1.0	5.1	10	0.77	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	2,500	23	6.4	85	190	3.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/9/12	2,000	24	5.6	75	160	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	140	1.7	1.0	3.2	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	250	ND<0.5	ND<0.5	2.7	5.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	0.54	0.68	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-2	5/22/08	11,000	1,300	170	460	230	620	ND<2.5	ND<2.5	9.6	870	ND<400	ND<25	ND<2.5	ND<2.5
	7/23/08	7,600	980	44	180	55	420	ND<2	ND<2	5.7	720	ND<200	ND<20	ND<2	ND<2
	10/13/08	7,300	910	23	120	18	280	ND<1.5	ND<1.5	3.1	650	ND<2,000	ND<50	ND<1.5	ND<1.5
	2/11/09	8,000	1,100	31	230	46	290	ND<2.5	ND<2.5	3.9	600	ND<800	ND<25	ND<2.5	ND<2.5
	4/28/09	5,800	500	27	110	55	330	ND<1	ND<1	4.4	600	ND<400	ND<10	ND<1	ND<1
	8/4/09	6,800	910	19	37	27	200	ND<1	ND<1	2.7	530	ND<200	ND<10	ND<1	ND<1
	12/9/09	6,600	450	14	55	34	210	ND<0.9	ND<0.9	2.6	410	ND<200	ND<9	ND<0.9	ND<0.9
	2/11/10	4,500	340	14	44	25	320	ND<0.9	ND<0.9	3.9	520	ND<300	ND<9	ND<0.9	ND<0.9
	5/4/10	2,300	110	7.1	17	16	350	ND<0.9	ND<0.9	4.1	550	ND<200	ND<9	ND<0.9	ND<0.9
	8/2/10	3,800	420	22	21	28	300	ND<0.9	ND<0.9	3.5	600	ND<300	ND<20	ND<0.9	ND<0.9
	11/2/10	2,600	230	7.0	11	4.0	300	ND<0.5	ND<0.5	3.3	660	ND<300	ND<8	ND<0.5	ND<0.5
	2/1/11	3,300	220	6.8	18	10	210	ND<0.5	ND<0.5	2.7	620	ND<300	ND<5	ND<0.5	ND<0.5
	4/27/11	1,900	78	2.6	2.6	5.6	200	ND<0.5	ND<0.5	2.2	590	ND<300	ND<5	ND<0.5	ND<0.5
	8/4/11	4,400	420	10	24	13	160	ND<0.5	ND<0.5	2.1	500	ND<100	ND<10	ND<0.5	ND<0.5
	10/11/11	2,700	110	5.0	4.0	11	170	ND<0.5	ND<0.5	1.9	440	ND<100	ND<5	ND<0.5	ND<0.5
	1/31/12	4,400	220	7.0	15	8.9	130	ND<0.5	ND<0.5	1.2	400	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/12	2,200	140	8.6	0.63	15	98	ND<0.5	ND<0.5	1.1	430	ND<200	ND<8	ND<0.5	ND<0.5
	8/7/12	4,000	360	8.9	14	15	110	ND<0.5	ND<0.5	1.2	380	ND<400	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-2	11/14/12	4,000	190	7.8	13	13	120	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
(cont.)	2/13/13	6,400	500	18	60	19	140	ND<0.5	ND<0.5	1.6	510	ND<400	ND<8	ND<0.5	ND<0.5
DW-3	5/22/08	4,700	8.7	2.1	120	200	0.86	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	2,800	8.1	1.4	94	100	2.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	4,100	59	10	160	70	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<80	ND<0.5	ND<0.5
	2/11/09	1,700	21	1.7	35	21	9.8	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<10	ND<0.5	ND<0.5
	4/27/09	1,800	16	2.3	26	10	3.0	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	1,200	6.8	0.99	4.3	3.4	18	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<5	ND<0.5	ND<0.5
	12/9/09	2,200	24	5.9	56	29	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.2	ND<300	ND<20	ND<0.5	ND<0.5
	2/11/10	700	9.5	2.0	18	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
	5/4/10	420	5.5	0.93	8.8	3.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/2/10	640	4.0	ND<0.5	5.3	3.9	0.59	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	170	0.85	ND<0.5	ND<0.5	0.59	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	60	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	310	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/10/11	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
	1/31/12	1,300	1.0	ND<0.5	19	15	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	750	1.2	ND<0.5	5.4	4.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/6/12	900	0.56	ND<0.5	7.0	4.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/12	410	ND<0.5	ND<0.5	1.7	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	120	ND<0.5	ND<0.5	1.2	0.50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-4	5/22/08	1,200	4.2	8.6	16	200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	91	0.79	ND<0.5	6.5	7.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	43	ND<0.5	ND<0.5
	2/11/09	ND<50	0.68	ND<0.5	1.4	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/09	ND<50	0.50	ND<0.5	1.1	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/5/09	52	1.7	ND<0.5	1.4	0.83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-4	12/9/09	ND<50	3.0	ND<0.5	2.0	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	180	3.3	3.7	13	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	0.70	4.0	0.59	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/10/11	ND<50	ND<0.5	0.67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	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
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	0.70	1.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-5	12/9/09	15,000	140	25	200	960	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	1,600	37	2.5	36	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	5/4/10	2,100	69	2.9	41	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
	8/2/10	12,000	240	9.4	350	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	11/2/10	5,000	120	3.6	68	35	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/1/11	3,800	70	2.5	37	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	710	8.0	ND<0.5	4.3	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	6,100	76	3.7	110	97	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	10/10/11	6,800	59	4.7	140	150	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	1/31/12	8,200	130	5.9	170	180	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<200	ND<1.5	ND<1.5
	5/10/12	11,000	100	6.8	320	380	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5
	8/8/12	14,000	84	11	480	590	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	11/14/12	8,800	24	2.5	110	140	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	4,400	65	5.4	110	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-6	12/9/09	6,200	33	4.3	100	43	9.7	ND<1	ND<1	ND<1	10	ND<100	ND<10	ND<1	ND<1
	2/11/10	4,800	18	3.0	44	15	14	ND<0.5	ND<0.5	ND<0.5	9.2	ND<80	ND<10	ND<0.5	ND<0.5
	5/4/10	4,600	13	3.5	29	17	5.6	ND<0.5	ND<0.5	ND<0.5	7.2	ND<80	ND<8	ND<0.5	ND<0.5
	8/2/10	4,500	13	4.4	54	14	5.9	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<8	ND<0.5	ND<0.5
	11/2/10	5,200	20	4.2	47	13	8.9	ND<0.9	ND<0.9	ND<0.9	26	ND<90	ND<9	ND<0.9	ND<0.9
	2/1/11	4,000	11	2.9	32	11	6.0	ND<0.5	ND<0.5	ND<0.5	16	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	3,100	8.8	2.4	12	8.2	6.2	ND<0.5	ND<0.5	ND<0.5	19	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/11	2,900	4.2	0.95	6.0	4.9	6.5	ND<0.5	ND<0.5	ND<0.5	24	ND<50	ND<8	ND<0.5	ND<0.5
	10/10/11	1,500	4.1	3.3	3.0	3.3	4.9	ND<0.5	ND<0.5	ND<0.5	20	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	4,700	13	2.4	51	12	8.1	ND<0.5	ND<0.5	ND<0.5	28	ND<50	ND<80	ND<0.5	ND<0.5
	5/10/12	2,600	7.8	1.6	12	5.2	4.6	ND<0.5	ND<0.5	ND<0.5	17	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	4,500	15	3.2	41	8.3	6.2	ND<0.5	ND<0.5	ND<0.5	20	ND<50	ND<8	ND<0.5	ND<0.5
	11/14/12	3,000	5.4	1.8	11	4.7	2.1	ND<0.5	ND<0.5	ND<0.5	6.8	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	4,600	25	4.0	53	8.7	10	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<9	ND<0.5	ND<0.5
DW-7	12/9/09	10,000	500	20	310	110	160	ND<2	ND<2	ND<2	270	ND<200	ND<20	ND<2	ND<2
	2/12/10	12,000	590	23	440	120	190	ND<2	ND<2	2.4	290	ND<200	ND<20	ND<2	ND<2
	5/4/10	4,100	250	15	89	32	97	ND<0.5	ND<0.5	1.0	160	ND<80	ND<5	ND<0.5	ND<0.5
	8/3/10	3,500	280	13	49	30	130	ND<0.5	ND<0.5	1.3	220	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	660	30	1.2	5.0	3.3	130	ND<0.5	ND<0.5	1.2	220	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	760	43	1.8	9.4	4.0	91	ND<0.5	ND<0.5	0.76	160	ND<50	ND<5	ND<0.5	ND<0.5
	4/27/11	1,600	120	4.6	4.2	6.7	95	ND<0.5	ND<0.5	1.0	170	ND<200	ND<5	ND<0.5	ND<0.5
	8/4/11	1,400	83	2.5	4.4	5.2	97	ND<0.5	ND<0.5	0.96	160	ND<80	ND<5	ND<0.5	ND<0.5
	10/11/11	400	45	1.1	0.80	1.6	90	ND<0.5	ND<0.5	0.89	180	ND<50	ND<5	ND<0.5	ND<0.5
	1/31/12	7,800	380	14	170	59	120	ND<0.5	ND<0.5	1.3	300	ND<150	ND<50	ND<0.5	ND<0.5
	5/10/12	940	47	1.6	6.1	5.2	120	ND<0.5	ND<0.5	1.1	280	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	1,200	33	2.5	8.0	8.4	80	ND<0.5	ND<0.5	0.83	250	ND<300	ND<5	ND<0.5	ND<0.5
	11/13/12	6,500	340	11	45	22	51	ND<0.5	ND<0.5	0.56	160	ND<80	ND<8	ND<0.5	ND<0.5
	2/13/13	970	78	3.0	10	2.7	18	ND<0.5	ND<0.5	ND<0.5	56	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-8	4/28/11	72,000	5,200	10,000	1,900	12,000	ND<10	ND<10	ND<10	ND<10	56	ND<1,000	ND<100	ND<10	ND<10
	8/4/11	65,000	2,900	8,100	650	10,000	ND<20	ND<20	ND<20	ND<20	ND<90	ND<2,000	ND<200	ND<20	ND<20
	10/25/11	82,000	4,300	10,000	1,900	12,000	ND<4	ND<4	ND<4	ND<4	58	ND<400	ND<40	ND<4	ND<4
	2/1/12	52,000	2,500	5,200	1,900	8,200	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	5/11/12	11,000	500	1,000	300	1,200	ND<2.5	ND<2.5	ND<2.5	ND<2.5	25	ND<250	ND<25	ND<2.5	ND<2.5
	8/8/12	52,000	1,900	4,500	1,500	5,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	58	ND<250	ND<25	ND<2.5	ND<2.5
	11/14/12	27,000	580	870	510	3,400	ND<5	ND<5	ND<5	ND<5	ND<25	ND<500	ND<50	ND<5	ND<5
	2/14/13	63,000	3,000	5,400	2,000	8,700	ND<5	ND<5	ND<5	ND<5	110	ND<500	ND<150	ND<5	ND<5
DW-9	6/14/12	8,300	89	2.4	21	96	36	ND<1.5	ND<1.5	ND<1.5	80	ND<150	ND<15	ND<1.5	ND<1.5
	8/8/12	12,000	310	11	400	110	35	ND<1.5	ND<1.5	ND<1.5	96	ND<150	ND<15	ND<1.5	ND<1.5
	11/14/12	10,000	210	7.5	230	65	28	ND<1.5	ND<1.5	ND<1.5	94	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	7,800	150	9.4	160	28	45	ND<1.5	ND<1.5	ND<1.5	110	ND<150	ND<15	ND<1.5	ND<1.5
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	0.80	ND<0.5	ND<0.5	0.55	ND<5	--	--	--	--	--	--	--	--
MW-D	1/17/99	5,600	1,600	130	66	220	ND<5	--	--	--	--	--	--	--	--
MW-E	1/17/99	5,700	1,600	180	180	310	ND<50	--	--	--	--	--	--	--	--
	6/10/99	5,000	1,300	130	320	450	ND<25	--	--	--	--	--	--	--	--
MW-W	1/17/99	23,000	7,600	760	1,400	5,000	ND<50	--	--	--	--	--	--	--	--
	6/10/99	16,000	4,100	420	1,300	4,000	ND<50	--	--	--	--	--	--	--	--
IP-1	7/23/08	62,000	2,100	6,800	2,700	11,000	16	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	10/13/08	55,000	3,100	3,300	2,300	7,700	ND<15	ND<15	ND<15	ND<15	98	ND<1,500	ND<150	ND<15	ND<15
	5/5/10[g]	33,000	900	1,500	1,400	5,000	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	4/27/11	24,000	750	2,200	420	4,800	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	2/1/12	15,000	370	350	600	1,300	ND<2	ND<2	ND<2	ND<2	16	ND<200	ND<20	NS	NS
	5/9/12	16,000	580	850	800	2,100	ND<2	ND<2	ND<2	ND<2	12	ND<200	ND<20	ND<2	ND<2
	8/8/12	12,000	260	190	470	860	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
IP-1	11/13/12	9,000	170	74	280	540	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
(cont.)	2/13/13	17,000	480	480	690	2,000	ND<2	ND<2	ND<2	ND<2	20	ND<200	ND<20	ND<2	ND<2
IP-2	7/23/08	5,500	160	43	130	350	10	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	13,000	1,900	58	600	630	180	ND<0.9	ND<0.9	9.4	46	ND<90	ND<20	ND<0.9	ND<0.9
	5/5/10[g]	2,700	66	220	61	240	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/26/11	350	8.9	1.7	4.7	5.7	0.90	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	340	10	4.8	6.3	13	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-3	7/23/08	1,100	23	14	7.5	90	32	ND<0.5	ND<0.5	ND<0.5	32	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	1,700	83	4.7	11	54	72	ND<0.5	ND<0.5	0.84	71	ND<50	ND<8	ND<0.5	ND<0.5
	5/5/10[g]	430[h]	6.4	22	4.9	21	3.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-4	7/23/08	7,600	130	45	240	750	940	ND<1.5	ND<1.5	6.9	890	ND<150	ND<15	ND<1.5	ND<1.5
	10/13/08	4,200	110	11	78	310	3,700	ND<1.5	ND<1.5	7.1	15,000	ND<2,000	ND<15	ND<1.5	ND<1.5
	5/6/10[g]	190	5.4	25	6.9	29	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	5.3	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-5	7/23/08	2,000[h]	3.0	17	5.1	31	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	720	14	13	8.7	32	19	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
IP-5	5/6/10[g]	270	5.7	25	5.9	29	20	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
(cont.)	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.72	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-6	7/23/08	4,400	260	78	98	340	180	ND<0.5	ND<0.5	1.6	190	ND<80	ND<9	ND<0.5	ND<0.5
	10/13/08	1,400	150	1.6	1.5	3.5	7.4	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<50	ND<0.5	ND<0.5
	5/5/10[g]	8,000[h]	24	100	18	98	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	1.1	0.66	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-7	7/23/08	4,200	190	12	99	190	49	ND<0.9	ND<0.9	1.1	58	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	6,000	350	6.6	150	60	97	ND<0.9	ND<0.9	2.5	76	ND<90	ND<50	ND<0.9	ND<0.9
	5/5/10[g]	33,000	49	62	38	69	14	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<9	ND<0.9	ND<0.9
	4/27/11	220	8.1	0.69	3.4	1.5	0.95	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-8	12/16/08	120,000	7,800	20,000	3,500	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	5/5/10[g]	83,000	3,900	13,000	2,400	14,000	ND<25	ND<25	ND<25	ND<25	ND<150	ND<2,500	ND<250	ND<25	ND<25
	4/28/11	13,000	620	2,000	240	2,200	ND<3	ND<3	ND<3	ND<3	27	ND<300	ND<30	ND<3	ND<3
	2/1/12	67,000	2,900	7,300	1400	11,000	ND<15	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	NS	NS
	5/9/12	50,000	2,400	4,900	790	8,600	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
	8/8/12	63,000	3,500	6,700	980	7,400	ND<9	ND<9	ND<9	ND<9	65	ND<900	ND<90	ND<9	ND<9

TABLE E-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethylbenzene[b] (µg/l)	Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
IP-8	11/14/12	33,000	1,000	2,300	260	4,300	ND<7	ND<7	ND<7	ND<7	47	ND<700	ND<70	ND<7	ND<7
(cont.)	2/14/13	65,000	3,300	7,100	1,600	9,200	ND<7	ND<7	ND<7	ND<7	110	ND<700	ND<150	ND<7	ND<7
IP-9	12/16/08	110,000	7,800	23,000	2,800	16,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	5/5/10[g]	92,000	6,000	19,000	2,500	14,000	ND<40	ND<40	ND<40	ND<40	ND<200	ND<4,000	ND<400	ND<40	ND<40
	4/28/11	38,000	1,400	4,300	860	6,000	ND<6	ND<6	ND<6	ND<6	38	ND<600	ND<60	ND<6	ND<6
	2/1/12	19,000	180	1,200	640	3,100	ND<3	ND<3	ND<3	ND<3	ND<15	ND<300	ND<30	NS	NS
	5/9/12	10,000	14	180	270	780	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	8/7/12	11,000	22	240	210	880	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	11/13/12	9,800	22	200	150	690	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
	2/13/13	12,000	68	560	280	1,300	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<15	ND<1.5	ND<1.5
IP-10	2/11/09	8,100	29	58	170	1,200	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5
	5/3/10[g]	3,600	73	80	140	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	4/26/11	4,300	28	140	110	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<8	ND<0.5	ND<0.5
	2/1/12	3,200	8.2	4.6	93	2.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	NS	NS
	5/9/12	3,900	24	38	110	58.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	8/7/12	2,700	15	5.8	31	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/12	2,600	12	7.6	4.7	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/12/13	6,500	26	270	180	590	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5

(a) Samples collected before July 2005 collected by others; data provided by Delta Environmental Consultants, Inc., Second Quarter 2005 Groundwater Monitoring Report dated 31 July 2005.

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

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

(d) "--" - Not analyzed.

(e) NS - Not sampled.

(f) TBA results may be biased slightly high. A fraction of MTBE (typically less than 10 percent) converts to TBA during the analysis of water samples. This conversion effect is considered to be mathematically significant in samples that contain MTBE/TBA ratios of over 20:1.

(g) Baseline remediation system values.

(h) Primarily compounds not found in typical Gasoline.

ATTACHMENT F

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

Laboratory Results

Scott Stromberg
Arctos Environmental
1332 Peralta Avenue
Berkeley, CA 94702

Subject : 10 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Stromberg,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed. Testing procedures comply with the 2003 NELAC and TNI 2009 standards. Laboratory results relate only to the samples tested. This report may be freely reproduced in full, but may only be reproduced in part with the express permission of Kiff Analytical, LLC. Kiff Analytical, LLC is certified by the State of California under the National Environmental Laboratory Accreditation Program (NELAP), lab # 08263CA. If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

Subject : 10 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Case Narrative

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for sample IP-10.

Matrix Spike/Matrix Spike Duplicate results associated with samples IP-10 and MW-7 for the analyte Nitrate as N were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with samples MW-7 and IP-10 for the analyte Sodium were affected by the analyte concentrations already present in the un-spiked sample.

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **VW-2** Matrix : Water Lab Number : 84014-01
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 15:22
Methanol	< 50	50	ug/L	EPA 8260B	02/15/13 15:22
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 15:22
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/15/13 15:22
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:22
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	02/15/13 15:22
Toluene - d8 (Surr)	99.7		% Recovery	EPA 8260B	02/15/13 15:22

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **TP-2** Matrix : Water Lab Number : 84014-02
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
Methyl-t-butyl ether (MTBE)	**0.57**	0.50	ug/L	EPA 8260B	02/15/13 15:57
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 15:57
Methanol	< 50	50	ug/L	EPA 8260B	02/15/13 15:57
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 15:57
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/15/13 15:57
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 15:57
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	02/15/13 15:57
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	02/15/13 15:57

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **MW-1** Matrix : Water Lab Number : 84014-03
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 16:31
Methanol	< 50	50	ug/L	EPA 8260B	02/15/13 16:31
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 16:31
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/15/13 16:31
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 16:31
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	02/15/13 16:31
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	02/15/13 16:31

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **MW-3** Matrix : Water Lab Number : 84014-04
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 17:06
Methanol	< 50	50	ug/L	EPA 8260B	02/15/13 17:06
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 17:06
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/15/13 17:06
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:06
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	02/15/13 17:06
Toluene - d8 (Surr)	99.6		% Recovery	EPA 8260B	02/15/13 17:06

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **TP-1** Matrix : Water Lab Number : 84014-05
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:40
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:40
Ethylbenzene	**3.6**	0.50	ug/L	EPA 8260B	02/15/13 17:40
Total Xylenes	**6.0**	0.50	ug/L	EPA 8260B	02/15/13 17:40
Methyl-t-butyl ether (MTBE)	**3.3**	0.50	ug/L	EPA 8260B	02/15/13 17:40
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:40
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:40
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:40
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 17:40
Methanol	< 50	50	ug/L	EPA 8260B	02/15/13 17:40
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 17:40
TPH as Gasoline	**160**	50	ug/L	EPA 8260B	02/15/13 17:40
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:40
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 17:40
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	02/15/13 17:40
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	02/15/13 17:40

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **DW-1** Matrix : Water Lab Number : 84014-06
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:55
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:55
Ethylbenzene	**0.54**	0.50	ug/L	EPA 8260B	02/15/13 23:55
Total Xylenes	**0.68**	0.50	ug/L	EPA 8260B	02/15/13 23:55
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:55
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:55
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:55
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:55
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 23:55
Methanol	< 50	50	ug/L	EPA 8260B	02/15/13 23:55
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 23:55
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/15/13 23:55
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:55
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:55
1,2-Dichloroethane-d4 (Surr)	98.1		% Recovery	EPA 8260B	02/15/13 23:55
Toluene - d8 (Surr)	97.8		% Recovery	EPA 8260B	02/15/13 23:55

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **MW-7** Matrix : Water Lab Number : 84014-07
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	02/13/13 15:58
Sulfate	**27**	0.50	mg/L	EPA 300.0	02/13/13 14:22
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	02/13/13 12:25
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	02/13/13 12:09
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/19/13 15:10
Chromium	**0.10**	0.0050	mg/L	EPA 6010B	02/19/13 15:10
Iron	**30**	0.10	mg/L	EPA 6010B	02/19/13 15:10
Manganese	**2.7**	0.0050	mg/L	EPA 6010B	02/19/13 15:10
Sodium	**56**	0.50	mg/L	EPA 6010B	02/19/13 15:10
Benzene	**1.0**	0.50	ug/L	EPA 8260B	02/16/13 00:27
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:27
Ethylbenzene	**2.3**	0.50	ug/L	EPA 8260B	02/16/13 00:27
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:27
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:27
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:27
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:27
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:27
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/16/13 00:27
Methanol	< 50	50	ug/L	EPA 8260B	02/16/13 00:27
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/16/13 00:27
TPH as Gasoline	**860**	50	ug/L	EPA 8260B	02/16/13 00:27
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:27
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:27
1,2-Dichloroethane-d4 (Surr)	97.7		% Recovery	EPA 8260B	02/16/13 00:27
Toluene - d8 (Surr)	98.5		% Recovery	EPA 8260B	02/16/13 00:27

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **IP-10** Matrix : Water Lab Number : 84014-08
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	02/13/13 14:35
Sulfate	< 0.50	0.50	mg/L	EPA 300.0	02/13/13 14:35
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	02/13/13 12:37
Ferrous Iron	**0.26**	0.10	mg/L	SM 3500-Fe D	02/13/13 12:10
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/19/13 15:14
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	02/19/13 15:14
Iron	**1.4**	0.10	mg/L	EPA 6010B	02/19/13 15:14
Manganese	**2.7**	0.0050	mg/L	EPA 6010B	02/19/13 15:14
Sodium	**52**	0.50	mg/L	EPA 6010B	02/19/13 15:14
Benzene	**26**	0.50	ug/L	EPA 8260B	02/16/13 00:59
Toluene	**270**	0.50	ug/L	EPA 8260B	02/16/13 00:59
Ethylbenzene	**180**	0.50	ug/L	EPA 8260B	02/16/13 00:59
Total Xylenes	**590**	0.50	ug/L	EPA 8260B	02/16/13 00:59
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:59
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:59
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:59
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:59
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/16/13 00:59
Methanol	< 50	50	ug/L	EPA 8260B	02/16/13 00:59
Ethanol	< 20	20	ug/L	EPA 8260B	02/16/13 00:59
TPH as Gasoline	**6500**	150	ug/L	EPA 8260B	02/19/13 23:00
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:59
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/16/13 00:59
1,2-Dichloroethane-d4 (Surr)	91.8		% Recovery	EPA 8260B	02/16/13 00:59
Toluene - d8 (Surr)	91.5		% Recovery	EPA 8260B	02/16/13 00:59

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **Trip Blank** Matrix : Water Lab Number : 84014-09
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 23:24
Methanol	< 50	50	ug/L	EPA 8260B	02/15/13 23:24
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/13 23:24
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/15/13 23:24
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/13 23:24
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	02/15/13 23:24
Toluene - d8 (Surr)	98.4		% Recovery	EPA 8260B	02/15/13 23:24

KIFF Analytical LLC

Report Number : 84014
Date : 02/20/2013

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

Sample : **DW-3** Matrix : Water Lab Number : 84014-10
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 23:59
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 23:59
Ethylbenzene	**1.2**	0.50	ug/L	EPA 8260B	02/19/13 23:59
Total Xylenes	**0.50**	0.50	ug/L	EPA 8260B	02/19/13 23:59
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 23:59
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 23:59
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 23:59
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 23:59
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/19/13 23:59
Methanol	< 50	50	ug/L	EPA 8260B	02/19/13 23:59
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/19/13 23:59
TPH as Gasoline	**120**	50	ug/L	EPA 8260B	02/19/13 23:59
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 23:59
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 23:59
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	02/19/13 23:59
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	02/19/13 23:59

Report Number : 84014

Date : 02/20/2013

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/19/2013
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	02/19/2013
Iron	< 0.10	0.10	mg/L	EPA 6010B	02/19/2013
Manganese	< 0.0050	0.0050	mg/L	EPA 6010B	02/19/2013
Sodium	< 0.50	0.50	mg/L	EPA 6010B	02/19/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/19/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/15/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/15/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
1,2-Dichloroethane-d4 (Surr)	97.3		%	EPA 8260B	02/15/2013
Toluene - d8 (Surr)	99.4		%	EPA 8260B	02/15/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/15/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/15/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/15/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/15/2013
1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	02/15/2013
Toluene - d8 (Surr)	99.3		%	EPA 8260B	02/15/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/19/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/19/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/19/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/19/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	02/19/2013
Toluene - d8 (Surr)	100		%	EPA 8260B	02/19/2013

KIFF ANALYTICAL, LLC

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

Report Number : 84014

Date : 02/20/2013

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	02/13/2013
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	02/13/2013
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	02/13/2013
Sulfate	<0.50	0.50	mg/L	EPA 300.0	02/13/2013

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 : 84014

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/20/2013

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
Ferrous Iron														
	84014-07	< 0.10	0.250	0.250	0.316	0.307	mg/L	SM 3500-Fe D	2/13/13	107	103	2.89	70.0-130	25
Nitrate as N														
	84014-08	< 0.10	0.500	0.500	0.182	0.167	mg/L	EPA 300.0	2/13/13	**36.3**	**33.4**	8.44	90.0-110	10
Sulfate														
	84014-08	< 0.50	2.50	2.50	2.86	2.85	mg/L	EPA 300.0	2/13/13	97.8	97.8	0.0714	90.0-110	10
Arsenic														
	84036-01	0.020	0.400	0.400	0.428	0.431	mg/L	EPA 6010B	2/19/13	102	103	0.792	75-125	20
Chromium														
	84036-01	0.0050	0.400	0.400	0.422	0.422	mg/L	EPA 6010B	2/19/13	104	104	0.0711	75-125	20
Iron														
	84036-01	2.4	0.400	0.400	2.76	2.90	mg/L	EPA 6010B	2/19/13	87.2	124	5.23	75-125	20
Manganese														
	84036-01	1.7	0.400	0.400	2.00	2.03	mg/L	EPA 6010B	2/19/13	79.8	88.5	1.74	75-125	20
Sodium														
	84036-01	100	0.400	0.400	105	107	mg/L	EPA 6010B	2/19/13	**0.00**	**425**	2.27	75-125	20

KIFF ANALYTICAL, LLC

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

Report Number : 84014

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/20/2013

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														
	84012-12	<0.50	38.9	39.9	36.7	37.7	ug/L	EPA 8260B	2/19/13	94.4	94.4	0.0650	80-120	25
1,2-Dibromoethane														
	84038-03	<0.50	40.0	40.0	40.7	41.7	ug/L	EPA 8260B	2/15/13	102	104	2.25	80-120	25
1,2-Dichloroethane														
	84038-03	<0.50	40.0	40.0	36.8	37.3	ug/L	EPA 8260B	2/15/13	92.0	93.3	1.37	75.7-122	25
Benzene														
	84038-03	6.1	40.0	40.0	44.3	44.6	ug/L	EPA 8260B	2/15/13	95.6	96.4	0.745	80-120	25
Diisopropyl ether														
	84038-03	<0.50	39.4	39.4	39.4	41.7	ug/L	EPA 8260B	2/15/13	100	106	5.53	80-120	25
Ethanol														
	84038-03	<5.0	101	101	85.6	90.4	ug/L	EPA 8260B	2/15/13	84.9	89.7	5.50	55.1-159	25
Ethyl-tert-butyl ether														
	84038-03	<0.50	40.6	40.6	40.8	43.5	ug/L	EPA 8260B	2/15/13	100	107	6.26	76.5-120	25
Ethylbenzene														
	84038-03	<0.50	40.0	40.0	40.6	40.9	ug/L	EPA 8260B	2/15/13	101	102	0.725	80-120	25
Methanol														
	84038-03	<50	999	999	886	923	ug/L	EPA 8260B	2/15/13	88.7	92.4	4.06	53.2-147	25

KIFF ANALYTICAL, LLC

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

Report Number : 84014

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/20/2013

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
Methyl-t-butyl ether														
	84038-03	<0.50	40.1	40.1	41.0	43.6	ug/L	EPA 8260B	2/15/13	102	109	6.26	69.7-121	25
P + M Xylene														
	84038-03	8.3	40.0	40.0	50.3	49.6	ug/L	EPA 8260B	2/15/13	105	103	1.63	76.8-120	25
Tert-Butanol														
	84038-03	<5.0	201	201	193	202	ug/L	EPA 8260B	2/15/13	96.1	100	4.46	80-120	25
Tert-amyl-methyl ether														
	84038-03	<0.50	40.4	40.4	39.9	42.1	ug/L	EPA 8260B	2/15/13	98.8	104	5.47	78.9-120	25
Toluene														
	84038-03	0.90	40.0	40.0	39.2	39.5	ug/L	EPA 8260B	2/15/13	95.7	96.5	0.844	80-120	25
1,2-Dibromoethane														
	84031-05	<0.50	40.0	40.0	41.7	41.2	ug/L	EPA 8260B	2/15/13	104	103	1.07	80-120	25
1,2-Dichloroethane														
	84031-05	<0.50	40.0	40.0	45.2	43.7	ug/L	EPA 8260B	2/15/13	113	109	3.37	75.7-122	25
Benzene														
	84031-05	<0.50	40.0	40.0	36.7	36.0	ug/L	EPA 8260B	2/15/13	91.7	90.0	1.83	80-120	25
Diisopropyl ether														
	84031-05	<0.50	39.4	39.4	38.9	38.6	ug/L	EPA 8260B	2/15/13	98.6	97.9	0.767	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84014

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/20/2013

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
Ethanol														
	84031-05	5.5	101	101	118	114	ug/L	EPA 8260B	2/15/13	111	107	3.70	55.1-159	25
Ethyl-tert-butyl ether														
	84031-05	<0.50	40.6	40.6	37.4	36.8	ug/L	EPA 8260B	2/15/13	92.1	90.7	1.51	76.5-120	25
Ethylbenzene														
	84031-05	<0.50	40.0	40.0	42.7	42.1	ug/L	EPA 8260B	2/15/13	107	105	1.49	80-120	25
Methanol														
	84031-05	<50	999	999	968	961	ug/L	EPA 8260B	2/15/13	96.9	96.2	0.697	53.2-147	25
Methyl-t-butyl ether														
	84031-05	<0.50	40.1	40.1	36.8	36.2	ug/L	EPA 8260B	2/15/13	91.9	90.4	1.62	69.7-121	25
P + M Xylene														
	84031-05	<0.50	40.0	40.0	42.5	42.3	ug/L	EPA 8260B	2/15/13	106	106	0.564	76.8-120	25
Tert-Butanol														
	84031-05	110	201	201	312	309	ug/L	EPA 8260B	2/15/13	99.6	97.7	1.95	80-120	25
Tert-amyl-methyl ether														
	84031-05	<0.50	40.4	40.4	40.2	39.4	ug/L	EPA 8260B	2/15/13	99.6	97.5	2.13	78.9-120	25
Toluene														
	84031-05	<0.50	40.0	40.0	39.6	38.8	ug/L	EPA 8260B	2/15/13	99.1	97.1	2.04	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84014

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/20/2013

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														
	84034-04	<0.50	40.0	40.0	42.8	42.4	ug/L	EPA 8260B	2/19/13	107	106	0.882	80-120	25
1,2-Dichloroethane														
	84034-04	<0.50	40.0	40.0	48.7	48.0	ug/L	EPA 8260B	2/19/13	122	120	1.55	75.7-122	25
Benzene														
	84034-04	<0.50	40.0	40.0	37.4	36.7	ug/L	EPA 8260B	2/19/13	93.4	91.8	1.75	80-120	25
Diisopropyl ether														
	84034-04	<0.50	39.4	39.4	41.0	40.4	ug/L	EPA 8260B	2/19/13	104	102	1.45	80-120	25
Ethanol														
	84034-04	<5.0	101	101	114	119	ug/L	EPA 8260B	2/19/13	114	118	3.71	55.1-159	25
Ethyl-tert-butyl ether														
	84034-04	<0.50	40.6	40.6	39.6	39.1	ug/L	EPA 8260B	2/19/13	97.6	96.3	1.25	76.5-120	25
Ethylbenzene														
	84034-04	<0.50	40.0	40.0	43.8	43.4	ug/L	EPA 8260B	2/19/13	109	108	0.878	80-120	25
Methanol														
	84034-04	<50	999	999	997	992	ug/L	EPA 8260B	2/19/13	99.8	99.3	0.475	53.2-147	25
Methyl-t-butyl ether														
	84034-04	<0.50	40.1	40.1	38.2	37.5	ug/L	EPA 8260B	2/19/13	95.2	93.5	1.80	69.7-121	25
P + M Xylene														
	84034-04	<0.50	40.0	40.0	43.8	43.2	ug/L	EPA 8260B	2/19/13	109	108	1.25	76.8-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84014

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/20/2013

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														
	84034-04	<5.0	201	201	211	208	ug/L	EPA 8260B	2/19/13	105	103	1.46	80-120	25
Tert-amyl-methyl ether														
	84034-04	<0.50	40.4	40.4	42.6	41.6	ug/L	EPA 8260B	2/19/13	106	103	2.52	78.9-120	25
Toluene														
	84034-04	<0.50	40.0	40.0	40.9	40.3	ug/L	EPA 8260B	2/19/13	102	101	1.48	80-120	25
Hexavalent Chromium														
	84014-07	< 1.0	5.00	5.00	5.05	5.18	ug/L	EPA 7199	2/13/13	101	104	2.51	90.0-110	10

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
Arsenic	0.400	mg/L	EPA 6010B	2/19/13	96.7	85-115
Chromium	0.400	mg/L	EPA 6010B	2/19/13	102	85-115
Iron	0.400	mg/L	EPA 6010B	2/19/13	98.8	85-115
Manganese	0.400	mg/L	EPA 6010B	2/19/13	95.6	85-115
Sodium	0.400	mg/L	EPA 6010B	2/19/13	91.6	85-115
Toluene	40.0	ug/L	EPA 8260B	2/19/13	95.0	80-120
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	2/15/13	101	80-120
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	2/15/13	93.9	75.7-122
Benzene	40.1	ug/L	EPA 8260B	2/15/13	97.7	80-120
Diisopropyl ether	39.5	ug/L	EPA 8260B	2/15/13	104	80-120
Ethanol	101	ug/L	EPA 8260B	2/15/13	92.3	55.1-159
Ethyl-tert-butyl ether	40.7	ug/L	EPA 8260B	2/15/13	104	76.5-120
Ethylbenzene	40.1	ug/L	EPA 8260B	2/15/13	103	80-120
Methanol	1000	ug/L	EPA 8260B	2/15/13	94.3	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	2/15/13	106	69.7-121
P + M Xylene	40.1	ug/L	EPA 8260B	2/15/13	104	76.8-120
TPH as Gasoline	509	ug/L	EPA 8260B	2/15/13	99.8	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	2/15/13	98.7	80-120
Tert-amyl-methyl ether	40.4	ug/L	EPA 8260B	2/15/13	102	78.9-120
Toluene	40.1	ug/L	EPA 8260B	2/15/13	98.0	80-120

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	39.8	ug/L	EPA 8260B	2/15/13	104	80-120
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	2/15/13	113	75.7-122
Benzene	39.8	ug/L	EPA 8260B	2/15/13	91.6	80-120
Diisopropyl ether	39.2	ug/L	EPA 8260B	2/15/13	97.9	80-120
Ethanol	100	ug/L	EPA 8260B	2/15/13	110	55.1-159
Ethyl-tert-butyl ether	40.4	ug/L	EPA 8260B	2/15/13	92.6	76.5-120
Ethylbenzene	39.8	ug/L	EPA 8260B	2/15/13	106	80-120
Methanol	994	ug/L	EPA 8260B	2/15/13	97.8	53.2-147
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	2/15/13	90.5	69.7-121
P + M Xylene	39.8	ug/L	EPA 8260B	2/15/13	106	76.8-120
TPH as Gasoline	509	ug/L	EPA 8260B	2/15/13	91.9	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	2/15/13	102	80-120
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	2/15/13	99.2	78.9-120
Toluene	39.8	ug/L	EPA 8260B	2/15/13	98.8	80-120
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	2/19/13	106	80-120
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	2/19/13	117	75.7-122
Benzene	40.1	ug/L	EPA 8260B	2/19/13	90.7	80-120
Diisopropyl ether	39.5	ug/L	EPA 8260B	2/19/13	98.1	80-120
Ethanol	101	ug/L	EPA 8260B	2/19/13	113	55.1-159
Ethyl-tert-butyl ether	40.7	ug/L	EPA 8260B	2/19/13	90.5	76.5-120
Ethylbenzene	40.1	ug/L	EPA 8260B	2/19/13	105	80-120

KIFF ANALYTICAL, LLC

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

Report Number : 84014

QC Report : Laboratory Control Sample (LCS)

Date : 02/20/2013

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Methanol	1000	ug/L	EPA 8260B	2/19/13	100	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	2/19/13	89.1	69.7-121
P + M Xylene	40.1	ug/L	EPA 8260B	2/19/13	106	76.8-120
TPH as Gasoline	508	ug/L	EPA 8260B	2/19/13	108	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	2/19/13	102	80-120
Tert-amyl-methyl ether	40.4	ug/L	EPA 8260B	2/19/13	99.6	78.9-120
Toluene	40.1	ug/L	EPA 8260B	2/19/13	99.8	80-120
Ferrous Iron	0.250	mg/L	SM 3500-Fe D	2/13/13	99.0	70.0-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	2/13/13	95.4	90.0-110
Nitrate as N	0.500	mg/L	EPA 300.0	2/13/13	101	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	2/13/13	100	90.0-110

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. 84014

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Scott Stromberg	California EDF Report? ☑ Yes ☐ No
Company / Address: Arctos Environmental 1332 Peralta Avenue, Berkeley, CA 94702	Sampling Company Log Code: EFSP
Phone Number: 510-525-2180	Global ID: T0600101410
Fax Number: 510-525-2392	EDF Deliverable To (Email Address): sstromberg@orionenv.com
Project #: 01LV / P.O. #:	Bill to: Jeff Baker
Project Name: Tesoro - Livermore	Sampler Signature: Pete
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: H_2SO_4	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air	Matrix:	Analysis Request: BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Dissolved Solids (SM 2540C)	Methane and Carbone Dioxide by RSK 175M	Chromium VI (EPA 7199)	Total Metals bye EPA 6010 (As, Cr, Fe, Mn, Na)							TAT	For Lab Use Only
																																				12 hr ☐ 24 hr ☐ 48hr ☐ 72hr ☐ 1 wk ☑	
VW-2	2.12.13	0820	3						3					X				X	X	X	X														Stnd.	01
TP-2	2.12.13	0900	3						3					X				X	X	X	X														Stnd.	02
MW-1	2.12.13	1000	3						3					X				X	X	X	X														Stnd.	03
MW-3	2.12.13	1045	3						3					X				X	X	X	X														Stnd.	04
TP-1	2.12.13	1120	3						3					X				X	X	X	X														Stnd.	05
DW-1	2.12.13	1220	3						3					X				X	X	X	X														Stnd.	06
MW-7	2.12.13	1305	7		5				5	1	6			X				X	X	X	X		X	X	X	X	X	X	X						Stnd.	07
IP-10	2.12.13	1400	7		5				5	1	6			X				X	X	X	X		X	X	X	X	X	X	X						Stnd.	08
Trip Blank	2.12.13	0700	2						2					X				X	X	X	X														Stnd.	09
DW-3	2.12.13	1530	3						3					X				X	X	X	X																10

Relinquished by:	Date	Time	Received by:
Pete	2.12.13	1535	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	021213	1535	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#: 84014 Date: 021213

Project ID: Tesoro - Livermore

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

Shipping Only: ☐ FedEx * ☐ OnTrac * ☐ Greyhound ☐ Other *Service level if not Priority or Sunrise (M-F): _____

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 1-8 Therm. ID# IR-1 Initial LJR Date/Time 021213/1817 ☐ 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 37
Matrix WA	Container type poly	# of containers received 10
Matrix _____	Container type _____	# of containers received _____

Date and Time Sample Put into Temp Storage Date: 021213 Time: 1823

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:

O:\old_ed\samprec\Forms\Sample Receipt Checklist rev 072412.doc

Leaders in Analytical Science and Service

KIFF Analytical LLC

Subcontract Laboratory Report Attachments

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

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 13-02-0835

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro - Livermore

Attention: Joel Kiff
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Amanda Porter

Approved for release on 02/20/2013 by:
Amanda Porter
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: Tesoro - Livermore
Work Order Number: 13-02-0835

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0835
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-7	**13-02-0835-1-D**	**02/12/13 13:05**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 10:35**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	17500	17.0	10		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-10	**13-02-0835-2-D**	**02/12/13 14:00**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 10:57**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	12600	17.0	10		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-659-503**	**N/A**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 09:38**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	ND	1.70	1		ug/L

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0835
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-7	**13-02-0835-1-A**	**02/12/13 13:05**	**Aqueous**	**GC 52**	**N/A**	**02/16/13 01:16**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Methane	1420	8.00	8		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-10	**13-02-0835-2-A**	**02/12/13 14:00**	**Aqueous**	**GC 52**	**N/A**	**02/16/13 01:56**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Methane	1420	8.00	8		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-1,828**	**N/A**	**Aqueous**	**GC 52**	**N/A**	**02/15/13 11:09**	**130215L01**

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

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0835

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-7	**13-02-0835-1**	**02/12/13**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	366	5.00	1		mg/L	N/A	02/19/13	SM 2320B
Solids, Total Dissolved	525	1.00	1		mg/L	02/18/13	02/18/13	SM 2540 C

Client Sample Number	Lab Sample Number	Date Collected	Matrix
IP-10	**13-02-0835-2**	**02/12/13**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	311	5.00	1		mg/L	N/A	02/19/13	SM 2320B
Solids, Total Dissolved	390	1.00	1		mg/L	02/18/13	02/18/13	SM 2540 C

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

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	02/19/13	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	02/18/13	02/18/13	SM 2540 C

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: N/A
Work Order No: 13-02-0835

Project: Tesoro - Livermore

Matrix: Aqueous or Solid

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	SM 2540 C	13-02-1015-1	02/18/13	720	680	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

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Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0835
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-503	**Aqueous**	**GC 14**	**N/A**	**02/15/13**	**130215L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon Dioxide	102.0	92.14	90	91.16	89	80-120	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0835
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,828	**Aqueous**	**GC 52**	**N/A**	**02/15/13**	**130215L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	98.50	91.42	93	91.38	93	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0835
Davis, CA 95618-6505		Preparation:	N/A
		Method:	SM 2320B

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-223-6,075	**Aqueous**	**PH1/BUR12**	**N/A**	**02/19/13**	**D0219ALKL1**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	100	99.2	99	99.0	99	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0835
Davis, CA 95618-6505		Preparation:	N/A
		Method:	SM 2540 C

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-180-3,558	**Aqueous**	**N/A**	**02/18/13**	**02/18/13**	**D0218TDSB1**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	100	85	85	90	90	80-120	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 13-02-0835

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number

Return to Contents

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

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

13-02-0835

COC No. **84014** Page 1 of 1

Project Contact (Hardcopy or PDF to):
Scott Forbes

Company/Address:
Kiff Analytical

Phone No.: 530-297-4800
FAX No.: 530-297-4808
Project Number: 01LV
P.O. No.: 84014

Project Name:
Tesoro - Livermore

Project Address:

EDF Report? YES

Recommended but not mandatory to complete this section:

Sampling Company Log Code: EFSP
Global ID: T0600101410
Deliverables to (Email Address): inbox@kiffanalytical.com

Chain-of-Custody Record and Analysis Request

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
MW-7	02/12/13	13:05	1	1	2	2	X	X	X	X	X	X	1
IP-10	02/12/13	14:00	1	1	2	2	X	X	X	X	X	X	2

Relinquished by: Kiff Analytical	Date 02/13/13	Time 1700	Received by:	
Relinquished by:	Date	Time	Received by:	
Relinquished by: (CONTRACT)	Date 2/14/13	Time 10:00	Received by Laboratory:	

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

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wgt(lbs): 15
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CALSCIENCE ENVIRONMENTAL **7440 LINCOLN WAY** **GARDEN GROVE, CA 92841** **RECEIVING (714)895-5494**	*Sort Code:* **ORG** *Special Services:* **Signature Required**

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-02-0853

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: EFF DATE: 02/14/13

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 1.8 °C - 0.2 °C (CF) = 1.6 °C ☑ Blank ☐ Sample

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

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

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

Ambient Temperature: ☐ Air ☐ Filter Initial: JRS

CUSTODY SEALS INTACT:

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

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

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

CONTAINER TYPE:

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

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

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

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

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

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

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:**

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KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

Laboratory Results

Scott Stromberg
Arctos Environmental
1332 Peralta Avenue
Berkeley, CA 94702

Subject : 10 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Stromberg,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed. Testing procedures comply with the 2003 NELAC and TNI 2009 standards. Laboratory results relate only to the samples tested. This report may be freely reproduced in full, but may only be reproduced in part with the express permission of Kiff Analytical, LLC. Kiff Analytical, LLC is certified by the State of California under the National Environmental Laboratory Accreditation Program (NELAP), lab # 08263CA. If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

Subject : 10 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Case Narrative

Sample IP-9 was analyzed for Gasoline outside of hold time for Method EPA 8260B. The hydrochloric acid (HCl) preservation was insufficient to maintain a pH of 2.0 or less required to extend sample hold time from 7 to 14 days.

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for sample DW-2.

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

Matrix Spike/Matrix Spike Duplicate results associated with sample IP-1 for the analyte Sulfate 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.

There are no Matrix Spike/Matrix Spike Duplicate results for Sulfate by method EPA 300.0 associated with samples IP-9, MW-11, and MW-2.

Matrix Spike/Matrix Spike Duplicate results associated with samples MW-11, MW-2, and IP-1 for the analyte Sodium were affected by the analyte concentrations already present in the un-spiked sample.

Matrix Spike/Matrix Spike Duplicate results associated with sample IP-9 for the analyte Iron were affected by the analyte concentrations already present in the un-spiked sample.

Matrix Spike/Matrix Spike Duplicate results associated with sample Trip Blank for the analyte Benzene were affected by the analyte concentrations already present in the un-spiked sample.

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **DW-6** Matrix : Water Lab Number : 84027-01
Sample Date :02/12/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**25**	0.50	ug/L	EPA 8260B	02/19/13 21:45
Toluene	**4.0**	0.50	ug/L	EPA 8260B	02/19/13 21:45
Ethylbenzene	**53**	0.50	ug/L	EPA 8260B	02/19/13 21:45
Total Xylenes	**8.7**	0.50	ug/L	EPA 8260B	02/19/13 21:45
Methyl-t-butyl ether (MTBE)	**10**	0.50	ug/L	EPA 8260B	02/19/13 21:45
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:45
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:45
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:45
Tert-Butanol	**34**	5.0	ug/L	EPA 8260B	02/19/13 21:45
Methanol	< 50	50	ug/L	EPA 8260B	02/19/13 21:45
Ethanol	< 9.0	9.0	ug/L	EPA 8260B	02/20/13 16:50
TPH as Gasoline	**4600**	90	ug/L	EPA 8260B	02/20/13 16:50
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:45
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:45
1,2-Dichloroethane-d4 (Surr)	96.5		% Recovery	EPA 8260B	02/19/13 21:45
Toluene - d8 (Surr)	94.9		% Recovery	EPA 8260B	02/19/13 21:45

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **DW-2** Matrix : Water Lab Number : 84027-02
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**500**	0.90	ug/L	EPA 8260B	02/20/13 16:17
Toluene	**18**	0.50	ug/L	EPA 8260B	02/19/13 21:51
Ethylbenzene	**60**	0.50	ug/L	EPA 8260B	02/19/13 21:51
Total Xylenes	**19**	0.50	ug/L	EPA 8260B	02/19/13 21:51
Methyl-t-butyl ether (MTBE)	**140**	0.50	ug/L	EPA 8260B	02/19/13 21:51
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:51
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:51
Tert-amyl methyl ether (TAME)	**1.6**	0.50	ug/L	EPA 8260B	02/19/13 21:51
Tert-Butanol	**510**	5.0	ug/L	EPA 8260B	02/19/13 21:51
Methanol	< 400	400	ug/L	EPA 8260B	02/19/13 21:51
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	02/19/13 21:51
TPH as Gasoline	**6400**	90	ug/L	EPA 8260B	02/20/13 16:17
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:51
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/13 21:51
1,2-Dichloroethane-d4 (Surr)	91.5		% Recovery	EPA 8260B	02/19/13 21:51
Toluene - d8 (Surr)	90.7		% Recovery	EPA 8260B	02/19/13 21:51

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **MW-12** Matrix : Water Lab Number : 84027-03
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**7.6**	0.50	ug/L	EPA 8260B	02/21/13 00:22
Toluene	**1.3**	0.50	ug/L	EPA 8260B	02/21/13 00:22
Ethylbenzene	**26**	0.50	ug/L	EPA 8260B	02/21/13 00:22
Total Xylenes	**3.5**	0.50	ug/L	EPA 8260B	02/21/13 00:22
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:22
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:22
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:22
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:22
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 00:22
Methanol	< 50	50	ug/L	EPA 8260B	02/21/13 00:22
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 00:22
TPH as Gasoline	**2500**	50	ug/L	EPA 8260B	02/21/13 00:22
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:22
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:22
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	02/21/13 00:22
Toluene - d8 (Surr)	92.3		% Recovery	EPA 8260B	02/21/13 00:22

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **DW-9** Matrix : Water Lab Number : 84027-04
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**150**	1.5	ug/L	EPA 8260B	02/20/13 14:10
Toluene	**9.4**	1.5	ug/L	EPA 8260B	02/20/13 14:10
Ethylbenzene	**160**	1.5	ug/L	EPA 8260B	02/20/13 14:10
Total Xylenes	**28**	1.5	ug/L	EPA 8260B	02/20/13 14:10
Methyl-t-butyl ether (MTBE)	**45**	1.5	ug/L	EPA 8260B	02/20/13 14:10
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 14:10
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 14:10
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 14:10
Tert-Butanol	**110**	7.0	ug/L	EPA 8260B	02/20/13 14:10
Methanol	< 150	150	ug/L	EPA 8260B	02/20/13 14:10
Ethanol	< 15	15	ug/L	EPA 8260B	02/20/13 14:10
TPH as Gasoline	**7800**	150	ug/L	EPA 8260B	02/20/13 14:10
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 14:10
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 14:10
1,2-Dichloroethane-d4 (Surr)	97.6		% Recovery	EPA 8260B	02/20/13 14:10
Toluene - d8 (Surr)	97.8		% Recovery	EPA 8260B	02/20/13 14:10

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **DW-7** Matrix : Water Lab Number : 84027-05
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**78**	0.50	ug/L	EPA 8260B	02/21/13 01:32
Toluene	**3.0**	0.50	ug/L	EPA 8260B	02/21/13 01:32
Ethylbenzene	**10**	0.50	ug/L	EPA 8260B	02/21/13 01:32
Total Xylenes	**2.7**	0.50	ug/L	EPA 8260B	02/21/13 01:32
Methyl-t-butyl ether (MTBE)	**18**	0.50	ug/L	EPA 8260B	02/21/13 01:32
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 01:32
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 01:32
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 01:32
Tert-Butanol	**56**	5.0	ug/L	EPA 8260B	02/21/13 01:32
Methanol	< 50	50	ug/L	EPA 8260B	02/21/13 01:32
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 01:32
TPH as Gasoline	**970**	50	ug/L	EPA 8260B	02/21/13 01:32
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 01:32
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 01:32
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	02/21/13 01:32
Toluene - d8 (Surr)	94.4		% Recovery	EPA 8260B	02/21/13 01:32

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **IP-9** Matrix : Water Lab Number : 84027-06
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Sulfate	**440**	10	mg/L	EPA 300.0	02/15/13 13:31
Hexavalent Chromium	**30**	1.0	ug/L	EPA 7199	02/14/13 12:24
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	02/14/13 12:07
Arsenic	**0.57**	0.015	mg/L	EPA 6010B	02/20/13 15:43
Chromium	**0.039**	0.0050	mg/L	EPA 6010B	02/20/13 15:43
Iron	**2.2**	0.10	mg/L	EPA 6010B	02/20/13 15:43
Manganese	**0.16**	0.0050	mg/L	EPA 6010B	02/20/13 15:43
Sodium	**3000**	50	mg/L	EPA 6010B	02/21/13 10:59
Benzene	**68**	1.5	ug/L	EPA 8260B	02/20/13 15:13
Toluene	**560**	1.5	ug/L	EPA 8260B	02/20/13 15:13
Ethylbenzene	**280**	1.5	ug/L	EPA 8260B	02/20/13 15:13
Total Xylenes	**1300**	1.5	ug/L	EPA 8260B	02/20/13 15:13
Methyl-t-butyl ether (MTBE)	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 15:13
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 15:13
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 15:13
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 15:13
Tert-Butanol	< 7.0	7.0	ug/L	EPA 8260B	02/20/13 15:13
Methanol	< 150	150	ug/L	EPA 8260B	02/20/13 15:13
Ethanol	< 15	15	ug/L	EPA 8260B	02/20/13 15:13
TPH as Gasoline	**12000**	250	ug/L	EPA 8260B	02/21/13 03:17
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 15:13
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	02/20/13 15:13
1,2-Dichloroethane-d4 (Surr)	95.4		% Recovery	EPA 8260B	02/20/13 15:13
Toluene - d8 (Surr)	95.5		% Recovery	EPA 8260B	02/20/13 15:13

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **MW-11** Matrix : Water Lab Number : 84027-07
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Sulfate	**95**	2.5	mg/L	EPA 300.0	02/15/13 12:45
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	02/14/13 12:37
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	02/14/13 12:30
Arsenic	**0.062**	0.015	mg/L	EPA 6010B	02/20/13 14:45
Chromium	**0.39**	0.0050	mg/L	EPA 6010B	02/20/13 14:45
Iron	**130**	0.10	mg/L	EPA 6010B	02/20/13 14:45
Manganese	**5.8**	0.0050	mg/L	EPA 6010B	02/20/13 14:45
Sodium	**730**	5.0	mg/L	EPA 6010B	02/20/13 15:06
Benzene	**28**	0.50	ug/L	EPA 8260B	02/20/13 12:35
Toluene	**72**	0.50	ug/L	EPA 8260B	02/20/13 12:35
Ethylbenzene	**160**	0.50	ug/L	EPA 8260B	02/20/13 12:35
Total Xylenes	**860**	1.0	ug/L	EPA 8260B	02/21/13 11:10
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 12:35
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 12:35
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 12:35
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 12:35
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/20/13 12:35
Methanol	< 50	50	ug/L	EPA 8260B	02/20/13 12:35
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	02/20/13 12:35
TPH as Gasoline	**6400**	100	ug/L	EPA 8260B	02/21/13 11:10
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 12:35
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 12:35
1,2-Dichloroethane-d4 (Surr)	95.9		% Recovery	EPA 8260B	02/20/13 12:35
Toluene - d8 (Surr)	99.9		% Recovery	EPA 8260B	02/20/13 12:35

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **MW-2** Matrix : Water Lab Number : 84027-08
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Sulfate	**99**	2.5	mg/L	EPA 300.0	02/15/13 12:57
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	02/14/13 12:50
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	02/14/13 12:38
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/20/13 14:50
Chromium	**0.0088**	0.0050	mg/L	EPA 6010B	02/20/13 14:50
Iron	**3.2**	0.10	mg/L	EPA 6010B	02/20/13 14:50
Manganese	**0.50**	0.0050	mg/L	EPA 6010B	02/20/13 14:50
Sodium	**54**	0.50	mg/L	EPA 6010B	02/20/13 14:50
Benzene	**29**	0.50	ug/L	EPA 8260B	02/21/13 00:57
Toluene	**4.4**	0.50	ug/L	EPA 8260B	02/21/13 00:57
Ethylbenzene	**8.9**	0.50	ug/L	EPA 8260B	02/21/13 00:57
Total Xylenes	**19**	0.50	ug/L	EPA 8260B	02/21/13 00:57
Methyl-t-butyl ether (MTBE)	**7.5**	0.50	ug/L	EPA 8260B	02/21/13 00:57
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:57
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:57
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:57
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 00:57
Methanol	< 50	50	ug/L	EPA 8260B	02/21/13 00:57
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 00:57
TPH as Gasoline	**270**	50	ug/L	EPA 8260B	02/21/13 00:57
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:57
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 00:57
1,2-Dichloroethane-d4 (Surr)	99.7		% Recovery	EPA 8260B	02/21/13 00:57
Toluene - d8 (Surr)	93.4		% Recovery	EPA 8260B	02/21/13 00:57

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **IP-1** Matrix : Water Lab Number : 84027-09
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Sulfate	< 0.50	0.50	mg/L	EPA 300.0	02/14/13 17:27
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	02/14/13 13:04
Ferrous Iron	**0.37**	0.10	mg/L	SM 3500-Fe D	02/14/13 12:38
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/20/13 14:54
Chromium	**0.056**	0.0050	mg/L	EPA 6010B	02/20/13 14:54
Iron	**18**	0.10	mg/L	EPA 6010B	02/20/13 14:54
Manganese	**3.6**	0.0050	mg/L	EPA 6010B	02/20/13 14:54
Sodium	**60**	0.50	mg/L	EPA 6010B	02/20/13 14:54
Benzene	**480**	2.0	ug/L	EPA 8260B	02/20/13 15:45
Toluene	**480**	2.0	ug/L	EPA 8260B	02/20/13 15:45
Ethylbenzene	**690**	2.0	ug/L	EPA 8260B	02/20/13 15:45
Total Xylenes	**2000**	4.0	ug/L	EPA 8260B	02/21/13 03:52
Methyl-t-butyl ether (MTBE)	< 2.0	2.0	ug/L	EPA 8260B	02/20/13 15:45
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	02/20/13 15:45
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	02/20/13 15:45
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	02/20/13 15:45
Tert-Butanol	**20**	9.0	ug/L	EPA 8260B	02/20/13 15:45
Methanol	< 200	200	ug/L	EPA 8260B	02/20/13 15:45
Ethanol	< 20	20	ug/L	EPA 8260B	02/20/13 15:45
TPH as Gasoline	**17000**	400	ug/L	EPA 8260B	02/21/13 03:52
1,2-Dichloroethane	< 2.0	2.0	ug/L	EPA 8260B	02/20/13 15:45
1,2-Dibromoethane	< 2.0	2.0	ug/L	EPA 8260B	02/20/13 15:45
1,2-Dichloroethane-d4 (Surr)	97.4		% Recovery	EPA 8260B	02/20/13 15:45
Toluene - d8 (Surr)	88.4		% Recovery	EPA 8260B	02/20/13 15:45

KIFF Analytical LLC

Report Number : 84027
Date : 02/21/2013

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

Sample : **Trip Blank** Matrix : Water Lab Number : 84027-10
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/20/13 05:23
Methanol	< 50	50	ug/L	EPA 8260B	02/20/13 05:23
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/20/13 05:23
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/20/13 05:23
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/20/13 05:23
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	02/20/13 05:23
Toluene - d8 (Surr)	97.8		% Recovery	EPA 8260B	02/20/13 05:23

Report Number : 84027

Date : 02/21/2013

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/19/2013
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	02/19/2013
Iron	< 0.10	0.10	mg/L	EPA 6010B	02/19/2013
Manganese	< 0.0050	0.0050	mg/L	EPA 6010B	02/19/2013
Sodium	< 0.50	0.50	mg/L	EPA 6010B	02/19/2013
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/20/2013
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	02/20/2013
Iron	< 0.10	0.10	mg/L	EPA 6010B	02/20/2013
Manganese	< 0.0050	0.0050	mg/L	EPA 6010B	02/20/2013
Sodium	< 0.50	0.50	mg/L	EPA 6010B	02/20/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/20/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/20/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/20/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/20/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	02/20/2013
Toluene - d8 (Surr)	95.9		%	EPA 8260B	02/20/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/19/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/19/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
1,2-Dichloroethane-d4 (Surr)	98.7		%	EPA 8260B	02/19/2013
Toluene - d8 (Surr)	100		%	EPA 8260B	02/19/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/20/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/20/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/20/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/20/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/20/2013
1,2-Dichloroethane-d4 (Surr)	98.7		%	EPA 8260B	02/20/2013
Toluene - d8 (Surr)	99.1		%	EPA 8260B	02/20/2013

Report Number : 84027

Date : 02/21/2013

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	02/19/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/19/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/19/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/19/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/19/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/19/2013
1,2-Dichloroethane-d4 (Surr)	103		%	EPA 8260B	02/19/2013
Toluene - d8 (Surr)	98.5		%	EPA 8260B	02/19/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/21/2013
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	02/14/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	02/14/2013
Sulfate	<0.50	0.50	mg/L	EPA 300.0	02/14/2013
Sulfate	<0.50	0.50	mg/L	EPA 300.0	02/15/2013

KIFF ANALYTICAL, LLC

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

Report Number : 84027

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/21/2013

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
Hexavalent Chromium														
	84027-07	< 1.0	5.00	5.00	4.94	4.99	ug/L	EPA 7199	2/14/13	98.8	99.9	1.07	90.0-110	10
Ferrous Iron														
	84027-07	< 0.10	0.250	0.250	0.251	0.260	mg/L	SM 3500-Fe D	2/14/13	97.8	101	3.52	70.0-130	25
Sulfate														
	84027-09	< 0.50	2.50	2.50	2.57	2.41	mg/L	EPA 300.0	2/14/13	94.9	**88.4**	6.47	90.0-110	10
Arsenic														
	84036-01	0.020	0.400	0.400	0.428	0.431	mg/L	EPA 6010B	2/19/13	102	103	0.792	75-125	20
Chromium														
	84036-01	0.0050	0.400	0.400	0.422	0.422	mg/L	EPA 6010B	2/19/13	104	104	0.0711	75-125	20
Iron														
	84036-01	2.4	0.400	0.400	2.76	2.90	mg/L	EPA 6010B	2/19/13	87.2	124	5.23	75-125	20
Manganese														
	84036-01	1.7	0.400	0.400	2.00	2.03	mg/L	EPA 6010B	2/19/13	79.8	88.5	1.74	75-125	20
Sodium														
	84036-01	100	0.400	0.400	105	107	mg/L	EPA 6010B	2/19/13	**0.00**	**425**	2.27	75-125	20

KIFF ANALYTICAL, LLC

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

Report Number : 84027

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/21/2013

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														
	84044-02	<0.50	40.0	40.0	37.4	37.7	ug/L	EPA 8260B	2/20/13	93.5	94.3	0.859	80-120	25
1,2-Dichloroethane														
	84044-02	<0.50	40.0	40.0	34.0	33.8	ug/L	EPA 8260B	2/20/13	84.9	84.5	0.419	75.7-122	25
Benzene														
	84044-02	<0.50	40.0	40.0	40.1	39.6	ug/L	EPA 8260B	2/20/13	100	99.1	1.23	80-120	25
Diisopropyl ether														
	84044-02	<0.50	39.4	39.4	39.4	39.1	ug/L	EPA 8260B	2/20/13	99.9	99.2	0.716	80-120	25
Ethanol														
	84044-02	<5.0	101	101	105	109	ug/L	EPA 8260B	2/20/13	104	108	3.61	55.1-159	25
Arsenic														
	84039-01	< 0.015	0.400	0.400	0.386	0.394	mg/L	EPA 6010B	2/20/13	96.2	98.3	2.13	75-125	20
Chromium														
	84039-01	0.0067	0.400	0.400	0.403	0.412	mg/L	EPA 6010B	2/20/13	99.0	101	2.21	75-125	20
Iron														
	84039-01	6.6	0.400	0.400	6.82	6.80	mg/L	EPA 6010B	2/20/13	**45.0**	**39.5**	0.323	75-125	20
Manganese														
	84039-01	0.24	0.400	0.400	0.601	0.613	mg/L	EPA 6010B	2/20/13	88.9	91.9	1.98	75-125	20

KIFF ANALYTICAL, LLC

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Report Number : 84027

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/21/2013

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
Sodium														
	84039-01	4.4	0.400	0.400	4.74	4.81	mg/L	EPA 6010B	2/20/13	87.5	104	1.40	75-125	20
Ethyl-tert-butyl ether														
	84044-02	<0.50	40.6	40.6	37.8	38.4	ug/L	EPA 8260B	2/20/13	93.2	94.7	1.55	76.5-120	25
Ethylbenzene														
	84044-02	<0.50	40.0	40.0	45.6	44.8	ug/L	EPA 8260B	2/20/13	114	112	1.72	80-120	25
Methanol														
	84044-02	<50	999	999	923	952	ug/L	EPA 8260B	2/20/13	92.4	95.3	3.12	53.2-147	25
Methyl-t-butyl ether														
	84044-02	1.1	40.1	40.1	37.5	37.6	ug/L	EPA 8260B	2/20/13	90.9	91.1	0.245	69.7-121	25
P + M Xylene														
	84044-02	0.63	40.0	40.0	44.3	44.2	ug/L	EPA 8260B	2/20/13	109	109	0.200	76.8-120	25
Tert-Butanol														
	84044-02	<5.0	201	201	207	206	ug/L	EPA 8260B	2/20/13	103	102	0.460	80-120	25
Tert-amyl-methyl ether														
	84044-02	<0.50	40.4	40.4	37.0	36.9	ug/L	EPA 8260B	2/20/13	91.8	91.5	0.357	78.9-120	25
Toluene														
	84044-02	<0.50	40.0	40.0	40.2	40.0	ug/L	EPA 8260B	2/20/13	101	100	0.524	80-120	25

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Report Number : 84027

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/21/2013

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														
	84027-01	<0.50	40.0	40.0	40.8	40.4	ug/L	EPA 8260B	2/19/13	102	101	1.21	80-120	25
1,2-Dichloroethane														
	84027-01	<0.50	40.0	40.0	34.6	35.8	ug/L	EPA 8260B	2/19/13	86.5	89.4	3.31	75.7-122	25
Benzene														
	84027-01	25	40.0	40.0	61.2	62.1	ug/L	EPA 8260B	2/19/13	91.1	93.5	2.62	80-120	25
Diisopropyl ether														
	84027-01	<0.50	39.4	39.4	40.4	41.6	ug/L	EPA 8260B	2/19/13	102	105	2.95	80-120	25
Ethyl-tert-butyl ether														
	84027-01	<0.50	40.6	40.6	41.3	41.2	ug/L	EPA 8260B	2/19/13	102	102	0.338	76.5-120	25
Ethylbenzene														
	84027-01	53	40.0	40.0	93.9	92.2	ug/L	EPA 8260B	2/19/13	101	97.2	4.32	80-120	25
Methanol														
	84027-01	<50	999	999	926	975	ug/L	EPA 8260B	2/19/13	92.7	97.6	5.20	53.2-147	25
Methyl-t-butyl ether														
	84027-01	10	40.1	40.1	54.9	52.6	ug/L	EPA 8260B	2/19/13	111	106	5.12	69.7-121	25
P + M Xylene														
	84027-01	8.1	40.0	40.0	50.2	49.6	ug/L	EPA 8260B	2/19/13	105	104	1.33	76.8-120	25
Tert-Butanol														
	84027-01	34	201	201	230	233	ug/L	EPA 8260B	2/19/13	97.4	98.6	1.24	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84027

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/21/2013

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Tert-amyl-methyl ether														
	84027-01	<0.50	40.4	40.4	41.0	39.6	ug/L	EPA 8260B	2/19/13	101	98.1	3.42	78.9-120	25
Toluene														
	84027-01	4.0	40.0	40.0	40.1	42.8	ug/L	EPA 8260B	2/19/13	90.2	96.9	7.14	80-120	25
1,2-Dibromoethane														
	84043-02	<0.50	40.0	40.0	43.6	40.3	ug/L	EPA 8260B	2/20/13	109	101	7.95	80-120	25
1,2-Dichloroethane														
	84043-02	<0.50	40.0	40.0	39.0	38.1	ug/L	EPA 8260B	2/20/13	97.6	95.3	2.39	75.7-122	25
Benzene														
	84043-02	<0.50	40.0	40.0	40.5	40.2	ug/L	EPA 8260B	2/20/13	101	100	0.807	80-120	25
Diisopropyl ether														
	84043-02	<0.50	39.4	39.4	42.5	42.9	ug/L	EPA 8260B	2/20/13	108	109	0.983	80-120	25
Ethanol														
	84043-02	<5.0	101	101	84.5	92.8	ug/L	EPA 8260B	2/20/13	83.8	92.0	9.31	55.1-159	25
Ethyl-tert-butyl ether														
	84043-02	<0.50	40.6	40.6	44.9	43.8	ug/L	EPA 8260B	2/20/13	111	108	2.59	76.5-120	25
Ethylbenzene														
	84043-02	<0.50	40.0	40.0	43.6	42.6	ug/L	EPA 8260B	2/20/13	109	106	2.17	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84027

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/21/2013

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														
	84043-02	<50	999	999	940	952	ug/L	EPA 8260B	2/20/13	94.1	95.3	1.29	53.2-147	25
Methyl-t-butyl ether														
	84043-02	<0.50	40.1	40.1	45.4	43.4	ug/L	EPA 8260B	2/20/13	113	108	4.59	69.7-121	25
P + M Xylene														
	84043-02	<0.50	40.0	40.0	43.4	42.5	ug/L	EPA 8260B	2/20/13	108	106	2.11	76.8-120	25
Tert-Butanol														
	84043-02	<5.0	201	201	202	206	ug/L	EPA 8260B	2/20/13	100	102	1.68	80-120	25
Tert-amyl-methyl ether														
	84043-02	<0.50	40.4	40.4	43.1	42.9	ug/L	EPA 8260B	2/20/13	107	106	0.368	78.9-120	25
Toluene														
	84043-02	<0.50	40.0	40.0	40.2	40.6	ug/L	EPA 8260B	2/20/13	100	102	1.13	80-120	25
1,2-Dibromoethane														
	84027-02	<0.50	40.0	40.0	39.2	38.9	ug/L	EPA 8260B	2/19/13	98.1	97.4	0.785	80-120	25
1,2-Dichloroethane														
	84027-02	<0.50	40.0	40.0	40.2	39.9	ug/L	EPA 8260B	2/19/13	100	99.8	0.643	75.7-122	25
Benzene														
	84027-02	450	40.0	40.0	470	458	ug/L	EPA 8260B	2/19/13	**54.2**	**23.2**	**80.1**	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84027

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/21/2013

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Diisopropyl ether														
	84027-02	<0.50	39.4	39.4	37.4	37.0	ug/L	EPA 8260B	2/19/13	94.9	94.0	0.929	80-120	25
Ethanol														
	84027-02	7.3	101	101	126	130	ug/L	EPA 8260B	2/19/13	118	121	2.99	55.1-159	25
Ethyl-tert-butyl ether														
	84027-02	<0.50	40.6	40.6	36.0	35.7	ug/L	EPA 8260B	2/19/13	88.9	87.9	1.04	76.5-120	25
Ethylbenzene														
	84027-02	60	40.0	40.0	103	98.7	ug/L	EPA 8260B	2/19/13	106	95.5	10.1	80-120	25
Methanol														
	84027-02	400	999	999	1500	1520	ug/L	EPA 8260B	2/19/13	111	113	1.84	53.2-147	25
Methyl-t-butyl ether														
	84027-02	140	40.1	40.1	171	169	ug/L	EPA 8260B	2/19/13	76.7	72.9	5.05	69.7-121	25
P + M Xylene														
	84027-02	16	40.0	40.0	58.7	56.5	ug/L	EPA 8260B	2/19/13	107	101	5.35	76.8-120	25
Tert-Butanol														
	84027-02	510	201	201	701	718	ug/L	EPA 8260B	2/19/13	94.8	104	8.86	80-120	25
Tert-amyl-methyl ether														
	84027-02	1.6	40.4	40.4	38.2	38.6	ug/L	EPA 8260B	2/19/13	90.7	91.5	0.922	78.9-120	25
Toluene														
	84027-02	18	40.0	40.0	53.9	52.4	ug/L	EPA 8260B	2/19/13	90.2	86.6	4.17	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84027

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/21/2013

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
P + M Xylene														
	84044-07	<0.50	40.0	40.0	40.5	40.3	ug/L	EPA 8260B	2/21/13	101	101	0.606	76.8-120	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
Arsenic	0.400	mg/L	EPA 6010B	2/19/13	96.7	85-115
Chromium	0.400	mg/L	EPA 6010B	2/19/13	102	85-115
Iron	0.400	mg/L	EPA 6010B	2/19/13	98.8	85-115
Manganese	0.400	mg/L	EPA 6010B	2/19/13	95.6	85-115
Sodium	0.400	mg/L	EPA 6010B	2/19/13	91.6	85-115
Arsenic	0.400	mg/L	EPA 6010B	2/20/13	94.5	85-115
Chromium	0.400	mg/L	EPA 6010B	2/20/13	99.0	85-115
Iron	0.400	mg/L	EPA 6010B	2/20/13	96.5	85-115
Manganese	0.400	mg/L	EPA 6010B	2/20/13	89.0	85-115
Sodium	0.400	mg/L	EPA 6010B	2/20/13	95.2	85-115
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	2/20/13	91.7	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	2/20/13	82.9	75.7-122
Benzene	40.0	ug/L	EPA 8260B	2/20/13	97.6	80-120
Diisopropyl ether	39.4	ug/L	EPA 8260B	2/20/13	97.6	80-120
Ethanol	101	ug/L	EPA 8260B	2/20/13	105	55.1-159
Ethyl-tert-butyl ether	40.6	ug/L	EPA 8260B	2/20/13	92.4	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	2/20/13	112	80-120
Methanol	999	ug/L	EPA 8260B	2/20/13	95.1	53.2-147
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	2/20/13	89.2	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	2/20/13	108	76.8-120

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
TPH as Gasoline	509	ug/L	EPA 8260B	2/20/13	99.2	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	2/20/13	101	80-120
Tert-amyl-methyl ether	40.4	ug/L	EPA 8260B	2/20/13	89.7	78.9-120
Toluene	40.0	ug/L	EPA 8260B	2/20/13	99.2	80-120
1,2-Dibromoethane	40.2	ug/L	EPA 8260B	2/19/13	104	80-120
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	2/19/13	93.4	75.7-122
Benzene	40.2	ug/L	EPA 8260B	2/19/13	96.9	80-120
Diisopropyl ether	39.6	ug/L	EPA 8260B	2/19/13	102	80-120
Ethyl-tert-butyl ether	40.8	ug/L	EPA 8260B	2/19/13	99.0	76.5-120
Ethylbenzene	40.2	ug/L	EPA 8260B	2/19/13	104	80-120
Methanol	1000	ug/L	EPA 8260B	2/19/13	89.4	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	2/19/13	100	69.7-121
P + M Xylene	40.2	ug/L	EPA 8260B	2/19/13	105	76.8-120
Tert-Butanol	202	ug/L	EPA 8260B	2/19/13	99.9	80-120
Tert-amyl-methyl ether	40.5	ug/L	EPA 8260B	2/19/13	100	78.9-120
Toluene	40.2	ug/L	EPA 8260B	2/19/13	99.3	80-120
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	2/20/13	103	80-120
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	2/20/13	92.3	75.7-122
Benzene	40.1	ug/L	EPA 8260B	2/20/13	100	80-120
Diisopropyl ether	39.5	ug/L	EPA 8260B	2/20/13	113	80-120
Ethanol	101	ug/L	EPA 8260B	2/20/13	92.1	55.1-159

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
Ethyl-tert-butyl ether	40.7	ug/L	EPA 8260B	2/20/13	110	76.5-120
Ethylbenzene	40.1	ug/L	EPA 8260B	2/20/13	104	80-120
Methanol	1000	ug/L	EPA 8260B	2/20/13	103	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	2/20/13	112	69.7-121
P + M Xylene	40.1	ug/L	EPA 8260B	2/20/13	106	76.8-120
TPH as Gasoline	508	ug/L	EPA 8260B	2/20/13	106	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	2/20/13	103	80-120
Tert-amyl-methyl ether	40.4	ug/L	EPA 8260B	2/20/13	103	78.9-120
Toluene	40.1	ug/L	EPA 8260B	2/20/13	101	80-120
1,2-Dibromoethane	40.2	ug/L	EPA 8260B	2/19/13	105	80-120
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	2/19/13	107	75.7-122
Benzene	40.2	ug/L	EPA 8260B	2/19/13	93.6	80-120
Diisopropyl ether	39.6	ug/L	EPA 8260B	2/19/13	99.4	80-120
Ethanol	101	ug/L	EPA 8260B	2/19/13	97.2	55.1-159
Ethyl-tert-butyl ether	40.8	ug/L	EPA 8260B	2/19/13	102	76.5-120
Ethylbenzene	40.2	ug/L	EPA 8260B	2/19/13	105	80-120
Methanol	1000	ug/L	EPA 8260B	2/19/13	101	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	2/19/13	109	69.7-121
P + M Xylene	40.2	ug/L	EPA 8260B	2/19/13	102	76.8-120
TPH as Gasoline	506	ug/L	EPA 8260B	2/19/13	116	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	2/19/13	105	80-120
Tert-amyl-methyl ether	40.5	ug/L	EPA 8260B	2/19/13	103	78.9-120

Report Number : 84027

QC Report : Laboratory Control Sample (LCS)

Date : 02/21/2013

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Toluene	40.2	ug/L	EPA 8260B	2/19/13	97.0	80-120
P + M Xylene	39.8	ug/L	EPA 8260B	2/21/13	106	76.8-120
TPH as Gasoline	507	ug/L	EPA 8260B	2/21/13	97.5	70.0-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	2/14/13	106	90.0-110
Ferrous Iron	0.250	mg/L	SM 3500-Fe D	2/14/13	97.0	70.0-130
Sulfate	2.50	mg/L	EPA 300.0	2/14/13	91.7	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	2/15/13	95.8	90.0-110

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. 84027

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Scott Stromberg	California EDF Report? ☑ Yes ☐ No
Company / Address: Arctos Environmental 1332 Peralta Avenue, Berkeley, CA 94702	Sampling Company Log Code: EFSP
Phone Number: 510-525-2180	Global ID: T0600101410
Fax Number: 510-525-2392	EDF Deliverable To (Email Address): sstromberg@orionenv.com
Project #: 01LV / P.O. #:	Bill to: Jeff Baker
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	Container:	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: H_2SO_4	Matrix: Water	Matrix: Soil	Matrix: Air	Matrix:	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Dissolved Solids (SM 2540C)	Methane and Carbone Dioxide by RSK 175M	Chromium VI (EPA 7199)	Total Metals bye EPA 6010 (As, Cr, Fe, Mn, Na)								For Lab Use Only
DW-6	2·12·13	1625	3						3				X				X	X	X	X																	Stnd.	01
DW-2	2·13·13	0830	3						3				X				X	X	X	X																	Stnd.	02
MW-12	2·13·13	0910	3						3				X				X	X	X	X																	Stnd.	03
DW-9	2·13·13	1005	3						3				X				X	X	X	X																	Stnd.	04
DW-7	2·13·13	1115	3						3				X				X	X	X	X																	Stnd.	05
IP-9	2·13·13	1235	7		5				5	1	6		X				X	X	X	X	X	X	X	X	X	X	X										Stnd.	06
MW-11	2·13·13	1245	7		5				5	1	6		X				X	X	X	X	X	X	X	X	X	X	X										Stnd.	07
MW-2	2·13·13	1345	7		5				5	1	6		X				X	X	X	X	X	X	X	X	X	X	X										Stnd.	08
IP-1	2·13·13	1420	7		5				5	1	6		X				X	X	X	X	X	X	X	X	X	X	X										Stnd.	09
Trip Blank	2·13·13	0700	2						2				X				X	X	X	X																			10

Relinquished by:	Date	Time	Received by:
	2·13·13	1510	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	021313	1510	Kiff Analytical

Remarks:

For Lab Use Only: Sample Receipt

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

Page 27 of 28

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

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER LNR Initials

SRG#: 84027 Date: 021313

Project ID: Tesoro - Livermore

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

Shipping Only: ☐ FedEx * ☐ OnTrac * ☐ Greyhound ☐ Other *Service level if not Priority or Sunrise (M-F): _____

COC Inspection

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

Sample Inspection

Coolant Present: ☒ Yes ☐ No (includes water)

Temperature °C 3.2 Therm. ID# IR-1 Initial LNR Date/Time 021313/1735 ☐ 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 45
Matrix WA	Container type poly	# of containers received 20
Matrix _____	Container type _____	# of containers received _____

Date and Time Sample Put into Temp Storage Date: 021313 Time: 1830

Quicklog

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

COMMENTS:

Leaders in Analytical Science and Service

KIFF Analytical LLC

Subcontract Laboratory Report Attachments

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

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 13-02-0834

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro - Livermore

Attention: Joel Kiff
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Amanda Porter

Approved for release on 02/20/2013 by:
Amanda Porter
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: Tesoro - Livermore
Work Order Number: 13-02-0834

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0834
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-9	**13-02-0834-1-D**	**02/13/13 12:35**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 17:35**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	5990	1.70	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11	**13-02-0834-2-D**	**02/13/13 12:45**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 16:29**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	64900	17.0	10		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**13-02-0834-3-D**	**02/13/13 13:45**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 16:49**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	82200	17.0	10		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-1	**13-02-0834-4-D**	**02/13/13 14:20**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 17:10**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	26000	17.0	10		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-659-503**	**N/A**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 09:38**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	ND	1.70	1		ug/L

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0834
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-9	**13-02-0834-1-A**	**02/13/13 12:35**	**Aqueous**	**GC 61**	**N/A**	**02/16/13 14:25**	**130216L01**

Parameter	Result	RL	DF	Qual	Units
Methane	112	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11	**13-02-0834-2-A**	**02/13/13 12:45**	**Aqueous**	**GC 61**	**N/A**	**02/16/13 16:27**	**130216L01**

Parameter	Result	RL	DF	Qual	Units
Methane	139	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**13-02-0834-3-A**	**02/13/13 13:45**	**Aqueous**	**GC 61**	**N/A**	**02/16/13 16:51**	**130216L01**

Parameter	Result	RL	DF	Qual	Units
Methane	94.1	1.00	1		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-1	**13-02-0834-4-A**	**02/13/13 14:20**	**Aqueous**	**GC 61**	**N/A**	**02/16/13 17:41**	**130216L01**

Parameter	Result	RL	DF	Qual	Units
Methane	2980	8.00	8		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-1,826**	**N/A**	**Aqueous**	**GC 61**	**N/A**	**02/16/13 11:41**	**130216L01**

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

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0834
Preparation: N/A
Method: EPA 300.0

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-9	**13-02-0834-1-E**	**02/13/13 12:35**	**Aqueous**	**IC 10**	**N/A**	**02/15/13 13:30**	**130215L01**

Comment(s): -The reporting limit is elevated resulting from matrix interference.

Parameter	Result	RL	DF	Qual	Units
Nitrate (as N)	ND	0.50	5	BU	mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11	**13-02-0834-2-E**	**02/13/13 12:45**	**Aqueous**	**IC 10**	**N/A**	**02/15/13 12:38**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Nitrate (as N)	0.49	0.10	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**13-02-0834-3-E**	**02/13/13 13:45**	**Aqueous**	**IC 10**	**N/A**	**02/15/13 12:55**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Nitrate (as N)	4.0	0.10	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-1	**13-02-0834-4-E**	**02/13/13 14:20**	**Aqueous**	**IC 10**	**N/A**	**02/15/13 13:13**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Nitrate (as N)	ND	0.10	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-906-3,401**	**N/A**	**Aqueous**	**IC 10**	**N/A**	**02/15/13 10:46**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Nitrate (as N)	ND	0.10	1		mg/L

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0834
Preparation: N/A
Method: SM 2320B

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-9	**13-02-0834-1-E**	**02/13/13 12:35**	**Aqueous**	**PH1/BUR12**	**N/A**	**02/19/13 20:01**	**D0219ALKL1**

Parameter	Result	RL	DF	Qual	Units
Alkalinity, Total (as CaCO3)	6100	10.0	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11	**13-02-0834-2-E**	**02/13/13 12:45**	**Aqueous**	**PH1/BUR12**	**N/A**	**02/19/13 20:01**	**D0219ALKL1**

Parameter	Result	RL	DF	Qual	Units
Alkalinity, Total (as CaCO3)	1960	10.0	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**13-02-0834-3-E**	**02/13/13 13:45**	**Aqueous**	**PH1/BUR12**	**N/A**	**02/19/13 20:01**	**D0219ALKL1**

Parameter	Result	RL	DF	Qual	Units
Alkalinity, Total (as CaCO3)	647	5.00	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-1	**13-02-0834-4-E**	**02/13/13 14:20**	**Aqueous**	**PH1/BUR12**	**N/A**	**02/19/13 20:01**	**D0219ALKL1**

Parameter	Result	RL	DF	Qual	Units
Alkalinity, Total (as CaCO3)	406	5.00	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-223-6,075**	**N/A**	**Aqueous**	**PH1/BUR12**	**N/A**	**02/19/13 20:01**	**D0219ALKL1**

Parameter	Result	RL	DF	Qual	Units
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0834
Preparation: N/A
Method: SM 2540 C

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-9	**13-02-0834-1-F**	**02/13/13 12:35**	**Aqueous**	**N/A**	**02/18/13**	**02/18/13 16:50**	**D0218TDSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total Dissolved	7920	10.0	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11	**13-02-0834-2-F**	**02/13/13 12:45**	**Aqueous**	**N/A**	**02/18/13**	**02/18/13 16:50**	**D0218TDSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total Dissolved	2380	10.0	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**13-02-0834-3-F**	**02/13/13 13:45**	**Aqueous**	**N/A**	**02/18/13**	**02/18/13 16:50**	**D0218TDSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total Dissolved	915	1.00	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-1	**13-02-0834-4-F**	**02/13/13 14:20**	**Aqueous**	**N/A**	**02/18/13**	**02/18/13 16:50**	**D0218TDSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total Dissolved	585	1.00	1		mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-180-3,558**	**N/A**	**Aqueous**	**N/A**	**02/18/13**	**02/18/13 16:50**	**D0218TDSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total Dissolved	ND	1.0	1		mg/L

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/14/13
Work Order No: 13-02-0834
Preparation: N/A
Method: EPA 300.0

Project Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-02-0952-7	**Aqueous**	**IC 10**	**N/A**	**02/15/13**	**130215S01**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrate (as N)	12	500	530	104	540	105	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	02/14/13
2795 2nd Street, Suite 300		Work Order No:	13-02-0834
Davis, CA 95618-6505		Preparation:	N/A
		Method:	SM 2540 C

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
13-02-1015-1	**Aqueous**	**N/A**	**02/18/13**	**02/18/13**	**D0218TDSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	720	680	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0834
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-503	**Aqueous**	**GC 14**	**N/A**	**02/15/13**	**130215L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon Dioxide	102.0	92.14	90	91.16	89	80-120	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0834
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,826	**Aqueous**	**GC 61**	**N/A**	**02/16/13**	**130216L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	98.50	94.03	95	86.84	88	80-120	8	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0834
Davis, CA 95618-6505		Preparation:	N/A
		Method:	SM 2320B

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-223-6,075	**Aqueous**	**PH1/BUR12**	**N/A**	**02/19/13**	**D0219ALKL1**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	100	99.2	99	99.0	99	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0834
Davis, CA 95618-6505		Preparation:	N/A
		Method:	EPA 300.0

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-906-3,401	**Aqueous**	**IC 10**	**N/A**	**02/15/13**	**130215L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrate (as N)	5.0	5.3	106	5.2	103	90-110	3	0-15	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0834
Davis, CA 95618-6505		Preparation:	N/A
		Method:	SM 2540 C

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-180-3,558	**Aqueous**	**N/A**	**02/18/13**	**02/18/13**	**D0218TDSB1**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	100	85	85	90	90	80-120	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 13-02-0834

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number

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

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

13-02-0834

COC No. **84027** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Company/Address: Kiff Analytical

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

Project Number: 01LV P.O. No.: 84027

Project Name: Tesoro - Livermore

Project Address:

Recommended but not mandatory to complete this section:

Sampling Company Log Code: EFSP

Global ID: T0600101410

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

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
IP-9	02/13/13	12:35	1	1	2	2	X	X	X	X	X	X	1
MW-11	02/13/13	12:45	1	1	2	2	X	X	X	X	X	X	2
MW-2	02/13/13	13:45	1	1	2	2	X	X	X	X	X	X	3
IP-1	02/13/13	14:20	1	1	2	2	X	X	X	X	X	X	4

Relinquished by: Kiff Analytical	Date 02/13/13	Time 1700	Received by:	Remarks: Please refer to attached Test Detail.
Relinquished by:	Date	Time	Received by:	
Relinquished by: (ONTRAC)	Date 2/14/13	Time 10:00	Received by Laboratory:	Bill to: Accounts Payable

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

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

REVISED 2/15/13

COC No. **84027** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Company/Address: Kiff Analytical

Recommended but not mandatory to complete this section:

Sampling Company Log Code: - EFSP

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

Global ID: T0600101410

Project Number: 01LV | P.O. No.: 84027

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

Project Name: Tesoro - Livermore

Project Address:

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Anions by EPA 300.0 SUB (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
IP-9	02/13/13	12:35	1	1	2	2	X	x	X	x	x	x	X	
MW-11	02/13/13	12:45	1	1	2	2	X	x	X	x	x	x	X	
MW-2	02/13/13	13:45	1	1	2	2	X	x	X	x	x	x	X	
IP-1	02/13/13	14:20	1	1	2	2	X	x	X	x	x	x	X	

Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:

Remarks: 1) Please refer to attached Test Detail.
2) Please add nitrate as indicated

Bill to: Accounts Payable

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OnTrac
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Shipped From:
KIFF ANALYTICAL
2795 2ND STREET 300
DAVIS, CA 95618

Sent By: SAMPLE RECEIVINGX125
Phone#: (530)297-4800
wgt(lbs): 15
Reference: SUBS 84027
Reference 2:

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

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-02-0 8 5 4

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: KIFF DATE: 02/14/13

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 1.9 °C - 0.2 °C (CF) = 1.7 °C ☑ Blank ☐ Sample

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

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

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

Ambient Temperature: ☐ Air ☐ Filter Initial: JV

CUSTODY SEALS INTACT:

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

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

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

CONTAINER TYPE:

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

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

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

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

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

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

Preservative: **h:** HCL **n:** HNO_3 **na**$_2$:$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** YL

Return to Contents

KIFF Analytical LLC

Report Number : 84045
Date : 02/22/2013

Laboratory Results

Scott Stromberg
Arctos Environmental
1332 Peralta Avenue
Berkeley, CA 94702

Subject : 5 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Dear Mr. Stromberg,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed. Testing procedures comply with the 2003 NELAC and TNI 2009 standards. Laboratory results relate only to the samples tested. This report may be freely reproduced in full, but may only be reproduced in part with the express permission of Kiff Analytical, LLC. Kiff Analytical, LLC is certified by the State of California under the National Environmental Laboratory Accreditation Program (NELAP), lab # 08263CA. If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 84045
Date : 02/22/2013

Subject : 5 Water Samples
Project Name : Tesoro - Livermore
Project Number : 01LV

Case Narrative

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

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-8 and IP-8 for the analyte Sulfate were affected by the analyte concentration present in the un-spiked sample.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-8 and IP-8 for the analyte Sodium were affected by the analyte concentrations already present in the un-spiked sample.

KIFF Analytical LLC

Report Number : 84045
Date : 02/22/2013

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

Sample : **DW-5** Matrix : Water Lab Number : 84045-01
Sample Date :02/13/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**65**	0.50	ug/L	EPA 8260B	02/22/13 00:24
Toluene	**5.4**	0.50	ug/L	EPA 8260B	02/22/13 00:24
Ethylbenzene	**110**	0.50	ug/L	EPA 8260B	02/22/13 00:24
Total Xylenes	**110**	0.50	ug/L	EPA 8260B	02/22/13 00:24
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/22/13 00:24
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/22/13 00:24
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/22/13 00:24
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/22/13 00:24
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/22/13 00:24
Methanol	< 50	50	ug/L	EPA 8260B	02/22/13 00:24
Ethanol	< 10	10	ug/L	EPA 8260B	02/22/13 00:24
TPH as Gasoline	**4400**	150	ug/L	EPA 8260B	02/21/13 11:45
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/22/13 00:24
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/22/13 00:24
1,2-Dichloroethane-d4 (Surr)	96.7		% Recovery	EPA 8260B	02/22/13 00:24
Toluene - d8 (Surr)	88.4		% Recovery	EPA 8260B	02/22/13 00:24

KIFF Analytical LLC

Report Number : 84045
Date : 02/22/2013

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

Sample : **DW-8** Matrix : Water Lab Number : 84045-02
Sample Date :02/14/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Sulfate	**10**	0.50	mg/L	EPA 300.0	02/19/13 14:41
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	02/14/13 17:05
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	02/14/13 17:22
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/20/13 14:58
Chromium	**0.0056**	0.0050	mg/L	EPA 6010B	02/20/13 14:58
Iron	**2.4**	0.10	mg/L	EPA 6010B	02/20/13 14:58
Manganese	**3.3**	0.0050	mg/L	EPA 6010B	02/20/13 14:58
Sodium	**150**	0.50	mg/L	EPA 6010B	02/20/13 14:58
Benzene	**3000**	5.0	ug/L	EPA 8260B	02/21/13 13:29
Toluene	**5400**	15	ug/L	EPA 8260B	02/22/13 12:11
Ethylbenzene	**2000**	5.0	ug/L	EPA 8260B	02/21/13 13:29
Total Xylenes	**8700**	15	ug/L	EPA 8260B	02/22/13 12:11
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 13:29
Diisopropyl ether (DIPE)	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 13:29
Ethyl-t-butyl ether (ETBE)	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 13:29
Tert-amyl methyl ether (TAME)	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 13:29
Tert-Butanol	**110**	25	ug/L	EPA 8260B	02/21/13 13:29
Methanol	< 500	500	ug/L	EPA 8260B	02/21/13 13:29
Ethanol	< 150	150	ug/L	EPA 8260B	02/22/13 12:11
TPH as Gasoline	**63000**	1500	ug/L	EPA 8260B	02/22/13 12:11
1,2-Dichloroethane	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 13:29
1,2-Dibromoethane	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 13:29
1,2-Dichloroethane-d4 (Surr)	96.2		% Recovery	EPA 8260B	02/21/13 13:29
Toluene - d8 (Surr)	99.9		% Recovery	EPA 8260B	02/21/13 13:29

KIFF Analytical LLC

Report Number : 84045
Date : 02/22/2013

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

Sample : **IP-8** Matrix : Water Lab Number : 84045-03
Sample Date :02/14/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Sulfate	**14**	0.50	mg/L	EPA 300.0	02/19/13 15:50
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	02/14/13 17:18
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	02/14/13 17:22
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/20/13 15:02
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	02/20/13 15:02
Iron	**0.46**	0.10	mg/L	EPA 6010B	02/20/13 15:02
Manganese	**3.2**	0.0050	mg/L	EPA 6010B	02/20/13 15:02
Sodium	**100**	0.50	mg/L	EPA 6010B	02/20/13 15:02
Benzene	**3300**	7.0	ug/L	EPA 8260B	02/21/13 14:03
Toluene	**7100**	15	ug/L	EPA 8260B	02/22/13 03:28
Ethylbenzene	**1600**	7.0	ug/L	EPA 8260B	02/21/13 14:03
Total Xylenes	**9200**	15	ug/L	EPA 8260B	02/22/13 03:28
Methyl-t-butyl ether (MTBE)	< 7.0	7.0	ug/L	EPA 8260B	02/21/13 14:03
Diisopropyl ether (DIPE)	< 7.0	7.0	ug/L	EPA 8260B	02/21/13 14:03
Ethyl-t-butyl ether (ETBE)	< 7.0	7.0	ug/L	EPA 8260B	02/21/13 14:03
Tert-amyl methyl ether (TAME)	< 7.0	7.0	ug/L	EPA 8260B	02/21/13 14:03
Tert-Butanol	**110**	40	ug/L	EPA 8260B	02/21/13 14:03
Methanol	< 700	700	ug/L	EPA 8260B	02/21/13 14:03
Ethanol	< 150	150	ug/L	EPA 8260B	02/22/13 03:28
TPH as Gasoline	**65000**	1500	ug/L	EPA 8260B	02/22/13 03:28
1,2-Dichloroethane	< 7.0	7.0	ug/L	EPA 8260B	02/21/13 14:03
1,2-Dibromoethane	< 7.0	7.0	ug/L	EPA 8260B	02/21/13 14:03
1,2-Dichloroethane-d4 (Surr)	97.7		% Recovery	EPA 8260B	02/21/13 14:03
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	02/21/13 14:03

KIFF Analytical LLC

Report Number : 84045
Date : 02/22/2013

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

Sample : **MW-6** Matrix : Water Lab Number : 84045-04
Sample Date :02/14/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**1400**	2.5	ug/L	EPA 8260B	02/22/13 04:38
Toluene	**42**	2.5	ug/L	EPA 8260B	02/22/13 04:38
Ethylbenzene	**230**	2.5	ug/L	EPA 8260B	02/22/13 04:38
Total Xylenes	**56**	2.5	ug/L	EPA 8260B	02/22/13 04:38
Methyl-t-butyl ether (MTBE)	**200**	2.5	ug/L	EPA 8260B	02/22/13 04:38
Diisopropyl ether (DIPE)	< 2.5	2.5	ug/L	EPA 8260B	02/22/13 04:38
Ethyl-t-butyl ether (ETBE)	< 2.5	2.5	ug/L	EPA 8260B	02/22/13 04:38
Tert-amyl methyl ether (TAME)	**2.5**	2.5	ug/L	EPA 8260B	02/22/13 04:38
Tert-Butanol	**100**	15	ug/L	EPA 8260B	02/22/13 04:38
Methanol	< 250	250	ug/L	EPA 8260B	02/22/13 04:38
Ethanol	< 25	25	ug/L	EPA 8260B	02/22/13 04:38
TPH as Gasoline	**12000**	250	ug/L	EPA 8260B	02/22/13 04:38
1,2-Dichloroethane	< 2.5	2.5	ug/L	EPA 8260B	02/22/13 04:38
1,2-Dibromoethane	< 2.5	2.5	ug/L	EPA 8260B	02/22/13 04:38
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	02/22/13 04:38
Toluene - d8 (Surr)	92.6		% Recovery	EPA 8260B	02/22/13 04:38

KIFF Analytical LLC

Report Number : 84045
Date : 02/22/2013

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

Sample : **Trip Blank** Matrix : Water Lab Number : 84045-05
Sample Date :02/14/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 11:17
Methanol	< 50	50	ug/L	EPA 8260B	02/21/13 11:17
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/13 11:17
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/21/13 11:17
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/13 11:17
1,2-Dichloroethane-d4 (Surr)	98.3		% Recovery	EPA 8260B	02/21/13 11:17
Toluene - d8 (Surr)	93.0		% Recovery	EPA 8260B	02/21/13 11:17

Report Number : 84045

Date : 02/22/2013

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic	< 0.015	0.015	mg/L	EPA 6010B	02/19/2013
Chromium	< 0.0050	0.0050	mg/L	EPA 6010B	02/19/2013
Iron	< 0.10	0.10	mg/L	EPA 6010B	02/19/2013
Manganese	< 0.0050	0.0050	mg/L	EPA 6010B	02/19/2013
Sodium	< 0.50	0.50	mg/L	EPA 6010B	02/19/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/21/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/21/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	02/21/2013
Toluene - d8 (Surr)	95.0		%	EPA 8260B	02/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/22/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/22/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/22/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/22/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/21/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/21/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dichloroethane-d4 (Surr)	98.8		%	EPA 8260B	02/21/2013
Toluene - d8 (Surr)	97.4		%	EPA 8260B	02/21/2013

KIFF ANALYTICAL, LLC

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

Report Number : 84045

Date : 02/22/2013

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	02/21/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/21/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dichloroethane-d4 (Surr)	99.2		%	EPA 8260B	02/21/2013
Toluene - d8 (Surr)	98.4		%	EPA 8260B	02/21/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Methanol	< 50	50	ug/L	EPA 8260B	02/21/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	02/21/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	02/21/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	02/21/2013
1,2-Dichloroethane-d4 (Surr)	97.2		%	EPA 8260B	02/21/2013
Toluene - d8 (Surr)	101		%	EPA 8260B	02/21/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	02/14/2013
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	02/14/2013
Sulfate	<0.50	0.50	mg/L	EPA 300.0	02/19/2013

KIFF ANALYTICAL, LLC

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

Report Number : 84045

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/22/2013

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
Hexavalent Chromium														
	84027-07	< 1.0	5.00	5.00	4.94	4.99	ug/L	EPA 7199	2/14/13	98.8	99.9	1.07	90.0-110	10
Ferrous Iron														
	84027-07	< 0.10	0.250	0.250	0.251	0.260	mg/L	SM 3500-Fe D	2/14/13	97.8	101	3.52	70.0-130	25
Sulfate														
	84045-02	10	2.50	2.50	12.6	12.7	mg/L	EPA 300.0	2/19/13	**85.1**	**86.8**	0.328	90.0-110	10
Arsenic														
	84036-01	0.020	0.400	0.400	0.428	0.431	mg/L	EPA 6010B	2/19/13	102	103	0.792	75-125	20
Chromium														
	84036-01	0.0050	0.400	0.400	0.422	0.422	mg/L	EPA 6010B	2/19/13	104	104	0.0711	75-125	20
Iron														
	84036-01	2.4	0.400	0.400	2.76	2.90	mg/L	EPA 6010B	2/19/13	87.2	124	5.23	75-125	20
Manganese														
	84036-01	1.7	0.400	0.400	2.00	2.03	mg/L	EPA 6010B	2/19/13	79.8	88.5	1.74	75-125	20
Sodium														
	84036-01	100	0.400	0.400	105	107	mg/L	EPA 6010B	2/19/13	**0.00**	**425**	2.27	75-125	20

KIFF ANALYTICAL, LLC

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

Report Number : 84045

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/22/2013

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														
	84066-05	<0.50	40.0	40.0	37.5	37.5	ug/L	EPA 8260B	2/21/13	93.8	93.6	0.218	80-120	25
1,2-Dichloroethane														
	84066-05	<0.50	40.0	40.0	33.8	33.7	ug/L	EPA 8260B	2/21/13	84.6	84.3	0.292	75.7-122	25
Benzene														
	84066-05	4.5	40.0	40.0	43.9	43.4	ug/L	EPA 8260B	2/21/13	98.5	97.3	1.25	80-120	25
Diisopropyl ether														
	84066-05	<0.50	39.4	39.4	39.1	39.1	ug/L	EPA 8260B	2/21/13	99.2	99.2	0.0304	80-120	25
Ethanol														
	84066-05	<5.0	101	101	109	115	ug/L	EPA 8260B	2/21/13	108	114	4.94	55.1-159	25
Ethyl-tert-butyl ether														
	84066-05	<0.50	40.6	40.6	37.6	37.5	ug/L	EPA 8260B	2/21/13	92.7	92.5	0.196	76.5-120	25
Ethylbenzene														
	84066-05	37	40.0	40.0	80.6	79.8	ug/L	EPA 8260B	2/21/13	110	108	1.78	80-120	25
Methanol														
	84066-05	<50	999	999	938	966	ug/L	EPA 8260B	2/21/13	94.0	96.7	2.90	53.2-147	25
Methyl-t-butyl ether														
	84066-05	17	40.1	40.1	53.2	53.6	ug/L	EPA 8260B	2/21/13	89.8	90.6	0.938	69.7-121	25
P + M Xylene														
	84066-05	11	40.0	40.0	49.7	49.1	ug/L	EPA 8260B	2/21/13	97.0	95.4	1.70	76.8-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84045

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/22/2013

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														
	84066-05	9.8	201	201	216	212	ug/L	EPA 8260B	2/21/13	102	101	1.73	80-120	25
Tert-amyl-methyl ether														
	84066-05	<0.50	40.4	40.4	37.4	37.4	ug/L	EPA 8260B	2/21/13	92.7	92.7	0.0607	78.9-120	25
Toluene														
	84066-05	0.58	40.0	40.0	39.1	38.8	ug/L	EPA 8260B	2/21/13	96.3	95.6	0.730	80-120	25
Ethanol														
	84069-01	<5.0	101	101	110	126	ug/L	EPA 8260B	2/22/13	109	125	13.6	55.1-159	25
P + M Xylene														
	84069-01	<0.50	40.0	40.0	44.3	44.4	ug/L	EPA 8260B	2/22/13	111	111	0.160	76.8-120	25
Toluene														
	84069-01	<0.50	40.0	40.0	40.8	40.5	ug/L	EPA 8260B	2/22/13	102	101	0.769	80-120	25
1,2-Dibromoethane														
	84067-04	<0.50	40.0	40.0	43.1	39.8	ug/L	EPA 8260B	2/21/13	108	99.5	8.00	80-120	25
1,2-Dichloroethane														
	84067-04	<0.50	40.0	40.0	39.2	37.5	ug/L	EPA 8260B	2/21/13	97.9	93.7	4.35	75.7-122	25
Benzene														
	84067-04	<0.50	40.0	40.0	40.6	39.8	ug/L	EPA 8260B	2/21/13	101	99.6	1.88	80-120	25

KIFF ANALYTICAL, LLC

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

Report Number : 84045

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/22/2013

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Diisopropyl ether														
	84067-04	<0.50	39.4	39.4	45.0	44.3	ug/L	EPA 8260B	2/21/13	114	112	1.52	80-120	25
Ethanol														
	84067-04	<5.0	101	101	98.0	95.4	ug/L	EPA 8260B	2/21/13	97.2	94.6	2.76	55.1-159	25
Ethyl-tert-butyl ether														
	84067-04	<0.50	40.6	40.6	44.4	43.4	ug/L	EPA 8260B	2/21/13	109	107	2.28	76.5-120	25
Ethylbenzene														
	84067-04	5.0	40.0	40.0	47.6	46.8	ug/L	EPA 8260B	2/21/13	106	104	1.85	80-120	25
Methanol														
	84067-04	<50	999	999	999	1040	ug/L	EPA 8260B	2/21/13	100	104	4.03	53.2-147	25
Methyl-t-butyl ether														
	84067-04	<0.50	40.1	40.1	43.6	43.1	ug/L	EPA 8260B	2/21/13	109	108	1.08	69.7-121	25
P + M Xylene														
	84067-04	1.7	40.0	40.0	44.2	43.7	ug/L	EPA 8260B	2/21/13	106	105	1.11	76.8-120	25
Tert-Butanol														
	84067-04	<5.0	201	201	210	211	ug/L	EPA 8260B	2/21/13	104	105	0.333	80-120	25
Tert-amyl-methyl ether														
	84067-04	<0.50	40.4	40.4	42.4	41.6	ug/L	EPA 8260B	2/21/13	105	103	1.96	78.9-120	25
Toluene														
	84067-04	<0.50	40.0	40.0	39.5	39.8	ug/L	EPA 8260B	2/21/13	98.8	99.6	0.765	80-120	25

KIFF ANALYTICAL, LLC

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QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 02/22/2013

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	84066-03	<0.50	40.0	40.0	40.3	39.4	ug/L	EPA 8260B	2/21/13	101	98.4	2.34	80-120	25
1,2-Dichloroethane	84066-03	<0.50	40.0	40.0	36.6	37.6	ug/L	EPA 8260B	2/21/13	91.6	93.9	2.48	75.7-122	25
Benzene	84066-03	<0.50	40.0	40.0	39.8	39.0	ug/L	EPA 8260B	2/21/13	99.6	97.4	2.22	80-120	25
Diisopropyl ether	84066-03	<0.50	39.4	39.4	45.3	44.0	ug/L	EPA 8260B	2/21/13	115	112	2.89	80-120	25
Ethanol	84066-03	<5.0	101	101	105	108	ug/L	EPA 8260B	2/21/13	104	107	3.26	55.1-159	25
Ethyl-tert-butyl ether	84066-03	<0.50	40.6	40.6	44.2	42.9	ug/L	EPA 8260B	2/21/13	109	106	2.96	76.5-120	25
Ethylbenzene	84066-03	<0.50	40.0	40.0	41.4	40.3	ug/L	EPA 8260B	2/21/13	103	101	2.71	80-120	25
Methanol	84066-03	<50	999	999	1150	1100	ug/L	EPA 8260B	2/21/13	116	110	4.99	53.2-147	25
Methyl-t-butyl ether	84066-03	<0.50	40.1	40.1	43.3	42.2	ug/L	EPA 8260B	2/21/13	108	105	2.44	69.7-121	25

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Project Name : **Tesoro - Livermore**

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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
P + M Xylene														
	84066-03	<0.50	40.0	40.0	41.6	40.5	ug/L	EPA 8260B	2/21/13	104	101	2.63	76.8-120	25
Tert-Butanol														
	84066-03	<5.0	201	201	203	199	ug/L	EPA 8260B	2/21/13	101	98.8	2.00	80-120	25
Tert-amyl-methyl ether														
	84066-03	<0.50	40.4	40.4	41.8	41.8	ug/L	EPA 8260B	2/21/13	104	104	0.139	78.9-120	25
Toluene														
	84066-03	<0.50	40.0	40.0	37.7	38.7	ug/L	EPA 8260B	2/21/13	94.3	96.8	2.63	80-120	25
1,2-Dibromoethane														
	84044-08	<0.50	40.0	40.0	43.6	42.4	ug/L	EPA 8260B	2/21/13	109	106	2.88	80-120	25
1,2-Dichloroethane														
	84044-08	<0.50	40.0	40.0	43.7	42.4	ug/L	EPA 8260B	2/21/13	109	106	3.12	75.7-122	25
Benzene														
	84044-08	<0.50	40.0	40.0	39.8	39.3	ug/L	EPA 8260B	2/21/13	99.5	98.2	1.28	80-120	25
Diisopropyl ether														
	84044-08	<0.50	39.4	39.4	41.6	41.2	ug/L	EPA 8260B	2/21/13	106	104	1.08	80-120	25
Ethyl-tert-butyl ether														
	84044-08	<0.50	40.6	40.6	43.3	42.4	ug/L	EPA 8260B	2/21/13	107	104	2.19	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 : 02/22/2013

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														
	84044-08	<0.50	40.0	40.0	40.9	39.9	ug/L	EPA 8260B	2/21/13	102	99.7	2.52	80-120	25
Methanol														
	84044-08	<50	999	999	808	845	ug/L	EPA 8260B	2/21/13	80.9	84.6	4.44	53.2-147	25
Methyl-t-butyl ether														
	84044-08	<0.50	40.1	40.1	43.5	42.4	ug/L	EPA 8260B	2/21/13	109	106	2.53	69.7-121	25
Tert-Butanol														
	84044-08	<5.0	201	201	211	209	ug/L	EPA 8260B	2/21/13	105	104	0.920	80-120	25
Tert-amyl-methyl ether														
	84044-08	<0.50	40.4	40.4	44.4	43.7	ug/L	EPA 8260B	2/21/13	110	108	1.50	78.9-120	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
Arsenic	0.400	mg/L	EPA 6010B	2/19/13	96.7	85-115
Chromium	0.400	mg/L	EPA 6010B	2/19/13	102	85-115
Iron	0.400	mg/L	EPA 6010B	2/19/13	98.8	85-115
Manganese	0.400	mg/L	EPA 6010B	2/19/13	95.6	85-115
Sodium	0.400	mg/L	EPA 6010B	2/19/13	91.6	85-115
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	2/21/13	91.7	80-120
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	2/21/13	83.9	75.7-122
Benzene	40.1	ug/L	EPA 8260B	2/21/13	98.2	80-120
Diisopropyl ether	39.5	ug/L	EPA 8260B	2/21/13	97.4	80-120
Ethanol	101	ug/L	EPA 8260B	2/21/13	111	55.1-159
Ethyl-tert-butyl ether	40.7	ug/L	EPA 8260B	2/21/13	91.2	76.5-120
Ethylbenzene	40.1	ug/L	EPA 8260B	2/21/13	111	80-120
Methanol	1000	ug/L	EPA 8260B	2/21/13	93.4	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	2/21/13	88.0	69.7-121
P + M Xylene	40.1	ug/L	EPA 8260B	2/21/13	107	76.8-120
TPH as Gasoline	509	ug/L	EPA 8260B	2/21/13	102	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	2/21/13	102	80-120
Tert-amyl-methyl ether	40.4	ug/L	EPA 8260B	2/21/13	89.7	78.9-120
Toluene	40.1	ug/L	EPA 8260B	2/21/13	98.9	80-120
Ethanol	101	ug/L	EPA 8260B	2/22/13	107	55.1-159

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	39.9	ug/L	EPA 8260B	2/22/13	109	76.8-120
TPH as Gasoline	507	ug/L	EPA 8260B	2/22/13	104	70.0-130
Toluene	39.9	ug/L	EPA 8260B	2/22/13	99.6	80-120
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	2/21/13	103	80-120
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	2/21/13	94.6	75.7-122
Benzene	39.8	ug/L	EPA 8260B	2/21/13	99.5	80-120
Diisopropyl ether	39.2	ug/L	EPA 8260B	2/21/13	108	80-120
Ethanol	100	ug/L	EPA 8260B	2/21/13	100	55.1-159
Ethyl-tert-butyl ether	40.4	ug/L	EPA 8260B	2/21/13	104	76.5-120
Ethylbenzene	39.8	ug/L	EPA 8260B	2/21/13	106	80-120
Methanol	994	ug/L	EPA 8260B	2/21/13	110	53.2-147
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	2/21/13	105	69.7-121
P + M Xylene	39.8	ug/L	EPA 8260B	2/21/13	105	76.8-120
TPH as Gasoline	509	ug/L	EPA 8260B	2/21/13	103	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	2/21/13	104	80-120
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	2/21/13	102	78.9-120
Toluene	39.8	ug/L	EPA 8260B	2/21/13	100	80-120
1,2-Dibromoethane	40.2	ug/L	EPA 8260B	2/21/13	102	80-120
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	2/21/13	93.2	75.7-122
Benzene	40.2	ug/L	EPA 8260B	2/21/13	99.2	80-120
Diisopropyl ether	39.6	ug/L	EPA 8260B	2/21/13	111	80-120

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Ethanol	101	ug/L	EPA 8260B	2/21/13	103	55.1-159
Ethyl-tert-butyl ether	40.8	ug/L	EPA 8260B	2/21/13	104	76.5-120
Ethylbenzene	40.2	ug/L	EPA 8260B	2/21/13	104	80-120
Methanol	1000	ug/L	EPA 8260B	2/21/13	113	53.2-147
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	2/21/13	103	69.7-121
P + M Xylene	40.2	ug/L	EPA 8260B	2/21/13	105	76.8-120
Tert-Butanol	202	ug/L	EPA 8260B	2/21/13	101	80-120
Tert-amyl-methyl ether	40.5	ug/L	EPA 8260B	2/21/13	101	78.9-120
Toluene	40.2	ug/L	EPA 8260B	2/21/13	96.8	80-120
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	2/21/13	104	80-120
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	2/21/13	108	75.7-122
Benzene	39.8	ug/L	EPA 8260B	2/21/13	96.0	80-120
Diisopropyl ether	39.2	ug/L	EPA 8260B	2/21/13	101	80-120
Ethyl-tert-butyl ether	40.4	ug/L	EPA 8260B	2/21/13	103	76.5-120
Ethylbenzene	39.8	ug/L	EPA 8260B	2/21/13	99.6	80-120
Methanol	994	ug/L	EPA 8260B	2/21/13	79.0	53.2-147
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	2/21/13	104	69.7-121
TPH as Gasoline	509	ug/L	EPA 8260B	2/21/13	89.1	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	2/21/13	103	80-120
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	2/21/13	106	78.9-120
Hexavalent Chromium	5.00	ug/L	EPA 7199	2/14/13	106	90.0-110

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
Ferrous Iron	0.250	mg/L	SM 3500-Fe D	2/14/13	97.0	70.0-130
Sulfate	2.50	mg/L	EPA 300.0	2/19/13	97.9	90.0-110

KIFF ANALYTICAL, LLC
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KIFF Analytical LLC

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

SRG # / Lab No. 84045

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Scott Stromberg	California EDF Report? ☑ Yes ☐ No
Company / Address: Arctos Environmental 1332 Peralta Avenue, Berkeley, CA 94702	Sampling Company Log Code: EFSP
Phone Number: 510-525-2180	Global ID: T0600101410
Fax Number: 510-525-2392	EDF Deliverable To (Email Address): sstromberg@orionenv.com
Project #: 01LV / P.O. #:	Bill to: Jeff Baker
Project Name: Tesoro - Livermore	Sampler Signature:
Project Address: 1619 1st Street Livermore, CA	

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

Sample Designation	Date	Time	Sampling	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: H_2SO_4	Matrix: Water	Matrix: Soil	Matrix: Air	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Dissolved Solids (SM 2540C)	Methane and Carbone Dioxide by RSK 175M	Chromium VI (EPA 7199)	Total Metals bye EPA 6010 (As, Cr, Fe, Mn, Na)	TAT	For Lab Use Only
DW-5	2-13-13	1605		3					3				X			X	X	X	X									Stnd.	01
DW-8	2-14-13	1100		7		5			5	1	6		X			X	X	X	X		X	X	X	X	X	X	X	Stnd.	02
IP-8	2-14-13	1130		7		5			5	1	6		X			X	X	X	X		X	X	X	X	X	X	X	Stnd.	03
MW-6	2-14-13	0850		3					3				X			X	X	X	X									Stnd.	04
Trip Blank	2-14-13	0730		2					2				X			X	X	X	X									Stnd.	05
																												Stnd.	
																												Stnd.	
																												Stnd.	
																												Stnd.	

Relinquished by:	Date	Time	Received by:
	2-14-13	1145	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	021413	1335	

Remarks:

For Lab Use Only: Sample Receipt

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

Page 21 of 22

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

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

RECEIVER Initials

SRG#: 84045 Date: 021413

Project ID: Tesoro - Livermore

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

Shipping Only: ☐ FedEx * ☐ OnTrac * ☐ Greyhound ☐ Other *Service level if not Priority or Sunrise (M-F): _____

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 0-6 Therm. ID# IR-1 Initial Eng Date/Time 021413 1530 ☐ 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 Vom	# of containers received 22
Matrix WA	Container type poly	# of containers received 10
Matrix _____	Container type _____	# of containers received _____

Date and Time Sample Put into Temp Storage Date: 021413 Time: 1534

Quicklog

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

COMMENTS:

Leaders in Analytical Science and Service

KIFF Analytical LLC

Subcontract Laboratory Report Attachments

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

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 13-02-0917

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro - Livermore

Attention: Joel Kiff
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Amanda Porter

Approved for release on 02/22/2013 by:
Amanda Porter
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: Tesoro - Livermore
Work Order Number: 13-02-0917

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/15/13
Work Order No: 13-02-0917
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-8	**13-02-0917-1-A**	**02/14/13 11:00**	**Aqueous**	**GC 52**	**N/A**	**02/15/13 23:16**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Methane	1520	8.00	8		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-8	**13-02-0917-2-A**	**02/14/13 11:30**	**Aqueous**	**GC 52**	**N/A**	**02/15/13 19:52**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Methane	1550	8.00	8		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-1,828**	**N/A**	**Aqueous**	**GC 52**	**N/A**	**02/15/13 11:09**	**130215L01**

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

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	02/15/13
2795 2nd Street, Suite 300		Work Order No:	13-02-0917
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-8	**13-02-0917-1-D**	**02/14/13 11:00**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 21:08**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	34400	17.0	10		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-8	**13-02-0917-2-D**	**02/14/13 11:30**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 21:28**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	30700	17.0	10		ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-659-503**	**N/A**	**Aqueous**	**GC 14**	**N/A**	**02/15/13 09:38**	**130215L01**

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	ND	1.70	1		ug/L

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/15/13
Work Order No: 13-02-0917

Project: Tesoro - Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-8	**13-02-0917-1**	**02/14/13**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrate (as N)	ND	0.10	1		mg/L	N/A	02/15/13	EPA 300.0
Alkalinity, Total (as CaCO3)	786	5.00	1		mg/L	N/A	02/21/13	SM 2320B
Solids, Total Dissolved	930	1.00	1		mg/L	02/19/13	02/19/13	SM 2540 C

Client Sample Number	Lab Sample Number	Date Collected	Matrix
IP-8	**13-02-0917-2**	**02/14/13**	**Aqueous**

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrate (as N)	0.11	0.10	1		mg/L	N/A	02/15/13	EPA 300.0
Alkalinity, Total (as CaCO3)	659	5.00	1		mg/L	N/A	02/21/13	SM 2320B
Solids, Total Dissolved	810	1.00	1		mg/L	02/19/13	02/19/13	SM 2540 C

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

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrate (as N)	ND	0.10	1		mg/L	N/A	02/15/13	EPA 300.0
Solids, Total Dissolved	ND	1.0	1		mg/L	02/19/13	02/19/13	SM 2540 C

Return to Contents

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

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505

Date Received: 02/15/13
Work Order No: 13-02-0917
Preparation: N/A
Method: EPA 300.0

Project Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-02-0952-7	**Aqueous**	**IC 10**	**N/A**	**02/15/13**	**130215S01**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrate (as N)	12	500	530	104	540	105	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0917
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-503	**Aqueous**	**GC 14**	**N/A**	**02/15/13**	**130215L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon Dioxide	102.0	92.14	90	91.16	89	80-120	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0917
Davis, CA 95618-6505		Preparation:	N/A
		Method:	RSK-175M

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,828	**Aqueous**	**GC 52**	**N/A**	**02/15/13**	**130215L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	98.50	91.42	93	91.38	93	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0917
Davis, CA 95618-6505		Preparation:	N/A
		Method:	EPA 300.0

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-906-3,401	**Aqueous**	**IC 10**	**N/A**	**02/15/13**	**130215L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrate (as N)	5.0	5.3	106	5.2	103	90-110	3	0-15	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical		Date Received:	N/A
2795 2nd Street, Suite 300		Work Order No:	13-02-0917
Davis, CA 95618-6505		Preparation:	N/A
		Method:	SM 2540 C

Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-180-3,560	**Aqueous**	**N/A**	**02/19/13**	**02/19/13**	**D0219TDSL1**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	100	90	90	95	95	80-120	5	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 13-02-0917

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

For any analysis identified as a "field" test with a holding time (HT) </= 15 minutes where the sample is received outside of HT, Calscience will adhere to its internal HT of 24 hours. In cases where sample analysis does not meet Calscience's internal HT, results will be appropriately qualified.

Return to Contents

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

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

13-02-0917

COC No. **84045** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Company/Address: Kiff Analytical

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

Project Number: 01LV P.O. No.: 84045

Project Name: Tesoro - Livermore

Project Address:

Recommended but not mandatory to complete this section:

Sampling Company Log Code: EFSP

Global ID: T0600101410

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

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
DW-8	02/14/13	11:00	1	1	2	2	X	X	X	X	X	X	1
IP-8	02/14/13	11:30	1	1	2	2	X	X	X	X	X	X	2

Relinquished by:	Date	Time	Received by:
Kiff Analytical	021413	1700	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date 021513	Time 0840	Received by Laboratory:

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

Return to Contents

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

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

REVISED 2/15/13

COC No. **84045** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Company/Address: Kiff Analytical

Recommended but not mandatory to complete this section:

Sampling Company Log Code: - EFSP

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

Global ID: T0600101410

Project Number: 01LV | P.O. No.: 84045

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

Project Name: Tesoro - Livermore

Project Address:

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Anions by EPA 300.0 SUB (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
DW-8	02/14/13	11:00	1	1	2	2	X	x	X	x	x	x	X	
IP-8	02/14/13	11:30	1	1	2	2	X	x	X	x	x	x	X	

Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:

Remarks: 1) Please refer to attached Test Detail.
2) Please add nitrate as indicated.

Bill to: Accounts Payable

Return to Contents

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

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

COC No. **84045** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Company/Address: Kiff Analytical

Recommended but not mandatory to complete this section:

Sampling Company Log Code: - EFSP

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

Global ID: T0600101410

Project Number: 01LV P.O. No.: 84045

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

Project Name: Tesoro - Livermore

Project Address:

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Matrix: Water	Analysis Request: Alkalinity SM 2320 (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	TAT: Due: 2/22/13	For Lab Use Only
DW-8	02/14/13	11:00	1	1	2	2	X	X	X	X	X	X	
IP-8	02/14/13	11:30	1	1	2	2	X	X	X	X	X	X	

Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

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0917

WebOnTrac View Shipment

OnTrac
On Time Delivery For Less

800.334.5000
ontrac.com

Date Printed 2/14/2013

Tracking#D10010552946374

Shipped From:
KIFF ANALYTICAL
2795 2ND STREET 300
DAVIS, CA 95618

Sent By: SAMPLE RECEIVINGX125
Phone#: (530)297-4800
wgt(lbs): 40
Reference: SUBS 84048, 045, ...
Reference 2: 600

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

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-02-0911 7

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: KIFF

DATE: 02/15/13

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2.6 °C - 0.2 °C (CF) = 2.4 °C ☑ Blank ☐ Sample

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

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

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

Ambient Temperature: ☐ Air ☐ Filter Initial: MC

CUSTODY SEALS INTACT:

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

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

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

CONTAINER TYPE:

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

Water: ☑VOA ☑VOAh ☐VOA**na**$_2$ ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na**$_2$ ☐1AGB**s**

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

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

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

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

Preservative: **h:** HCL **n:** HNO_3 **na**$_2$:$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:**

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ATTACHMENT G

OXYGEN SYSTEM MONITORING RESULTS

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-1	10/15/10	0.03	NM[(c)]
	10/18/10	NM	NM
	10/22/10	9.96	NM
	10/25/10	41.75	82.2
	11/1/10	51.19	77.7
	12/9/10	24.66	51.3
	12/14/10	23.67	53.3
	12/23/10	28.27	58.1
	1/5/11	29.06	52.0
	1/18/11	0.0	0.0
	2/1/11	0.25	88.9
	3/4/11	15.02	90.4
	4/8/11	0.12	49.8
	5/3/11	0.01	88.0
	6/27/11	0.01	0.0
	6/28/11	0.24	91.3
	6/30/11	0.08	94.3
	7/5/11	0.13	94.5
	7/7/11	0.01	94.2
	7/13/11	0.01	95.3
	7/22/11	0.01	94.5
	8/9/11	0.01	94.5
	9/1/11	0.05	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	0.01	91.0
	3/20/12	0.02	93.0
	4/26/12	NM	94.7
	5/16/12	0.01	NM
	6/19/12	NM	NM
	7/17/12	0.01	NM
	8/16/12	0.01	NM
	9/21/12	NM	NM
	11/20/12	-0.02	NM
	12/11/12	NM	NM

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-1	1/3/13	NM	91.2
(cont.)	3/28/13	NM	85.4
IP-2	10/15/10	0.03	NM
	10/18/10	NM	NM
	10/22/10	0.05	NM
	10/25/10	0.29	82.2
	11/1/10	0.02	77.7
	12/9/10	0.46	51.3
	12/14/10	0.84	53.3
	12/23/10	0.41	58.1
	1/5/11	NM	52.0
	1/18/11	2.01	0.0
	2/1/11	2.09	88.9
	3/4/11	1.45	90.4
	4/8/11	3.38	49.8
	5/3/11	0.47	88.0
	6/27/11	0.01	0.0
	6/28/11	25.05	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	9.31	94.5
	8/9/11	17.38	94.5
	9/1/11	24.79	92.9
	11/29/11	1.14	0.0
	1/5/12	44.72	93.6
	2/2/12	36.25	91.0
	3/20/12	7.40	93.0
	4/26/12	11.27	94.7
	5/16/12	8.48	NM
	6/19/12	18.34	NM
	7/17/12	7.41	NM
	8/16/12	NM	NM
	9/21/12	2.31	NM

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-2	11/20/12	NM	NM
(cont.)	12/11/12	31.74	NM
	1/3/13	11.65	91.2
	3/28/13	24.84	85.4
IP-3	10/15/10	0.06	NM
	10/18/10	NM	NM
	10/22/10	NM	NM
	10/25/10	NM	82.2
	11/1/10	0.12	77.7
	12/9/10	0.15	51.3
	12/14/10	0.19	53.3
	12/23/10	0.33	58.1
	1/5/11	0.66	52.0
	1/18/11	0.08	0.0
	2/1/11	15.12	88.9
	3/4/11	14.61	90.4
	4/8/11	20.46	49.8
	5/3/11	5.59	88.0
	6/27/11	0.01	0.0
	6/28/11	0.96	91.3
	6/30/11	0.67	94.3
	7/5/11	0.55	94.5
	7/7/11	1.32	94.2
	7/13/11	0.26	95.3
	7/22/11	0.30	94.5
	8/9/11	0.49	94.5
	9/1/11	3.63	92.9
	11/29/11	2.11	0.0
	1/5/12	11.85	93.6
	2/2/12	8.91	91.0
	3/20/12	2.97	93.0
	4/26/12	1.17	94.7
	5/16/12	2.11	NM
	6/19/12	11.83	NM
	7/17/12	0.73	NM

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-3	8/16/12	NM	NM
(cont.)	9/21/12	1.48	NM
	11/20/12	NM	NM
	12/11/12	6.42	NM
	1/3/13	4.42	91.2
	3/28/13	7.62	85.4
IP-4	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	0.04	NM
	10/25/10	0.14	82.2
	11/1/10	0.15	77.7
	12/9/10	0.09	51.3
	12/14/10	0.01	53.3
	12/23/10	0.03	58.1
	1/5/11	0.02	52.0
	1/18/11	1.04	0.0
	2/1/11	1.25	88.9
	3/4/11	0.18	90.4
	4/8/11	1.02	49.8
	5/3/11	13.77	88.0
	6/27/11	1.33	0.0
	6/28/11	7.11	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	9.74	94.5
	8/9/11	15.48	94.5
	9/1/11	16.45	92.9
	11/29/11	0.91	0.0
	1/5/12	15.56	93.6
	2/2/12	26.26	91.0
	3/20/12	0.58	93.0
	4/26/12	1.06	94.7
	5/16/12	0.38	NM

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-4	6/19/12	2.22	NM
(cont.)	7/17/12	1.11	NM
	8/16/12	NM	NM
	9/21/12	4.00	NM
	11/20/12	NM	NM
	12/11/12	3.11	NM
	1/3/13	2.38	91.2
	3/28/13	5.06	85.4
IP-5	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.04	NM
	10/25/10	0.09	82.2
	11/1/10	0.02	77.7
	12/9/10	0.21	51.3
	12/14/10	0.01	53.3
	12/23/10	0.07	58.1
	1/5/11	NM	52.0
	1/18/11	0.72	0.0
	2/1/11	0.77	88.9
	3/4/11	50.28	90.4
	4/8/11	25.82	49.8
	5/3/11	19.23	88
	6/27/11	0.03	0.0
	6/28/11	38.65	91.3
	6/30/11	30.79	94.3
	7/5/11	41.81	94.5
	7/7/11	42.53	94.2
	7/13/11	38.87	95.3
	7/22/11	31.29	94.5
	8/9/11	32.78	94.5
	9/1/11	40.51	92.9
	11/29/11	13.76	0.0
	1/5/12	16.42	93.6
	2/2/12	16.21	91.0
	3/20/12	4.49	93.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-5	4/26/12	12.87	94.7
(cont.)	5/16/12	7.53	NM
	6/19/12	11.44	NM
	7/17/12	6.47	NM
	8/16/12	NM	NM
	9/21/12	25.52	NM
	11/20/12	NM	NM
	12/11/12	52.5	NM
	1/3/13	6.32	91.2
	3/28/13	2.02	85.4
IP-6	10/15/10	0.25	NM
	10/18/10	NM	NM
	10/22/10	0.27	NM
	10/25/10	0.44	82.2
	11/1/10	11.22	77.7
	12/9/10	12.55	51.3
	12/14/10	12.79	53.3
	12/23/10	12.82	58.1
	1/5/11	14.3	52
	1/18/11	5.19	0.0
	2/1/11	15.94	88.9
	3/4/11	10.31	90.4
	4/8/11	13.22	49.8
	5/3/11	9.97	88.0
	6/27/11	4.88	0.0
	6/28/11	3.65	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	2.69	94.5
	8/9/11	2.40	94.5
	9/1/11	2.79	92.9
	11/29/11	1.17	0.0
	1/5/12	3.30	93.6

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-6	2/2/12	2.72	91.0
(cont.)	3/20/12	2.43	93.0
	4/26/12	2.29	94.7
	5/16/12	2.36	NM
	6/19/12	10.41	NM
	7/17/12	3.59	NM
	8/16/12	NM	NM
	9/21/12	NM	NM
	11/20/12	NM	NM
	12/11/12	NM	91.8
	1/3/13	1.57	91.2
	3/28/13	2.30	85.4
IP-7	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	0.13	NM
	10/25/10	0.17	82.2
	11/1/10	0.34	77.7
	12/9/10	5.75	51.3
	12/14/10	4.72	53.3
	12/23/10	6.29	58.1
	1/5/11	5.75	52.0
	1/18/11	0.14	0.0
	2/1/11	32.69	88.9
	3/4/11	10.22	90.4
	4/8/11	2.58	49.8
	5/3/11	0.75	88.0
	6/27/11	0.26	0.0
	6/28/11	0.26	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	0.15	94.5
	8/9/11	0.10	94.5
	9/1/11	0.24	92.9

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-7	11/29/11	0.74	0.0
(cont.)	1/5/12	1.17	93.6
	2/2/12	0.17	91.0
	3/20/12	0.12	93.0
	4/26/12	0.94	94.7
	5/16/12	0.05	NM
	6/19/12	0.06	NM
	7/17/12	0.01	NM
	8/16/12	NM	NM
	9/21/12	NM	NM
	11/20/12	NM	NM
	12/11/12	NM	NM
	1/3/13	0.22	91.2
	3/28/13	0.08	85.4
IP-8	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.27	NM
	10/25/10	0.21	82.2
	11/1/10	NM	77.7
	12/9/10	NM	51.3
	12/14/10	NM	53.3
	12/23/10	NM	58.1
	1/5/11	NM	52.0
	1/18/11	NM	0.0
	2/1/11	NM	88.9
	3/4/11	NM	90.4
	4/8/11	24.74	49.8
	5/3/11	5.15	88.0
	6/27/11	0.01	0.0
	6/28/11	21.98	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	11.34	94.5

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-8	8/9/11	12.88	94.5
(cont.)	9/1/11	16.02	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	26.83	91.0
	3/20/12	1.94	93.0
	4/26/12	NM	94.7
	5/16/12	1.64	NM
	6/19/12	NM	NM
	7/17/12	5.14	NM
	8/16/12	0.06	NM
	9/21/12	NM	NM
	11/20/12	3.55	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
	3/28/13	NM	85.4
IP-9	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	11.27	NM
	10/25/10	18.36	82.2
	11/1/10	18.96	77.7
	12/9/10	31.42	51.3
	12/14/10	33.16	53.3
	12/23/10	31.77	58.1
	1/5/11	35.3	52.0
	1/18/11	0.0	0.0
	2/1/11	0.65	88.9
	3/4/11	0.45	90.4
	4/8/11	0.42	49.8
	5/3/11	0.55	88.0
	6/27/11	0.01	0.0
	6/28/11	NM	91.3
	6/30/11	27.14	94.3
	7/5/11	23.48	94.5
	7/7/11	22.62	94.2

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-9	7/13/11	21.37	95.3
(cont.)	7/22/11	20.65	94.5
	8/9/11	16.24	94.5
	9/1/11	36.38	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	46.40	91.0
	3/20/12	33.17	93.0
	4/26/12	NM	94.7
	5/16/12	28.85	NM
	6/19/12	NM	NM
	7/17/12	1.33	NM
	8/16/12	0.01	NM
	9/21/12	NM	NM
	11/20/12	0.12	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
	3/28/13	NM	85.4
IP-10	10/15/10	0.11	NM
	10/18/10	NM	NM
	10/22/10	0.07	NM
	10/25/10	5.33	82.2
	11/1/10	8.48	77.7
	12/9/10	0.25	51.3
	12/14/10	0.30	53.3
	12/23/10	0.04	58.1
	1/5/11	0.01	52.0
	1/18/11	0.0	0.0
	2/1/11	0.18	88.9
	3/4/11	0.04	90.4
	4/8/11	26.54	49.8
	5/3/11	4.45	88.0
	6/27/11	0.04	0.0
	6/28/11	10.08	91.3
	6/30/11	NM	94.3

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
IP-10	7/5/11	NM	94.5
(cont.)	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	29.15	94.5
	8/9/11	11.44	94.5
	9/1/11	37.28	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	0.14	91.0
	3/20/12	0.01	93.0
	4/26/12	NM	94.7
	5/16/12	0.09	NM
	6/19/12	NM	NM
	7/17/12	0.04	NM
	8/16/12	0.01	NM
	9/21/12	NM	NM
	11/20/12	0.04	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
	3/28/13	NM	85.4
MW-1	10/15/10	0.11	NM
	10/18/10	NM	NM
	10/22/10	0.31	NM
	10/25/10	0.35	82.2
	11/1/10	1.79	77.7
	12/9/10	0.21	51.3
	12/14/10	0.01	53.3
	12/23/10	0.01	58.1
	1/5/11	0.0	52.0
	1/18/11	0.0	0.0
	2/1/11	0.66	88.9
	3/4/11	NM	90.4
	4/8/11	10.53	49.8
	5/3/11	10.43	88.0
	6/27/11	0.71	0.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-1	6/28/11	NM	91.3
(cont.)	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	11.42	95.3
	7/22/11	16.04	94.5
	8/9/11	27.72	94.5
	9/1/11	32.16	92.9
	11/29/11	NM	0.0
	1/5/12	0.97	93.6
	2/2/12	1.73	91.0
	3/20/12	0.32	93.0
	4/26/12	NM	94.7
	5/16/12	0.01	NM
	6/19/12	NM	NM
	7/17/12	0.01	NM
	8/16/12	0.66	NM
	9/21/12	NM	NM
	11/20/12	NM	NM
	12/11/12	NM	NM
	1/3/13	0.01	91.2
	3/28/13	NM	85.4
MW-2	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.15	NM
	10/25/10	0.04	82.2
	11/1/10	0.08	77.7
	12/9/10	0.03	51.3
	12/14/10	0.21	53.3
	12/23/10	0.01	58.1
	1/5/11	0.06	52.0
	1/18/11	0.0	0.0
	2/1/11	0.15	88.9
	3/4/11	0.44	90.4
	4/8/11	0.06	49.8

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-2	5/3/11	0.01	88.0
(cont.)	6/27/11	0.02	0.0
	6/28/11	NM	91.3
	6/30/11	0.04	94.3
	7/5/11	0.01	94.5
	7/7/11	0.07	94.2
	7/13/11	0.04	95.3
	7/22/11	0.11	94.5
	8/9/11	1.14	94.5
	9/1/11	0.24	92.9
	11/29/11	0.71	0.0
	1/5/12	1.92	93.6
	2/2/12	0.17	91.0
	3/20/12	0.02	93.0
	4/26/12	0.93	94.7
	5/16/12	0.24	NM
	6/19/12	0.41	NM
	7/17/12	0.01	NM
	8/16/12	0.07	NM
	9/21/12	0.06	NM
	11/20/12	0.18	NM
	12/11/12	5.98	NM
	1/3/13	0.07	91.2
	3/28/13	15.51	85.4
MW-11	10/15/10	0.04	NM
	10/18/10	NM	NM
	10/22/10	29.48	NM
	10/25/10	29.78	82.2
	11/1/10	32.42	77.7
	12/9/10	5.07	51.3
	12/14/10	13.39	53.3
	12/23/10	11.87	58.1
	1/5/11	11.42	52.0
	1/18/11	0.0	0.0
	2/1/11	1.18	88.9

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
MW-11	3/4/11	0.23	90.4
(cont.)	4/8/11	16.87	49.8
	5/3/11	12.14	88.0
	6/27/11	0.01	0.0
	6/28/11	36.72	91.3
	6/30/11	32.83	94.3
	7/5/11	33.76	94.5
	7/7/11	33.91	94.2
	7/13/11	35.42	95.3
	7/22/11	33.97	94.5
	8/9/11	34.22	94.5
	9/1/11	27.88	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	0.04	91.0
	3/20/12	0.01	93.0
	4/26/12	NM	94.7
	5/16/12	6.89	NM
	6/19/12	NM	NM
	7/17/12	0.37	NM
	8/16/12	0.04	NM
	9/21/12	NM	NM
	11/20/12	12.9	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
	3/28/13	NM	85.4
DW-1	10/15/10	0.03	NM
	10/18/10	NM	NM
	10/22/10	NM	NM
	10/25/10	NM	82.2
	11/1/10	0.03	77.7
	12/9/10	10.38	51.3
	12/14/10	9.93	53.3
	12/23/10	7.14	58.1
	1/5/11	15.77	52.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
DW-1	1/18/11	11.58	0.0
(cont.)	2/1/11	24.42	88.9
	3/4/11	28.71	90.4
	4/8/11	19.81	49.8
	5/3/11	0.01	88.0
	6/27/11	0.02	0.0
	6/28/11	0.24	91.3
	6/30/11	0.05	94.3
	7/5/11	0.08	94.5
	7/7/11	0.16	94.2
	7/13/11	0.04	95.3
	7/22/11	0.08	94.5
	8/9/11	0.46	94.5
	9/1/11	0.09	92.9
	11/29/11	0.94	0.0
	1/5/12	3.25	93.6
	2/2/12	15.07	91.0
	3/20/12	0.17	93.0
	4/26/12	1.30	94.7
	5/16/12	0.42	NM
	6/19/12	0.92	NM
	7/17/12	0.09	NM
	8/16/12	0.08	NM
	9/21/12	2.61	NM
	11/20/12	0.26	NM
	12/11/12	0.36	NM
	1/3/13	0.45	91.2
	3/28/13	0.58	85.4
TP-1	10/15/10	0.12	NM
	10/18/10	NM	NM
	10/22/10	2.11	NM
	10/25/10	16.11	82.2
	11/1/10	5.15	77.7
	12/9/10	0.01	51.3
	12/14/10	0.33	53.3

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
TP-1	12/23/10	0.16	58.1
(cont.)	1/5/11	0.0	52.0
	1/18/11	0.0	0.0
	2/1/11	27.22	88.9
	3/4/11	12.11	90.4
	4/8/11	15.61	49.8
	5/3/11	1.25	88.0
	6/27/11	0.01	0.0
	6/28/11	7.49	91.3
	6/30/11	0.02	94.3
	7/5/11	0.19	94.5
	7/7/11	8.43	94.2
	7/13/11	0.02	95.3
	7/22/11	11.89	94.5
	8/9/11	18.19	94.5
	9/1/11	10.35	92.9
	11/29/11	0.67	0.0
	1/5/12	12.64	93.6
	2/2/12	2.75	91.0
	3/20/12	0.03	93.0
	4/26/12	16.6	94.7
	5/16/12	16.03	NM
	6/19/12	7.31	NM
	7/17/12	7.01	NM
	8/16/12	1.25	NM
	9/21/12	0.01	NM
	11/20/12	8.32	NM
	12/11/12	28.48	NM
	1/3/13	34.85	91.2
	3/28/13	23.98	85.4
TP-2	10/15/10	0.05	NM
	10/18/10	NM	NM
	10/22/10	25.44	NM
	10/25/10	24.90	82.2
	11/1/10	25.83	77.7

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
TP-2	12/9/10	6.03	51.3
(cont.)	12/14/10	5.12	53.3
	12/23/10	0.63	58.1
	1/5/11	0.43	52.0
	1/18/11	0.0	0.0
	2/1/11	33.44	88.9
	3/4/11	34.15	90.4
	4/8/11	19.31	49.8
	5/3/11	11.95	88
	6/27/11	0.01	0.0
	6/28/11	24.27	91.3
	6/30/11	23.57	94.3
	7/5/11	31.33	94.5
	7/7/11	33.74	94.2
	7/13/11	33.16	95.3
	7/22/11	33.72	94.5
	8/9/11	35.64	94.5
	9/1/11	26.08	92.9
	11/29/11	0.69	0.0
	1/5/12	14.77	93.6
	2/2/12	21.95	91.0
	3/20/12	16.32	93.0
	4/26/12	8.75	94.7
	5/16/12	19.78	NM
	6/19/12	19.87	NM
	7/17/12	15.29	NM
	8/16/12	3.22	NM
	9/21/12	8.70	NM
	11/20/12	28.4	NM
	12/11/12	2.64	NM
	1/3/13	37.35	91.2
	3/28/13	35.85	85.4
VW-2	1/5/12	13.24	93.6
	2/2/12	5.56	91.0
	3/20/12	6.11	93.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen[(a)] (mg/l)	Oxygen Purity[(b)] (%)
VW-2	4/26/12	10.57	94.7
(cont.)	5/16/12	10.52	NM
	6/19/12	5.87	NM
	7/17/12	5.13	NM
	8/16/12	4.93	NM
	9/21/12	8.11	NM
	11/20/12	3.64	NM
	12/11/12	32.72	NM
	1/3/13	32.77	91.2
	3/28/13	32.14	85.4

(a) Dissolved oxygen measured in milligrams per liter (mg/l).
(b) Oxygen purity measured at injection manifold (same for all wells) in percent (%).
(c) Not measured.

ATTACHMENT H

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: 20415

2. Page 1 of 1

3. Generator's Name and Mailing Address
Tesoro Environmental Resource Co.
3450 344th Way Auburn, WA 98001
4. Generator's Phone ( )

Tesoro 67076
1619 First St.
Livermore, CA

5. Transporter 1 Company Name
Excel Environmental Services

6. US EPA ID Number
CAL000209350

A. State Transporter's ID

B. Transporter 1 Phone 800-376-6068

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
Riverbank Oil Transfer (ROT)
5200 Claus Rd.
Riverbank, CA 95367

10. US EPA ID Number
CALCON190516

E. State Facility's ID

F. Facility's Phone 209-863-8181

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Waste Water	001	TT	750	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
Non Haz Water

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Gloves ERG 171

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
		2	14	13

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Peter Arzola	Pete	2	14	13

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Tim Liggett	Jim Liggett			

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

GENERATOR

TRANSPORTER

FACILITY

NON-HAZARDOUS WASTE

Rev. 3/95