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February 18, 2015

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

Subject: **Fourth Quarter 2014 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 ***Fourth Quarter 2014 Status Report*** for the subject site, dated 18 February 2015. This report is submitted by Arctos Environmental on behalf of Tesoro Environmental Resources Company.

Based on my inquiry of the person or persons directly responsible for gathering the information contained in this report, I believe the information was prepared by qualified personnel who properly gathered and evaluated the information, and that the information submitted is, to the best of my knowledge and belief, true, correct, and complete. Please feel free to call me at 253/896-8700 or Scott Stromberg of Arctos Environmental at 510/525-2180 with questions.

Sincerely,

Kyle Waldron
Environmental Remediation Administrator
Tesoro Companies Inc.

Attachments

CC: Arctos – Scott Stromberg

ARCTOS

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18 February 2015
Project No. 01LV

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

Subject: Fourth Quarter 2014 Status Report
1619 1st Street, Livermore, California
Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0434

Dear Mr. Wickham:

Arctos Environmental (Arctos), on behalf of Tesoro Environmental Resources Company (Tesoro), has prepared this letter report summarizing project tasks completed during the fourth quarter 2014 at the subject site (Figure 1).

Executive Summary

A quarterly groundwater monitoring event was conducted from 12 to 13 November 2014. On average, there was an approximately 5-foot decrease in water levels since the third quarter 2014. Water levels were at their lowest elevations since groundwater monitoring began in 1993. The highest onsite petroleum hydrocarbon concentrations were detected at wells DW-1 and DW-8, located in the western portion of the site adjacent to the underground storage tanks (USTs). The highest offsite petroleum hydrocarbon concentrations were detected at wells DW-5 and DW-9, located northwest of the intersection of 1st Street and South P Street. Approximately 0.01 foot of light non-aqueous phase liquid (LNAPL) was detected at well DW-5 during sampling. A groundwater sample was collected from the well and laboratory results indicated that concentrations were consistent with recent results.

During the fourth quarter 2014, the soil vapor extraction (SVE) system operated at 94 percent uptime. During operation, an estimated 1,700 pounds of petroleum hydrocarbons were removed through volatilization and an estimated 1,600 pounds were removed through biodegradation. Between 12 November and 18 December, water levels increased by approximately 8 feet and SVE influent hydrocarbon concentrations decreased

by approximately 90 percent. The oxygen injection system remained shut off during the fourth quarter 2014.

The expanded on- and offsite in situ chemical oxidation (ISCO) pilot test was conducted during the second and third quarters 2013. A description of the expanded ISCO pilot test procedures and results are included in Arctos's "Expanded In Situ Chemical Oxidation (ISCO) Pilot Test Report" dated 2 October 2014 (Arctos, 2014).

During the first quarter 2015, Arctos will continue operating the SVE system to remove subsurface hydrocarbon mass while water levels remain low. Arctos will also continue groundwater monitoring and ISCO monitoring activities to evaluate groundwater concentrations trends.

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, Confluence Environmental, of Sacramento, California, performed a quarterly groundwater monitoring event from 12 to 13 November 2014. Groundwater samples were collected from wells MW-1, DW-1 through DW-9, IP-1, IP-5, and IP-8 through IP-10. Samples were unable to be collected from 15 wells because of low water levels. 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 and quality control (QA/QC) procedures are in Attachment A. Field data sheets are in Attachment B.

Analytical Program

Groundwater samples collected from wells MW-1 and DW-4 were analyzed in accordance with the analytical plan in Attachment A. Groundwater samples collected from the remaining wells were tested for additional analytes in accordance with the expanded ISCO pilot test work plan (Arctos, 2013).

Groundwater Results

Groundwater elevations were approximately 409 to 421 feet above mean sea level (MSL; 53 to 63 feet below ground surface [bgs]). Water levels decreased an average of 5.1 feet compared to the previous quarter and were an average of 21 feet lower than water levels in the fourth quarter 2013 (Table 1). The water level data indicate that

the general direction of groundwater flow is toward the northwest with an estimated gradient of 0.01 (1 foot/75 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment C).

During the fourth quarter 2014, the highest onsite concentrations of total petroleum hydrocarbons as gasoline (TPHg), benzene, and methyl tert-butyl ether (MTBE) were detected at wells DW-1 and DW-8, located in the western portion of the site adjacent to the USTs. The highest offsite petroleum hydrocarbon concentrations were detected at wells DW-5 and DW-9, located downgradient of the site in the offsite parking lot. Approximately 0.01 foot of LNAPL was detected at well DW-5 during sampling. A groundwater sample was collected from the well and laboratory results indicated that concentrations were consistent with recent results. The concentration of benzene at well DW-5 was 27 micrograms per liter (µg/l). 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. The table below summarizes the maximum hydrocarbon concentrations detected on and off site.

Hydrocarbon Compound	Maximum Onsite Concentration[(a)] (µg/l)	Maximum Offsite Concentration[(a)] (µg/l)
TPHg	53,000 (DW-8)	18,000 (DW-5)
Benzene	3,200 (DW-8)	130 (DW-9)
MTBE	7.8 (DW-1)	22 (DW-9)

(a) Dissolved-phase petroleum hydrocarbons as analyzed by EPA Method 8260B and reported in µg/l.

In general, hydrocarbon concentrations at onsite source area wells decreased as a result of SVE and oxygen injection system operation from 2010 to 2012. Concentrations at offsite wells remained relatively stable during this period. After ISCO injections were conducted on and off site during the second and third quarters 2013, hydrocarbon concentrations increased at on- and offsite wells as a result of hydrocarbon desorption from the injection chemicals' surfactant properties. Monitoring results have shown that concentrations are generally stable or decreasing at on- and offsite wells since the expanded ISCO pilot test. This is likely attributable to hydrocarbon mass resorbing onto soil as equilibrium conditions return.

Well	TPHg Concentration[a] (µg/l)			
	Before SVE and O2 (May 2010)	After SVE and O2 and Before ISCO (April 2013)	After ISCO (June or August 2013)	Current (November 2014)
Onsite				
DW-1	1,800	ND[b]<50	12,000	160
DW-8	NA[c]	5,900	55,000	53,000
Offsite				
DW-5	2,100	3,000	120,000	18,000
DW-9	NA[c]	3,200	27,000	9,600

(a) Dissolved-phase TPHg as analyzed by EPA Method 8260B.
(b) ND – Not detected above the reporting limit listed.
(c) NA – Not applicable. Wells DW-8 and DW-9 were installed in April 2011 and June 2012, respectively.

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 D, and the laboratory reports and the chain-of-custody forms are in Attachment E.

ISCO Pilot Tests

Arctos conducted an ISCO pilot test at onsite well IP-9 during the fourth quarter 2011 and an expanded ISCO pilot test at onsite wells IP-1, IP-2, IP-3, IP-8, and IP-9 and offsite wells IP-11 through IP-17 during the second and third quarters 2013. 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.

The RegenOx™ oxidant complex can cause an increase in hexavalent chromium concentrations. ISCO monitoring has indicated that hexavalent chromium was detected at monitoring wells MW-8, MW-10, MW-11, DW-8, and injection wells IP-1, IP-8, and IP-9. During the fourth quarter 2014, hexavalent chromium was not detected in any samples. Wells MW-8 and MW-10 were not sampled during the fourth quarter because of low water levels. ISCO pilot test groundwater monitoring results for petroleum hydrocarbons and general chemistry are summarized in Tables 4 and 5, respectively.

Table 5 includes highlighting to point out all results that exceeded California primary or secondary maximum contaminant levels (MCLs). Several analytical parameters that have been monitored have never had a sample result with a concentration exceeding the MCL, or MCLs do not exist. These parameters include:

- Nitrate

- Total chromium
- Manganese
- Carbon dioxide
- Methane
- Alkalinity.

Source Area Remediation

SVE System

The SVE system operated from June 2010 to November 2012. The system was shut down in November 2012 and remained off through the second quarter 2014. During this period of operation, the total hydrocarbon mass removed by the SVE system was estimated to be 38,250 pounds or approximately 5,890 gallons (at a density of 6.5 pounds per gallon).

During the third quarter 2014, water levels on site decreased to the lowest levels observed since 2009. The SVE system was restarted on 8 July 2014 to remediate hydrocarbon-impacted, vadose zone soil that was not exposed during previous SVE system operation. The system was connected to onsite wells MW-1, MW-11, TP-1, TP-2, and VW-2.

During the fourth quarter 2014, the system operated at 94 percent uptime. Well VW-2 was shut down on 15 October because of low influent hydrocarbon concentrations and well MW-11 was shut down on 18 December because of low influent concentrations and low wellhead vacuum.

The SVE system influent was monitored bimonthly with a field photoionization detector and by laboratory analysis of soil gas samples. The SVE system was monitored to document and optimize hydrocarbon mass removal from the subsurface. Table 6 summarizes the laboratory analytical results for influent SVE system samples.

The average influent soil vapor TPHg concentration during the fourth quarter 2014 was 1,900 ppmv. Influent hydrocarbon concentrations increased until November, then decreased corresponding to increasing water levels. Water levels on site increased by approximately 8 feet between 12 November and 18 December and influent hydrocarbon concentrations decreased by approximately 90 percent.

The average mass removal rate by volatilization during the fourth quarter 2014 was approximately 28 pounds per day (lb/day), or approximately 1,700 pounds during the reporting period. The percentage of oxygen in soil vapor was approximately 19 percent during the fourth quarter 2014, indicative of biodegradation of petroleum hydrocarbons.

The estimated mass removal rate by biodegradation during the fourth quarter 2014 was approximately 27 lb/day, or approximately 1,600 pounds during the reporting period. The total hydrocarbon mass removed by the system to date is estimated to be 46,000 pounds or approximately 7,100 gallons (at a density of 6.5 pounds per gallon). Table 7 summarizes mass removal rates by volatilization and biodegradation.

Figures 6, 7, and 8 show soil vapor influent concentrations, mass removal by volatilization, and mass removal by biodegradation, respectively. Soil vapor sampling procedures are in Attachment C.

Oxygen Injection System

The oxygen injection system operated from October 2010 to March 2013. The system was shut down on 28 March 2013 in preparation for the expanded ISCO pilot test and remained shut off during the fourth quarter 2014.

Conclusions

Results of groundwater sampling and SVE operation and maintenance indicate the following conclusions:

- On- and offsite dissolved-phase hydrocarbon concentrations have decreased or remained stable since the expanded ISCO pilot test
- Approximately 0.01 foot of LNAPL was detected at well DW-5 but relatively low benzene concentrations (27 µg/l) indicated weathered LNAPL
- Water levels decreased to the lowest levels observed since 1993 and exposed deeper soil to SVE operation until increasing approximately 8 feet during December
- During the fourth quarter 2014, the total hydrocarbon mass removed by the system is estimated to be 3,300 pounds or approximately 510 gallons.

Recommendations

Based on the activities completed during this quarter, Arctos recommends the following tasks during the first quarter 2015 and beyond:

- Continue operation of the SVE system while water levels remain relatively low
- Continue groundwater monitoring and evaluate hydrocarbon concentration trends as water levels increase

- Discontinue testing groundwater samples for analytes that do not have MCLs or have MCLs that have never been exceeded in historical ISCO groundwater monitoring samples
- Evaluate options for additional ISCO injections.

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

Very truly yours,

ARCTOS ENVIRONMENTAL

Scott Stromberg
Project Geologist

Michael P. Purchase, P.E.
Principal Engineer

Copy: Kyle Waldron – 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 – Expanded ISCO Pilot Test VOC Concentrations
Table 5 – Expanded ISCO Pilot Test General Chemistry Concentrations
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
Attachment A – Groundwater Sampling QA/QC Procedures
Attachment B – Field Data Sheets
Attachment C – Historical Well and Groundwater Elevations
Attachment D – Historical Groundwater Analytical Results
Attachment E – Laboratory Analytical Reports and Chain-of-Custody Forms
Attachment F – Waste Manifests

References

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.

Arctos Environmental, 2013. *Work Plan for Expanded ISCO Pilot Test, 1619 1st Street, Livermore, California, Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0434*, 28 February.

Arctos Environmental, 2014. *Expanded In Situ Chemical Oxidation (ISCO) Pilot Test Report, Tesoro Site No. 67076 (Former Beacon 3604), 1619 1st Street, Livermore, California*, 2 October.

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	11/7/13	34.36	474.21	439.85
	1/21/14	33.23		440.98
	6/10/14	41.40		432.81
	8/13/14	48.64		425.57
	11/12/14	52.80		421.41
MW-2	11/7/13	35.09	472.98	437.89
	1/21/14	33.81		439.17
	6/10/14	41.65		431.33
	8/13/14	50.12		422.86
	11/12/14	DRY[(c)]		--
MW-3	11/7/13	34.60	473.37	438.77
	1/21/14	33.49		439.88
	6/10/14	41.62		431.75
	8/13/14	50.67		422.70
	11/12/14	DRY		--
MW-4	11/7/13	35.18	473.64	438.46
	1/21/14	34.07		439.57
	6/10/14	42.10		431.54
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-5	11/7/13	35.94	472.67	436.73
	1/21/14	34.65		438.02
	6/10/14	42.40		430.27
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-6	11/7/13	39.82	471.93	432.11
	1/21/14	35.42		436.51
	6/10/14	42.36		429.57
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-7	11/7/13	34.06	472.33	438.27
	1/21/14	33.11		439.22
	6/10/14	40.50		431.83

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TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7	8/13/14	DRY	472.33	--
(cont.)	11/12/14	DRY		--
MW-8	11/7/13	35.95	471.18	435.23
	1/21/14	34.63		436.55
	6/10/14	43.17		428.01
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-9	11/7/13	37.87	470.78	432.91
	1/21/14	36.31		434.47
	6/10/14	43.15		427.63
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-10	11/7/13	36.05	471.63	435.58
	1/21/14	34.55		437.08
	6/10/14	40.18		431.45
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-11	11/7/13	33.75	472.96	439.21
	1/21/14	32.43		440.53
	6/10/14	38.62		434.34
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-12	11/7/13	37.40	469.77	432.37
	1/21/14	35.94		433.83
	6/10/14	42.76		427.01
	8/13/14	DRY		--
	11/12/14	DRY		--
VW-2	11/7/13	DRY	472.57	--
	1/21/14	33.16		439.41
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	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	11/7/13	35.07	474.38	439.31
	1/21/14	33.80		440.58
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
TP-1	11/7/13	34.65	472.64	437.99
	1/21/14	33.38		439.26
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
TP-2	11/7/13	34.50	472.78	438.28
	1/21/14	33.25		439.53
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
DW-1	11/7/13	34.79	472.85	438.06
	1/21/14	33.57		439.28
	6/10/14	41.71		431.14
	8/13/14	51.02		421.83
	11/12/14	56.47		416.38
DW-2	11/7/13	36.94	471.61	434.67
	1/21/14	35.59		436.02
	6/10/14	43.35		428.26
	8/13/14	52.02		419.59
	11/12/14	56.52		415.09
DW-3	11/7/13	36.85	470.33	433.48
	1/21/14	35.32		435.01
	6/10/14	44.03		426.30
	8/13/14	54.13		416.20
	11/12/14	58.59		411.74
DW-4	11/7/13	36.45	468.48	432.03
	1/21/14	35.99		432.49
	6/10/14	44.63		423.85

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-4	8/13/14	54.37	468.48	414.11
(cont.)	11/12/14	58.86		409.62
DW-5	11/7/13	36.97	471.86	434.89
	1/21/14	34.45		437.41
	6/10/14	43.51		428.35
	8/13/14	51.13		420.73
	11/13/14	56.40		415.46
DW-6	11/7/13	38.24	471.77	433.53
	1/21/14	37.03		434.74
	6/10/14	44.40		427.37
	8/13/14	52.71		419.06
	11/12/14	57.14		414.63
DW-7	11/7/13	38.25	470.07	431.82
	1/21/14	36.70		433.37
	6/10/14	44.67		425.40
	8/13/14	53.47		416.60
	11/12/14	57.99		412.08
DW-8	11/7/13	33.54	472.31	438.77
	1/21/14	33.03		439.28
	6/10/14	40.60		431.71
	8/13/14	50.56		421.75
	11/12/14	55.87		416.44
DW-9	11/7/13	37.76	469.80	432.04
	1/21/14	36.26		433.54
	6/10/14	44.05		425.75
	8/13/14	52.61		417.19
	11/12/14	56.94		412.86

(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) 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)	Ethyl-benzene[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	11/7/13	4,300	0.82	2.9	76	160	ND<50[b]	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/14	9,600	2.5	5.2	130	250	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<15	ND<0.5	ND<0.5
	6/11/14	2,500	ND<0.5	1.6	27	58	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	8/13/14	1,300	2.9	3.6	9.3	25	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	11/12/14	5,400	33	48	39	530	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.4	ND<50	ND<8	ND<0.5	ND<0.5
MW-2	11/7/13	4,700	140	7.5	160	170	28	ND<0.9	ND<0.9	ND<0.9	22	ND<90	ND<9	ND<0.9	ND<0.9
	1/22/14	3,000	140	9.0	68	92	43	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	6,900	520	40	300	320	120	ND<0.5	ND<0.5	1.4	100	ND<80	ND<25	ND<0.5	ND<0.5
	8/14/14	10,000	1500	41	380	300	240	ND<0.5	ND<0.5	2.6	160	ND<300	ND<20	ND<0.5	ND<0.5
	11/12/14	NS[c]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	11/7/13	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
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-5	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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-5	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	11/7/13	12,000	1,200	62	190	81	100	ND<2.5	ND<2.5	ND<2.5	66	ND<250	ND<25	ND<2.5	ND<2.5
	1/22/14	15,000	1,100	37	120	52	110	ND<2.5	ND<2.5	ND<2.5	190	ND<250	ND<25	ND<2.5	ND<2.5
	6/10/14	11,000	860	20	50	20	120	ND<1.5	ND<1.5	ND<1.5	280	ND<150	ND<15	ND<1.5	ND<1.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	11/7/13	330	ND<0.5	ND<0.5	0.51	0.73	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	1000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-8	11/7/13	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
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	80	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	11/7/13	1,400	3.1	ND<0.5	0.70	0.58	4.2	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	2,000	2.4	ND<0.5	0.81	0.79	2.7	ND<0.5	ND<0.5	ND<0.5	7.6	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	780	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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-10	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	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.)	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	11/7/13	8,800	50	54	380	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	12	ND<150	ND<15	ND<1.5	ND<1.5
	1/22/14	15,000	44	45	390	910	ND<1.5	ND<1.5	ND<1.5	ND<1.5	7.7	ND<150	ND<15	ND<1.5	ND<1.5
	6/10/14	660	3.7	1.2	7.0	5.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-12	11/7/13	4,600	15	2.4	47	13	0.50	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	3,400	4.3	1.5	12	2.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	4,500	10	2.9	67	13	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-2	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	11/7/13	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
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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)
TP-1	11/7/13	2,800	14	1.8	19	7.3	43	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	3,400	11	1.4	16	5.2	41	ND<0.5	ND<0.5	ND<0.5	22	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-2	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-1	11/7/13	5,200	69	13	130	200	18	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<8	ND<0.5	ND<0.5
	1/22/14	5,000	51	13	98	110	12	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	3,600	56	9.4	130	220	18	ND<0.5	ND<0.5	ND<0.5	14	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	1,200	24	1.4	7.2	1.4	12	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	160	3.0	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	9.2	ND<50	ND<5	ND<0.5	ND<0.5
DW-2	11/7/13	6,500	520	18	57	17	150	ND<0.9	ND<0.9	2.2	310	ND<90	ND<9	ND<0.9	ND<0.9
	1/22/14	8,500	490	14	55	15	150	ND<0.9	ND<0.9	1.9	380	ND<300	ND<9	ND<0.9	ND<0.9
	6/11/14	4,400	330	6.5	26	7.3	100	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
	8/14/14	3,000	170	3.0	5.8	2.7	58	ND<0.5	ND<0.5	0.76	410	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/14	1,100	0.83	ND<0.5	ND<0.5	ND<0.5	9.0	ND<0.5	ND<0.5	ND<0.5	310	ND<50	ND<5	ND<0.5	ND<0.5
DW-3	11/7/13	960	ND<0.5	ND<0.5	5.1	2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	860	ND<0.5	ND<0.5	3.0	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
	6/11/14	1900	0.64	ND<0.5	23	9.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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-3	8/13/14	430	5.3	ND<0.5	1.4	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
(cont.)	11/12/14	290	0.72	ND<0.5	ND<0.5	ND<0.5	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	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	53	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-5	11/7/13	26,000	62	12	1000	1,400	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	1/22/14	17,000	66	6.1	440	470	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<400	ND<40	ND<2.5	ND<2.5
	6/11/14	18,000	53	4.3	340	410	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	8/14/14	15,000	60	5.0	330	570	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	11/13/14	18,000	27	4.3	290	510	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
DW-6	11/7/13	2,400	14	1.7	5.6	3.1	10	ND<0.5	ND<0.5	ND<0.5	35	ND<80	ND<5	ND<0.5	ND<0.5
	1/22/14	3,000	6.8	0.98	3.6	2.9	10	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	5,400	19	3.0	39	5.6	9.2	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<8	ND<0.5	ND<0.5
	8/14/14	4,300	16	2.9	29	6.0	6.8	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<10	ND<0.5	ND<0.5
	11/13/14	3,400	2.4	1.1	ND<0.5	0.65	5.3	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	ND<0.5	ND<0.5
DW-7	11/7/13	9,700	260	8.4	200	63	52	ND<1.5	ND<1.5	ND<1.5	170	ND<150	ND<15	ND<1.5	ND<1.5
	1/22/14	15,000	380	15	430	200	77	ND<1.5	ND<1.5	ND<1.5	230	ND<150	ND<15	ND<1.5	ND<1.5
	6/11/14	12,000	380	13	370	190	79	ND<1.5	ND<1.5	ND<1.5	240	ND<150	ND<15	ND<1.5	ND<1.5
	8/14/14	2,400	110	3.2	30	17	37	ND<0.5	ND<0.5	ND<0.5	190	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	1,000	8.9	ND<0.5	0.61	ND<0.5	17	ND<0.5	ND<0.5	ND<0.5	160	ND<50	ND<5	ND<0.5	ND<0.5
DW-8	11/7/13	56,000	1800	2800	2100	7,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	37	ND<250	ND<25	ND<2.5	ND<2.5
	1/22/14	40,000	1,100	1,200	1,200	4,300	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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-8	6/11/14	52,000	2,400	2,100	1,700	6,400	ND<7	ND<7	ND<7	ND<7	67	ND<700	ND<70	ND<7	ND<7
(cont.)	8/14/14	44,000	3,200	1,200	1,700	6,100	ND<7	ND<7	ND<7	ND<7	70	ND<700	ND<70	ND<7	ND<7
	11/13/14	53,000	3,200	790	2,200	7,100	ND<7	ND<7	ND<7	ND<7	65	ND<700	ND<70	ND<7	ND<7
DW-9	11/7/13	8,000	120	5.9	100	38	25	ND<1.5	ND<1.5	ND<1.5	73	ND<150	ND<15	ND<1.5	ND<1.5
	1/22/14	14,000	180	6.7	200	65	27	ND<1.5	ND<1.5	ND<1.5	77	ND<150	ND<15	ND<1.5	ND<1.5
	6/11/14	13,000	380	11	300	81	41	ND<2.5	ND<2.5	ND<2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
	8/14/14	9,100	170	10	120	26	24	ND<1.5	ND<1.5	ND<1.5	70	ND<150	ND<15	ND<1.5	ND<1.5
	11/13/14	9,600	130	6.8	36	11	22	ND<1.5	ND<1.5	ND<1.5	53	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)	Ethyl-benzene[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
	4/24/13	9,700	230	160	370	1,200	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	8/22/13	23,000	360	430	740	2,300	ND<2	ND<2	ND<2	ND<2	25	ND<200	ND<20	ND<2	ND<2
	11/7/13	7,400	70	94	200	400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	14	ND<90	ND<9	ND<0.9	ND<0.9
	1/22/14	16,000	190	280	460	1,600	ND<0.9	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<10	ND<0.9	ND<0.9
	6/10/14	50,000	1,600	4,000	1,200	5,700	ND<9	ND<9	ND<9	ND<9	110	ND<900	ND<90	ND<9	ND<9
	8/13/14	24,000	530	980	690	3,100	ND<5	ND<5	ND<5	ND<5	47	ND<500	ND<50	ND<5	ND<5
	11/13/14	24,000	480	510	620	2,300	ND<5	ND<5	ND<5	ND<5	37	ND<500	ND<50	ND<5	ND<5
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

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)	Ethyl-benzene[(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-2	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	4/23/13	160	5.6	3.7	1.3	3.6	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	350	2.4	2.4	2.2	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	6.4	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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
	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
	4/22/13	ND<50	0.51	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	580	2.6	1.0	7.2	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

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)	Ethyl-benzene[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	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	11/12/14	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
	4/23/13	140	ND<0.5	43	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	70	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
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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

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)	Ethyl-benzene[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-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
(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
	4/23/13	ND<50	ND<0.5	4.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	180	ND<0.5	ND<0.5	3.0	6.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.76	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-6	7/23/08	4,400	260	78	98	340	180	ND<0.5	ND<0.5	1.6	190	ND<80	ND<9	ND<0.5	ND<0.5
	10/13/08	1,400	150	1.6	1.5	3.5	7.4	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<50	ND<0.5	ND<0.5
	5/5/10[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
	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
	4/23/13	57	ND<0.5	11	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	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)	Ethyl-benzene[(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	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	6/11/14	70	8.6	ND<0.5	ND<0.5	ND<0.5	3.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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	1.5	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
	4/23/13	ND<50	ND<0.5	5.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	2,100	18	0.77	7.5	2.0	12	ND<0.5	ND<0.5	ND<0.5	82	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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

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)	Ethyl-benzene[(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-8	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
(cont.)	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
	4/24/13	33,000	1,700	4,200	430	5,600	ND<6	ND<6	ND<6	ND<6	ND<30	ND<600	ND<60	ND<6	ND<6
	8/22/13	19,000	130	440	260	1,900	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<80	ND<4	ND<4
	11/7/13	18,000	400	520	170	1,700	ND<4	ND<4	ND<4	ND<4	23	ND<400	ND<40	ND<4	ND<4
	1/22/14	41,000	550	1,600	560	4,200	ND<4	ND<4	ND<4	ND<4	22	ND<400	ND<40	ND<4	ND<4
	6/11/14	52,000	1,200	3,300	940	6,400	ND<5	ND<5	ND<5	ND<5	28	ND<500	ND<50	ND<5	ND<5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/13/14	53,000	1,200	3,900	1,000	8,000	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
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
	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
	4/24/13	8,800	42	480	210	1,100	ND<1.5	ND<1.5	ND<1.5	ND<1.5	11	ND<150	ND<15	ND<1.5	ND<1.5
	8/22/13	7,500	14	250	190	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<400	ND<15	ND<1.5	ND<1.5
	11/7/13	1,100	4.9	30	14	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5

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)	Ethyl-benzene[(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	1/22/14	1,600	1.9	9.7	8.6	16	0.50	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	6/11/14	2,000	ND<0.5	ND<0.5	1.5	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
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	3,000	5.4	97	49	340	ND<0.5	ND<0.5	ND<0.5	ND<0.5	31	ND<50	ND<5	ND<0.5	ND<0.5
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
	4/24/13	1,800	12	11	24	81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/22/13	1,100	2.2	ND<0.5	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/7/13	810	2.6	1.7	1.5	7.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	2,100	7.2	2.7	1.8	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	6/10/14	2,600	10	1.8	3.4	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	8/13/14	1,100	2.9	ND<0.5	0.58	0.92	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	11/12/14	1,800	7.7	1.2	3.5	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5

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

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

(c) Baseline remediation system values.

(d) NS - Not sampled.

(e) Primarily compounds not found in typical gasoline.

TABLE 4

EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Event	Sample Date	TPHg[a] (µg/l)	Benzene[a] (µg/l)	Toluene[a] (µg/l)	Ethyl-benzene[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-2	Baseline	4/23/13	430	10	2.2	3.8	8.5	13	ND<0.5[b]	ND<0.5	ND<0.5	6.6	ND<50	ND<8	ND<0.5	ND<0.5
	Post-Inj #1	6/24/13	1,700	7.2	0.91	12	16	9.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #2	8/21/13	11,000	560	30	430	440	88	ND<0.5	ND<0.5	1.0	48	ND<50	ND<8	ND<0.5	ND<0.5
	Post-Inj #3	11/7/13	4,700	140	7.5	160	170	28	ND<0.9	ND<0.9	ND<0.9	22	ND<90	ND<9	ND<0.9	ND<0.9
	1Q14	1/22/14	3,000	140	9.0	68	92	43	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	6,900	520	40	300	320	120	ND<0.5	ND<0.5	1.4	100	ND<80	ND<25	ND<0.5	ND<0.5
	3Q14	8/14/14	10,000	1,500	41	380	300	240	ND<0.5	ND<0.5	2.6	160	ND<300	ND<20	ND<0.5	ND<0.5
	4Q14	11/12/14	NS[c]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	Baseline	4/24/13	8,600	880	22	89	25	190	ND<1.5	ND<1.5	2.7	700	ND<400	ND<15	ND<1.5	ND<1.5
	Post-Inj #1	6/25/13	6,800	350	7.0	26	9.3	81	ND<0.9	ND<0.9	1.0	280	ND<800	ND<9	ND<0.9	ND<0.9
	Post-Inj #2	8/22/13	14,000	1,500	59	290	150	110	ND<1.5	ND<1.5	ND<1.5	93	ND<400	ND<15	ND<1.5	ND<1.5
	Post-Inj #3	11/7/13	12,000	1,200	62	190	81	100	ND<2.5	ND<2.5	ND<2.5	66	ND<250	ND<25	ND<2.5	ND<2.5
	1Q14	1/22/14	15,000	1,100	37	120	52	110	ND<2.5	ND<2.5	ND<2.5	190	ND<250	ND<25	ND<2.5	ND<2.5
	2Q14	6/10/14	11,000	860	20	50	20	120	ND<1.5	ND<1.5	ND<1.5	280	ND<150	ND<15	ND<1.5	ND<1.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	Baseline	4/23/13	720	0.65	0.61	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #1	6/24/13	1,700	1.3	ND<0.5	2.7	2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #2	8/21/13	880	0.54	ND<0.5	1.7	0.82	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #3	11/7/13	330	ND<0.5	ND<0.5	0.51	0.73	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1Q14	1/22/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/10/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-8	Baseline	4/23/13	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
	Post-Inj #1	6/25/13	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
	Post-Inj #2	8/22/13	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

TABLE 4

EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Event	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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-8	Post-Inj #3	11/7/13	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
(cont.)	1Q14	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	80	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	Baseline	4/23/13	1,900	4.5	0.75	1.7	1.0	3.4	ND<0.5	ND<0.5	ND<0.5	5.0	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #1	6/25/13	2,800	20	0.91	3.8	2.7	6.0	ND<0.5	ND<0.5	ND<0.5	29	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #2	8/22/13	1,500	20	0.70	1.7	0.84	9.0	ND<0.5	ND<0.5	ND<0.5	40	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #3	11/7/13	1,400	3.1	ND<0.5	0.70	0.58	4.2	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5
	1Q14	1/22/14	2,000	2.4	ND<0.5	0.81	0.79	2.7	ND<0.5	ND<0.5	ND<0.5	7.6	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	780	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	Baseline	4/22/13	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
	Post-Inj #1	6/25/13	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
	Post-Inj #2	8/21/13	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
	Post-Inj #3	11/7/13	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
	1Q14	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	Baseline	4/24/13	5,800	16	18	140	640	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	Post-Inj #1	6/24/13	8,000	24	34	190	830	ND<0.9	ND<0.9	ND<0.9	ND<0.9	5.8	ND<90	ND<9	ND<0.9	ND<0.9
	Post-Inj #2	8/22/13	9,600	26	32	260	940	ND<0.9	ND<0.9	ND<0.9	ND<0.9	8.6	ND<200	ND<20	ND<0.9	ND<0.9
	Post-Inj #3	11/7/13	8,800	50	54	380	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	12	ND<150	ND<15	ND<1.5	ND<1.5
	1Q14	1/22/14	15,000	44	45	390	910	ND<1.5	ND<1.5	ND<1.5	ND<1.5	7.7	ND<150	ND<15	ND<1.5	ND<1.5
	2Q14	6/10/14	660	3.7	1.2	7.0	5.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 4

EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Event	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-12	Baseline	4/24/13	1,400	2.2	0.78	7.7	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<100	ND<20	ND<0.5	ND<0.5
	Post-Inj #1	6/25/13	4,400	8.8	5.2	26	13	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #2	8/22/13	4,500	15	2.4	33	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
	Post-Inj #3	11/7/13	4,600	15	2.4	47	13	0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1Q14	1/22/14	3,400	4.3	1.5	12	2.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/10/14	4,500	10	2.9	67	13	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-1	Baseline	4/24/13	9,700	230	160	370	1,200	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	Post-Inj #2	8/22/13	23,000	360	430	740	2,300	ND<2	ND<2	ND<2	ND<2	25	ND<200	ND<20	ND<2	ND<2
	Post-Inj #3	11/7/13	7,400	70	94	200	400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	14	ND<90	ND<9	ND<0.9	ND<0.9
	1Q14	1/22/14	16,000	190	280	460	1,600	ND<0.9	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<10	ND<0.9	ND<0.9
	2Q14	6/10/14	50,000	1,600	4,000	1,200	5,700	ND<9	ND<9	ND<9	ND<9	110	ND<900	ND<90	ND<9	ND<9
	3Q14	8/13/14	24,000	530	980	690	3,100	ND<5	ND<5	ND<5	ND<5	47	ND<500	ND<50	ND<5	ND<5
	4Q14	11/13/14	24,000	480	510	620	2,300	ND<5	ND<5	ND<5	ND<5	37	ND<500	ND<50	ND<5	ND<5
IP-5	Baseline	4/23/13	ND<50	ND<0.5	4.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #2	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Post-Inj #3	11/7/13	180	ND<0.5	ND<0.5	3.0	6.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1Q14	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4Q14	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.76	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-8	Baseline	4/24/13	33,000	1,700	4,200	430	5,600	ND<6	ND<6	ND<6	ND<6	ND<30	ND<600	ND<60	ND<6	ND<6
	Post-Inj #2	8/22/13	19,000	130	440	260	1,900	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<80	ND<4	ND<4
	Post-Inj #3	11/7/13	18,000	400	520	170	1,700	ND<4	ND<4	ND<4	ND<4	23	ND<400	ND<40	ND<4	ND<4

TABLE 4

EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Event	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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-8	1Q14	1/22/14	41,000	550	1,600	560	4,200	ND<4	ND<4	ND<4	ND<4	22	ND<400	ND<40	ND<4	ND<4
(cont.)	2Q14	6/11/14	52,000	1,200	3,300	940	6,400	ND<5	ND<5	ND<5	ND<5	28	ND<500	ND<50	ND<5	ND<5
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/13/14	53,000	1,200	3,900	1,000	8,000	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
IP-9	Baseline	4/24/13	8,800	42	480	210	1,100	ND<1.5	ND<1.5	ND<1.5	ND<1.5	11	ND<150	ND<15	ND<1.5	ND<1.5
	Post-Inj #2	8/22/13	7,500	14	250	190	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<400	ND<15	ND<1.5	ND<1.5
	Post-Inj #3	11/7/13	1,100	4.9	30	14	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	1Q14	1/22/14	1,600	1.9	9.7	8.6	16	0.50	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	2,000	ND<0.5	ND<0.5	1.5	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
	3Q14	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4Q14	11/12/14	3,000	5.4	97	49	340	ND<0.5	ND<0.5	ND<0.5	ND<0.5	31	ND<50	ND<5	ND<0.5	ND<0.5
IP-10	Baseline	4/24/13	1,800	12	11	24	81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	Post-Inj #2	8/22/13	1,100	2.2	ND<0.5	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #3	11/7/13	810	2.6	1.7	1.5	7.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1Q14	1/22/14	2,100	7.2	2.7	1.8	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2Q14	6/10/14	2,600	10	1.8	3.4	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	3Q14	8/13/14	1,100	2.9	ND<0.5	0.58	0.92	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	4Q14	11/12/14	1,800	7.7	1.2	3.5	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
DW-1	Baseline	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	0.78	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #1	6/24/13	12,000	110	66	280	860	13	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #2	8/21/13	1,100	18	5.8	34	82	5.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #3	11/7/13	5,200	69	13	130	200	18	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<8	ND<0.5	ND<0.5
	1Q14	1/22/14	5,000	51	13	98	110	12	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	3,600	56	9.4	130	220	18	ND<0.5	ND<0.5	ND<0.5	14	ND<50	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	1,200	24	1.4	7.2	1.4	12	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<5	ND<0.5	ND<0.5
	4Q14	11/12/14	160	3.0	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	9.2	ND<50	ND<5	ND<0.5	ND<0.5

TABLE 4

EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Event	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(a)] (µg/l)	Total Xylenes[(a)] (µg/l)	MTBE[(a)] (µg/l)	DIPE[(a)] (µg/l)	ETBE[(a)] (µg/l)	TAME[(a)] (µg/l)	TBA[(a)] (µg/l)	Methanol[(a)] (µg/l)	Ethanol[(a)] (µg/l)	1,2-DCA[(a)] (µg/l)	EDB[(a)] (µg/l)
DW-2	Baseline	4/24/13	4,500	320	7.2	26	9.5	100	ND<0.5	ND<0.5	1.3	370	ND<80	ND<5	ND<0.5	ND<0.5
	Post-Inj #1	6/25/13	4,900	250	6.2	58	26	100	ND<0.5	ND<0.5	1.2	400	ND<50	ND<8	ND<0.5	ND<0.5
	Post-Inj #2	8/22/13	8,300	600	23	96	42	240	ND<0.5	ND<0.5	2.5	500	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #3	11/7/13	6,500	520	18	57	17	150	ND<0.9	ND<0.9	2.2	310	ND<90	ND<9	ND<0.9	ND<0.9
	1Q14	1/22/14	8,500	490	14	55	15	150	ND<0.9	ND<0.9	1.9	380	ND<300	ND<9	ND<0.9	ND<0.9
	2Q14	6/11/14	4,400	330	6.5	26	7.3	100	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
	3Q14	8/14/14	3,000	170	3.0	5.8	2.7	58	ND<0.5	ND<0.5	0.76	410	ND<50	ND<5	ND<0.5	ND<0.5
	4Q14	11/13/14	1,100	0.83	ND<0.5	ND<0.5	ND<0.5	9.0	ND<0.5	ND<0.5	ND<0.5	310	ND<50	ND<5	ND<0.5	ND<0.5
DW-3	Baseline	4/23/13	66	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #1	6/25/13	5,600	1.1	1.1	120	76	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #2	8/21/13	840	1.4	ND<0.5	3.2	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
	Post-Inj #3	11/7/13	960	ND<0.5	ND<0.5	5.1	2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1Q14	1/22/14	860	ND<0.5	ND<0.5	3.0	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
	2Q14	6/11/14	1,900	0.64	ND<0.50	23	9.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	3Q14	8/13/14	430	5.3	ND<0.5	1.4	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
	4Q14	11/12/14	290	0.72	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-5	Baseline	4/24/13	3,000	32	2.5	38	31	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	Post-Inj #1	6/25/13	120,000	120	ND<4	1,400	2,200	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<200	ND<4	ND<4
	Post-Inj #2	8/22/13	22,000	58	11	770	1,200	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	Post-Inj #3	11/7/13	26,000	62	12	1,000	1,400	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	1Q14	1/22/14	17,000	66	6.1	440	470	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<400	ND<40	ND<2.5	ND<2.5
	2Q14	6/11/14	18,000	53	4.3	340	410	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	3Q14	8/14/14	15,000	60	5.0	330	570	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	4Q14	11/13/14	18,000	27	4.3	290	510	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
DW-6	Baseline	4/24/13	1,000	2.9	1.1	2.1	0.98	1.8	ND<0.5	ND<0.5	ND<0.5	6.2	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #1	6/25/13	7,000	23	3.0	80	13	9.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #2	8/22/13	5,700	28	3.4	80	11	12	ND<0.5	ND<0.5	ND<0.5	37	ND<90	ND<8	ND<0.5	ND<0.5

TABLE 4

EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Event	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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	Post-Inj #3	11/7/13	2,400	14	1.7	5.6	3.1	10	ND<0.5	ND<0.5	ND<0.5	35	ND<80	ND<5	ND<0.5	ND<0.5
(cont.)	1Q14	1/22/14	3,000	6.8	0.98	3.6	2.9	10	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	2Q14	6/11/14	5,400	19	3.0	39	5.6	9.2	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<8	ND<0.5	ND<0.5
	3Q14	8/14/14	4,300	16	2.9	29	6.0	6.8	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<10	ND<0.5	ND<0.5
	4Q14	11/13/14	3,400	2.4	1.1	ND<0.5	0.65	5.3	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	ND<0.5	ND<0.5
DW-7	Baseline	4/23/13	3,300	230	9.2	22	10	50	ND<0.5	ND<0.5	0.55	160	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #1	6/25/13	27,000	590	32	960	640	100	ND<0.5	ND<0.5	0.95	330	ND<80	ND<20	ND<4	ND<0.5
	Post-Inj #2	8/22/13	15,000	420	18	520	320	96	ND<2.5	ND<2.5	ND<2.5	310	ND<250	ND<25	ND<2.5	ND<2.5
	Post-Inj #3	11/7/13	9,700	260	8.4	200	63	52	ND<1.5	ND<1.5	ND<1.5	170	ND<150	ND<15	ND<1.5	ND<1.5
	1Q14	1/22/14	15,000	380	15	430	200	77	ND<1.5	ND<1.5	ND<1.5	230	ND<150	ND<15	ND<1.5	ND<1.5
	2Q14	6/11/14	12,000	380	13	370	190	79	ND<1.5	ND<1.5	ND<1.5	240	ND<150	ND<15	ND<1.5	ND<1.5
	3Q14	8/14/14	2,400	110	3.2	30	17	37	ND<0.5	ND<0.5	ND<0.5	190	ND<50	ND<5	ND<0.5	ND<0.5
	4Q14	11/12/14	1,000	8.9	ND<0.5	0.61	ND<0.5	17	ND<0.5	ND<0.5	ND<0.5	160	ND<50	ND<5	ND<0.5	ND<0.5
DW-8	Baseline	4/24/13	5,900	350	370	140	790	ND<0.9	ND<0.9	ND<0.9	ND<0.9	8.0	ND<200	ND<80	ND<0.9	ND<0.9
	Post-Inj #1	6/24/13	55,000	2,200	3,200	2,100	7,400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	56	ND<90	ND<50	ND<0.9	ND<0.9
	Post-Inj #2	8/22/13	16,000	380	240	500	1,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<25	ND<2.5	ND<2.5
	Post-Inj #3	11/7/13	56,000	1,800	2,800	2,100	7,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	37	ND<250	ND<25	ND<2.5	ND<2.5
	1Q14	1/22/14	40,000	1,100	1,200	1,200	4,300	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	2Q14	6/11/14	52,000	2,400	2,100	1,700	6,400	ND<7	ND<7	ND<7	ND<7	67	ND<700	ND<70	ND<7	ND<7
	3Q14	8/14/14	44,000	3,200	1,200	1,700	6,100	ND<7	ND<7	ND<7	ND<7	70	ND<700	ND<70	ND<7	ND<7
	4Q14	11/13/14	53,000	3,200	790	2,200	7,100	ND<7	ND<7	ND<7	ND<7	65	ND<700	ND<70	ND<7	ND<7
DW-9	Baseline	4/24/13	3,200	18	1.7	7.8	7.2	21	ND<0.5	ND<0.5	ND<0.5	67	ND<50	ND<5	ND<0.5	ND<0.5
	Post-Inj #1	6/25/13	27,000	490	17	1,100	430	30	ND<4	ND<4	ND<4	62	ND<400	ND<40	ND<4	ND<4
	Post-Inj #2	8/22/13	19,000	320	13	690	240	28	ND<4	ND<4	ND<4	87	ND<2,000	ND<40	ND<4	ND<4
	Post-Inj #3	11/7/13	8,000	120	5.9	100	38	25	ND<1.5	ND<1.5	ND<1.5	73	ND<150	ND<15	ND<1.5	ND<1.5
	1Q14	1/22/14	14,000	180	6.7	200	65	27	ND<1.5	ND<1.5	ND<1.5	77	ND<150	ND<15	ND<1.5	ND<1.5
	2Q14	6/11/14	13,000	380	11	300	81	41	ND<2.5	ND<2.5	ND<2.5	100	ND<250	ND<25	ND<2.5	ND<2.5

TABLE 4

EXPANDED ISCO PILOT TEST VOC CONCENTRATIONS
TESORO - LIVERMORE, 67076

Monitoring Well	Event	Sample Date	TPHg[(a)] (µg/l)	Benzene[(a)] (µg/l)	Toluene[(a)] (µg/l)	Ethyl-benzene[(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-9	3Q14	8/14/14	9,100	170	10	120	26	24	ND<1.5	ND<1.5	ND<1.5	70	ND<150	ND<15	ND<1.5	ND<1.5
(cont.)	4Q14	11/13/14	9,600	130	6.8	36	11	22	ND<1.5	ND<1.5	ND<1.5	53	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 5

EXPANDED 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-2	11/7/13	ND<1[h]	72	ND<0.015	ND<0.005	1.0	2.5	60	ND<1	ND<0.1	35,600	1,150	586	980
	1/22/14	ND<0.5	61	ND<0.015	ND<0.005	1.2	2.9	54	ND<1	0.59	69,700	2,130	640	760
	6/11/14	ND<0.1	2.7	ND<0.015	ND<0.005	2.6	2.8	74	ND<1	0.51	64,800	4,260	676	790
	8/14/14	ND<0.1	13	0.018	ND<0.005	6.6	3.1	64	ND<1	2.0	23,300	1,330	700	830
	11/12/14	NS[i]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	11/7/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	1.0	2.1	75	ND<1	0.61	30,300	4,210	497	955
	1/22/14	ND<1	ND<5	ND<0.015	ND<0.005	1.2	2.1	68	ND<1	0.82	47,200	7,210	539	695
	6/10/14	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.4	2.2	78	ND<1	0.60	17,000	2,980	604	730
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	11/7/13	ND<0.5	27	ND<0.015	ND<0.005	0.21	1.5	74	ND<1	ND<0.1	21,100	358	418	605
	1/22/14	ND<0.1	23	ND<0.015	ND<0.005	0.42	1.6	71	ND<1	ND<0.1	25,100	1,330	448	600
	6/10/14	ND<0.1	15	ND<0.015	ND<0.005	0.75	1.9	88	ND<1	0.17	33,600	281	574	700
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-8	11/7/13	5.1	60	ND<0.015	ND<0.005	ND<0.1	0.51	55	2.4	ND<0.1	12,300	1.2	373	870
	1/22/14	1.3	64	ND<0.015	ND<0.005	ND<0.1	0.55	52	ND<1	ND<0.1	17,500	7.6	380	605
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-9	11/7/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	1.9	1.8	69	ND<1	0.57	21,200	280	485	900
	1/22/14	ND<0.5	ND<2.5	ND<0.015	ND<0.005	1.8	1.7	57	ND<1	0.62	32,200	426	473	600
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	11/7/13	1.2	89	ND<0.015	0.015	ND<0.1	0.022	61	14	ND<0.1	11,500	20	556	1,080
	1/21/14	1.4	82	ND<0.015	0.014	ND<0.1	0.040	55	15	ND<0.1	19,200	14.7	557	795

TABLE 5

EXPANDED 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-10	6/10/14	1.1	80	ND<0.015	ND<0.005	ND<0.1	0.34	52	5.4	ND<0.1	6,210	1.4	562	805
(cont.)	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	11/7/13	ND<1	190	0.049	ND<0.005	0.13	0.45	1,300	ND<1	ND<0.1	21,400	185	556	3,950
	1/22/14	ND<1	100	0.029	ND<0.005	0.12	0.54	850	ND<1	0.11	48,500	165	2,250	2,720
	6/10/14	ND<0.1	7.2	ND<0.015	0.0052	1.7	0.073	78	ND<1	0.36	1,910	16.8	626	770
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-12	11/7/13	ND<0.5	14	ND<0.015	ND<0.005	0.37	1.7	66	ND<1	0.20	18,000	1,980	421	850
	1/22/14	1.8	33	ND<0.015	ND<0.005	ND<0.1	1.1	62	ND<1	ND<0.1	24,300	2,250	402	610
	6/10/14	ND<0.1	38	0.016	ND<0.005	2.6	1.0	58	ND<1	0.45	10,000	1,780	425	600
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IP-1	11/7/13	ND<1	1,100	0.35	0.066	0.11	0.011	8,900	92	ND<0.1	ND<1.7	136	20,700	27,700
	1/22/14	ND<1	680	0.20	0.0065	0.27	0.031	2,600	1.1	ND<0.1	352	842	6,570	9,800
	6/10/14	ND<0.1	180	0.14	ND<0.005	0.60	0.079	1,700	ND<1	ND<0.1	598	2,650	3,060	3,960
	8/13/14	ND<0.5	360	0.47	ND<0.005	0.68	0.12	2,700	ND<1	ND<0.1	1,080	1,390	4,860	6,240
	11/13/14	ND<0.1	300	0.21	ND<0.01	0.46	0.086	2,000	ND<2	ND<0.1	1,340	1,770	3,800	4,820
IP-5	11/7/13	ND<0.5	41	ND<0.015	ND<0.005	ND<0.1	0.17	38	ND<1	ND<0.1	4,280	22	311	510
	1/21/14	0.39	38	ND<0.015	ND<0.005	ND<0.1	0.41	40	ND<1	ND<0.1	11,400	334	313	470
	6/10/14	ND<0.1	27	ND<0.015	ND<0.005	ND<0.1	1.8	42	ND<1	ND<0.1	4,900	202	343	550
	8/13/14	ND<0.1	35	ND<0.015	ND<0.005	ND<0.1	1.4	48	ND<1	ND<0.1	5,730	123	348	550
	11/12/14	0.52	39	ND<0.015	ND<0.005	ND<0.1	1.1	42	ND<1	ND<0.1	9,200	232	306	610
IP-8	11/7/13	ND<1	750	0.14	0.026	ND<0.1	0.017	5,800	13	ND<0.1	221	122	8,900	10,800
	1/22/14	ND<1	840	0.21	0.010	ND<0.1	0.043	3,600	9.7	ND<0.1	632	216	7,080	11,800
	6/11/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 5

EXPANDED 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-8	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	11/13/14	ND<0.1	390	0.32	ND<0.01	0.26	0.064	2,300	ND<2	ND<0.1	628	716	4,200	5,700
IP-9	11/7/13	ND<0.5	260	0.019	0.0067	ND<0.1	ND<0.005	2,500	7.1	ND<0.1	294	3.2	5,600	654
	1/22/14	ND<0.5	320	0.10	0.022	ND<0.1	0.014	3,500	16	ND<0.1	505	11	6,280	6,750
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	ND<0.2	560	0.75	ND<0.025	0.26	0.048	4,100	ND<2	ND<0.1	538	14	7,120	9,250
IP-10	11/7/13	ND<0.5	3.8	ND<0.015	ND<0.005	0.63	2.7	56	ND<1	ND<0.1	4,960	577	294	495
	1/22/14	ND<0.1	1.4	ND<0.015	ND<0.005	1.1	2.8	58	ND<1	0.30	18,100	1,150	306	455
	6/10/14	ND<0.1	1.7	ND<0.015	ND<0.005	0.86	2.7	64	ND<1	0.16	4,850	1,160	339	500
	8/13/14	ND<0.1	3.3	ND<0.015	ND<0.005	1.3	3.3	59	ND<1	ND<0.1	16,600	658	335	495
	11/12/14	ND<0.1	1.3	ND<0.015	ND<0.005	1.6	3.5	60	ND<1	0.22	6,980	477	340	590
DW-1	11/7/13	ND<0.5	27	ND<0.015	ND<0.005	ND<0.1	4.5	180	ND<1	ND<0.1	29,700	1,000	820	1,300
	1/22/14	ND<1	13	ND<0.015	ND<0.005	0.91	4.1	140	ND<1	0.14	57,100	2,030	715	865
	6/11/14	ND<0.1	27	ND<0.015	ND<0.005	ND<0.1	3.1	140	ND<1	ND<0.1	46,500	1,270	690	815
	8/13/14	ND<0.1	29	ND<0.015	ND<0.005	1.3	3.4	170	ND<1	ND<0.1	27,700	2,070	769	930
	11/12/14	ND<0.1	80	ND<0.015	ND<0.005	ND<0.1	1.9	280	ND<1	ND<0.1	18,000	656	844	1,180
DW-2	11/7/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	0.81	2.6	77	ND<1	ND<0.1	19,900	2,620	572	1,030
	1/22/14	ND<1	ND<5	ND<0.015	ND<0.005	0.99	2.4	75	ND<1	0.47	50,100	3,260	572	705
	6/11/14	ND<0.1	16	ND<0.015	ND<0.005	1.0	2.4	120	ND<1	0.30	10,100	1,780	664	820
	8/14/14	ND<0.1	13	ND<0.015	ND<0.005	1.0	2.7	110	ND<1	0.67	22,200	363	625	800
	11/13/14	ND<0.1	25	ND<0.015	ND<0.005	0.69	2.4	110	ND<1	0.11	27,500	553	576	810
DW-3	11/7/13	1.5	50	ND<0.015	ND<0.005	ND<0.1	1.1	54	ND<1	ND<0.1	11,200	359	373	795
	1/22/14	3.0	59	ND<0.015	ND<0.005	ND<0.1	0.63	52	ND<1	ND<0.1	15,500	450	364	575
	6/11/14	1.1	56	ND<0.015	ND<0.005	ND<0.1	0.87	54	ND<1	ND<0.1	10,200	426	401	170
	8/13/14	ND<0.1	38	ND<0.015	ND<0.005	0.56	1.8	53	ND<1	ND<0.1	10,200	343	437	570
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 5

EXPANDED 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)
DW-5	11/7/13	ND<1	120	ND<0.015	ND<0.005	ND<0.1	0.91	370	ND<1	ND<0.1	12,100	1,400	219	1,520
	1/22/14	ND<2	60	ND<0.015	ND<0.005	ND<0.1	1.2	250	ND<1	ND<0.1	16,600	1,940	804	1,080
	6/11/14	ND<1	26	ND<0.015	ND<0.005	0.14	1.0	290	ND<1	ND<0.1	22,800	3,080	788	1,040
	8/14/14	ND<0.1	7.4	ND<0.015	ND<0.005	0.34	1.2	290	ND<1	0.12	7,050	2,990	844	1,100
	11/13/14	0.88	70	0.0166	ND<0.01	0.17	0.16	638	ND<1	ND<0.1	8,090	962	1,340	1,600
DW-6	11/7/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	0.73	2.2	52	ND<1	0.21	9,950	890	419	880
	1/22/14	ND<0.5	ND<2.5	ND<0.015	ND<0.005	0.69	2.2	50	ND<1	0.32	27,500	1,890	432	560
	6/11/14	ND<0.1	4.1	ND<0.015	ND<0.005	1.0	2.2	54	ND<1	0.42	18,300	3,210	431	575
	8/14/14	ND<0.1	1.1	ND<0.015	ND<0.005	1.3	2.4	54	ND<1	0.81	11,000	853	435	600
	11/13/14	0.84	33	ND<0.015	ND<0.005	2.8	2.2	50	ND<1	0.63	11,700	878	419	585
DW-7	11/7/13	ND<1	35	ND<0.015	ND<0.005	0.45	2.2	100	ND<1	0.24	13,000	4,690	523	710
	1/22/14	ND<1	20	ND<0.015	ND<0.005	0.61	2.4	100	ND<1	0.23	40,400	6,940	572	755
	6/11/14	ND<0.1	10	ND<0.015	ND<0.005	0.63	2.4	120	ND<1	0.13	39,200	4,850	638	800
	8/14/14	ND<0.1	17	ND<0.015	ND<0.005	0.49	2.7	90	ND<1	0.25	17,100	2,210	553	715
	11/12/14	ND<0.1	21	ND<0.015	ND<0.005	0.60	2.7	90	ND<1	ND<0.1	24,900	1,000	516	710
DW-8	11/7/13	ND<1	ND<5	ND<0.015	ND<0.005	2.0	4.0	160	ND<1	ND<0.1	24,300	511	778	1,120
	1/22/14	ND<2	ND<10	ND<0.015	ND<0.005	1.8	3.0	110	ND<1	0.11	19,100	2,580	527	625
	6/11/14	ND<0.1	1.1	ND<0.015	ND<0.005	2.8	3.3	170	ND<1	0.67	55,300	3,430	790	970
	8/14/14	ND<0.1	0.83	ND<0.015	ND<0.005	3.8	3.6	170	ND<1	0.98	37,000	4,300	750	925
	11/13/14	ND<0.1	1.4	ND<0.015	ND<0.005	4.3	3.3	160	ND<1	0.88	42,500	4,680	755	935
DW-9	11/7/13	ND<1	ND<5	ND<0.015	ND<0.005	0.82	2.3	73	ND<1	ND<0.1	9,660	3,330	461	625
	1/22/14	ND<1	ND<5	ND<0.015	ND<0.005	0.84	2.3	64	ND<1	ND<0.1	24,800	4,940	469	630
	6/11/14	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.3	2.2	69	ND<1	0.42	33,100	5,910	488	625

TABLE 5

EXPANDED 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)
DW-9	8/14/14	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.3	2.4	64	ND<1	0.96	13,100	3,940	469	605
(cont.)	11/13/14	ND<0.1	0.79	ND<0.015	ND<0.005	4.7	2.8	61	ND<1	0.61	28,100	3,780	470	590

(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 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 mg/l.
(e) Carbon dioxide (CO_2) and methane (CH_4) analyzed by EPA Method RSK-175M; reported in µg/l.
(f) Total alkalinity as CaCO3 analyzed by Standard Method 2320B; reported in mg/l.
(g) Total dissolved solids (TDS) analyzed by Standard Method 2540 C; reported in mg/l.
(h) ND - Not detected at the reporting limit listed.
(i) NS - Not sampled.

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

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	4/28/11	150	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.8	ND<0.5	17.5	77.6
SVE-Manifold	5/12/11	280	ND<0.06	ND<0.05	ND<0.05	ND<0.05	ND<0.1	ND<0.5	4.7	ND<0.5	17.2	78.1
SVE-Manifold	5/25/11	330	0.15	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

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	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
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
SVE-Manifold-1	7/8/14	3,200	1.2	ND<0.8	1.3	3.5	ND<0.7	1.8	2.9	ND<0.5	14.1	81.1
SVE-Manifold-2	7/8/14	3,700	1.4	ND<1	1.8	4.9	ND<0.9	1.8	3.3	ND<0.5	14.0	80.9
SVE-Manifold	7/10/14	2,100	1.3	ND<1.5	ND<1.5	4.5	ND<1	ND<0.5	2.6	ND<0.5	18.0	79.0
SVE-Manifold	7/14/14	1,700	1.4	1.5	ND<0.8	6.1	ND<0.7	ND<0.5	2.4	ND<0.5	18.8	78.6
SVE-Manifold	7/17/14	1,700	1.3	ND<1.5	ND<1.5	6.2	ND<1	ND<0.5	2.2	ND<0.5	18.8	78.8

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	7/23/14	1,800	1.2	1.1	0.53	6.0	ND<0.5	ND<0.5	2.2	ND<0.5	18.7	78.8
SVE-Manifold	7/30/14	1,800	0.95	0.93	ND<0.5	5.0	ND<0.5	ND<0.5	1.8	ND<0.5	19.0	79.0
SVE-Manifold	8/12/14	1,800	1.2	ND<1	ND<1	4.4	ND<0.9	ND<0.5	1.9	ND<0.5	18.7	79.2
SVE-Manifold	8/26/14	1,800	1.4	ND<1	ND<1	3.2	ND<0.9	ND<0.5	ND<0.5	ND<0.5	20.4	79.6
SVE-Manifold	9/10/14	2,000	1.6	0.65	0.85	2.7	ND<0.25	ND<0.5	1.4	ND<0.5	19.2	79.2
SVE-Manifold	9/25/14	1,400	1.2	ND<1	ND<1	2.7	ND<0.9	ND<0.5	1.1	ND<0.5	19.8	79.0
SVE-Manifold	10/15/14	1,800	1.8	ND<1.5	ND<1.5	2.1	ND<1	ND<0.5	1.8	ND<0.5	18.9	79.2
SVE-Manifold-1	10/29/14	2,400	2.8	ND<1.5	ND<1.5	6.9	ND<1	ND<0.5	1.4	ND<0.5	19.3	79.1
SVE-Manifold-2	10/29/14	2,000	2.1	ND<1	1.0	5.4	ND<0.9	ND<0.5	1.4	ND<0.5	19.3	79.2
SVE-Manifold	11/6/14	3,400	2.6	0.65	1.2	3.8	ND<0.5	ND<0.5	1.7	ND<0.5	17.9	80.2
SVE-Manifold	12/4/14	3,100	1.2	ND<0.5	0.46	4.2	ND<0.5	ND<0.5	1.9	ND<0.5	18.3	79.7
SVE-Manifold	12/18/14	350	0.12	0.072	ND<0.05	1.1	ND<0.1	ND<0.5	0.95	ND<0.5	20.1	79.0
SVE-Manifold-2	12/18/14	270	0.15	0.13	ND<0.05	0.86	ND<0.1	ND<0.5	0.67	ND<0.5	20.5	78.9

(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)
Operating on wells MW-11, VW-2, TP-1, TP-2											
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
Operating on wells MW-1, MW-11, VW-2, TP-1, TP-2											
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
Operating on wells MW-11, VW-2, TP-1, TP-2											
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	2,412	101	150	0.35	49	4.1	41	2.3	2.3	48

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 (°F)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
Operating on well VW-2											
20	1/12/11	2,748	115	280	--	54	4.2	14[(d)]	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
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

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 (^{o}F)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
Operating on wells MW-11, VW-2, TP-1, TP-2											
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
Operating on wells VW-2, TP-1, TP-2											
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
Operating on wells MW-1, MW-11, VW-2, TP-1, TP-2											
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
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
Operating on wells MW-11, VW-2, TP-1, TP-2											
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

TABLE 7

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

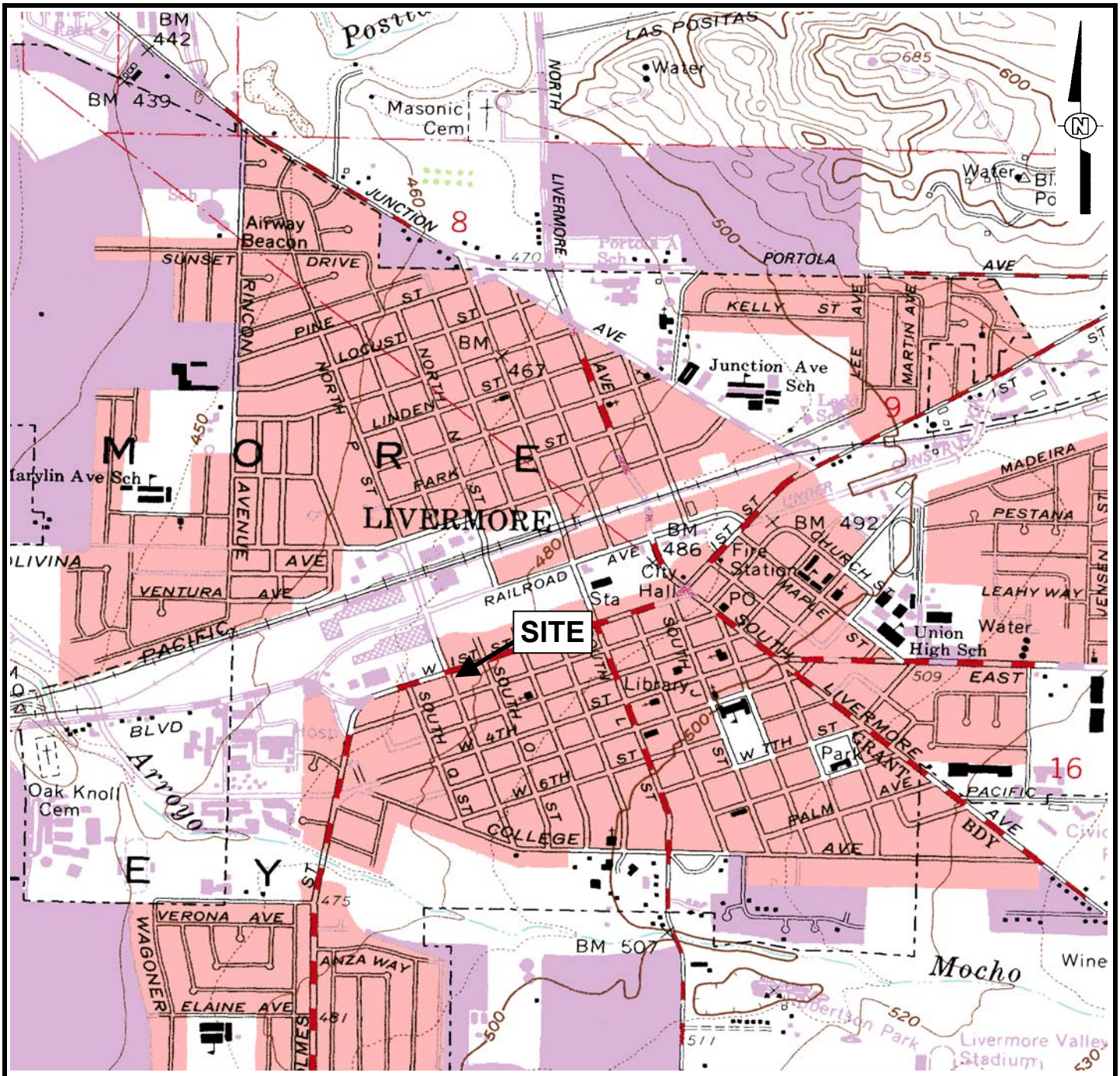
Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (^oF)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal Rate (lbs/day)
Operating on wells MW-11, VW-2, TP-1, TP-2 (cont.)											
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
Operating on wells MW-1, MW-11, VW-2, TP-1, TP-2											
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
68	7/8/14	17,706	738	3,200	--	83	1.6	41	49	2.9	62
69	7/8/14	17,707	738	3,700	--	86	1.6	32	44	3.3	54
70	7/10/14	17,750	740	2,100	--	75	1.7	29	23	2.6	39
71	7/14/14	17,846	744	1,700	--	80	1.6	31	20	2.4	37
72	7/17/14	17,919	747	1,700	--	77	1.6	30	19	2.2	34
73	7/23/14	18,062	753	1,800	--	78	1.6	30	20	2.2	34
74	7/30/14	18,230	760	1,800	--	81	1.6	34	23	1.8	31
75	8/12/14	18,543	773	1,800	--	77	1.6	36	24	1.9	35
76	8/26/14	18,879	787	1,800	--	75	1.6	38	25	ND<0.5	NA
77	9/10/14	19,238	802	2,000	--	75	1.4	40	30	1.4	29

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)
Operating on wells MW-1, MW-11, VW-2, TP-1, TP-2 (cont.)											
78	9/25/14	19,599	817	1,400	--	73	1.4	38	20	1.1	22
79	10/15/14	20,078	837	1,800	--	72	1.5	39	26	1.8	36
Operating on wells MW-1, MW-11 , TP-1, TP-2											
80	10/29/14	20,414	851	2,400	--	65	1.6	40	35	1.4	28
81	10/29/14	20,417	851	2,000	--	72	1.3	41	31	1.4	29
82	11/6/14	20,437	852	3,400	--	68	1.5	40	51	1.7	34
83	12/4/14	21,178	882	3,100	--	81	1.6	37	43	1.9	35
84	12/18/14	21,514	896	350	--	55	1.9	41	5	0.95	19
Operating on wells MW-1, TP-1, TP-2											
85	12/18/14	21,518	897	270	--	58	1.9	28	3	0.67	9

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



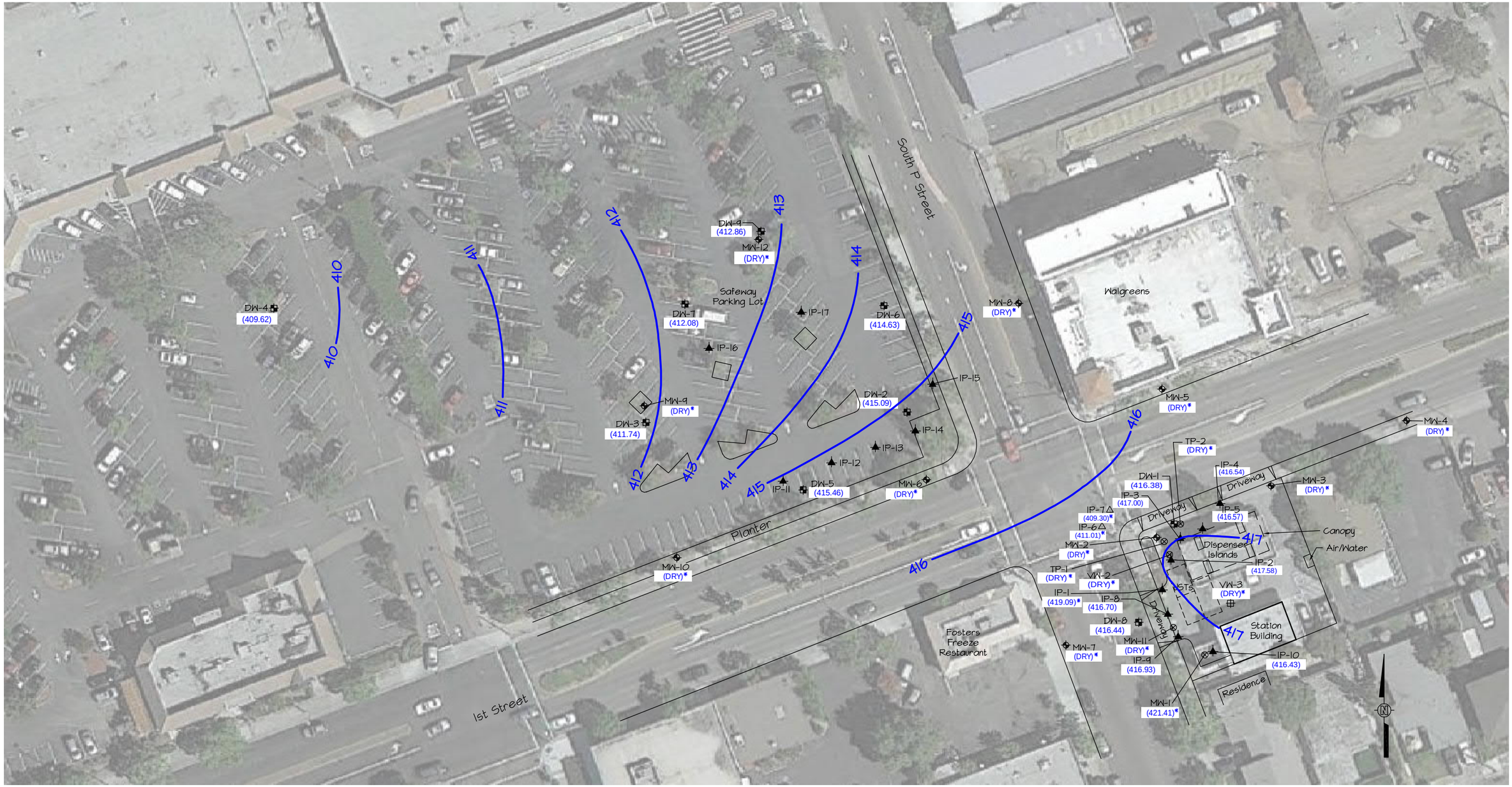
SCALE

0 2000 4000 FEET

REFERENCE

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

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



Legend

- MW-7 — Groundwater Monitoring Well
- 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
- (409.62) — Groundwater Elevation (Feet, MSL) Measured 12 and 13 November 2014
- 417 — Groundwater Elevation Contour (Feet, MSL)
- * — Groundwater Elevation Not Used for Contours

0 30' 60'

SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
27	22	MY	2/15/14	Fourth Quarter 2013 Monitoring Report
	23	MY	3/15/14	Fourth Quarter 2013 Monitoring Report
	24	MY	5/15/14	First Quarter 2014 Monitoring Report
	25	MY	7/15/14	Second Quarter 2014 Monitoring Report
	26	MY	10/15/14	Third Quarter 2014 Monitoring Report
	27	MY	1/15/15	Fourth Quarter 2014 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

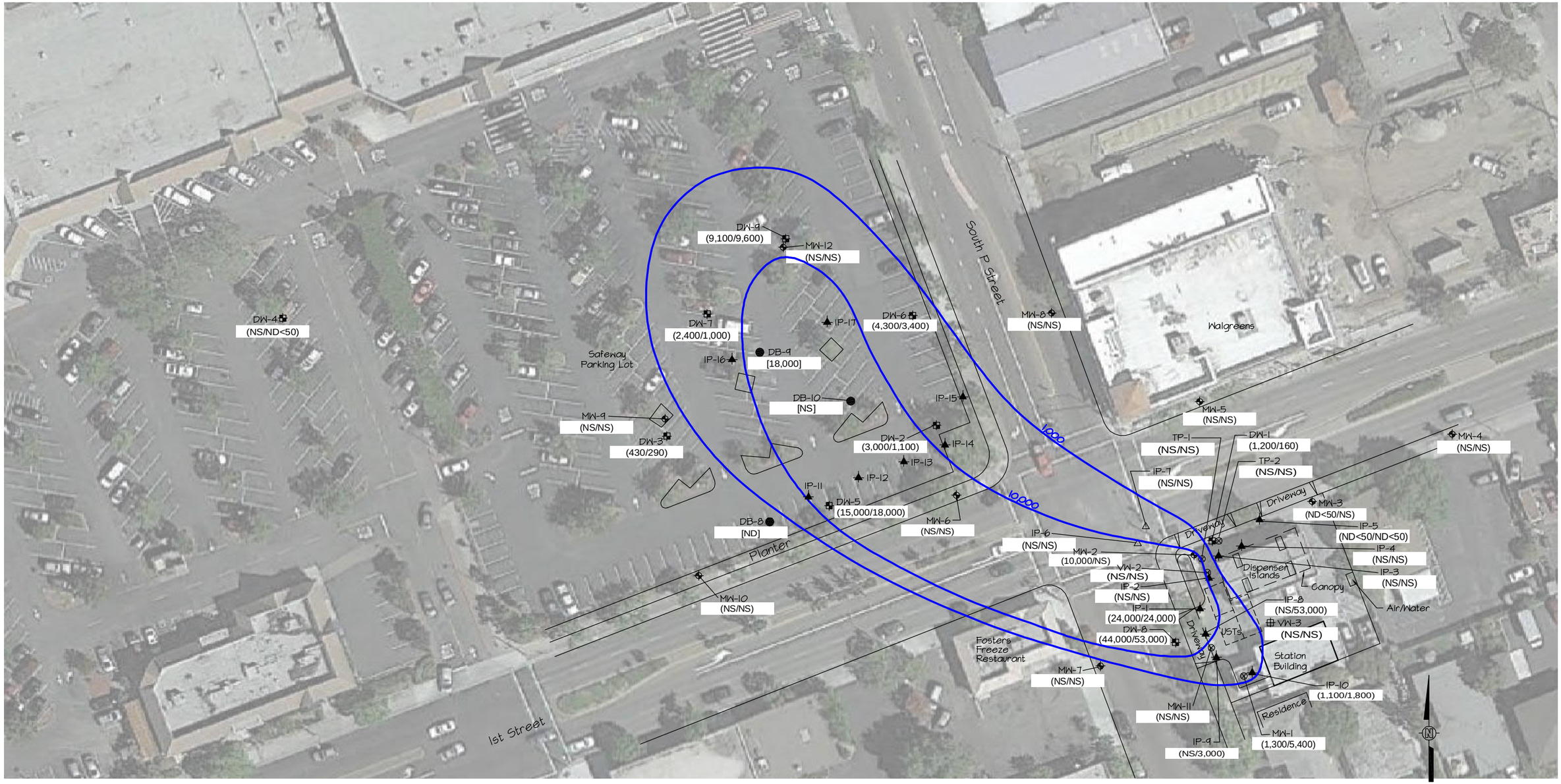
GROUNDWATER ELEVATION CONTOURS

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

FILE NO. 01LV11B-20427.DWG

FIGURE 2

1/1/2015 11:06AM 01LV11B-20427.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<50/NS) — 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 Benzene Results in µg/L

0 30' 60'
SCALE

REVISION	NO.	BY	DATE	DESCRIPTION
27	23	MY	3/15/14	Fourth Quarter 2013 Monitoring Report
	24	MY	5/15/14	First Quarter 2014 Monitoring Report
	25	MY	7/15/14	Second Quarter 2014 Monitoring Report
	26	MY	10/15/14	Third Quarter 2014 Monitoring Report
	27	MY	1/15/15	Fourth Quarter 2014 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

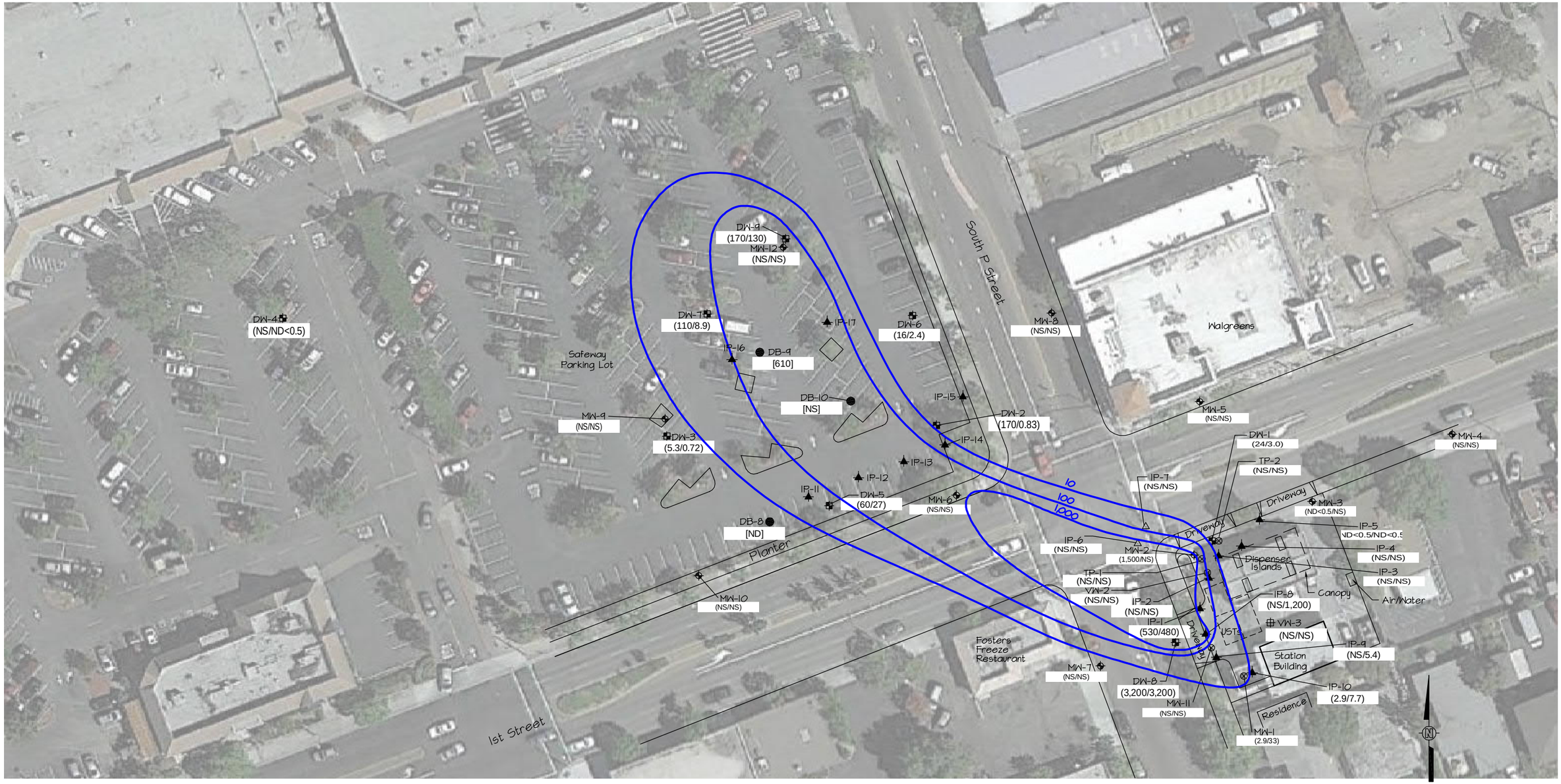
TPHg CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20527.DWG

FIGURE 3

1/1/2015 11:16AM 01LV11B-20527.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/NS)	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
27	23	MY	3/15/14	Fourth Quarter 2013 Monitoring Report
	24	MY	5/15/14	First Quarter 2014 Monitoring Report
	25	MY	7/15/14	Second Quarter 2014 Monitoring Report
	26	MY	10/15/14	Third Quarter 2014 Monitoring Report
	27	MY	1/15/15	Fourth Quarter 2014 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

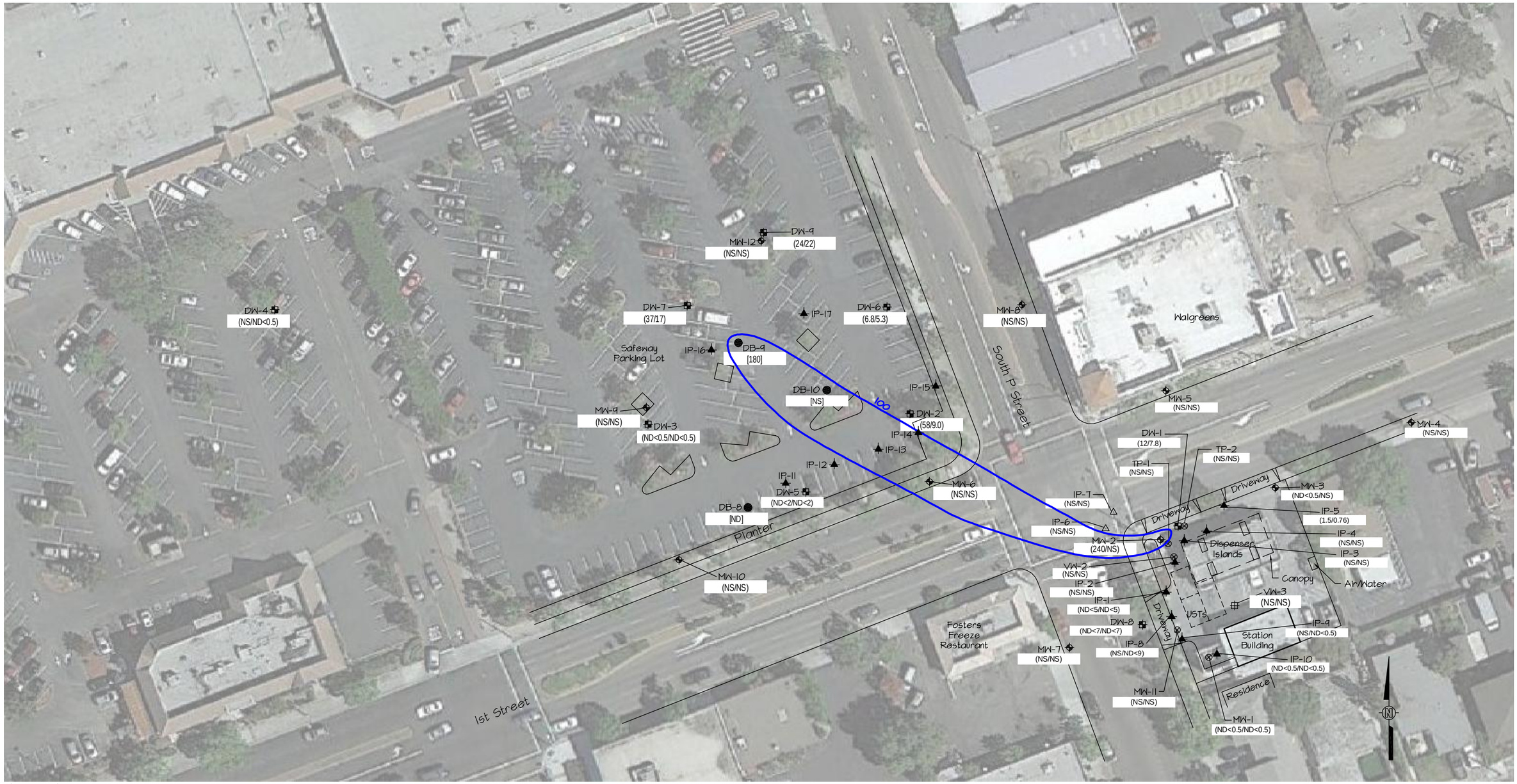
BENZENE CONCENTRATION CONTOURS

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

FILE NO. 01LV11B-20627.DWG

FIGURE 4

01LV11B-20627.dwg 1/1/2015 11:34AM



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
TP-1 ⊗	Monitoring Well/Vapor Extraction Well

(ND<0.5/NS)	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	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
27	23	MY	3/15/14	Fourth Quarter 2013 Monitoring Report
	24	MY	5/15/14	First Quarter 2014 Monitoring Report
	25	MY	7/15/14	Second Quarter 2014 Monitoring Report
	26	MY	10/15/14	Third Quarter 2014 Monitoring Report
	27	MY	1/15/15	Fourth Quarter 2014 Monitoring Report

ARCTOS ENVIRONMENTAL

TESORO - LIVERMORE

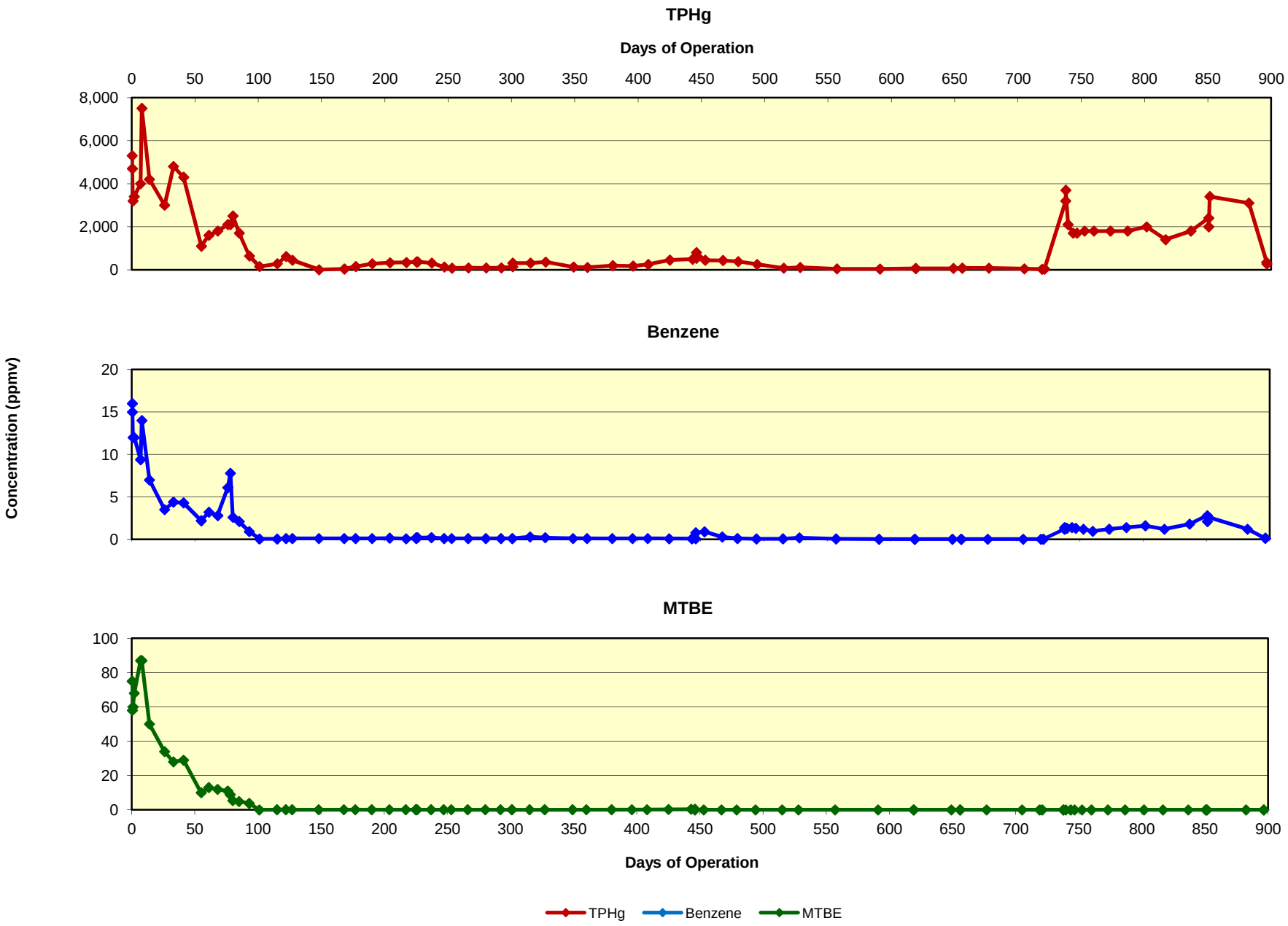
MTBE CONCENTRATION CONTOURS

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

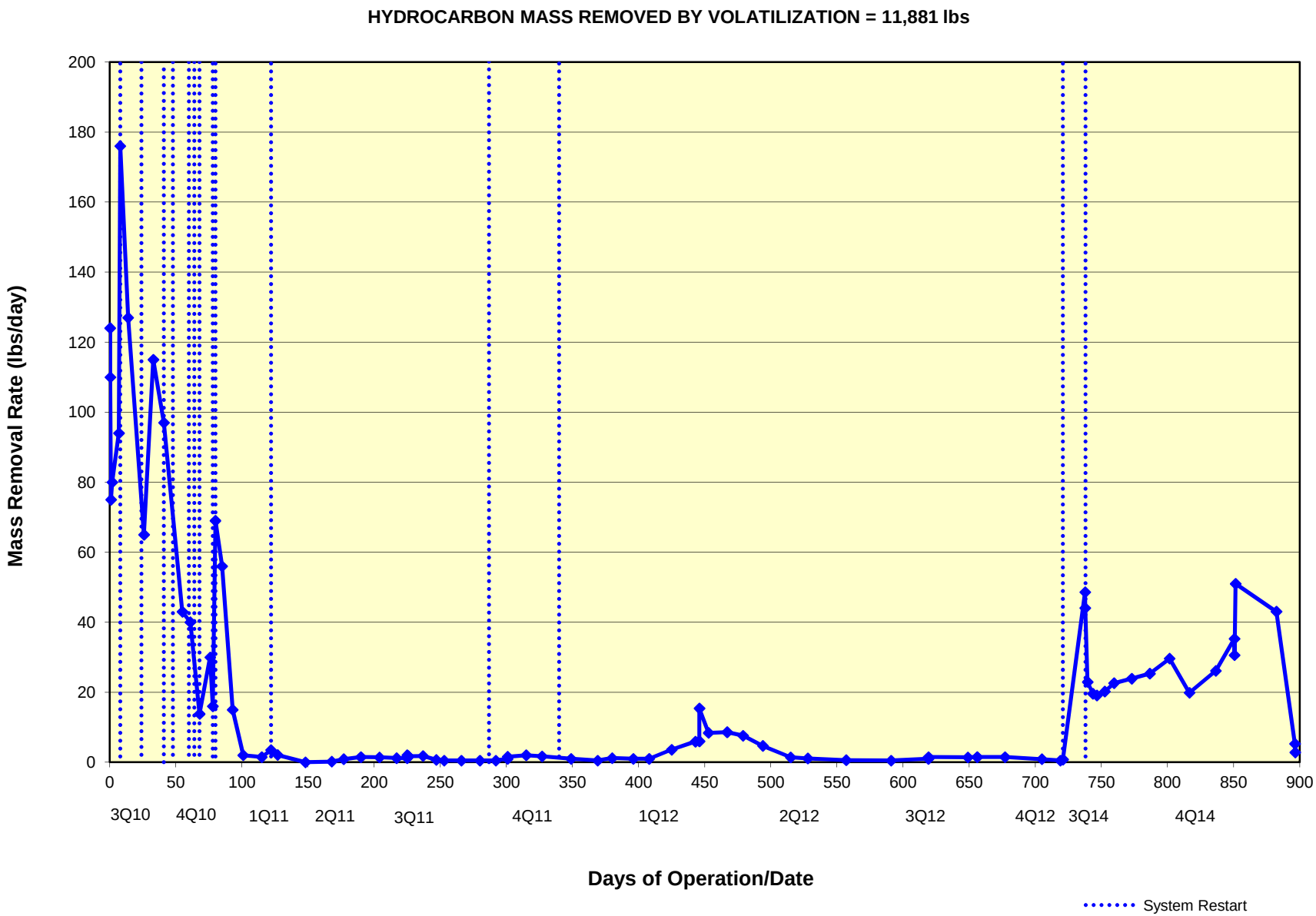
FILE NO. 01LV11B-20727.DWG

FIGURE 5

12/27/2014 10:30AM 01LV11B-20727.dwg

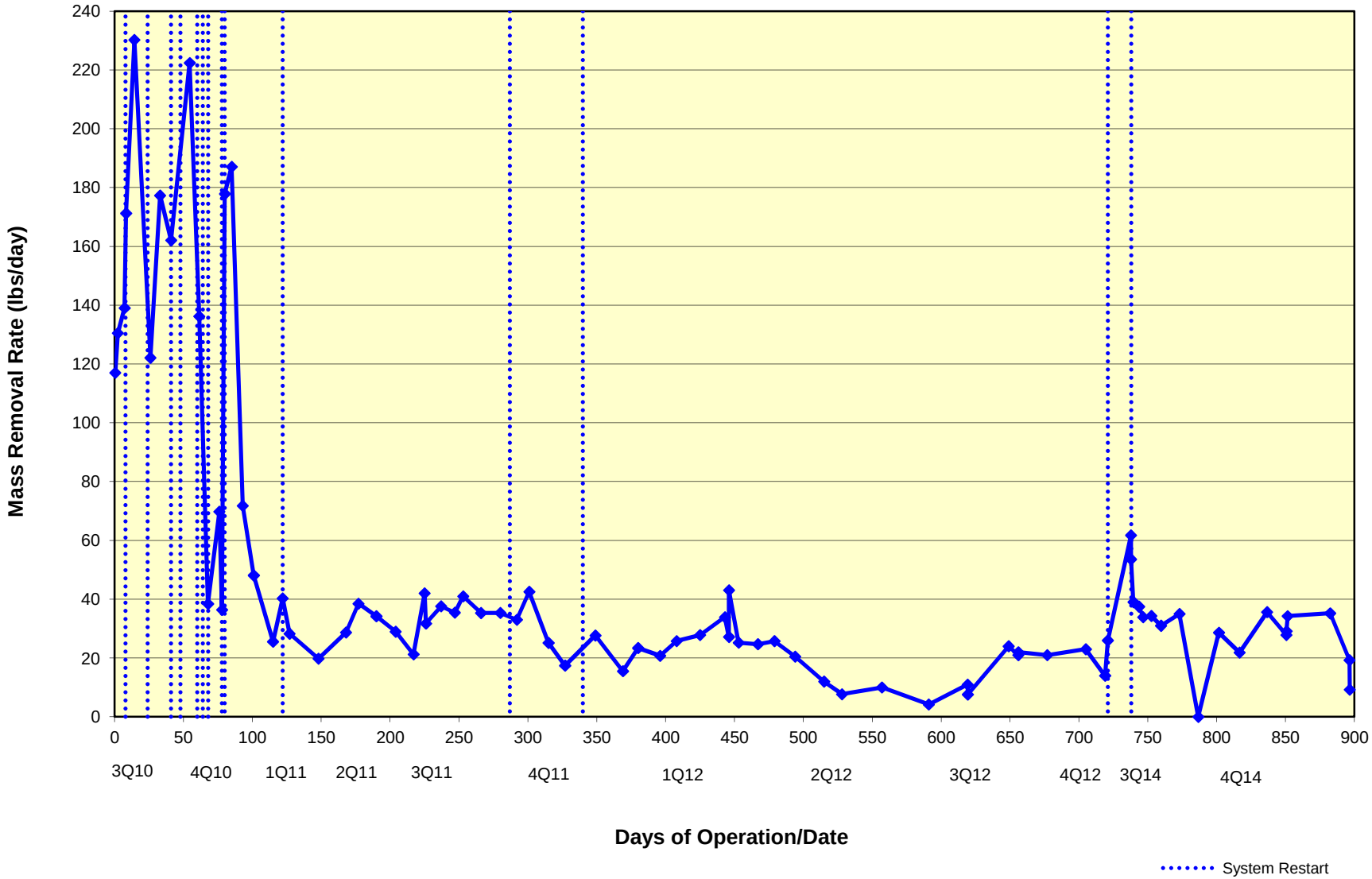


ARCTOS Arctos Environmental	Tesoro - Livermore	SOIL VAPOR INFLUENT CONCENTRATIONS	Figure 6
4Q14 System Graphs.xlsx | 1/15/2015			



ARCTOS Arctos Environmental		Tesoro - Livermore	MASS REMOVAL BY VOLATILIZATION	Figure 7
4Q14 System Graphs.xlsx	1/15/2015			

HYDROCARBON MASS REMOVED BY BIODEGRADATION = 34,389 lbs



ARCTOS Arctos Environmental	Tesoro - Livermore	MASS REMOVAL BY BIODEGRADATION	Figure 8
4Q14 System Graphs.xlsx | 1/15/2015			

ATTACHMENT A

GROUNDWATER SAMPLING QUALITY ASSURANCE AND QUALITY CONTROL (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 I.

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

Meter Calibration Log

EQUIPMENT MAKE	EQUIPMENT MODEL	SERIAL NUMBER	DATE	TIME	TEMP OF CALIBRATION STANDARD (°C or °F)	pH STANDARD 4	pH STANDARD 7	pH STANDARD 10	SPECIFIC CONDUCTANCE 1417 µS/cm	ORP _____ mV	DISSOLVED OXYGEN _____ mg/L or %
Myron L	Ultrameter II	6223276	11/12/14	0900	15°	4.0	7.0	10.0	1417	-	—
"	"	"	11/13/14	0630	14.8	4.0	7.0	10.0	1417	-	—

Confluence Environmental, Inc.

ORP Values (degrees in C then value): 5:257.0 10:250.5 15:244.0 20:237.5 25:231.0 30:224.5 35:218.0 40:211.5

Water Level Measurements

Job Number: F1-141117 Date: 11/12/14 Client: Orion

Site: Livermore Tesoro #67076

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC) TOB		
DW-1	0810	4			56.47		64.80	TOC		
DW-2	0711	4			56.57		59.80			
DW-3	0655	4			58.59		59.72			
DW-4	0644	4			58.86		70.06			
DW-5	0718	4			56.44		59.80			
DW-6	0710	4			57.14		60.15			
DW-7	0701	4			57.99		65.18			
DW-8	0847	4			55.87		64.68			
DW-9	0704	4			56.94		59.65			
IP-1	0755	2			53.97		64.52			
IP-2	0820	2			55.48		64.45			
IP-3	0815	2			56.05		64.74			
IP-4	0827	2			56.56		64.80			
IP-5	0830	2			56.48		64.25			
IP-6	0802	2			61.42		71.60			
IP-7	0804	2			63.13		70.40			
IP-8	0748	2			56.57		64.52			
IP-9	0735	2			56.42		64.75			
IP-10	0747	2			57.45		63.05			
MW-1	0750	4			52.80		54.26			

Water Level Measurements

Job Number: FI-141112 Date: 11/12/14 Client: Orion

Site: Livermore Tesoro #67076

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC)/TOB	IP probe	
MW-2	0800	4			53.80		54.05	TOC		
MW-3	0835	4			Dry	52.88	52.85			
MW-4	0833	2			Dry	46.56	46.69			
MW-5	0839	2			Dry	46.31	46.27			
MW-6	0715	2			47.44		47.55			
MW-7	0730	2			Dry @	46.45	46.15			
MW-8	0850	2			44.48		44.50			
MW-9	0657	2			Dry @	44.55	44.50			
MW-10	0648	2			44.57		44.98			
MW-11	0740	4			Dry	40.25	40.25			
MW-12	0706	4			44.24		44.56			
TP-1	0800	2			40.96		41.06			
TP-2	0813	2			Dry	40.15	40.11			
VW-2	0822	2			Dry	34.89	35.02			
VW-3	0746	2			Dry	36.34	36.30			
11/13/14 DW-5	0800	4	~~56~~ 59.34	.01	~~56~~ 59.40		59.80		✓✓	

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse (A Feeney)	**Client:** Orion
Well ID: DW-4	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 58.86	**Total Depth:** 70.06
Purge equip: (ES - diam: 3/4") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 7.3 X 3 = 21.84 (Total Purge) 80%= 61.10

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
0934	21.1	7.73	863.6	8	167	~2	7.5	
0938	21.1	7.64	862.5	25	160	1	15	
0943	21.4	7.54	854.3	27	158	1	22	
		not @		80 %	will	return	to	Sample

Did well dewater? YES (NO)	Total volume removed: 22 (gal / L)	
Sample method: (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/12/14	Sample time: 1220	DTW at sample: 58.90
Sample ID: DW-4	Lab: Kiff	Number of bottles: 3
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

111

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: DW-5	**Date:** 11/13/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 56.44	**Total Depth:** 59.80
Purge equip: ~~ES~~ diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ~~2.2~~ X 3 = 6.6 (Total Purge) 80%= ~~57.4~~

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
	.01		Product	detected			w/	Strong odor
							IP probe
	Grab		Sample					
	NO		parameters,			globules	of	product
	approx		70'	of	5/8"	tubing		removed from
	well							

Did well dewater? YES NO	Total volume removed: —	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/13/14	Sample time: 1130	DTW at sample: 56.40
Sample ID: DW-5	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth: 56.39	Volume of NAPL: .01	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse (A Feeney)	**Client:** Orion
Well ID: DW-6	**Date:** 11/13/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 57.14 **Total Depth:** 60.15
Purge equip: (ES - diam) 3" Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 2 X 3 = 6 (Total Purge) 80%= 57.74

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
0730	19.7	7.59	1138	>1,000	-118	~2	2	odor
		well	dewatered	@	2.5	gal		
Not	e	80%	after	2 hours				
0930	20.2	7.69	1200	>1,000	-181	-	-	
* water		extremely	thick &	muddy	-	3		field filters used for HNO3 metals bottle

Did well dewater? (YES) NO	Total volume removed: 2.5 (gal) / L)	
Sample method: (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/13/14	Sample time: 0930	DTW at sample: 57.96
Sample ID: DW-6	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: DW-7	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4) 6" Other:		**DTW:** 57.99 **Total Depth:** 65.18
Purge equip: ES - diam: 2 Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 4.7 X 3 = 14 (Total Purge) 80%= 59.43

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
1213	21.0	7.97	1409	89	-169	~2	5	Odor
	well		dewatered	@ 6 gal				
1415	20.6	7.58	1246	50	-76	-	-	

Did well dewater? YES NO	Total volume removed: 6 (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/12/14	Sample time: 14 15	DTW at sample: 58.04
Sample ID: DW-7	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse (A Feeney)	**Client:** Orion
Well ID: DW-8	**Date:** 11/13/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 55.87 **Total Depth:** 64.68
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 5.7 X 3 = 17.2 (Total Purge) 80%= 57.63

Time	Temp (°C °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
0836	20.2	8.00	1431	4,000	-142	~2	6	odor
		we	11	dewatered	@	9	gal	
	not	@	SN	°/,	a	fter	2+	hours
1045	19.6	7.72	1999	50	-143	-	-	

Did well dewater? (YES) NO	Total volume removed: 9	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/13/14	Sample time: 1045	DTW at sample: 58.97
Sample ID: DW-8	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse ~~A Feeney~~	**Client:** Orion
Well ID: Dw-9	**Date:** 11/13/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 56.94 **Total Depth:** 59.65
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 1.8 X 3 = 5.3 (Total Purge) 80%= 57.48

Time	Temp (°C) °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
0743	~~21.3~~ 18.5	7.28	1196	>1,000	-144	~2	2	odor
	well	dewatered @				2 gal		
0945	20.6	7.33	1190	>1,000	-109	-	-	
* 2	field	filtered	used	for				metals bottle.

Did well dewater? (YES) NO	Total volume removed: 2 (gal) / L)	
Sample method: (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/13/14	Sample time: 0945	DTW at sample: 57.03
Sample ID: Dw-9	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse (A Feeney)	**Client:** Orion
Well ID: IP-1	**Date:** 11/13/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:		**DTW:** 53.97 **Total Depth:** 64.52
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 1.7 X 3 = 5.1 (Total Purge) 80%= 56.08

Time	Temp (°C/ °F)	pH	Cond (mS / uS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
0820	19.5	9.63	7260	65	-42	-	2	
.	well		dewatered	@ 2 gal				
1015	19.8	9.63	7056	80	21	-	-	

Did well dewater? YES NO	Total volume removed: 2 (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/13/14	Sample time: 1015	DTW at sample: 54.27
Sample ID: IP-1	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse (A Feeney)	**Client:** Orion
Well ID: IP-5	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:		**DTW:** 56.48 **Total Depth:** 64.25
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 1.2 X 3 = 3.7 (Total Purge) 80%= 58.03

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
0959	19.7	7.75	921.8	>1,000	152	1	1.5	
		well	dewatered			@ 2	gal	
1235	18.8	8.07	954.0	>1,000	75	-	-	

Did well dewater? (YES) NO Total volume removed: 2 (gal/ L)

Sample method: (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:

Sample date: 11/12/14 Sample time: 1235 DTW at sample: 56.52

Sample ID: IP-5 Lab: Kiff Number of bottles: 12

Analysis: See COC (ISCO)

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: IP-8	**Date:** 11/13/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:		**DTW:** 56.52 **Total Depth:** 64.52
Purge equip: ES - diam: 2 Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 1.3 X 3 = 3.8 (Total Purge) 80%= 58.12

Time	Temp (°C / °F)	pH	Cond (mS / uS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
0846	19.8	10.29	9702	79	-52	~1	1.5	odor
	well	dewatered	@	~2 gal				
not	@	80%	after	2 hours				
1100	18.8	10.22	7622	361	-23	-	-	

Did well dewater? YES NO	Total volume removed: 2 (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/13/14	Sample time: 1100	DTW at sample: 58.34
Sample ID: IP-8	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: IP-9	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:		**DTW:** 56.42 **Total Depth:** 64.75
Purge equip: ES - diam: 2" Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 1.3 X 3 = 4 (Total Purge) 80%= 58.09

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
1133	19.1	10.63	13.55	18	-31	1	1.5	
1134	20.3	10.61	13.67	17	-33	1	3	
1136	20.5	10.59	13.57	16	-35	1	4	

Did well dewater? YES (NO)	Total volume removed: 4 (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/12/14	Sample time: 1140	DTW at sample: 58.04
Sample ID: IP-9	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: IP-10	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:		**DTW:** 57.45 **Total Depth:** 63.05
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 9 X 3 = 2.7 (Total Purge) 80%= 58.57

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
1040	19.8	7.70	921.8	7,000	-128	-	1	odor
	well		dewatered			1.9 gal		
1315	18.7	7.76	958.8	7,000	-109	-	-	

Did well dewater? YES NO	Total volume removed: 2 (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/12/14	Sample time: 1315	DTW at sample: 57.64
Sample ID: IP-10	Lab: Kiff	Number of bottles: 12
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse ~~A Feeney~~	**Client:** Orion
Well ID: VW-2	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** DM	**Total Depth:** 34.89
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		insufficient			water to Sample			

Did well dewater? YES NO	Total volume removed: (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse ~~A Feeney~~	**Client:** Orion
Well ID: MW-3	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** Dry	**Total Depth:** 36.54
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		insufficient			water		to Sample	

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse AFeeney	**Client:** Orion
Well ID: TP-1	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	**DTW:** 40.96	**Total Depth:** 41.06
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		insufficient	water	to	Sample			

Did well dewater? YES NO | Total volume removed: (gal / L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date: | Sample time: | DTW at sample:

Sample ID: | Lab: Kiff | Number of bottles:

Analysis: See COC (ISCO)

Equipment blank ID @ | Field blank ID @

Duplicate ID: | Pre-purge DO: | Post purge DO:

$Fe2^{+}$: | Pre-purge ORP: | Post purge ORP:

NAPL depth: | Volume of NAPL: | Volume removed: ml

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Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse (A Feeney)	**Client:** Orion
Well ID: TP-2	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	**DTW:** Dry	**Total Depth:** 4.15
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		in	sufficient	Water	to	Sample		

Did well dewater? YES NO	Total volume removed: (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse ~~A Feeney~~	**Client:** Orion
Well ID: MW-1	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 52.80	**Total Depth:** 54.26
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 0.9 X 3 = 2.8 (Total Purge) 80%= 53.09

Time	Temp (°C) °F	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
1118	19.8	7.44	1317	>1,000	-185	-	1	odor, dark gray muddy water
		we	ll	dewatered @		1.5 gal		
1340	19.5	7.50	1315	>1,000	-159	-	-	

Did well dewater? YES NO	Total volume removed: 1.5 (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/12/14	Sample time: 1340	DTW at sample: 53.09
Sample ID: MW-1	Lab: Kiff	Number of bottles: 3
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-2	**Date:** 11/21/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 53.80	**Total Depth:** 54.05
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		insufficient			water	to	sample	

Did well dewater? YES NO | Total volume removed: (gal / L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-3	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** Dry **Total Depth:** 52.88
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		in	Sufficient		Water	to		Sample

Did well dewater? YES NO	Total volume removed: (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse ~~A~~ Feeney	**Client:** Orion
Well ID: MW-4	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** Dry	**Total Depth:** 46.56
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
			insufficient water to Sample					

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-5	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" (2)" 3" 4" 6" Other:	**DTW:** DY	**Total Depth:** 46.31
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		in	sufficient	water	to		Sample	

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse (A Feeney)	**Client:** Orion
Well ID: MW-6	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" (2") 3" 4" 6" Other:		**DTW:** 47.44 **Total Depth:** 47.55
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		insufficient			water	to	Sample	

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-7	**Date:** 11/3/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** Dry	**Total Depth:** 46.45
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		insufficient water to				Sample		

Did well dewater? YES NO — Total volume removed: (gal / L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-8	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:		**DTW:** 44.48 **Total Depth:** 44.50
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		in 5J efficient				water	to	Sample

Did well dewater? YES NO	Total volume removed: (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-9	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** DY	**Total Depth:** 44.55
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		insufficient			water	to	Sample	

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-10	**Date:** 11/21/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" 4" 6" Other:		**DTW:** 44.57 **Total Depth:** 44.98
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
			insufficient			water	to	Sample

Did well dewater? YES NO | Total volume removed: (gal / L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-11	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** Dry	**Total Depth:** 40.25
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
	insufficient				water to		Sample	

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: MW-12	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 44.24 **Total Depth:** 44.56
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
		insufficient			water	to	Sample	

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Kiff	Number of bottles:
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse A Feeney	**Client:** Orion
Well ID: DW-1	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 56.47 **Total Depth:** 64.80
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 5.4 X 3 = 16.2 (Total Purge) 80%= 58.14

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	Notes
1102	20.6	7.68	1945	10	-129	2	5.5	Strong odor
1105	20.7	7.58	2290	8	-121	1	11	
well		dewatered @				1.7 gpl		1
1355	19.5	7.57	1819	12	-50	-	-	

Did well dewater? (YES) NO	Total volume removed: 17 (gal) / L)	
Sample method: (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/12/14	Sample time: 1355	DTW at sample: 56.48
Sample ID: DW-1	Lab: Kiff	Number of bottles: 17
Analysis: See COC (ISCO)		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse (A Feeney)	**Client:** Orion
Well ID: DW-2	**Date:** 11/13/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 56.57 **Total Depth:** 59.80
Purge equip: (ES) diam: 2 " Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 2.1 X 3 = 6.4 (Total Purge) 80%= 57.18

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
0718	21.9	7.18	1311	>1,000	-86	~2	2	light grey, odor
	well	dewatered			@ 3	gal		
0900	19.9	7.72	1749	>1000	-133	-	-	

Did well dewater? (YES) NO	Total volume removed: 3 (gal / L)
Sample method: (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:	
Sample date: 11/13/14 Sample time: 0900	DTW at sample: 56.70
Sample ID: DW-2 Lab: Kiff	Number of bottles: 17
Analysis: See COC (ISCO)	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
$Fe2^+$:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-141112	**Sampler:** E Morse ~~A Feeney~~	**Client:** Orion
Well ID: DW-3	**Date:** 11/12/14	**Site:** Livermore Tesoro #67076
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 58.59 **Total Depth:** 59.72
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 0.7 X 3 = 2.2 (Total Purge) 80%= 58.82

Time	Temp (C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	ORP (mv)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	Notes
1025	20.8	7.58	1045	>1,000*	-90	-	.7	* Dark gray, muddy
		well dewatered @ 1 gal						
1300	20.3	7.82	1053	>1,000	-96	-	-	
*	Insufficient water to collect complete bottle set							

Did well dewater? YES NO	Total volume removed: .7 (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 11/12/14	Sample time: 1300	DTW at sample: 58.68
Sample ID: DW-3	Lab: Kiff	Number of bottles: ~~12~~ 13
Analysis: See COC (ISCO)		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

896476

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3308 El Camino Ave, Suite 300 #148
Sacramento, CA 95821
916-760-7641 - main
916-473-8617 - fax
www.confluence-env.com

Chain of Custody

Project Name: Tesoro - Livermore #67076

Job Number: F1-14117

TAT: (STANDARD) 5 DAY 2 DAY 24 HOUR OTHER:

Lab: **Kiff**	Site Address: 1619 1st St, Livermore	Confluence PM: Jason Brown
Address: 2795 2nd St, Suite 300, Davis CA 95616	California Global ID No.: T0600101410	Phone / Fax: 916-760-7641 / 916-473-8617
Contact: Troy Turpen	Include EDF w/ Report: (Yes) No	Confluence Log Code: **CESC**
Phone/ Fax: 530-297-4800 x.111	Consultant / PM: Orion / Mike Purchase	Report to: Mike Purchase
	Phone / Fax: 510-525-2180 / 510-525-2392	Invoice to: Mike Purchase

	Sample ID	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Requested Analysis: TPH-G, BTEX (8260)	Oxygenates(7) & Lead Scavengers (8260)	Ferrous Iron (SM 3500-Fe-D)	Hexavalent Chromium (7199)	Nitrate & Sulfate (300)	Total Alkalinity (SM2320B)	Metals by ICP (6010B)*	Methane (RSK 175M)	Carbon Dioxide (RSK 175M)	TDS (2540C)	Notes and Comments
	DW-2	0900	11/13/14		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	01
	DW-6	0930			X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	02
	DW-9	0945			X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	03
	IP-1	1015			X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	04
	DW-8	1045			X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	05
	IP-8	1100			X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	06
	DW-5 *	1130			X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	07

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: A. Feeney / Confluence						
Sampler's Company: Confluence Environmental		11/13/14	1207			
Shipment Date:						
Shipment Method:				Michelle Spencer Kiff Analytical	11/14	1207

Special Instructions: *Metals list to include: Fe, Cr, Na, As & Mn; Metals samples have been filtered in the field

*DW-5 - hot sample

ATTACHMENT C

HISTORICAL WELL AND GROUNDWATER ELEVATIONS

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-1	6/1/93	37.50	474.29	436.79
	6/22/93	38.46		435.83
	10/6/93	42.22		432.07
	1/13/94	34.52		439.77
	3/30/94	31.93		442.36
	4/25/94	33.49		440.80
	8/12/94	41.03		433.26
	12/14/94	38.63		435.66
	2/10/95	30.80		443.49
	6/15/95	25.46		448.83
	9/26/95	31.05		443.24
	12/15/95	28.11		446.18
	3/21/96	17.67		456.62
	6/13/96	22.86		451.43
	9/16/96	30.04		444.25
	12/2/96	26.74		447.55
	3/7/97	20.84		453.45
	6/12/97	28.71		445.58
	9/29/97	33.91		440.38
	12/1/97	34.88		439.41
	3/19/98	19.83		454.46
	5/29/98	21.57		452.72
	9/15/98	31.68		442.61
	11/30/98	36.80		437.49
	1/17/99	30.02		444.27
	6/10/99	29.30		444.99
	9/7/99	31.41		442.88
	12/13/99	32.95		441.34
	3/13/00	25.74		448.55
	6/12/00	28.24		446.05
	11/10/00	30.56		443.73
	12/31/00	31.71		442.58
	3/27/01	30.43		443.86

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-1	6/30/01	36.61	474.29	437.68
(cont.)	9/26/01	45.10		429.19
	12/18/01	39.39		434.90
	3/18/02	38.24		436.05
	8/21/02	36.71		437.58
	12/3/02	36.85		437.44
	3/4/03	33.72		440.57
	6/10/03	31.31		442.98
	9/9/03	35.05		439.24
	12/23/03	30.15		444.14
	3/23/04	26.61		447.68
	5/10/04	30.31		443.98
	8/4/04	34.77		439.52
	11/4/04	33.93		440.36
	1/12/05	27.82		446.47
	5/2/05	24.87		449.42
	7/19/05	29.26		445.03
	11/21/05	31.15		443.14
	2/9/06	26.24		448.05
	5/16/06	24.87		449.42
	8/9/06	31.64		442.65
	11/8/06	31.16		443.13
	2/14/07	30.00		444.29
	5/17/07	33.75		440.54
	8/2/07	40.00		434.29
	11/12/07	48.55		425.74
	2/14/08	34.74		439.55
	5/8/08	36.15		438.14
	7/23/08	45.76		428.53
	10/13/08	51.00		423.29
	2/11/09	48.69		425.60
	4/27/09	41.90		432.39
	8/4/09	51.44		422.85

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
MW-1	12/8/09	39.87	474.29	434.42
(cont.)	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
	4/22/13	33.11		441.10
	8/21/13	35.40		438.81
	11/7/13	34.36		439.85
	1/21/14	33.23		440.98
	6/10/14	41.40		432.81
	8/13/14	48.64		425.57
	11/12/14	52.80		421.41
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-2	3/21/96	17.47	472.98	455.51
(cont.)	6/13/96	23.69		449.29
	9/16/96	31.24		441.74
	12/2/96	26.90		446.08
	3/7/97	21.33		451.65
	6/12/97	29.94		443.04
	9/29/97	34.22		438.76
	12/1/97	35.94		437.04
	3/19/98	20.34		452.64
	5/29/98	22.63		450.35
	9/15/98	32.30		440.68
	11/30/98	36.90		436.08
	1/17/99	30.17		442.81
	6/10/99	29.98		443.00
	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 C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-2	5/10/04	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
	1/31/12	39.52		433.46
	5/7/12	36.89		436.09

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-2	8/6/12	40.95	472.98	432.03
(cont.)	11/12/12	39.03		433.95
	2/12/13	32.13		440.85
	4/22/13	34.15		438.83
	6/24/13	35.05		437.93
	8/21/13	36.05		436.93
	11/7/13	35.09		437.89
	1/21/14	33.81		439.17
	6/10/14	41.65		431.33
	8/13/14	50.12		422.86
	11/12/14	DRY[(d)]		--
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-3	9/15/98	30.70	473.37	442.67
(cont.)	11/30/98	34.96		438.41
	1/17/99	28.81		444.56
	6/10/99	28.10		445.27
	9/7/99	30.38		442.99
	12/13/99	31.46		441.91
	3/13/00	24.28		449.09
	6/12/00	26.80		446.57
	11/10/00	29.47		443.90
	12/31/00	31.38		441.99
	3/27/01	29.94		443.43
	6/30/01	37.54		435.83
	9/26/01	45.17		428.20
	12/18/01	39.41		433.96
	3/18/02	37.73		435.64
	6/5/02	35.35		438.02
	8/21/02	36.21		437.16
	12/3/02	35.62		437.75
	3/4/03	32.75		440.62
	6/10/03	31.26		442.11
	9/9/03	34.72		438.65
	12/23/03	30.47		442.90
	3/23/04	26.67		446.70
	5/10/04	30.25		443.12
	8/4/04	34.70		438.67
	11/4/04	33.94		439.43
	1/12/05	28.21		445.16
	5/2/05	24.56		448.81
	7/19/05	29.39		443.98
	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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-3	11/8/06	31.30	473.37	442.07
(cont.)	2/14/07	30.20		443.17
	5/17/07	33.64		439.73
	8/2/07	41.74		431.63
	11/12/07	47.41		425.96
	2/14/08	34.73		438.64
	5/8/08	35.60		437.77
	7/23/08	45.00		428.37
	10/13/08	50.70		422.67
	2/11/09	47.81		425.56
	4/27/09	41.18		432.19
	8/4/09	51.89		421.48
	12/8/09	39.50		433.87
	2/11/10	35.19		438.18
	5/3/10	31.39		441.98
	8/2/10	34.61		438.76
	11/2/10	37.20		436.17
	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
	4/22/13	33.51		439.86
	8/21/13	35.71		437.66
	11/7/13	34.60		438.77
	1/21/14	33.49		439.88
	6/10/14	41.62		431.75
	8/13/14	50.67		422.70
	11/12/14	DRY		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-4	3/30/94	31.56	473.64	442.08
	4/25/94	32.73		440.91
	8/12/94	41.61		432.03
	12/14/94	38.11		435.53
	2/10/95	30.50		443.14
	6/15/95	23.63		450.01
	9/26/95	29.70		443.94
	12/15/95	27.56		446.08
	3/21/96	15.63		458.01
	6/13/96	21.07		452.57
	9/16/96	28.99		444.65
	12/2/96	26.04		447.60
	3/7/97	19.69		453.95
	6/12/97	28.04		445.60
	9/29/97	29.91		443.73
	12/1/97	33.88		439.76
	3/19/98	18.67		454.97
	5/29/98	20.16		453.48
	9/15/98	30.46		443.18
	11/30/98	34.50		439.14
	1/17/99	28.30		445.34
	6/10/99	27.60		446.04
	9/7/99	30.79		442.85
	12/13/99	31.60		442.04
	3/13/00	24.35		449.29
	6/12/00	26.91		446.73
	11/10/00	29.71		443.93
	12/31/00	31.79		441.85
	3/27/01	29.98		443.66
	6/30/01	36.88		436.76
	9/26/01	43.87		429.77
	12/18/01	39.30		434.34
	3/18/02	37.75		435.89

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-4	6/5/02	35.68	473.64	437.96
(cont.)	8/21/02	36.58		437.06
	12/3/02	35.90		437.74
	3/4/03	32.73		440.91
	6/10/03	31.20		442.44
	9/9/03	34.64		439.00
	12/23/03	31.30		442.34
	3/23/04	26.71		446.93
	5/10/04	30.33		443.31
	8/4/04	34.87		438.77
	11/4/04	34.28		439.36
	1/12/05	28.67		444.97
	5/2/05	24.46		449.18
	7/19/05	29.36		444.28
	11/21/05	31.80		441.84
	2/9/06	26.34		447.30
	5/16/06	24.30		449.34
	8/9/06	32.05		441.59
	11/8/06	32.85		440.79
	2/14/07	30.46		443.18
	5/17/07	33.92		439.72
	8/2/07	40.68		432.96
	11/12/07	DRY		--
	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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-4	8/2/10	35.15	473.64	438.49
(cont.)	11/2/10	37.55		436.09
	2/1/11	32.86		440.78
	4/25/11	28.69		444.95
	8/3/11	32.01		441.63
	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
	4/22/13	33.80		439.84
	8/21/13	36.10		437.54
	11/7/13	35.18		438.46
	1/21/14	34.07		439.57
	6/10/14	42.10		431.54
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-5	3/30/94	32.07	472.67	440.60
	4/25/94	33.65		439.02
	8/12/94	42.73		429.94
	12/14/94	38.89		433.78
	2/10/95	31.44		441.23
	6/15/95	24.99		447.68
	9/26/95	30.20		442.47
	12/15/95	28.56		444.11
	3/21/96	16.82		455.85
	6/13/96	22.61		450.06
	9/16/96	29.78		442.89
	12/2/96	26.51		446.16
	3/7/97	21.91		450.76
	9/29/97	31.74		440.93
	12/1/97	34.05		438.62

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-5	3/19/98	20.93	472.67	451.74
(cont.)	5/29/98	21.30		451.37
	9/15/98	31.32		441.35
	11/30/98	35.44		437.23
	1/17/99	29.59		443.08
	6/10/99	28.05		444.62
	9/7/99	31.11		441.56
	12/13/99	32.66		440.01
	3/13/00	25.87		446.80
	6/12/00	28.15		444.52
	11/10/00	30.05		442.62
	12/31/00	31.81		440.86
	3/27/01	30.57		442.10
	6/30/01	37.24		435.43
	9/26/01	44.53		428.14
	12/18/01	40.65		432.02
	3/18/02	38.75		433.92
	6/5/02	36.21		436.46
	8/21/02	36.76		435.91
	12/3/02	36.12		436.55
	3/4/03	32.90		439.77
	6/10/03	33.04		439.63
	9/9/03	34.20		438.47
	12/23/03	31.38		441.29
	3/23/04	27.51		445.16
	5/10/04	31.12		441.55
	8/4/04	35.09		437.58
	11/4/04	34.34		438.33
	1/12/05	29.19		443.48
	5/2/05	25.31		447.36
	7/19/05	30.49		442.18
	11/21/05	32.35		440.32
	2/9/06	27.19		445.48

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-5	5/16/06	25.30	472.67	447.37
(cont.)	8/9/06	32.68		439.99
	11/8/06	32.22		440.45
	2/14/07	34.00		438.67
	5/17/07	34.29		438.38
	8/2/07	41.72		430.95
	11/12/07	DRY		--
	2/14/08	35.66		437.01
	5/8/08	36.60		436.07
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	42.50		430.17
	8/4/09	DRY		--
	12/8/09	39.92		432.75
	2/11/10	36.62		436.05
	5/3/10	32.89		439.78
	8/2/10	36.16		436.51
	11/2/10	38.75		433.92
	2/1/11	32.77		439.90
	4/25/11	29.03		443.64
	8/3/11	33.18		439.49
	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
	4/22/13	35.09		437.58
	8/21/13	37.00		435.67
	11/7/13	35.94		436.73
	1/21/14	34.65		438.02
	6/10/14	42.40		430.27

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-5	8/13/14	DRY	472.67	--
(cont.)	11/12/14	DRY		--
MW-6	3/30/94	33.38	471.93	438.55
	4/25/94	35.49		436.44
	8/12/94	45.14		426.79
	12/14/94	40.99		430.94
	2/10/95	33.34		438.59
	6/15/95	26.88		445.05
	9/26/95	33.55		438.38
	12/15/95	30.32		441.61
	3/21/96	18.89		453.04
	6/13/96	24.62		447.31
	9/16/96	32.64		439.29
	12/2/96	27.42		444.51
	3/7/97	22.13		449.80
	6/12/97	31.02		440.91
	9/29/97	35.77		436.16
	12/1/97	37.14		434.79
	3/19/98	21.10		450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	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		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-6	12/18/01	43.36	471.93	428.57
(cont.)	3/18/02	41.29		430.64
	6/5/02	38.85		433.08
	8/21/02	39.02		432.91
	12/3/02	38.76		433.17
	3/4/03	35.13		436.80
	6/10/03	34.15		437.78
	9/9/03	37.66		434.27
	12/23/03	33.43		438.50
	3/23/04	29.96		441.97
	5/10/04	32.98		438.95
	8/4/04	37.02		434.91
	11/4/04	37.03		434.90
	1/12/05	32.01		439.92
	5/2/05	27.30		444.63
	7/19/05	32.27		439.66
	11/21/05	33.23		438.70
	2/9/06	29.07		442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-6	2/11/10	38.89	471.93	433.04
(cont.)	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
	10/10/11	37.45		434.48
	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
	4/22/13	36.78		435.15
	6/25/13	37.15		434.78
	8/21/13	37.98		433.95
	11/7/13	39.82		432.11
	1/21/14	35.42		436.51
	6/10/14	42.36		429.57
	8/13/14	DRY		--
	11/12/14	DRY		--
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7	3/7/97	21.33	472.33	451.00
(cont.)	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
	1/17/99	31.04		441.29
	6/10/99	29.89		442.44
	9/7/99	32.38		439.95
	12/13/99	33.98		438.35
	3/13/00	27.09		445.24
	6/12/00	28.76		443.57
	11/10/00	31.54		440.79
	12/31/00	32.76		439.57
	3/27/01	30.97		441.36
	6/30/01	37.50		434.83
	9/26/01	45.11		427.22
	12/18/01	41.13		431.20
	3/18/02	39.22		433.11
	6/5/02	36.55		435.78
	8/21/02	36.81		435.52
	12/3/02	36.52		435.81
	3/4/03	32.60		439.73
	6/10/03	31.33		441.00
	9/9/03	34.71		437.62
	12/23/03	30.80		441.53
	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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7	5/2/05	24.66	472.33	447.67
(cont.)	7/19/05	29.07		443.26
	11/21/05	30.42		441.91
	2/9/06	26.15		446.18
	5/16/06	24.44		447.89
	8/9/06	31.77		440.56
	11/8/06	31.14		441.19
	2/14/07	30.39		441.94
	5/17/07	33.31		439.02
	8/2/07	37.09		435.24
	11/12/07	DRY		--
	2/14/08	36.51		435.82
	5/8/08	36.00		436.33
	7/23/08	44.42		427.91
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	41.80		430.53
	8/4/09	DRY		--
	12/17/09	39.26		433.07
	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
	4/22/13	33.19		439.14

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-7	6/24/13	34.10	472.33	438.23
(cont.)	8/21/13	36.90		435.43
	11/7/13	34.06		438.27
	1/21/14	33.11		439.22
	6/10/14	40.50		431.83
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-8	12/23/03	32.01	471.18	439.17
	3/23/04	28.50		442.68
	5/10/04	31.44		439.74
	8/4/04	35.11		436.07
	11/4/04	34.77		436.41
	1/12/05	29.66		441.52
	5/2/05	25.91		445.27
	7/19/05	30.56		440.62
	11/21/05	32.48		438.70
	2/9/06	27.40		443.78
	5/16/06	25.60		445.58
	8/9/06	32.77		438.41
	11/8/06	32.10		439.08
	2/14/07	30.94		440.24
	5/17/07	34.14		437.04
	8/2/07	41.24		429.94
	11/12/07	DRY		--
	2/14/08	35.55		435.63
	5/8/08	36.64		434.54
	7/23/08	DRY		--
	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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-8	5/3/10	32.81	471.18	438.37
(cont.)	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
	4/22/13	35.00		436.18
	6/25/13	36.40		434.78
	8/21/13	37.20		433.98
	11/7/13	35.95		435.23
	1/21/14	34.63		436.55
	6/10/14	43.17		428.01
	8/13/14	DRY		--
	11/12/14	DRY		--
MW-9	12/23/03	34.03	470.78	436.75
	3/23/04	30.01		440.77
	5/10/04	33.61		437.17
	8/4/04	37.47		433.31
	11/4/04	37.44		433.34
	5/2/05	27.73		443.05
	7/19/05	32.90		437.88
	11/21/05	34.15		436.63
	2/9/06	29.44		441.34
	5/16/06	27.50		443.28
	8/9/06	35.85		434.93
	11/8/06	34.18		436.60
	2/14/07	34.00		436.78

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-9	5/17/07	36.88	470.78	433.90
(cont.)	8/2/07	44.11		426.67
	11/12/07	DRY		--
	2/14/08	39.32		431.46
	5/8/08	38.90		431.88
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	43.79		426.99
	8/4/09	DRY		--
	12/8/09	43.61		427.17
	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
	8/6/12	43.51		427.27
	11/12/12	42.66		428.12
	2/12/13	34.70		436.08
	4/22/13	37.01		433.77
	6/25/13	37.82		432.96
	8/21/13	39.02		431.76
	11/7/13	37.87		432.91
	1/21/14	36.31		434.47
	6/10/14	43.15		427.63
	8/13/14	DRY		--
	11/12/14	DRY		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-10	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
	11/2/10	38.30		433.33
	2/1/11	34.63		437.00
	4/25/11	29.63		442.00
	8/3/11	33.26		438.37
	10/10/11	35.62		436.01

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-10	1/31/12	39.67	471.63	431.96
(cont.)	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
	4/22/13	34.99		436.64
	6/25/13	36.25		435.38
	8/21/13	37.11		434.52
	11/7/13	36.05		435.58
	1/21/14	34.55		437.08
	6/10/14	40.18		431.45
	8/13/14	DRY		--
	11/12/14	DRY		--
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		--
	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
	4/22/13	32.74		440.22
	6/24/13	33.62		439.34

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
MW-11 (cont.)	8/21/13	34.74	472.96[(c)]	438.22
	11/7/13	33.75		439.21
	1/21/14	32.43		440.53
	6/10/14	38.62		434.34
	8/13/14	DRY		--
	11/12/14	DRY		--
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
	4/22/13	36.18		433.59
	6/25/13	37.80		431.97
	8/21/13	38.80		430.97
	11/7/13	37.40		432.37
	1/21/14	35.94		433.83
	6/10/14	42.76		427.01
	8/13/14	DRY		--
	11/12/14	DRY		--
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
VW-2	5/8/08	35.31	473.28	437.97
(cont.)	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
	10/10/11	33.29		439.28
	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
	4/22/13	33.51		439.06
	8/21/13	DRY		--
	11/7/13	DRY		--
	1/21/14	33.16		439.41
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
VW-3	2/9/06	26.60	474.38	447.78
(cont.)	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
	11/2/10	DRY		--
	2/1/11	32.56		441.82
	4/25/11	27.81		446.57
	8/3/11	28.93		445.45
	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
	4/22/13	33.49		440.89
	8/21/13	35.46		438.92
	11/7/13	35.07		439.31
	1/21/14	33.80		440.58

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
VW-3 (cont.)	6/10/14	DRY	474.38	--
	8/13/14	DRY		--
	11/12/14	DRY		--
TP-1	7/19/05	29.91	472.82	442.91
	11/21/05	32.28		440.54
	2/9/06	28.02		444.80
	5/17/06	25.18		447.64
	8/9/06	32.81		440.01
	11/8/06	32.02		440.80
	2/14/07	33.59		439.23
	5/17/07	33.52		439.30
	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
	11/2/10	37.46		435.18
	2/1/11	33.01		439.63
	4/25/11	28.23		444.41
	8/3/11	31.85		440.79
	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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
TP-1	2/12/13	31.96	472.64[(c)]	440.68
(cont.)	4/22/13	33.71		438.93
	8/21/13	35.86		436.78
	11/7/13	34.65		437.99
	1/21/14	33.38		439.26
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
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
	11/2/10	37.35		435.43
	2/1/11	32.79		439.99
	4/25/11	28.30		444.48
	8/3/11	31.59		441.19

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
TP-2	10/10/11	32.14	472.78[(c)]	440.64
(cont.)	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
	4/22/13	33.70		439.08
	8/21/13	35.43		437.35
	11/7/13	34.50		438.28
	1/21/14	33.25		439.53
	6/10/14	DRY		--
	8/13/14	DRY		--
	11/12/14	DRY		--
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 C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-1	4/22/13	33.72	472.85	439.13
(cont.)	6/24/13	35.08		437.77
	8/21/13	35.90		436.95
	11/7/13	34.79		438.06
	1/21/14	33.57		439.28
	6/10/14	41.71		431.14
	8/13/14	51.02		421.83
	11/12/14	56.47		416.38
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
	4/22/13	36.70		434.91
	6/25/13	36.94		434.67
	8/21/13	37.85		433.76
	11/7/13	36.94		434.67
	1/21/14	35.59		436.02

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-2 (cont.)	6/10/14	43.35	471.61	428.26
	8/13/14	52.02		419.59
	11/12/14	56.52		415.09
DW-3	5/22/08	40.20	470.33	430.13
	7/23/08	49.09		421.24
	10/13/08	54.62		415.71
	2/11/09	51.96		418.37
	4/27/09	45.17		425.16
	8/4/09	56.32		414.01
	12/8/09	42.92		427.41
	2/11/10	38.75		431.58
	5/3/10	34.51		435.82
	8/2/10	35.59		434.74
	11/2/10	40.00		430.33
	2/1/11	35.50		434.83
	4/25/11	30.45		439.88
	8/3/11	34.71		435.62
	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
	4/22/13	36.10		434.23
	6/25/13	37.39		432.94
	8/21/13	38.38		431.95
	11/7/13	36.85		433.48
	1/21/14	35.32		435.01
	6/10/14	44.03		426.30
	8/13/14	54.13		416.20
	11/12/14	58.59		411.74
DW-4	5/22/08	40.20	468.48	428.28
	7/23/08	49.50		418.98

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-4	10/13/08	54.90	468.48	413.58
(cont.)	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
	4/22/13	35.90		432.58
	8/21/13	38.30		430.18
	11/7/13	36.45		432.03
	1/21/14	35.99		432.49
	6/10/14	44.63		423.85
	8/13/14	54.37		414.11
	11/12/14	58.86		409.62
DW-5	12/8/09	43.05	471.86	428.81
	2/11/10	38.93		432.93
	5/3/10	34.55		437.31
	8/2/10	37.56		434.30
	11/2/10	40.00		431.86
	2/1/11	35.57		436.29
	4/25/11	30.59		441.27
	8/3/11	34.64		437.22

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-5	10/10/11	37.00	471.86	434.86
(cont.)	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
	4/22/13	36.52		435.34
	6/25/13	37.42		434.44
	8/21/13	38.35		433.51
	11/7/13	36.97		434.89
	1/21/14	34.45		437.41
	6/10/14	43.51		428.35
	8/13/14	51.13		420.73
	11/13/14	56.40		415.46
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
	4/22/13	37.29		434.48
	6/25/13	38.55		433.22
	8/21/13	39.55		432.22
	11/7/13	38.24		433.53
	1/21/14	37.03		434.74

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[(a)] (feet MSL)	Water Table Elevation[(b)] (feet MSL)
DW-6	6/10/14	44.40	471.77	427.37
(cont.)	8/13/14	52.71		419.06
	11/12/14	57.14		414.63
DW-7	12/8/09	43.01	470.07	427.06
	2/11/10	38.70		431.37
	5/3/10	34.64		435.43
	8/2/10	37.82		432.25
	11/2/10	40.42		429.65
	2/1/11	35.76		434.31
	4/25/11	30.82		439.25
	8/3/11	35.19		434.88
	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
	4/22/13	36.80		433.27
	6/25/13	38.44		431.63
	8/21/13	39.91		430.16
	11/7/13	38.25		431.82
	1/21/14	36.70		433.37
	6/10/14	44.67		425.40
	8/13/14	53.47		416.60
	11/12/14	57.99		412.08
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

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
DW-8	4/22/13	32.66	472.31	439.65
(cont.)	6/24/13	33.87		438.44
	8/21/13	34.43		437.88
	11/7/13	33.54		438.77
	1/21/14	33.03		439.28
	6/10/14	40.60		431.71
	8/13/14	50.56		421.75
	11/12/14	55.87		416.44
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
	4/22/13	36.39		433.41
	6/25/13	38.46		431.34
	8/21/13	39.32		430.48
	11/7/13	37.76		432.04
	1/21/14	36.26		433.54
	6/10/14	44.05		425.75
	8/13/14	52.61		417.19
	11/12/14	56.94		412.86
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
	1/31/12	39.26		433.80
	5/7/12	36.18		436.88
	8/6/12	40.23		432.83

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
IP-1	11/12/12	38.76	473.06[c]	434.30
(cont.)	2/12/13	31.25		441.81
	4/22/13	33.28		439.78
	6/24/13	34.85		438.21
	8/21/13	36.10		436.96
	11/7/13	35.07		437.99
	1/21/14	33.57		439.49
	6/10/14	40.90		432.16
	8/13/14	49.05		424.01
	11/12/14	53.97		419.09
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		--
	4/22/13	33.86		439.20
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
	6/10/14	42.39		430.67
	8/13/14	50.26		422.80
	11/12/14	55.48		417.58
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		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
IP-3	4/22/13	34.12	473.05[c]	438.93
(cont.)	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
	6/10/14	42.35		430.70
	8/13/14	50.90		422.15
	11/12/14	56.05		417.00
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		--
	4/22/13	33.76		439.34
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
	6/10/14	41.83		431.27
	8/13/14	51.08		422.02
	11/12/14	56.56		416.54
IP-5	7/23/08	44.70	473.06	428.36
	10/13/08	51.06		422.00
	5/3/10[f]	31.60		441.46
	4/25/11	27.80	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		--
	4/22/13	33.78		439.27
	6/24/13	35.08		437.97
	8/21/13	NM		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
IP-5	11/7/13	34.68	473.05	438.37
(cont.)	1/21/14	33.14		439.91
	6/10/14	41.75		431.30
	8/13/14	50.95		422.10
	11/12/14	56.48		416.57
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		--
	4/22/13	37.05		435.38
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--
	6/10/14	45.71		426.72
	8/13/14	55.68		416.75
	11/12/14	61.42		411.01
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		--
	4/22/13	38.34		434.09
	8/21/13	NM		--
	11/7/13	NM		--
	1/21/14	NM		--

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
IP-7 (cont.)	6/10/14	46.70	472.43	425.73
	8/13/14	57.10		415.33
	11/12/14	63.13		409.30
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
	4/22/13	33.75		439.47
	8/21/13	36.69		436.53
	11/7/13	34.58		438.64
	1/21/14	33.42		439.80
	6/10/14	41.72		431.50
	8/13/14	51.10		422.12
	11/12/14	56.52		416.70
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
	4/22/13	33.85		439.50
	8/21/13	35.50		437.85
	11/7/13	33.96		439.39
	1/21/14	32.78		440.57
	6/10/14	40.65		432.70
	8/13/14	50.45		422.90
	11/12/14	56.42		416.93

TABLE C-1

HISTORICAL WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation[a] (feet MSL)	Water Table Elevation[b] (feet MSL)
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
	4/22/13	33.40		440.48
	6/24/13	34.87		439.01
	8/21/13	35.55		438.33
	11/7/13	34.41		439.47
	1/21/14	33.11		440.77
	6/10/14	42.15		431.73
	8/13/14	51.80		422.08
	11/12/14	57.45		416.43

(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 D

HISTORICAL GROUNDWATER ANALYTICAL RESULTS

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	--	--	--	--	--	--	--	--

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	1/17/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
(cont.)	6/10/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	2/14/08	1,700	3.3	17	38	83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	620	1.8	ND<0.5	12	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	270	0.52	ND<0.5	3.9	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	10/13/08	730	ND<0.5	ND<0.5	0.68	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	2/11/09	2,100	4.1	8.1	18	36	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5
	4/27/09	2,800	9.9	34	94	170	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/09	890	ND<0.5	ND<0.5	1.7	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	12/8/09	3,200	16	18	81	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<20	ND<0.5	ND<0.5
	2/11/10	1,300	3.7	1.7	13	6.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	5/5/10	710	2.2	0.92	5.9	2.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	1,200	2.4	3.7	22	23	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	1,100	7.3	34	18	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/11	200	ND<0.5	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
	4/22/13	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	11/7/13	4,300	0.82	2.9	76	160	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.)	1/21/14	9,600	2.5	5.2	130	250	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<15	ND<0.5	ND<0.5
	6/11/14	2,500	ND<0.5	1.6	27	58	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5
	8/13/14	1,300	2.9	3.6	9.3	25	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	11/12/14	5,400	33	48	39	530	ND<0.5	ND<0.5	ND<0.5	ND<0.5	8.4	ND<50	ND<8	ND<0.5	ND<0.5
MW-2	6/1/93	170,000	20,000	21,000	3,300	18,000	--	--	--	--	--	--	--	--	--
	6/22/93	160,000	19,000	22,000	3,500	18,000	--	--	--	--	--	--	--	--	--
	10/6/93	110,000	17,000	17,000	3,000	15,000	--	--	--	--	--	--	--	--	--
	1/13/94	93,000	20,000	19,000	2,300	14,000	--	--	--	--	--	--	--	--	--
	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	41,000	9,600	7,300	840	7,800	--	--	--	--	--	--	--	--	--
	8/12/94	59,000	11,000	11,000	2,300	11,000	--	--	--	--	--	--	--	--	--
	12/14/94	63,000	13,000	13,000	2,200	12,000	--	--	--	--	--	--	--	--	--
	2/10/95	63,000	12,000	12,000	2,200	11,000	--	--	--	--	--	--	--	--	--
	6/15/95	61,000	11,000	12,000	1,900	11,000	--	--	--	--	--	--	--	--	--
	9/26/95	61,000	9,400	11,000	2,300	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	48,000	8,000	8,300	2,200	12,000	--	--	--	--	--	--	--	--	--
	3/21/96	48,000	8,000	7,700	2,400	12,000	--	--	--	--	--	--	--	--	--
	6/13/96	33,000	7,300	8,800	1,900	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	8,600	510	640	180	1,300	ND<250	--	--	--	--	--	--	--	--
	12/2/96	29,000	4,400	4,000	1,300	6,100	ND<130	--	--	--	--	--	--	--	--
	3/7/97	13,000	1,800	1,100	270	2,000	ND<250	--	--	--	--	--	--	--	--
	6/12/97	68,000	7,800	6,600	2,300	11,000	ND<500	--	--	--	--	--	--	--	--
	9/29/97	15,000	1,500	97	740	1,800	ND<250	--	--	--	--	--	--	--	--

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	12/1/97	13,000	900	37	860	2,400	ND<250	--	--	--	--	--	--	--	--
(cont.)	3/19/98	42,000	5,000	3,600	2,000	8,300	ND<250	--	--	--	--	--	--	--	--
	5/29/98	68,000	5,600	4,700	2,400	11,000	ND<250	--	--	--	--	--	--	--	--
	9/15/98	36,000	3900	1200	1400	7800	ND<250	--	--	--	--	--	--	--	--
	11/30/98	16,000	2,200	59	1,200	1,500	ND<250	--	--	--	--	--	--	--	--
	1/17/99	30,000	4,000	2,200	2,100	9,500	ND<250	--	--	--	--	--	--	--	--
	6/10/99	70,000	6,300	1,800	3,600	14,000	ND<500	--	--	--	--	--	--	--	--
	9/7/99	42,000	3,800	840	1,900	8,000	150	--	--	--	--	--	--	--	--
	12/13/99	14,000	1,400	87	690	110	34	--	--	--	--	--	--	--	--
	3/13/00	38,000	2,400	2,300	1,600	6,400	2,400	--	--	--	--	--	--	--	--
	6/12/00	56,000	4,000	950	2,300	7,200	ND<50	--	--	--	--	--	--	--	--
	11/10/00	35,000	5,100	850	1,500	3,200	230	--	--	--	--	--	--	--	--
	12/31/00	21,000	3,200	420	1,300	1,200	440	--	--	--	--	--	--	--	--
	3/27/01	3,500	420	64	16	280	120	--	--	--	--	--	--	--	--
	6/30/01	1,200	88	4.5	65	37	29	--	--	--	--	--	--	--	--
	9/26/01	53,000	8,500	1,500	2,400	4,600	270	--	--	--	--	--	--	--	--
	12/18/01	26,000	5,400	900	1,500	2,200	430	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	4,200	240	7.3	200	53	89	--	--	--	--	--	--	--	--
	6/5/02	25,000	3,500	390	1,400	2,400	550	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	32	620	300	160	--	--	--	--	--	--	--	--
	12/3/02	3,700	110	2.5	130	11	29	--	--	--	--	--	--	--	--
	3/4/03	8,700	1,100	77	350	540	230	ND<0.5	ND<0.5	ND<10	21	ND<150	ND<5	ND<0.5	ND<0.5
	6/10/03	6,300	660	35	190	120	410	ND<2.5	ND<2.5	ND<5	ND<25	ND<250	ND<25	ND<2.5	ND<2.5

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	9/9/03	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
(cont.)	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	12/8/09	24,000	3,100	200	1,200	830	520	ND<7	ND<7	8.0	250	ND<700	ND<70	ND<7	ND<7
	2/12/10	19,000	2,900	440	940	1,300	820	ND<7	ND<7	9.5	400	ND<700	ND<70	ND<7	ND<7
	5/3/10	26,000	3,100	870	1,100	2,200	530	ND<7	ND<7	8.0	370	ND<700	ND<70	ND<7	ND<7
	8/3/10	19,000	2,000	150	840	730	280	ND<4	ND<4	4.4	200	ND<400	ND<40	ND<4	ND<4
	11/4/10	13,000	2,000	160	420	390	540	ND<4	ND<4	5.7	510	ND<400	ND<40	ND<4	ND<4
	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
	4/23/13	430	10	2.2	3.8	8.5	13	ND<0.5	ND<0.5	ND<0.5	6.6	ND<50	ND<8	ND<0.5	ND<0.5
	6/24/13	1,700	7.2	0.91	12	16	9.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	11,000	560	30	430	440	88	ND<0.5	ND<0.5	1.0	48	ND<50	ND<8	ND<0.5	ND<0.5
	11/7/13	4,700	140	7.5	160	170	28	ND<0.9	ND<0.9	ND<0.9	22	ND<90	ND<9	ND<0.9	ND<0.9
	1/22/14	3,000	140	9.0	68	92	43	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	6,900	520	40	300	320	120	ND<0.5	ND<0.5	1.4	100	ND<80	ND<25	ND<0.5	ND<0.5
	8/14/14	10,000	1,500	41	380	300	240	ND<0.5	ND<0.5	2.6	160	ND<300	ND<20	ND<0.5	ND<0.5
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-3	6/1/93	270	4.6	ND<0.5	ND<0.5	1.9	--	--	--	--	--	--	--	--	--
	6/22/93	160	8.2	ND<0.5	ND<0.5	0.72	--	--	--	--	--	--	--	--	--
	10/6/93	740	57	110	24	120	--	--	--	--	--	--	--	--	--
	1/13/94	83	2.6	0.67	0.78	4.2	--	--	--	--	--	--	--	--	--
	3/30/94	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/94	60	0.75	3.2	0.50	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
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	11/12/07	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
(cont.)	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
	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
	4/22/13	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
	8/22/13	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	11/7/13	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
(cont.)	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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	--	--

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	ND<50	2.4	1.8	2.3	4.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
	4/22/13	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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	--	--	--	--	--	--	--	--
	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
	6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	540	4.1	ND<0.5	ND<0.5	0.52	ND<5	--	--	--	--	--	--	--	--

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	9/15/98	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
(cont.)	11/30/98	430	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	1/17/99	500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/10/99	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/7/99	820	46	1.7	10	21	ND<5	--	--	--	--	--	--	--	--
	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/13/00	270	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/10/00	2,200	42	1.1	25	30	8.6	--	--	--	--	--	--	--	--
	12/31/00	1,300	21	ND<0.5	4.3	2.6	10	--	--	--	--	--	--	--	--
	3/27/01	1,200	11	ND<0.5	2.6	ND<0.5	21	--	--	--	--	--	--	--	--
	6/30/01	1,400	4.8	ND<0.5	1.5	0.56	14	--	--	--	--	--	--	--	--
	9/26/01	660	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.0	--	--	--	--	--	--	--	--
	12/18/01	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	890	0.65	ND<0.5	ND<0.5	ND<0.5	3.1	--	--	--	--	--	--	--	--
	6/5/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/21/02	2,100	20	ND<0.5	63	4.0	7.0	--	--	--	--	--	--	--	--
	12/3/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/4/03	490	10	ND<0.5	2.2	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/9/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	12/23/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/23/04	440	2.3	ND<0.5	1.0	5.9	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
MW-5	5/6/10	220	ND<0.5	ND<0.5	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
	4/22/13	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
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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	--	--	--	--	--	--	--	--	--

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	6/15/95	75,000	20,000	11,000	2,100	15,000	--	--	--	--	--	--	--	--	--
(cont.)	9/26/95	62,000	15,000	9,600	1,700	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	61,000	15,000	9,000	2,300	15,000	--	--	--	--	--	--	--	--	--
	3/21/96	65,000	18,000	9,800	2,400	16,000	--	--	--	--	--	--	--	--	--
	6/13/96	29,000	8,600	3,300	2,200	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	42,000	6,400	1,800	2,100	11,000	ND<250	--	--	--	--	--	--	--	--
	12/2/96	28,000	3,000	1,100	970	8,300	ND<500	--	--	--	--	--	--	--	--
	3/7/97	12,000	2,000	190	520	2,300	ND<250	--	--	--	--	--	--	--	--
	6/12/97	37,000	3,900	470	1,600	6,200	ND<100	--	--	--	--	--	--	--	--
	9/29/97	34,000	3,500	370	1,600	5,200	ND<100	--	--	--	--	--	--	--	--
	12/1/97	20,000	2,100	ND<10	1,200	2,200	ND<100	--	--	--	--	--	--	--	--
	3/19/98	24,000	2,900	460	1,100	3,400	ND<100	--	--	--	--	--	--	--	--
	5/29/98	38,000	3,500	700	1,800	5,200	ND<100	--	--	--	--	--	--	--	--
	9/15/98	22,000	1,900	110	1,400	3,000	ND<100	--	--	--	--	--	--	--	--
	11/30/98	9,900	770	16	820	710	ND<100	--	--	--	--	--	--	--	--
	1/17/99	14,000	2,200	160	1,700	3,600	ND<100	--	--	--	--	--	--	--	--
	6/10/99	22,000	1,600	160	1,400	2,900	5.5	--	--	--	--	--	--	--	--
	9/7/99	17,000	1,400	33	1,300	1,800	ND<50	--	--	--	--	--	--	--	--
	12/13/99	16,000	790	9.2	840	780	ND<25	--	--	--	--	--	--	--	--
	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	--	--	--	--	--	--	--	--

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	6/30/01	750	45	0.93	47	14	54	--	--	--	--	--	--	--	--
(cont.)	9/26/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/18/01	43,000	3,800	350	1,900	3,000	900	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	33,000	2,600	120	1,800	2,800	740	--	--	--	--	--	--	--	--
	6/5/02	10,000	1,100	16	700	180	600	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	23	710	290	370	--	--	--	--	--	--	--	--
	12/3/02	16,000	1,700	63	970	630	1,500	--	--	--	--	--	--	--	--
	3/4/03	16,000	1,700	25	1,200	40	7,700	ND<20	ND<20	ND<70	ND<200	ND<2,000	ND<200	ND<20	ND<20
	6/10/03	9,500	860	15	380	47	2,600	ND<5	ND<5	18	ND<50	ND<500	ND<50	ND<5	ND<5
	9/9/03	11,000	1,000	16	630	120	2,500	ND<5	ND<5	20	52	ND<500	ND<50	ND<5	ND<5
	12/23/03	18,000	2,100	41	1,100	390	4,900	ND<10	ND<10	42	ND<100	ND<1,000	ND<100	ND<10	ND<10
	3/23/04	24,000	1,400	71	1,500	2,000	7,500	ND<20	ND<20	66	ND<200	ND<2,000	ND<200	ND<20	ND<20
	5/10/04	6,500	550	ND<10	71	43	3,700	ND<10	ND<10	31	ND<100	ND<1,000	ND<100	ND<10	ND<10
	8/4/04	8,200	990	19	300	120	3,300	ND<5	ND<5	23	ND<50	ND<500	ND<50	ND<5	ND<5
	11/4/04	9,600	1,100	30	320	160	2,200	ND<4	ND<4	18	22	ND<400	ND<40	ND<4	ND<4
	1/12/05	12,000	1,100	34	600	500	3,600	ND<4	ND<4	31	30	ND<400	ND<40	ND<4	ND<4
	5/2/05	14,000	630	22	610	920	4,000	ND<10	ND<10	32	120	ND<3,000	ND<100	ND<10	ND<10
	7/20/05	9,800	1,200	21	340	150	1,800	ND<2.5	ND<2.5	14	140	ND<500	ND<25	ND<2.5	ND<2.5
	11/21/05	6,600	150	26	580	640	100	ND<1	ND<1	ND<1	13	ND<100	ND<10	ND<1	ND<1
	2/9/06	7,100	340	11	370	360	910	ND<2	ND<2	9.3	120	ND<200	ND<20	ND<2	ND<2
	5/17/06	7,100	270	5.1	320	290	930	ND<2	ND<2	8.4	260	ND<200	ND<20	ND<2	ND<2
	8/9/06	5,800	440	7.5	120	45	670	ND<2	ND<2	7.3	380	ND<2,000	ND<50	ND<2	ND<2
	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	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
	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
	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	4/24/13	8,600	880	22	89	25	190	ND<1.5	ND<1.5	2.7	700	ND<400	ND<15	ND<1.5	ND<1.5
	6/25/13	6,800	350	7.0	26	9.3	81	ND<0.9	ND<0.9	1.0	280	ND<800	ND<9	ND<0.9	ND<0.9
	8/22/13	14,000	1,500	59	290	150	110	ND<1.5	ND<1.5	ND<1.5	93	ND<400	ND<15	ND<1.5	ND<1.5
	11/7/13	12,000	1,200	62	190	81	100	ND<2.5	ND<2.5	ND<2.5	66	ND<250	ND<25	ND<2.5	ND<2.5
	1/22/14	15,000	1,100	37	120	52	110	ND<2.5	ND<2.5	ND<2.5	190	ND<250	ND<25	ND<2.5	ND<2.5
	6/10/14	11,000	860	20	50	20	120	ND<1.5	ND<1.5	ND<1.5	280	ND<150	ND<15	ND<1.5	ND<1.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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	--	--	--	--	--	--	--	--

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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	2,600	2.5	ND<0.5	36	31	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	1,600	2.0	ND<0.5	16	16	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	830	1.6	ND<0.5	15	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	710	ND<0.5	ND<0.5	0.75	0.52	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	1,400	1.1	ND<0.5	9.2	8.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	1,100	0.56	ND<0.5	3.4	23	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	270	ND<0.5	ND<0.5	1.2	0.98	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	930	0.84	ND<0.5	10	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	650	ND<0.5	ND<0.5	1.2	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	800	ND<0.5	ND<0.5	1.0	0.62	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	800	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	700	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	3,200	1.3	ND<0.5	50	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	1,600	1.2	ND<0.5	4.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	1,400	2.2	0.74	2.8	0.93	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	2,300	3.9	1.4	8.9	5.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/28/09	4,500	7.4	3.8	33	7.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	12/17/09	4,500	6.7	3.4	27	8.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5
	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
	4/23/13	720	0.65	0.61	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/24/13	1,700	1.3	ND<0.5	2.7	2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	880	0.54	ND<0.5	1.7	0.82	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/7/13	330	ND<0.5	ND<0.5	0.51	0.73	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	1,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	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
	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
	4/23/13	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
	6/25/13	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
	8/22/13	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
	11/7/13	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
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	80	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total 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	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
	5/8/08	1,200	8.2	0.52	4.0	0.74	5.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total 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	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	12/9/09	1,200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
	4/23/13	1,900	4.5	0.75	1.7	1.0	3.4	ND<0.5	ND<0.5	ND<0.5	5.0	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	2,800	20	0.91	3.8	2.7	6.0	ND<0.5	ND<0.5	ND<0.5	29	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	1,500	20	0.70	1.7	0.84	9.0	ND<0.5	ND<0.5	ND<0.5	40	ND<50	ND<5	ND<0.5	ND<0.5
	11/7/13	1,400	3.1	ND<0.5	0.7	0.58	4.2	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	2,000	2.4	ND<0.5	0.81	0.79	2.7	ND<0.5	ND<0.5	ND<0.5	7.6	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	780	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	5.4	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total 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	9/5/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--
	12/23/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	3/23/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	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
	4/22/13	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
	6/25/13	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
	8/21/13	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
	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total 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-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
	4/24/13	5,800	16	18	140	640	ND<0.9	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9
	6/24/13	8,000	24	34	190	830	ND<0.9	ND<0.9	ND<0.9	ND<0.9	5.8	ND<90	ND<9	ND<0.9	ND<0.9
	8/22/13	9,600	26	32	260	940	ND<0.9	ND<0.9	ND<0.9	ND<0.9	8.6	ND<200	ND<20	ND<0.9	ND<0.9
	11/7/13	8,800	50	54	380	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	12	ND<150	ND<15	ND<1.5	ND<1.5
	1/22/14	15,000	44	45	390	910	ND<1.5	ND<1.5	ND<1.5	ND<1.5	7.7	ND<150	ND<15	ND<1.5	ND<1.5
	6/10/14	660	3.7	1.2	7.0	5.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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-11	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
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
	4/24/13	1,400	2.2	0.78	7.7	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<100	ND<20	ND<0.5	ND<0.5
	6/25/13	4,400	8.8	5.2	26	13	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	4,500	15	2.4	33	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
	11/7/13	4,600	15	2.4	47	13	0.50	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	3,400	4.3	1.5	12	2.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	4,500	10	2.9	67	13	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-2	8/4/04	5,700	480	ND<20	600	ND<20	12,000	ND<20	ND<20	110	ND<90	ND<2,000	ND<200	ND<20	ND<20
	11/4/04	5,800	340	ND<20	38	ND<20	10,000	ND<20	ND<20	120	ND<90	ND<2,000	ND<200	ND<20	ND<20
	1/12/05	3,800	210	ND<5	90	54	2,900	ND<5	ND<5	33	26[f]	ND<500	ND<50	ND<5	ND<5
	5/2/05	2,600	84	ND<2	13	7.0	960	ND<2	ND<2	12	57	ND<500	ND<20	ND<2	ND<2
	7/20/05	6,200	240	13	290	480	6,600	ND<2	ND<2	56	59[f]	ND<2,000	ND<20	ND<2	ND<2
	11/21/05	3,100	100	ND<9	22	10	5,300	ND<9	ND<9	54	76[f]	ND<900	ND<90	ND<9	ND<9
	2/9/06	3,500	140	ND<25	130	36	12,000	ND<25	ND<25	65	2,800	ND<2,500	ND<250	ND<25	ND<25
	5/17/06	1,800	90	2.6	39	11	1,200	ND<2.5	ND<2.5	12	700	ND<250	ND<25	ND<2.5	ND<2.5
	8/9/06	4,300	86	3.5	200	16	2,500	ND<2.5	ND<2.5	28	2,800	ND<5,000	ND<25	ND<2.5	ND<2.5
	11/8/06	3,200	46	3.1	10	4.8	1,500	ND<3	ND<3	11	7,100	ND<800	ND<30	ND<3	ND<3

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	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
	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	4/24/13	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
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VW-3	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/20/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	1,100
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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
	4/22/13	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
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	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
	1/22/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total 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	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	11/12/14	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
	12/17/09	10,000	690	19	700	45	1,000	ND<2.5	ND<2.5	8.8	2,900	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/5/10	15,000	2,100	360	1,100	620	3,400	ND<8	ND<8	27	4,500	ND<800	ND<80	ND<8	ND<8
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	14,000	1,000	270	280	1,600	4,500	ND<8	ND<8	28	4,800	ND<800	ND<80	ND<8	ND<8

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
	4/24/13	2,000	35	21	22	180	76	ND<0.5	ND<0.5	0.70	33	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	3,500	28	3.8	35	11	100	ND<0.5	ND<0.5	0.98	42	ND<50	ND<5	ND<0.5	ND<0.5
	11/7/13	2,800	14	1.8	19	7.3	43	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	3,400	11	1.4	16	5.2	41	ND<0.5	ND<0.5	ND<0.5	22	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TP-2	7/20/05	26,000	1,800	1,100	1,100	2,500	63,000	ND<150	ND<150	400	ND<700	ND<15,000	ND<1,500	ND<150	ND<150
	11/22/05	16,000	1,200	140	840	820	52,000	ND<90	ND<90	340	1,200	ND<9,000	ND<900	ND<90	ND<90
	2/9/06	2,700	94	2.9	28	14	1,200	ND<2.5	ND<2.5	13	1,600	ND<250	ND<25	ND<2.5	ND<2.5
	5/17/06	31,000	2,200	1,100	1,500	3,300	87,000	ND<90	ND<90	680	4,800	ND<15,000	ND<1,500	ND<90	ND<90
	8/9/06	14,000	1,400	86	1,200	830	56,000	ND<2.5	ND<2.5	350	2,800	ND<4,000	ND<25	ND<2.5	ND<2.5
	11/8/06	16,000	1,300	ND<90	930	370	38,000	ND<90	ND<90	280	3,600	ND<40,000	ND<900	ND<90	ND<90
	2/14/07	22,000	1,900	230	1,700	1,600	53,000	ND<90	ND<90	400	2,800	ND<20,000	ND<900	ND<90	ND<90
	5/17/07	ND<25,000	2,400	51	1,500	510	69,000	ND<2	ND<0.5	550	4,300	ND<25,000	ND<5	--	--

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	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
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	7,200	950	ND<25	77	ND<25	13,000	ND<25	ND<25	130	20,000	ND<2,500	ND<250	ND<25	ND<25
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	6,400	740	ND<25	450	130	14,000	ND<25	ND<25	130	9,900	ND<2,500	ND<250	ND<25	ND<25
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/4/10	4,900	230	82	150	630	980	ND<5	ND<5	6.3	14,000	ND<500	ND<50	ND<5	ND<5
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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
	4/24/13	100	1.2	0.88	1.6	7.4	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total 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	8/21/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.89	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
(cont.)	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DW-1	5/22/08	5,100	470	150	210	570	100	ND<0.9	ND<0.9	0.98	76	ND<90	ND<9	ND<0.9	ND<0.9
	7/23/08	560	43	5.2	18	40	16	ND<0.5	ND<0.5	ND<0.5	21	ND<100	ND<5	ND<0.5	ND<0.5
	10/13/08	2,800	370	15	120	78	140	ND<0.5	ND<0.5	1.2	220	ND<300	ND<80	ND<0.5	ND<0.5
	2/11/09	520	45	5.3	32	31	42	ND<0.5	ND<0.5	ND<0.5	43	ND<100	ND<8	ND<0.5	ND<0.5
	4/28/09	2,700	250	36	160	190	86	ND<0.5	ND<0.5	0.84	120	ND<50	ND<5	ND<0.5	ND<0.5
	8/5/09	2,100	330	17	87	53	220	ND<0.5	ND<0.5	2.0	310	ND<50	ND<5	ND<0.5	ND<0.5
	12/8/09	6,200	560	63	400	490	140	ND<0.5	ND<0.5	1.1	200	ND<200	ND<8	ND<0.5	ND<0.5
	2/12/10	2,000	200	36	130	150	49	ND<0.5	ND<0.5	ND<0.5	58	ND<200	ND<5	ND<0.5	ND<0.5
	5/4/10	1,800	160	27	110	140	21	ND<0.5	ND<0.5	ND<0.5	41	ND<100	ND<5	ND<0.5	ND<0.5
	8/2/10	1,400	53	11	67	78	8.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/10	ND<50	0.90	ND<0.5	0.70	1.3	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/2/11	58	1.9	ND<0.5	2.0	2.5	0.52	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	4/28/11	72	2.2	5.7	2.0	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	55	0.57	ND<0.5	0.92	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	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
	4/22/13	ND<50	ND<0.5	ND<0.5	ND<0.5	0.78	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/24/13	12,000	110	66	280	860	13	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	1,100	18	5.8	34	82	5.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/7/13	5,200	69	13	130	200	18	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<8	ND<0.5	ND<0.5
	1/22/14	5,000	51	13	98	110	12	ND<0.5	ND<0.5	ND<0.5	11	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	3,600	56	9.4	130	220	18	ND<0.5	ND<0.5	ND<0.5	14	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	1,200	24	1.4	7.2	1.4	12	ND<0.5	ND<0.5	ND<0.5	15	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	160	3.0	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	9.2	ND<50	ND<5	ND<0.5	ND<0.5
DW-2	5/22/08	11,000	1,300	170	460	230	620	ND<2.5	ND<2.5	9.6	870	ND<400	ND<25	ND<2.5	ND<2.5
	7/23/08	7,600	980	44	180	55	420	ND<2	ND<2	5.7	720	ND<200	ND<20	ND<2	ND<2
	10/13/08	7,300	910	23	120	18	280	ND<1.5	ND<1.5	3.1	650	ND<2,000	ND<50	ND<1.5	ND<1.5
	2/11/09	8,000	1,100	31	230	46	290	ND<2.5	ND<2.5	3.9	600	ND<800	ND<25	ND<2.5	ND<2.5
	4/28/09	5,800	500	27	110	55	330	ND<1	ND<1	4.4	600	ND<400	ND<10	ND<1	ND<1
	8/4/09	6,800	910	19	37	27	200	ND<1	ND<1	2.7	530	ND<200	ND<10	ND<1	ND<1
	12/9/09	6,600	450	14	55	34	210	ND<0.9	ND<0.9	2.6	410	ND<200	ND<9	ND<0.9	ND<0.9
	2/11/10	4,500	340	14	44	25	320	ND<0.9	ND<0.9	3.9	520	ND<300	ND<9	ND<0.9	ND<0.9
	5/4/10	2,300	110	7.1	17	16	350	ND<0.9	ND<0.9	4.1	550	ND<200	ND<9	ND<0.9	ND<0.9
	8/2/10	3,800	420	22	21	28	300	ND<0.9	ND<0.9	3.5	600	ND<300	ND<20	ND<0.9	ND<0.9
	11/2/10	2,600	230	7.0	11	4.0	300	ND<0.5	ND<0.5	3.3	660	ND<300	ND<8	ND<0.5	ND<0.5
	2/1/11	3,300	220	6.8	18	10	210	ND<0.5	ND<0.5	2.7	620	ND<300	ND<5	ND<0.5	ND<0.5
	4/27/11	1,900	78	2.6	2.6	5.6	200	ND<0.5	ND<0.5	2.2	590	ND<300	ND<5	ND<0.5	ND<0.5
	8/4/11	4,400	420	10	24	13	160	ND<0.5	ND<0.5	2.1	500	ND<100	ND<10	ND<0.5	ND<0.5

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	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
	4/24/13	4,500	320	7.2	26	9.5	100	ND<0.5	ND<0.5	1.3	370	ND<80	ND<5	ND<0.5	ND<0.5
	6/25/13	4,900	250	6.2	58	26	100	ND<0.5	ND<0.5	1.2	400	ND<50	ND<8	ND<0.5	ND<0.5
	8/22/13	8,300	600	23	96	42	240	ND<0.5	ND<0.5	2.5	500	ND<50	ND<5	ND<0.5	ND<0.5
	11/7/13	6,500	520	18	57	17	150	ND<0.9	ND<0.9	2.2	310	ND<90	ND<9	ND<0.9	ND<0.9
	1/22/14	8,500	490	14	55	15	150	ND<0.9	ND<0.9	1.9	380	ND<300	ND<9	ND<0.9	ND<0.9
	6/11/14	4,400	330	6.5	26	7.3	100	ND<0.5	ND<0.5	1.3	390	ND<200	ND<5	ND<0.5	ND<0.5
	8/14/14	3,000	170	3.0	5.8	2.7	58	ND<0.5	ND<0.5	0.76	410	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/14	1,100	0.83	ND<0.5	ND<0.5	ND<0.5	9.0	ND<0.5	ND<0.5	ND<0.5	310	ND<50	ND<5	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-3	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
(cont.)	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
	4/23/13	66	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	5,600	1.1	1.1	120	76	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	840	1.4	ND<0.5	3.2	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
	11/7/13	960	ND<0.5	ND<0.5	5.1	2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	860	ND<0.5	ND<0.5	3.0	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
	6/11/14	1,900	0.64	ND<0.5	23	9.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	8/13/14	430	5.3	ND<0.5	1.4	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
	11/12/14	290	0.72	ND<0.5	ND<0.5	ND<0.5	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 D-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)	Ethyl-benzene[b] (µg/l)	Total 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
	4/22/13	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
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	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
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	53	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
DW-5	12/9/09	15,000	140	25	200	960	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<25	ND<2.5	ND<2.5
	2/11/10	1,600	37	2.5	36	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	5/4/10	2,100	69	2.9	41	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
DW-5	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
(cont.)	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
	4/24/13	3,000	32	2.5	38	31	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	6/25/13	120,000	120	ND<4	1,400	2,200	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<200	ND<4	ND<4
	8/22/13	22,000	58	11	770	1,200	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	11/7/13	26,000	62	12	1,000	1,400	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	1/22/14	17,000	66	6.1	440	470	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<400	ND<40	ND<2.5	ND<2.5
	6/11/14	18,000	53	4.3	340	410	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<40	ND<4	ND<4
	8/14/14	15,000	60	5.0	330	570	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	11/13/14	18,000	27	4.3	290	510	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
DW-6	12/9/09	6,200	33	4.3	100	43	9.7	ND<1	ND<1	ND<1	10	ND<100	ND<10	ND<1	ND<1
	2/11/10	4,800	18	3.0	44	15	14	ND<0.5	ND<0.5	ND<0.5	9.2	ND<80	ND<10	ND<0.5	ND<0.5
	5/4/10	4,600	13	3.5	29	17	5.6	ND<0.5	ND<0.5	ND<0.5	7.2	ND<80	ND<8	ND<0.5	ND<0.5
	8/2/10	4,500	13	4.4	54	14	5.9	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<8	ND<0.5	ND<0.5
	11/2/10	5,200	20	4.2	47	13	8.9	ND<0.9	ND<0.9	ND<0.9	26	ND<90	ND<9	ND<0.9	ND<0.9

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
(cont.)	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
	4/24/13	1,000	2.9	1.1	2.1	0.98	1.8	ND<0.5	ND<0.5	ND<0.5	6.2	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	7,000	23	3	80	13	9.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	5,700	28	3.4	80	11	12	ND<0.5	ND<0.5	ND<0.5	37	ND<90	ND<8	ND<0.5	ND<0.5
	11/7/13	2,400	14	1.7	5.6	3.1	10	ND<0.5	ND<0.5	ND<0.5	35	ND<80	ND<5	ND<0.5	ND<0.5
	1/22/14	3,000	6.8	0.98	3.6	2.9	10	ND<0.5	ND<0.5	ND<0.5	36	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	5,400	19	3.0	39	5.6	9.2	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<8	ND<0.5	ND<0.5
	8/14/14	4,300	16	2.9	29	6.0	6.8	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<10	ND<0.5	ND<0.5
	11/13/14	3,400	2.4	1.1	ND<0.5	0.65	5.3	ND<0.5	ND<0.5	ND<0.5	25	ND<50	ND<5	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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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-7	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
(cont.)	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
	4/23/13	3,300	230	9.2	22	10	50	ND<0.5	ND<0.5	0.55	160	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	27,000	590	32	960	640	100	ND<0.5	ND<0.5	0.95	330	ND<80	ND<20	ND<4	ND<0.5
	8/22/13	15,000	420	18	520	320	96	ND<2.5	ND<2.5	ND<2.5	310	ND<250	ND<25	ND<2.5	ND<2.5
	11/7/13	9,700	260	8.4	200	63	52	ND<1.5	ND<1.5	ND<1.5	170	ND<150	ND<15	ND<1.5	ND<1.5
	1/22/14	15,000	380	15	430	200	77	ND<1.5	ND<1.5	ND<1.5	230	ND<150	ND<15	ND<1.5	ND<1.5
	6/11/14	12,000	380	13	370	190	79	ND<1.5	ND<1.5	ND<1.5	240	ND<150	ND<15	ND<1.5	ND<1.5
	8/14/14	2,400	110	3.2	30	17	37	ND<0.5	ND<0.5	ND<0.5	190	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	1,000	8.9	ND<0.5	0.61	ND<0.5	17	ND<0.5	ND<0.5	ND<0.5	160	ND<50	ND<5	ND<0.5	ND<0.5
DW-8	4/28/11	72,000	5,200	10,000	1,900	12,000	ND<10	ND<10	ND<10	ND<10	56	ND<1,000	ND<100	ND<10	ND<10
	8/4/11	65,000	2,900	8,100	650	10,000	ND<20	ND<20	ND<20	ND<20	ND<90	ND<2,000	ND<200	ND<20	ND<20
	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
	4/24/13	5,900	350	370	140	790	ND<0.9	ND<0.9	ND<0.9	ND<0.9	8.0	ND<200	ND<80	ND<0.9	ND<0.9

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	6/24/13	55,000	2,200	3,200	2,100	7,400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	56	ND<90	ND<50	ND<0.9	ND<0.9
(cont.)	8/22/13	16,000	380	240	500	1,400	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<15	ND<250	ND<25	ND<2.5	ND<2.5
	11/7/13	56,000	1,800	2,800	2,100	7,900	ND<2.5	ND<2.5	ND<2.5	ND<2.5	37	ND<250	ND<25	ND<2.5	ND<2.5
	1/22/14	40,000	1,100	1,200	1,200	4,300	ND<7	ND<7	ND<7	ND<7	ND<40	ND<700	ND<70	ND<7	ND<7
	6/11/14	52,000	2,400	2,100	1,700	6,400	ND<7	ND<7	ND<7	ND<7	67	ND<700	ND<70	ND<7	ND<7
	8/14/14	44,000	3,200	1,200	1,700	6,100	ND<7	ND<7	ND<7	ND<7	70	ND<700	ND<70	ND<7	ND<7
	11/13/14	53,000	3,200	790	2,200	7,100	ND<7	ND<7	ND<7	ND<7	65	ND<700	ND<70	ND<7	ND<7
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
	4/24/13	3,200	18	1.7	7.8	7.2	21	ND<0.5	ND<0.5	ND<0.5	67	ND<50	ND<5	ND<0.5	ND<0.5
	6/25/13	27,000	490	17	1,100	430	30	ND<4	ND<4	ND<4	62	ND<400	ND<40	ND<4	ND<4
	8/22/13	19,000	320	13	690	240	28	ND<4	ND<4	ND<4	87	ND<2,000	ND<40	ND<4	ND<4
	11/7/13	8,000	120	5.9	100	38	25	ND<1.5	ND<1.5	ND<1.5	73	ND<150	ND<15	ND<1.5	ND<1.5
	1/22/14	14,000	180	6.7	200	65	27	ND<1.5	ND<1.5	ND<1.5	77	ND<150	ND<15	ND<1.5	ND<1.5
	6/11/14	13,000	380	11	300	81	41	ND<2.5	ND<2.5	ND<2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
	8/14/14	9,100	170	10	120	26	24	ND<1.5	ND<1.5	ND<1.5	70	ND<150	ND<15	ND<1.5	ND<1.5
	11/13/14	9,600	130	6.8	36	11	22	ND<1.5	ND<1.5	ND<1.5	53	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	--	--	--	--	--	--	--	--

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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-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
	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
	4/24/13	9,700	230	160	370	1,200	ND<2	ND<2	ND<2	ND<2	ND<9	ND<200	ND<20	ND<2	ND<2
	6/24/13	14,000	130	260	280	1,000	ND<2	ND<2	ND<2	ND<2	10	ND<200	ND<20	ND<2	ND<2
	8/22/13	23,000	360	430	740	2,300	ND<2	ND<2	ND<2	ND<2	25	ND<200	ND<20	ND<2	ND<2
	11/7/13	7,400	70	94	200	400	ND<0.9	ND<0.9	ND<0.9	ND<0.9	14	ND<90	ND<9	ND<0.9	ND<0.9
	1/22/14	16,000	190	280	460	1,600	ND<0.9	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<10	ND<0.9	ND<0.9
	6/10/14	50,000	1,600	4,000	1,200	5,700	ND<9	ND<9	ND<9	ND<9	110	ND<900	ND<90	ND<9	ND<9
	8/13/14	24,000	530	980	690	3,100	ND<5	ND<5	ND<5	ND<5	47	ND<500	ND<50	ND<5	ND<5
	11/13/14	24,000	480	510	620	2,300	ND<5	ND<5	ND<5	ND<5	37	ND<500	ND<50	ND<5	ND<5
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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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-2	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
(cont.)	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
	4/23/13	160	5.6	3.7	1.3	3.6	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	350	2.4	2.4	2.2	5.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	6.4	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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
	4/22/13	ND<50	0.51	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total 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-3	6/11/14	580	2.6	1.0	7.2	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
(cont.)	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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
	4/23/13	140	ND<0.5	43	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	70	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
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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
	5/6/10[g]	270	5.7	25	5.9	29	20	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.72	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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 D-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)	Ethyl-benzene[b] (µg/l)	Total 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	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
	4/23/13	ND<50	ND<0.5	4.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	180	ND<0.5	ND<0.5	3.0	6.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/21/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/10/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/14	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.76	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
IP-6	7/23/08	4,400	260	78	98	340	180	ND<0.5	ND<0.5	1.6	190	ND<80	ND<9	ND<0.5	ND<0.5
	10/13/08	1,400	150	1.6	1.5	3.5	7.4	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<50	ND<0.5	ND<0.5
	5/5/10[g]	8,000[h]	24	100	18	98	0.51	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/27/11	ND<50	1.1	0.66	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
	4/23/13	57	ND<0.5	11	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	70	8.6	ND<0.5	ND<0.5	ND<0.5	3.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date[a]	TPHg[b] (µg/l)	Benzene[b] (µg/l)	Toluene[b] (µg/l)	Ethyl-benzene[b] (µg/l)	Total Xylenes[b] (µg/l)	MTBE[b] (µg/l)	DIPE[b] (µg/l)	ETBE[b] (µg/l)	TAME[b] (µg/l)	TBA[b] (µg/l)	Methanol[b] (µg/l)	Ethanol[b] (µg/l)	1,2-DCA[b] (µg/l)	EDB[b] (µg/l)
IP-7	7/23/08	4,200	190	12	99	190	49	ND<0.9	ND<0.9	1.1	58	ND<90	ND<9	ND<0.9	ND<0.9
	10/13/08	6,000	350	6.6	150	60	97	ND<0.9	ND<0.9	2.5	76	ND<90	ND<50	ND<0.9	ND<0.9
	5/5/10[g]	33,000	49	62	38	69	14	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<9	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
	4/23/13	ND<50	ND<0.5	5.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/21/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/7/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	1/21/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/11/14	2,100	18	0.77	7.5	2.0	12	ND<0.5	ND<0.5	ND<0.5	82	ND<50	ND<5	ND<0.5	ND<0.5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	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
	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
	4/24/13	33,000	1,700	4,200	430	5,600	ND<6	ND<6	ND<6	ND<6	ND<30	ND<600	ND<60	ND<6	ND<6

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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	8/22/13	19,000	130	440	260	1,900	ND<4	ND<4	ND<4	ND<4	ND<20	ND<400	ND<80	ND<4	ND<4
(cont.)	11/7/13	18,000	400	520	170	1,700	ND<4	ND<4	ND<4	ND<4	23	ND<400	ND<40	ND<4	ND<4
	1/22/14	41,000	550	1,600	560	4,200	ND<4	ND<4	ND<4	ND<4	22	ND<400	ND<40	ND<4	ND<4
	6/11/14	52,000	1,200	3,300	940	6,400	ND<5	ND<5	ND<5	ND<5	28	ND<500	ND<50	ND<5	ND<5
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/13/14	53,000	1,200	3,900	1,000	8,000	ND<9	ND<9	ND<9	ND<9	ND<50	ND<900	ND<90	ND<9	ND<9
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
	4/24/13	8,800	42	480	210	1,100	ND<1.5	ND<1.5	ND<1.5	ND<1.5	11	ND<150	ND<15	ND<1.5	ND<1.5
	8/22/13	7,500	14	250	190	1,000	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<400	ND<15	ND<1.5	ND<1.5
	11/7/13	1,100	4.9	30	14	89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	1/22/14	1,600	1.9	9.7	8.6	16	0.50	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	6/11/14	2,000	ND<0.5	ND<0.5	1.5	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
	8/13/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/14	3,000	5.4	97	49	340	ND<0.5	ND<0.5	ND<0.5	ND<0.5	31	ND<50	ND<5	ND<0.5	ND<0.5
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

TABLE D-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)	Ethyl-benzene[b] (µg/l)	Total 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-10	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
(cont.)	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
	4/24/13	1,800	12	11	24	81	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	6/24/13	1,500	5.4	1.1	0.76	6.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/22/13	1,100	2.2	ND<0.5	ND<0.5	2.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/7/13	810	2.6	1.7	1.5	7.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/22/14	2,100	7.2	2.7	1.8	7.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	6/10/14	2,600	10	1.8	3.4	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	8/13/14	1100	2.9	ND<0.5	0.58	0.92	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	11/12/14	1,800	7.7	1.2	3.5	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5

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

(b) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 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).

(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 E

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Laboratory Results

Mike Purchase
Arctos Environmental
2332 5th St., Suite A
Berkeley, CA 94610

Subject : 8 Water Samples
Project Name : Tesoro - Livermore #67076
Project Number : F1-141112

Dear Mr. Purchase,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed. 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 Environmental Laboratory Accreditation Program (ELAP), lab number 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 : 89640
Date : 11/19/2014

Subject : 8 Water Samples
Project Name : Tesoro - Livermore #67076
Project Number : F1-141112

Case Narrative

The LCS result associated with samples IP-9 and MW-1 for the analyte Methyl-t-butyl ether (MTBE) exceeded acceptance criteria, but was within the marginal exceedance allowance as defined in the TNI Standards.

Recoveries for some Matrix Spike/ Matrix Spike Duplicate analytes were outside control limits. This may indicate a bias for the samples that were spiked. Since the LCS recoveries were within control limits, no data are flagged.

Sample MW-1 was analyzed by method EPA 8260B from bottles that contained headspace bubbles greater than 1/4 inch in diameter.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for samples IP-10 and MW-1.

The Method Reporting Limits for Hexavalent Chromium by Method EPA 7199 and Nitrate as N by Method EPA 300.0 were raised due to high concentrations of other analytes for sample IP-9.

Matrix Spike/Matrix Spike Duplicate results associated with sample DW-1 for the analyte Sulfate were calculated using data points beyond the calibration range.

The LCS and Matrix Spike/Matrix Spike Duplicate results associated with samples IP-9 and MW-1 for the analytes Ethanol and Methanol were above control limits possibly indicating a high bias for these analytes. Since the samples were non-detect for these analytes, no data were flagged.

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **F1-141112**

Sample : **DW-4** Matrix : Water Lab Number : 89640-01
Sample Date :11/12/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/14 01:01
Methanol	< 50	50	ug/L	EPA 8260B	11/13/14 01:01
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/14 01:01
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/13/14 01:01
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:01
1,2-Dichloroethane-d4 (Surr)	98.4		% Recovery	EPA 8260B	11/13/14 01:01
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	11/13/14 01:01

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **F1-141112**

Sample : **IP-5** Matrix : Water Lab Number : 89640-02
Sample Date :11/12/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	**0.52**	0.10	mg/L	EPA 300.0	11/13/14 13:59
Sulfate	**39**	0.50	mg/L	EPA 300.0	11/13/14 13:59
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 10:02
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	11/13/14 10:56
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/19/14 11:23
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/19/14 11:23
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	11/19/14 11:23
Manganese, Dissolved	**1.1**	0.0050	mg/L	EPA 6010B	11/19/14 11:23
Sodium, Dissolved	**42**	0.50	mg/L	EPA 6010B	11/19/14 11:23
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
Methyl-t-butyl ether (MTBE)	**0.76**	0.50	ug/L	EPA 8260B	11/13/14 01:32
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/14 01:32
Methanol	< 50	50	ug/L	EPA 8260B	11/13/14 01:32
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/14 01:32
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/13/14 01:32
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 01:32
1,2-Dichloroethane-d4 (Surr)	98.0		% Recovery	EPA 8260B	11/13/14 01:32
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	11/13/14 01:32

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **F1-141112**

Sample : **IP-9** Matrix : Water Lab Number : 89640-03
Sample Date :11/12/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.20	0.20	mg/L	EPA 300.0	11/13/14 14:56
Sulfate	**560**	50	mg/L	EPA 300.0	11/13/14 15:08
Hexavalent Chromium	< 2.0	2.0	ug/L	EPA 7199	11/13/14 10:11
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	11/13/14 10:57
Arsenic, Dissolved	**0.75**	0.051	mg/L	EPA 6010B	11/19/14 12:11
Chromium, Dissolved	< 0.025	0.025	mg/L	EPA 6010B	11/19/14 12:11
Iron, Dissolved	**0.26**	0.10	mg/L	EPA 6010B	11/19/14 12:11
Manganese, Dissolved	**0.048**	0.025	mg/L	EPA 6010B	11/19/14 12:11
Sodium, Dissolved	**4100**	2.0	mg/L	EPA 6010B	11/19/14 11:36
Benzene	**5.4**	0.50	ug/L	EPA 8260B	11/14/14 02:24
Toluene	**97**	0.50	ug/L	EPA 8260B	11/14/14 02:24
Ethylbenzene	**49**	0.50	ug/L	EPA 8260B	11/14/14 02:24
Total Xylenes	**340**	0.50	ug/L	EPA 8260B	11/14/14 02:24
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/14/14 02:24
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/14/14 02:24
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/14/14 02:24
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/14/14 02:24
Tert-Butanol	**31**	5.0	ug/L	EPA 8260B	11/14/14 02:24
Methanol	< 50	50	ug/L	EPA 8260B	11/14/14 02:24
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/14/14 02:24
TPH as Gasoline	**3000**	50	ug/L	EPA 8260B	11/14/14 02:24
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/14/14 02:24
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/14/14 02:24
1,2-Dichloroethane-d4 (Surr)	98.7		% Recovery	EPA 8260B	11/14/14 02:24
Toluene - d8 (Surr)	94.6		% Recovery	EPA 8260B	11/14/14 02:24

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **F1-141112**

Sample : **DW-3** Matrix : Water Lab Number : 89640-04
Sample Date :11/12/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**0.72**	0.50	ug/L	EPA 8260B	11/15/14 01:48
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/15/14 01:48
Methanol	< 50	50	ug/L	EPA 8260B	11/15/14 01:48
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/15/14 01:48
TPH as Gasoline	**290**	50	ug/L	EPA 8260B	11/15/14 01:48
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/15/14 01:48
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	11/15/14 01:48
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	11/15/14 01:48

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **F1-141112**

Sample : **IP-10** Matrix : Water Lab Number : 89640-05
Sample Date :11/12/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/13/14 14:33
Sulfate	**1.3**	0.50	mg/L	EPA 300.0	11/13/14 14:33
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 10:21
Ferrous Iron	**0.22**	0.10	mg/L	SM 3500-Fe D	11/13/14 10:57
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/19/14 11:48
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/19/14 11:48
Iron, Dissolved	**1.6**	0.10	mg/L	EPA 6010B	11/19/14 11:48
Manganese, Dissolved	**3.5**	0.0050	mg/L	EPA 6010B	11/19/14 11:48
Sodium, Dissolved	**60**	0.50	mg/L	EPA 6010B	11/19/14 11:48
Benzene	**7.7**	0.50	ug/L	EPA 8260B	11/13/14 02:35
Toluene	**1.2**	0.50	ug/L	EPA 8260B	11/13/14 02:35
Ethylbenzene	**3.5**	0.50	ug/L	EPA 8260B	11/13/14 02:35
Total Xylenes	**3.9**	0.50	ug/L	EPA 8260B	11/13/14 02:35
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:35
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:35
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:35
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:35
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/14 02:35
Methanol	< 50	50	ug/L	EPA 8260B	11/13/14 02:35
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	11/13/14 02:35
TPH as Gasoline	**1800**	50	ug/L	EPA 8260B	11/13/14 02:35
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:35
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:35
1,2-Dichloroethane-d4 (Surr)	95.2		% Recovery	EPA 8260B	11/13/14 02:35
Toluene - d8 (Surr)	97.7		% Recovery	EPA 8260B	11/13/14 02:35

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **F1-141112**

Sample : **MW-1** Matrix : Water Lab Number : 89640-06
Sample Date :11/12/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**33**	0.50	ug/L	EPA 8260B	11/13/14 23:20
Toluene	**48**	0.50	ug/L	EPA 8260B	11/13/14 23:20
Ethylbenzene	**39**	0.50	ug/L	EPA 8260B	11/13/14 23:20
Total Xylenes	**530**	0.50	ug/L	EPA 8260B	11/13/14 23:20
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 23:20
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 23:20
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 23:20
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 23:20
Tert-Butanol	**8.4**	5.0	ug/L	EPA 8260B	11/13/14 23:20
Methanol	< 50	50	ug/L	EPA 8260B	11/13/14 23:20
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	11/13/14 23:20
TPH as Gasoline	**5400**	90	ug/L	EPA 8260B	11/15/14 04:46
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 23:20
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 23:20
1,2-Dichloroethane-d4 (Surr)	81.5		% Recovery	EPA 8260B	11/13/14 23:20
Toluene - d8 (Surr)	81.1		% Recovery	EPA 8260B	11/13/14 23:20

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **F1-141112**

Sample : **DW-1** Matrix : Water Lab Number : 89640-07
Sample Date :11/12/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/13/14 14:45
Sulfate	**80**	1.0	mg/L	EPA 300.0	11/17/14 15:50
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 10:30
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	11/13/14 10:57
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/19/14 11:51
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/19/14 11:51
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	11/19/14 11:51
Manganese, Dissolved	**1.9**	0.0050	mg/L	EPA 6010B	11/19/14 11:51
Sodium, Dissolved	**280**	0.50	mg/L	EPA 6010B	11/19/14 12:15
Benzene	**3.0**	0.50	ug/L	EPA 8260B	11/13/14 03:07
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 03:07
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 03:07
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 03:07
Methyl-t-butyl ether (MTBE)	**7.8**	0.50	ug/L	EPA 8260B	11/13/14 03:07
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 03:07
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 03:07
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 03:07
Tert-Butanol	**9.2**	5.0	ug/L	EPA 8260B	11/13/14 03:07
Methanol	< 50	50	ug/L	EPA 8260B	11/13/14 03:07
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/14 03:07
TPH as Gasoline	**160**	50	ug/L	EPA 8260B	11/13/14 03:07
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 03:07
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 03:07
1,2-Dichloroethane-d4 (Surr)	99.7		% Recovery	EPA 8260B	11/13/14 03:07
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	11/13/14 03:07

KIFF Analytical LLC

Report Number : 89640
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **F1-141112**

Sample : **DW-7** Matrix : Water Lab Number : 89640-08
Sample Date :11/12/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/13/14 13:25
Sulfate	**21**	0.50	mg/L	EPA 300.0	11/13/14 13:25
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 10:39
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	11/13/14 10:58
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/19/14 11:56
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/19/14 11:56
Iron, Dissolved	**0.60**	0.10	mg/L	EPA 6010B	11/19/14 11:56
Manganese, Dissolved	**2.7**	0.0050	mg/L	EPA 6010B	11/19/14 11:56
Sodium, Dissolved	**90**	0.50	mg/L	EPA 6010B	11/19/14 11:56
Benzene	**8.9**	0.50	ug/L	EPA 8260B	11/13/14 02:04
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:04
Ethylbenzene	**0.61**	0.50	ug/L	EPA 8260B	11/13/14 02:04
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:04
Methyl-t-butyl ether (MTBE)	**17**	0.50	ug/L	EPA 8260B	11/13/14 02:04
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:04
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:04
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:04
Tert-Butanol	**160**	5.0	ug/L	EPA 8260B	11/13/14 02:04
Methanol	< 50	50	ug/L	EPA 8260B	11/13/14 02:04
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/14 02:04
TPH as Gasoline	**1000**	50	ug/L	EPA 8260B	11/13/14 02:04
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:04
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/14 02:04
1,2-Dichloroethane-d4 (Surr)	95.2		% Recovery	EPA 8260B	11/13/14 02:04
Toluene - d8 (Surr)	99.7		% Recovery	EPA 8260B	11/13/14 02:04

Report Number : 89640

Date : 11/19/2014

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/19/2014
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/19/2014
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	11/19/2014
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/19/2014
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	11/19/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/2014
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
Methanol	< 50	50	ug/L	EPA 8260B	11/13/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/13/2014
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/13/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/13/2014
1,2-Dichloroethane-d4 (Surr)	105		%	EPA 8260B	11/13/2014
Toluene - d8 (Surr)	104		%	EPA 8260B	11/13/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/14/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/12/2014
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
Methanol	< 50	50	ug/L	EPA 8260B	11/12/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/12/2014
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/12/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/12/2014
1,2-Dichloroethane-d4 (Surr)	99.7		%	EPA 8260B	11/12/2014
Toluene - d8 (Surr)	100		%	EPA 8260B	11/12/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/14/2014
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
Methanol	< 50	50	ug/L	EPA 8260B	11/14/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/14/2014
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/14/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/14/2014

KIFF ANALYTICAL, LLC

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

Report Number : 89640

Date : 11/19/2014

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	11/14/2014
Toluene - d8 (Surr)	99.6		%	EPA 8260B	11/14/2014
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	11/13/2014
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	11/13/2014
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	11/13/2014
Sulfate	<0.50	0.50	mg/L	EPA 300.0	11/13/2014
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	11/13/2014
Sulfate	<0.50	0.50	mg/L	EPA 300.0	11/13/2014
Sulfate	<0.50	0.50	mg/L	EPA 300.0	11/17/2014

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 : 89640

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

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														
	89640-06	<0.50	40.0	40.0	31.7	32.3	ug/L	EPA 8260B	11/14/14	79.2	80.7	1.90	70.0-130	25
1,2-Dichloroethane														
	89640-06	<0.50	40.0	40.0	31.0	33.0	ug/L	EPA 8260B	11/14/14	77.6	82.4	6.06	70.0-130	25
Benzene														
	89640-06	33	40.0	40.0	63.0	64.0	ug/L	EPA 8260B	11/14/14	75.8	78.1	2.95	70.0-130	25
Diisopropyl ether														
	89640-06	<0.50	40.0	40.0	36.0	33.9	ug/L	EPA 8260B	11/14/14	89.9	84.8	5.90	70.0-130	25
Ethanol														
	89640-06	6.4	100	100	432	427	ug/L	EPA 8260B	11/14/14	**425**	**420**	1.09	55.0-150	25
Ethyl-tert-butyl ether														
	89640-06	<0.50	40.0	40.0	27.1	26.0	ug/L	EPA 8260B	11/14/14	**67.8**	**65.1**	4.06	70.0-130	25
Ethylbenzene														
	89640-06	39	40.0	40.0	76.0	76.8	ug/L	EPA 8260B	11/14/14	93.1	95.1	2.16	70.0-130	25
Methanol														
	89640-06	<50	1000	1000	2310	2210	ug/L	EPA 8260B	11/14/14	**231**	**221**	4.52	65.0-150	25
Methyl-t-butyl ether														
	89640-06	<0.50	40.0	40.0	19.1	19.0	ug/L	EPA 8260B	11/14/14	**47.6**	**47.6**	0.0622	70.0-130	25
P + M Xylene														
	89640-06	360	40.0	40.0	375	376	ug/L	EPA 8260B	11/14/14	**27.4**	**29.5**	7.35	70.0-130	25

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Report Number : 89640

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

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														
	89640-06	8.4	200	200	193	201	ug/L	EPA 8260B	11/14/14	92.5	96.1	3.85	70.0-130	25
Tert-amyl-methyl ether														
	89640-06	<0.50	40.0	40.0	29.1	29.0	ug/L	EPA 8260B	11/14/14	72.8	72.5	0.496	70.0-130	25
Toluene														
	89640-06	48	40.0	40.0	76.5	77.1	ug/L	EPA 8260B	11/14/14	70.9	72.3	1.96	70.0-130	25
Toluene														
	89652-03	<0.50	40.0	39.8	40.0	41.6	ug/L	EPA 8260B	11/14/14	99.9	104	4.38	70.0-130	25
1,2-Dibromoethane														
	89623-04	<0.50	40.0	40.0	44.7	43.2	ug/L	EPA 8260B	11/12/14	112	108	3.38	70.0-130	25
1,2-Dichloroethane														
	89623-04	<0.50	40.0	40.0	41.0	40.0	ug/L	EPA 8260B	11/12/14	102	100	2.30	70.0-130	25
Benzene														
	89623-04	<0.50	40.0	40.0	42.0	41.1	ug/L	EPA 8260B	11/12/14	105	103	2.28	70.0-130	25
Diisopropyl ether														
	89623-04	<0.50	40.0	40.0	42.2	41.8	ug/L	EPA 8260B	11/12/14	105	104	0.852	70.0-130	25
Ethanol														
	89623-04	<5.0	100	100	89.2	90.4	ug/L	EPA 8260B	11/12/14	89.2	90.4	1.32	55.0-150	25

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Report Number : 89640

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

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
Ethyl-tert-butyl ether														
	89623-04	<0.50	40.0	40.0	43.0	42.7	ug/L	EPA 8260B	11/12/14	108	107	0.799	70.0-130	25
Ethylbenzene														
	89623-04	<0.50	40.0	40.0	43.5	42.6	ug/L	EPA 8260B	11/12/14	109	106	2.06	70.0-130	25
Methanol														
	89623-04	<50	1000	1000	961	921	ug/L	EPA 8260B	11/12/14	96.1	92.1	4.22	65.0-150	25
Methyl-t-butyl ether														
	89623-04	2.2	40.0	40.0	45.2	44.3	ug/L	EPA 8260B	11/12/14	108	105	2.06	70.0-130	25
P + M Xylene														
	89623-04	<0.50	40.0	40.0	44.1	43.1	ug/L	EPA 8260B	11/12/14	110	108	2.36	70.0-130	25
Tert-Butanol														
	89623-04	<5.0	200	200	209	202	ug/L	EPA 8260B	11/12/14	104	101	3.31	70.0-130	25
Tert-amyl-methyl ether														
	89623-04	<0.50	40.0	40.0	43.7	42.6	ug/L	EPA 8260B	11/12/14	109	107	2.37	70.0-130	25
Toluene														
	89623-04	<0.50	40.0	40.0	43.2	42.0	ug/L	EPA 8260B	11/12/14	108	105	2.85	70.0-130	25
1,2-Dibromoethane														
	89638-02	<0.50	40.0	40.0	41.9	40.6	ug/L	EPA 8260B	11/14/14	105	101	3.13	70.0-130	25

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Report Number : 89640

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
1,2-Dichloroethane														
	89638-02	<0.50	40.0	40.0	41.8	39.6	ug/L	EPA 8260B	11/14/14	104	98.9	5.42	70.0-130	25
Benzene														
	89638-02	<0.50	40.0	40.0	42.4	40.1	ug/L	EPA 8260B	11/14/14	106	100	5.57	70.0-130	25
Diisopropyl ether														
	89638-02	<0.50	40.0	40.0	40.3	39.2	ug/L	EPA 8260B	11/14/14	101	97.9	2.86	70.0-130	25
Ethanol														
	89638-02	<5.0	100	100	91.5	93.7	ug/L	EPA 8260B	11/14/14	91.5	93.7	2.43	55.0-150	25
Ethyl-tert-butyl ether														
	89638-02	<0.50	40.0	40.0	40.9	40.4	ug/L	EPA 8260B	11/14/14	102	101	1.26	70.0-130	25
Ethylbenzene														
	89638-02	<0.50	40.0	40.0	42.6	41.4	ug/L	EPA 8260B	11/14/14	106	104	2.82	70.0-130	25
Methanol														
	89638-02	<50	1000	1000	1020	1000	ug/L	EPA 8260B	11/14/14	102	100	1.02	65.0-150	25
Methyl-t-butyl ether														
	89638-02	<0.50	40.0	40.0	40.7	41.4	ug/L	EPA 8260B	11/14/14	102	103	1.62	70.0-130	25
P + M Xylene														
	89638-02	<0.50	40.0	40.0	41.0	40.0	ug/L	EPA 8260B	11/14/14	103	99.9	2.65	70.0-130	25
Tert-Butanol														
	89638-02	<5.0	200	200	208	197	ug/L	EPA 8260B	11/14/14	104	98.4	5.38	70.0-130	25

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QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

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														
	89638-02	<0.50	40.0	40.0	41.0	40.7	ug/L	EPA 8260B	11/14/14	102	102	0.591	70.0-130	25
Toluene														
	89638-02	<0.50	40.0	40.0	41.0	40.0	ug/L	EPA 8260B	11/14/14	102	100	2.48	70.0-130	25
Hexavalent Chromium														
	89640-02	< 1.0	5.00	5.00	4.78	4.78	ug/L	EPA 7199	11/13/14	95.7	95.6	0.0793	90.0-110	10
Ferrous Iron														
	89640-02	< 0.10	0.251	0.251	0.264	0.277	mg/L	SM 3500-Fe D	11/13/14	101	106	4.80	70.0-130	25
Nitrate as N														
	89640-08	< 0.10	5.00	5.00	4.67	4.74	mg/L	EPA 300.0	11/13/14	93.5	94.7	1.34	90.0-110	10
Sulfate														
	89640-08	21	25.0	25.0	45.4	45.7	mg/L	EPA 300.0	11/13/14	95.7	97.1	0.764	90.0-110	10
Nitrate as N														
	89641-02	0.86	5.00	5.00	5.68	5.79	mg/L	EPA 300.0	11/13/14	96.3	98.5	1.93	90.0-110	10
Sulfate														
	89641-02	20	25.0	25.0	43.9	44.5	mg/L	EPA 300.0	11/13/14	96.0	98.3	1.32	90.0-110	10

KIFF ANALYTICAL, LLC

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Report Number : 89640

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

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
Sulfate														
	89621-02	39	25.0	25.0	62.0	62.5	mg/L	EPA 300.0	11/17/14	92.1	94.0	0.779	90.0-110	10
Arsenic, (Dis)														
	89640-02	< 0.015	0.400	0.400	0.418	0.423	mg/L	EPA 6010B	11/19/14	104	105	1.02	75-125	20
Chromium, (Dis)														
	89640-02	< 0.0050	0.400	0.400	0.394	0.398	mg/L	EPA 6010B	11/19/14	98.4	99.5	1.08	75-125	20
Iron, (Dis)														
	89640-02	< 0.10	4.00	4.00	3.79	3.84	mg/L	EPA 6010B	11/19/14	94.8	96.1	1.39	75-125	20
Manganese, (Dis)														
	89640-02	1.1	0.400	0.400	1.49	1.54	mg/L	EPA 6010B	11/19/14	93.5	106	3.17	75-125	20
Sodium, (Dis)														
	89640-02	42	40.0	40.0	81.2	83.7	mg/L	EPA 6010B	11/19/14	97.6	104	3.04	75-125	20

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

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	11/19/14	102	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	11/19/14	98.2	85-115
Iron, (Dis)	4.00	mg/L	EPA 6010B	11/19/14	93.6	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	11/19/14	92.5	85-115
Sodium, (Dis)	40.0	mg/L	EPA 6010B	11/19/14	101	85-115
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	11/13/14	91.8	70.0-130
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	11/13/14	93.5	70.0-130
Benzene	40.0	ug/L	EPA 8260B	11/13/14	99.8	70.0-130
Diisopropyl ether	40.0	ug/L	EPA 8260B	11/13/14	105	70.0-130
Ethanol	100	ug/L	EPA 8260B	11/13/14	**377**	55.0-150
Ethyl-tert-butyl ether	40.0	ug/L	EPA 8260B	11/13/14	91.3	70.0-130
Ethylbenzene	40.0	ug/L	EPA 8260B	11/13/14	106	70.0-130
Methanol	1000	ug/L	EPA 8260B	11/13/14	**255**	65.0-150
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	11/13/14	**64.5**	70.0-130
P + M Xylene	40.0	ug/L	EPA 8260B	11/13/14	103	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	11/13/14	96.5	70.0-130
Tert-amyl-methyl ether	40.0	ug/L	EPA 8260B	11/13/14	96.6	70.0-130
Toluene	40.0	ug/L	EPA 8260B	11/13/14	99.1	70.0-130
Toluene	40.0	ug/L	EPA 8260B	11/14/14	102	70.0-130

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QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dibromoethane	40.2	ug/L	EPA 8260B	11/12/14	105	70.0-130
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	11/12/14	98.1	70.0-130
Benzene	40.2	ug/L	EPA 8260B	11/12/14	99.4	70.0-130
Diisopropyl ether	40.2	ug/L	EPA 8260B	11/12/14	99.4	70.0-130
Ethanol	100	ug/L	EPA 8260B	11/12/14	88.5	55.0-150
Ethyl-tert-butyl ether	40.2	ug/L	EPA 8260B	11/12/14	102	70.0-130
Ethylbenzene	40.2	ug/L	EPA 8260B	11/12/14	104	70.0-130
Methanol	1000	ug/L	EPA 8260B	11/12/14	92.6	65.0-150
Methyl-t-butyl ether	40.2	ug/L	EPA 8260B	11/12/14	101	70.0-130
P + M Xylene	40.2	ug/L	EPA 8260B	11/12/14	106	70.0-130
TPH as Gasoline	500	ug/L	EPA 8260B	11/12/14	81.8	70.0-130
Tert-Butanol	201	ug/L	EPA 8260B	11/12/14	98.7	70.0-130
Tert-amyl-methyl ether	40.2	ug/L	EPA 8260B	11/12/14	102	70.0-130
Toluene	40.2	ug/L	EPA 8260B	11/12/14	102	70.0-130
1,2-Dibromoethane	39.9	ug/L	EPA 8260B	11/14/14	103	70.0-130
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	11/14/14	98.1	70.0-130
Benzene	39.9	ug/L	EPA 8260B	11/14/14	101	70.0-130
Diisopropyl ether	39.9	ug/L	EPA 8260B	11/14/14	100	70.0-130
Ethanol	99.8	ug/L	EPA 8260B	11/14/14	97.4	55.0-150
Ethyl-tert-butyl ether	39.9	ug/L	EPA 8260B	11/14/14	103	70.0-130
Ethylbenzene	39.9	ug/L	EPA 8260B	11/14/14	104	70.0-130
Methanol	998	ug/L	EPA 8260B	11/14/14	107	65.0-150

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore #67076**

Project Number : **F1-141112**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	11/14/14	103	70.0-130
P + M Xylene	39.9	ug/L	EPA 8260B	11/14/14	99.5	70.0-130
TPH as Gasoline	500	ug/L	EPA 8260B	11/14/14	89.8	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	11/14/14	99.8	70.0-130
Tert-amyl-methyl ether	39.9	ug/L	EPA 8260B	11/14/14	106	70.0-130
Toluene	39.9	ug/L	EPA 8260B	11/14/14	102	70.0-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	11/13/14	94.3	90.0-110
Ferrous Iron	0.251	mg/L	SM 3500-Fe D	11/13/14	103	70.0-130
Nitrate as N	5.00	mg/L	EPA 300.0	11/13/14	98.3	90.0-110
Sulfate	25.0	mg/L	EPA 300.0	11/13/14	98.7	90.0-110
Nitrate as N	5.00	mg/L	EPA 300.0	11/13/14	98.3	90.0-110
Sulfate	25.0	mg/L	EPA 300.0	11/13/14	98.5	90.0-110
Sulfate	25.0	mg/L	EPA 300.0	11/17/14	99.6	90.0-110

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Chain of Custody

Project Name: Tesoro - Livermore #67076

Job Number: F1-141117

TAT: (STANDARD) 5 DAY 2 DAY 24 HOUR OTHER:

Lab: **Kiff**	Site Address: 1619 1st St, Livermore	Confluence PM: Jason Brown
Address: 2795 2nd St, Suite 300, Davis CA 95616	California Global ID No.: TO600101410	Phone / Fax: 916-760-7641 / 916-473-8617
Contact: Troy Turpen	Include EDF w/ Report: (Yes) No	Confluence Log Code: **CESC**
Phone/ Fax: 530-297-4800 x.111	Consultant / PM: Orion / Mike Purchase	Report to: Mike Purchase
	Phone / Fax: 510-525-2180 / 510-525-2392	Invoice to: Mike Purchase

	Sample ID	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Requested Analysis: TPH-G, BTEX (8260)	Requested Analysis: Oxygenates(7) & Lead Scavengers (8260)	Requested Analysis: Ferrous Iron (SM 3500-Fe-D)	Requested Analysis: Hexavalent Chromium (7199)	Requested Analysis: Nitrate & Sulfate (300)	Requested Analysis: Total Alkalinity (SM2320B)	Requested Analysis: Metals by ICP (6010B)*	Requested Analysis: Methane (RSK 175M)	Requested Analysis: Carbon Dioxide (RSK 175M)	Requested Analysis: TDS (2540C)	Notes and Comments
	DW-4	1220	11/12/14		X			3				3		X	X									01
	IP-5	1235	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	02
	IP-9	1140	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	03
	DW-3	1300	"		X			3				3		X	X									04
	IP-10	1315	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	05
	MW-1	1340	"		X			3				3		X	X									06
	DW-1	1355	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	07
	DW-7	1415	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	08

Sampler's Name: A. Feeney	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Confluence Environmental	[illegible]	11/12/14	1440			
Shipment Date:						
Shipment Method:				[signature] Cliff Bradford	11/12/14	1440

Special Instructions: ***Metals list to include: Fe, Cr, Na, As & Mn; Metals samples have been filtered in the field**

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SAMPLE RECEIPT CHECKLIST

SRG #: 89640

Sample Receipt	Initials/Date: Eug 111214	Storage Time: 1718	Sample Login	Initials/Date: TJB 111214

TAT: ☒ Standard ☐ Rush ☐ Split ☐ None | Method of Receipt: ☒ Courier ☐ Over-the-counter ☐ Shipped

Temp °C 4.2/0.4 ☐ N/A | Therm ID 123 | Time 1708 | Coolant present ☒ Yes ☐ No ☐ Water | ☐ Temp Excursion

For Shipments Only: Cooler Receipt Initials/Date/Time: | Custody Seals ☐ N/A ☐ Intact ☐ Broken

Chain-of-Custody:	Yes	No
Is COC present?	✓	
Is COC signed by relinquisher?	✓	
Is COC dated by relinquisher?	✓	
Is the sampler's name on the COC?	✓	
Are there analyses or hold for all samples?	✓	

Documented on	COC	Labels	Discrepancies:
Sample ID	✓	✓	
Project ID	✓	✓	
Sample Date	✓	✓	
Sample Time	✓	✓	
Does COC match project history?	☐ N/A	☒ Yes	☐ No

Samples:	N/A	Yes	No
Are sample custody seals intact?	✓		
Are sample containers intact?		✓	
Is preservation documented?		✓	
In-house Analysis:	**N/A**	**Yes**	**No**
Are preservatives acceptable?		✓	
Are samples within holding time?		✓	
Are sample container types correct?		✓ 111214	
Is there adequate sample volume?		✓	✓

Comments: sediment in sample -06 (all VOAs). TJB 111214 1828

Receipt Details:

Matrix	Container Type	# of Containers
WA	Voa	44
WA	Poly	25

Requires client: Clarification ☐ Approval ☐ Notification ☒

Proceed With Analysis: ☐ YES ☐ NO Init/Date:
Client Communication:

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

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WORK ORDER NUMBER: 14-11-1197

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro - Livermore #67076

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

Amanda Porter

Approved for release on 11/21/2014 by:
Amanda Porter
Project Manager

ResultLink

Email your PM

Eurofins Calscience, 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.

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Contents

Client Project Name: Tesoro - Livermore #67076
Work Order Number: 14-11-1197

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Work Order Narrative

Work Order: 14-11-1197 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 11/14/14. They were assigned to Work Order 14-11-1197.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

New York NELAP air certification does not certify for all reported methods and analytes, reference the accredited items here: http://www.calscience.com/PDF/New_York.pdf

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

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

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Analytical Report

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

Date Received: 11/14/14
Work Order: 14-11-1197
Preparation: N/A
Method: RSK-175M
Units: ug/L

Project: Tesoro - Livermore #67076

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-5	**14-11-1197-1-C**	**11/12/14 12:35**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 13:41**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	9200	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-9	**14-11-1197-2-C**	**11/12/14 11:40**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 14:20**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	538	1.70	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-10	**14-11-1197-3-C**	**11/12/14 13:15**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 14:40**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	6980	1.70	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-1	**14-11-1197-4-C**	**11/12/14 13:55**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 15:18**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	18000	6.80	4.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-7	**14-11-1197-5-C**	**11/12/14 14:15**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 15:36**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	24900	6.80	4.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-659-752**	**N/A**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 12:12**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	ND	1.70	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

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

Date Received: 11/14/14
Work Order: 14-11-1197
Preparation: N/A
Method: RSK-175M
Units: ug/L

Project: Tesoro - Livermore #67076

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-5	**14-11-1197-1-A**	**11/12/14 12:35**	**Aqueous**	**GC 52**	**N/A**	**11/17/14 14:15**	**141117L01**

Parameter	Result	RL	DF	Qualifiers
Methane	232	1.00	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-9	**14-11-1197-2-A**	**11/12/14 11:40**	**Aqueous**	**GC 52**	**N/A**	**11/17/14 14:42**	**141117L01**

Parameter	Result	RL	DF	Qualifiers
Methane	13.7	1.00	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-10	**14-11-1197-3-A**	**11/12/14 13:15**	**Aqueous**	**GC 52**	**N/A**	**11/17/14 15:37**	**141117L01**

Parameter	Result	RL	DF	Qualifiers
Methane	477	2.00	2.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-1	**14-11-1197-4-A**	**11/12/14 13:55**	**Aqueous**	**GC 52**	**N/A**	**11/17/14 17:03**	**141117L01**

Parameter	Result	RL	DF	Qualifiers
Methane	656	4.00	4.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-7	**14-11-1197-5-B**	**11/12/14 14:15**	**Aqueous**	**GC 52**	**N/A**	**11/17/14 18:59**	**141117L01**

Parameter	Result	RL	DF	Qualifiers
Methane	1000	4.00	4.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-2289**	**N/A**	**Aqueous**	**GC 52**	**N/A**	**11/17/14 12:46**	**141117L01**

Parameter	Result	RL	DF	Qualifiers
Methane	ND	1.00	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505
Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1197

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
IP-5	**14-11-1197-1**	**11/12/14 12:35**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	306	5.00	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	610	1.00	1.00		mg/L	11/18/14	11/18/14	SM 2540 C

IP-9	**14-11-1197-2**	**11/12/14 11:40**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	7120	10.0	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	9250	10.0	1.00		mg/L	11/18/14	11/18/14	SM 2540 C

IP-10	**14-11-1197-3**	**11/12/14 13:15**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	340	5.00	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	590	1.00	1.00		mg/L	11/18/14	11/18/14	SM 2540 C

DW-1	**14-11-1197-4**	**11/12/14 13:55**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	844	5.00	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	1180	10.0	1.00		mg/L	11/18/14	11/18/14	SM 2540 C

DW-7	**14-11-1197-5**	**11/12/14 14:15**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	516	5.00	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	710	1.00	1.00		mg/L	11/18/14	11/18/14	SM 2540 C

Method Blank						**N/A**		**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	ND	1.0	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	ND	1.0	1.00		mg/L	11/18/14	11/18/14	SM 2540 C

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - Sample Duplicate

Kiff Analytical	Date Received: 11/14/14
2795 2nd Street, Suite 300	Work Order: 14-11-1197
Davis, CA 95618-6505	Preparation: N/A
	Method: SM 2320B
Project: Tesoro - Livermore #67076	Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
IP-5	**Sample**	**Aqueous**	**PH1/BUR03**	**N/A**	**11/19/14 20:05**	**E1119ALKD1**
IP-5	**Sample Duplicate**	**Aqueous**	**PH1/BUR03**	**N/A**	**11/19/14 20:05**	**E1119ALKD1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	306.0	306.0	0	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

Kiff Analytical	Date Received: 11/14/14
2795 2nd Street, Suite 300	Work Order: 14-11-1197
Davis, CA 95618-6505	Preparation: N/A
	Method: SM 2540 C
Project: Tesoro - Livermore #67076	Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
DW-7	**Sample**	**Aqueous**	**SC 5**	**11/18/14 00:00**	**11/18/14 16:10**	**E1118TDSD4**
DW-7	**Sample Duplicate**	**Aqueous**	**SC 5**	**11/18/14 00:00**	**11/18/14 16:10**	**E1118TDSD4**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	710.0	730.0	3	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

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

Date Received: 11/14/14
Work Order: 14-11-1197
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore #67076

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-752	**LCS**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 11:31**	**141118L01**
099-12-659-752	**LCSD**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 11:50**	**141118L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon Dioxide	104.0	98.88	95	96.11	92	80-120	3	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

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

Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1197
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-2289	**LCS**	**Aqueous**	**GC 52**	**N/A**	**11/17/14 11:51**	**141117L01**
099-12-663-2289	**LCSD**	**Aqueous**	**GC 52**	**N/A**	**11/17/14 12:18**	**141117L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Methane	102.0	98.36	96	98.59	97	80-120	0	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

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

Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1197
Preparation: N/A
Method: SM 2320B

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-859-514	**LCS**	**Aqueous**	**PH1/BUR03**	**N/A**	**11/19/14 20:05**	**E1119ALKB1**
099-15-859-514	**LCSD**	**Aqueous**	**PH1/BUR03**	**N/A**	**11/19/14 20:05**	**E1119ALKB1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	100.0	98.00	98	98.00	98	80-120	0	0-20	

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

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

Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1197
Preparation: N/A
Method: SM 2540 C

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-180-4311	**LCS**	**Aqueous**	**SC 5**	**11/18/14**	**11/18/14 16:10**	**E1118TDSL3**
099-12-180-4311	**LCSD**	**Aqueous**	**SC 5**	**11/18/14**	**11/18/14 16:10**	**E1118TDSL3**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	100.0	110.0	110	105.0	105	80-120	5	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Sample Analysis Summary Report

Work Order: 14-11-1197 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
RSK-175M	N/A	884	GC 14	2
RSK-175M	N/A	884	GC 52	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	930	GC 52	2
SM 2320B	N/A	688	PH1/BUR03	1
SM 2540 C	N/A	722	SC 5	1

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Glossary of Terms and Qualifiers

Work Order: 14-11-1197 Page 1 of 1

Qualifiers	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 suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
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.
BV	Sample received 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.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
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.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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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

14-11-1197

COC No. **89640** Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Recommended but not mandatory to complete this section:

Company/Address: Kiff Analytical

Sampling Company Log Code: CESC

Global ID: T0600101410

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

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

Project Number: F1-141112 | P.O. No.: **89640**

Project Name: Tesoro - Livermore #67076

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 (Total as $CaCO_3$)	Carbon Dioxide by RSK 175	Hydrocarbons in Water by RSK 175 (Methane	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
IP-5	11/12/14	12:35	1	1	2	2	X	X	X	X	X	X	1
IP-9	11/12/14	11:40	1	1	2	2	X	X	X	X	X	X	2
IP-10	11/12/14	13:15	1	1	2	2	X	X	X	X	X	X	3
DW-1	11/12/14	13:55	1	1	2	2	X	X	X	X	X	X	4
DW-7	11/12/14	14:15	1	1	2	2	X	X	X	X	X	X	5

Relinquished by:	Date 111314	Time 1700	Received by:	Remarks:
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date 11/14/14	Time 1000	Received by Laboratory:	Bill to: Accounts Payable

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Sent By: SAMPLE RECEIVINGX125
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wgt(lbs): 20
Reference: SUBS 89642, 40, 46
Reference 2: 600

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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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WORK ORDER #: 14-11-0917

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Tiffo

DATE: 11/14/14

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

Temperature 3.4 °C - 0.2 °C (CF) = 3.2 °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 Checked by: LS

CUSTODY SEALS INTACT:

☑ Cooler ☐ _____ ☐ No (Not Intact) ☐ Not Present ☐ N/A Checked by: LS

☐ Sample ☐ _____ ☐ No (Not Intact) ☑ Not Present Checked by: 862

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	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
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® ☐_____

Aqueous: ☑2VOA ☑2VOAh ☐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: 862

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

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: SM

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KIFF Analytical LLC

Report Number : 89646
Date : 11/19/2014

Laboratory Results

Scott Stromberg
Arctos Environmental
2332 5th St., Suite A
Berkeley, CA 94610

Subject : 7 Water Samples
Project Name : Tesoro - Livermore #67076
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 Environmental Laboratory Accreditation Program (ELAP), lab number 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 : 89646
Date : 11/19/2014

Subject : 7 Water Samples
Project Name : Tesoro - Livermore #67076
Project Number : 01LV

Case Narrative

The Method Reporting Limit for Hexavalent Chromium by Method EPA 7199 was raised due to the high concentration of other analytes for samples IP-1 and IP-8.

Sample DW-5 was analyzed by method EPA 8260B from bottles that contained headspace bubbles greater than 1/4 inch in diameter.

Recoveries for some Matrix Spike/ Matrix Spike Duplicate analytes were outside control limits. This may indicate a bias for the samples that were spiked. Since the LCS recoveries were within control limits, no data are flagged.

KIFF Analytical LLC

Report Number : 89646
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **01LV**

Sample : **DW-2** Matrix : Water Lab Number : 89646-01
Sample Date :11/13/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/14/14 12:03
Sulfate	**25**	0.50	mg/L	EPA 300.0	11/14/14 12:03
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 17:24
Ferrous Iron	**0.11**	0.10	mg/L	SM 3500-Fe D	11/13/14 19:45
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/18/14 13:26
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/18/14 13:26
Iron, Dissolved	**0.69**	0.10	mg/L	EPA 6010B	11/18/14 13:26
Manganese, Dissolved	**2.4**	0.0050	mg/L	EPA 6010B	11/18/14 13:26
Sodium, Dissolved	**110**	0.50	mg/L	EPA 6010B	11/18/14 13:26
Benzene	**0.83**	0.50	ug/L	EPA 8260B	11/17/14 13:15
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/17/14 13:15
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/17/14 13:15
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/17/14 13:15
Methyl-t-butyl ether (MTBE)	**9.0**	0.50	ug/L	EPA 8260B	11/17/14 13:15
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/14 13:15
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/14 13:15
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/17/14 13:15
Tert-Butanol	**310**	5.0	ug/L	EPA 8260B	11/17/14 13:15
Methanol	< 50	50	ug/L	EPA 8260B	11/17/14 13:15
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/17/14 13:15
TPH as Gasoline	**1100**	50	ug/L	EPA 8260B	11/17/14 13:15
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/17/14 13:15
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/17/14 13:15
1,2-Dichloroethane-d4 (Surr)	98.9		% Recovery	EPA 8260B	11/17/14 13:15
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	11/17/14 13:15

KIFF Analytical LLC

Report Number : 89646
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **01LV**

Sample : **DW-6** Matrix : Water Lab Number : 89646-02
Sample Date :11/13/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	**0.84**	0.10	mg/L	EPA 300.0	11/14/14 14:41
Sulfate	**33**	0.50	mg/L	EPA 300.0	11/14/14 12:12
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 17:44
Ferrous Iron	**0.63**	0.10	mg/L	SM 3500-Fe D	11/13/14 19:45
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/18/14 13:40
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/18/14 13:40
Iron, Dissolved	**2.8**	0.10	mg/L	EPA 6010B	11/18/14 13:40
Manganese, Dissolved	**2.2**	0.0050	mg/L	EPA 6010B	11/18/14 13:40
Sodium, Dissolved	**50**	0.50	mg/L	EPA 6010B	11/18/14 13:40
Benzene	**2.4**	0.50	ug/L	EPA 8260B	11/18/14 04:52
Toluene	**1.1**	0.50	ug/L	EPA 8260B	11/18/14 04:52
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/18/14 04:52
Total Xylenes	**0.65**	0.50	ug/L	EPA 8260B	11/18/14 04:52
Methyl-t-butyl ether (MTBE)	**5.3**	0.50	ug/L	EPA 8260B	11/18/14 04:52
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/18/14 04:52
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/18/14 04:52
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/18/14 04:52
Tert-Butanol	**25**	5.0	ug/L	EPA 8260B	11/18/14 04:52
Methanol	< 50	50	ug/L	EPA 8260B	11/18/14 04:52
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/18/14 04:52
TPH as Gasoline	**3400**	50	ug/L	EPA 8260B	11/18/14 04:52
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/18/14 04:52
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/18/14 04:52
1,2-Dichloroethane-d4 (Surr)	98.1		% Recovery	EPA 8260B	11/18/14 04:52
Toluene - d8 (Surr)	95.8		% Recovery	EPA 8260B	11/18/14 04:52

KIFF Analytical LLC

Report Number : 89646
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **01LV**

Sample : **DW-9** Matrix : Water Lab Number : 89646-03
Sample Date :11/13/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/14/14 12:22
Sulfate	**0.79**	0.50	mg/L	EPA 300.0	11/14/14 12:22
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 17:50
Ferrous Iron	**0.61**	0.10	mg/L	SM 3500-Fe D	11/13/14 19:45
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/18/14 13:51
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/18/14 13:51
Iron, Dissolved	**4.7**	0.10	mg/L	EPA 6010B	11/18/14 13:51
Manganese, Dissolved	**2.8**	0.0050	mg/L	EPA 6010B	11/18/14 13:51
Sodium, Dissolved	**61**	0.50	mg/L	EPA 6010B	11/18/14 13:51
Benzene	**130**	1.5	ug/L	EPA 8260B	11/17/14 14:21
Toluene	**6.8**	1.5	ug/L	EPA 8260B	11/17/14 14:21
Ethylbenzene	**36**	1.5	ug/L	EPA 8260B	11/17/14 14:21
Total Xylenes	**11**	1.5	ug/L	EPA 8260B	11/17/14 14:21
Methyl-t-butyl ether (MTBE)	**22**	1.5	ug/L	EPA 8260B	11/17/14 14:21
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	11/17/14 14:21
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	11/17/14 14:21
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	11/17/14 14:21
Tert-Butanol	**53**	7.0	ug/L	EPA 8260B	11/17/14 14:21
Methanol	< 150	150	ug/L	EPA 8260B	11/17/14 14:21
Ethanol	< 15	15	ug/L	EPA 8260B	11/17/14 14:21
TPH as Gasoline	**9600**	150	ug/L	EPA 8260B	11/17/14 14:21
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	11/17/14 14:21
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	11/17/14 14:21
1,2-Dichloroethane-d4 (Surr)	93.6		% Recovery	EPA 8260B	11/17/14 14:21
Toluene - d8 (Surr)	95.6		% Recovery	EPA 8260B	11/17/14 14:21

KIFF Analytical LLC

Report Number : 89646
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **01LV**

Sample : **IP-1** Matrix : Water Lab Number : 89646-04
Sample Date :11/13/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/14/14 12:31
Sulfate	**300**	25	mg/L	EPA 300.0	11/14/14 16:15
Hexavalent Chromium	< 2.0	2.0	ug/L	EPA 7199	11/13/14 17:57
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	11/13/14 19:46
Arsenic, Dissolved	**0.21**	0.020	mg/L	EPA 6010B	11/18/14 15:16
Chromium, Dissolved	< 0.010	0.010	mg/L	EPA 6010B	11/18/14 15:16
Iron, Dissolved	**0.46**	0.10	mg/L	EPA 6010B	11/18/14 15:16
Manganese, Dissolved	**0.086**	0.010	mg/L	EPA 6010B	11/18/14 15:16
Sodium, Dissolved	**2000**	1.0	mg/L	EPA 6010B	11/18/14 13:57
Benzene	**480**	5.0	ug/L	EPA 8260B	11/17/14 15:26
Toluene	**510**	5.0	ug/L	EPA 8260B	11/17/14 15:26
Ethylbenzene	**620**	5.0	ug/L	EPA 8260B	11/17/14 15:26
Total Xylenes	**2300**	5.0	ug/L	EPA 8260B	11/17/14 15:26
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	11/17/14 15:26
Diisopropyl ether (DIPE)	< 5.0	5.0	ug/L	EPA 8260B	11/17/14 15:26
Ethyl-t-butyl ether (ETBE)	< 5.0	5.0	ug/L	EPA 8260B	11/17/14 15:26
Tert-amyl methyl ether (TAME)	< 5.0	5.0	ug/L	EPA 8260B	11/17/14 15:26
Tert-Butanol	**37**	25	ug/L	EPA 8260B	11/17/14 15:26
Methanol	< 500	500	ug/L	EPA 8260B	11/17/14 15:26
Ethanol	< 50	50	ug/L	EPA 8260B	11/17/14 15:26
TPH as Gasoline	**24000**	500	ug/L	EPA 8260B	11/17/14 15:26
1,2-Dichloroethane	< 5.0	5.0	ug/L	EPA 8260B	11/17/14 15:26
1,2-Dibromoethane	< 5.0	5.0	ug/L	EPA 8260B	11/17/14 15:26
1,2-Dichloroethane-d4 (Surr)	97.3		% Recovery	EPA 8260B	11/17/14 15:26
Toluene - d8 (Surr)	97.3		% Recovery	EPA 8260B	11/17/14 15:26

KIFF Analytical LLC

Report Number : 89646
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **01LV**

Sample : **DW-8** Matrix : Water Lab Number : 89646-05
Sample Date :11/13/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/14/14 12:41
Sulfate	**1.4**	0.50	mg/L	EPA 300.0	11/14/14 12:41
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 18:04
Ferrous Iron	**0.88**	0.10	mg/L	SM 3500-Fe D	11/13/14 19:46
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/18/14 14:01
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/18/14 14:01
Iron, Dissolved	**4.3**	0.10	mg/L	EPA 6010B	11/18/14 14:01
Manganese, Dissolved	**3.3**	0.0050	mg/L	EPA 6010B	11/18/14 14:01
Sodium, Dissolved	**160**	0.50	mg/L	EPA 6010B	11/18/14 14:01
Benzene	**3200**	7.0	ug/L	EPA 8260B	11/17/14 15:59
Toluene	**790**	7.0	ug/L	EPA 8260B	11/17/14 15:59
Ethylbenzene	**2200**	7.0	ug/L	EPA 8260B	11/17/14 15:59
Total Xylenes	**7100**	9.0	ug/L	EPA 8260B	11/17/14 23:37
Methyl-t-butyl ether (MTBE)	< 7.0	7.0	ug/L	EPA 8260B	11/17/14 15:59
Diisopropyl ether (DIPE)	< 7.0	7.0	ug/L	EPA 8260B	11/17/14 15:59
Ethyl-t-butyl ether (ETBE)	< 7.0	7.0	ug/L	EPA 8260B	11/17/14 15:59
Tert-amyl methyl ether (TAME)	< 7.0	7.0	ug/L	EPA 8260B	11/17/14 15:59
Tert-Butanol	**65**	40	ug/L	EPA 8260B	11/17/14 15:59
Methanol	< 700	700	ug/L	EPA 8260B	11/17/14 15:59
Ethanol	< 70	70	ug/L	EPA 8260B	11/17/14 15:59
TPH as Gasoline	**53000**	700	ug/L	EPA 8260B	11/17/14 15:59
1,2-Dichloroethane	< 7.0	7.0	ug/L	EPA 8260B	11/17/14 15:59
1,2-Dibromoethane	< 7.0	7.0	ug/L	EPA 8260B	11/17/14 15:59
1,2-Dichloroethane-d4 (Surr)	98.2		% Recovery	EPA 8260B	11/17/14 15:59
Toluene - d8 (Surr)	99.5		% Recovery	EPA 8260B	11/17/14 15:59

KIFF Analytical LLC

Report Number : 89646
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **01LV**

Sample : **IP-8** Matrix : Water Lab Number : 89646-06
Sample Date :11/13/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	11/14/14 12:50
Sulfate	**390**	25	mg/L	EPA 300.0	11/14/14 16:24
Hexavalent Chromium	< 2.0	2.0	ug/L	EPA 7199	11/13/14 18:11
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	11/13/14 19:47
Arsenic, Dissolved	**0.32**	0.020	mg/L	EPA 6010B	11/18/14 15:21
Chromium, Dissolved	< 0.010	0.010	mg/L	EPA 6010B	11/18/14 15:21
Iron, Dissolved	**0.26**	0.10	mg/L	EPA 6010B	11/18/14 15:21
Manganese, Dissolved	**0.064**	0.010	mg/L	EPA 6010B	11/18/14 15:21
Sodium, Dissolved	**2300**	1.0	mg/L	EPA 6010B	11/18/14 14:05
Benzene	**1200**	9.0	ug/L	EPA 8260B	11/17/14 16:10
Toluene	**3900**	9.0	ug/L	EPA 8260B	11/17/14 16:10
Ethylbenzene	**1000**	9.0	ug/L	EPA 8260B	11/17/14 16:10
Total Xylenes	**8000**	9.0	ug/L	EPA 8260B	11/17/14 16:10
Methyl-t-butyl ether (MTBE)	< 9.0	9.0	ug/L	EPA 8260B	11/17/14 16:10
Diisopropyl ether (DIPE)	< 9.0	9.0	ug/L	EPA 8260B	11/17/14 16:10
Ethyl-t-butyl ether (ETBE)	< 9.0	9.0	ug/L	EPA 8260B	11/17/14 16:10
Tert-amyl methyl ether (TAME)	< 9.0	9.0	ug/L	EPA 8260B	11/17/14 16:10
Tert-Butanol	< 50	50	ug/L	EPA 8260B	11/17/14 16:10
Methanol	< 900	900	ug/L	EPA 8260B	11/17/14 16:10
Ethanol	< 90	90	ug/L	EPA 8260B	11/17/14 16:10
TPH as Gasoline	**53000**	900	ug/L	EPA 8260B	11/17/14 16:10
1,2-Dichloroethane	< 9.0	9.0	ug/L	EPA 8260B	11/17/14 16:10
1,2-Dibromoethane	< 9.0	9.0	ug/L	EPA 8260B	11/17/14 16:10
1,2-Dichloroethane-d4 (Surr)	97.2		% Recovery	EPA 8260B	11/17/14 16:10
Toluene - d8 (Surr)	98.2		% Recovery	EPA 8260B	11/17/14 16:10

KIFF Analytical LLC

Report Number : 89646
Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**
Project Number : **01LV**

Sample : **DW-5** Matrix : Water Lab Number : 89646-07
Sample Date :11/13/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	**0.88**	0.10	mg/L	EPA 300.0	11/14/14 15:46
Sulfate	**70**	10	mg/L	EPA 300.0	11/14/14 16:41
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	11/13/14 18:31
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	11/13/14 19:47
Benzene	**27**	2.0	ug/L	EPA 8260B	11/17/14 14:54
Toluene	**4.3**	2.0	ug/L	EPA 8260B	11/17/14 14:54
Ethylbenzene	**290**	2.0	ug/L	EPA 8260B	11/17/14 14:54
Total Xylenes	**510**	2.0	ug/L	EPA 8260B	11/17/14 14:54
Methyl-t-butyl ether (MTBE)	< 2.0	2.0	ug/L	EPA 8260B	11/17/14 14:54
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	11/17/14 14:54
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	11/17/14 14:54
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	11/17/14 14:54
Tert-Butanol	< 9.0	9.0	ug/L	EPA 8260B	11/17/14 14:54
Methanol	< 200	200	ug/L	EPA 8260B	11/17/14 14:54
Ethanol	< 20	20	ug/L	EPA 8260B	11/17/14 14:54
TPH as Gasoline	**18000**	250	ug/L	EPA 8260B	11/18/14 00:47
1,2-Dichloroethane	< 2.0	2.0	ug/L	EPA 8260B	11/17/14 14:54
1,2-Dibromoethane	< 2.0	2.0	ug/L	EPA 8260B	11/17/14 14:54
1,2-Dichloroethane-d4 (Surr)	93.7		% Recovery	EPA 8260B	11/17/14 14:54
Toluene - d8 (Surr)	93.0		% Recovery	EPA 8260B	11/17/14 14:54

Report Number : 89646

Date : 11/19/2014

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	11/18/2014
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/18/2014
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	11/18/2014
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	11/18/2014
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	11/18/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/17/2014
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Methanol	< 50	50	ug/L	EPA 8260B	11/17/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/17/2014
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/17/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	11/17/2014
Toluene - d8 (Surr)	100		%	EPA 8260B	11/17/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/17/2014
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Methanol	< 50	50	ug/L	EPA 8260B	11/17/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/17/2014
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/17/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
1,2-Dichloroethane-d4 (Surr)	98.4		%	EPA 8260B	11/17/2014
Toluene - d8 (Surr)	97.9		%	EPA 8260B	11/17/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	11/17/2014
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Methanol	< 50	50	ug/L	EPA 8260B	11/17/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	11/17/2014
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	11/17/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	11/17/2014
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	11/17/2014
Toluene - d8 (Surr)	99.7		%	EPA 8260B	11/17/2014

KIFF ANALYTICAL, LLC

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Report Number : 89646

Date : 11/19/2014

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	11/13/2014
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	11/13/2014
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	11/14/2014
Sulfate	<0.50	0.50	mg/L	EPA 300.0	11/14/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

KIFF ANALYTICAL, LLC

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

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

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														
	89640-02	< 1.0	5.00	5.00	4.78	4.78	ug/L	EPA 7199	11/13/14	95.7	95.6	0.0793	90.0-110	10
Ferrous Iron														
	89640-02	< 0.10	0.251	0.251	0.264	0.277	mg/L	SM 3500-Fe D	11/13/14	101	106	4.80	70.0-130	25
1,2-Dibromoethane														
	89654-02	<0.50	40.0	40.0	41.1	41.4	ug/L	EPA 8260B	11/17/14	103	104	0.761	70.0-130	25
1,2-Dichloroethane														
	89654-02	<0.50	40.0	40.0	38.3	37.4	ug/L	EPA 8260B	11/17/14	95.7	93.6	2.29	70.0-130	25
Benzene														
	89654-02	<0.50	40.0	40.0	38.5	38.5	ug/L	EPA 8260B	11/17/14	96.3	96.3	0.0284	70.0-130	25
Diisopropyl ether														
	89654-02	<0.50	40.0	40.0	40.7	39.1	ug/L	EPA 8260B	11/17/14	102	97.7	4.10	70.0-130	25
Ethanol														
	89654-02	<5.0	100	100	92.9	93.4	ug/L	EPA 8260B	11/17/14	92.9	93.4	0.594	55.0-150	25
Ethyl-tert-butyl ether														
	89654-02	<0.50	40.0	40.0	40.8	40.3	ug/L	EPA 8260B	11/17/14	102	101	1.11	70.0-130	25
Ethylbenzene														
	89654-02	<0.50	40.0	40.0	35.1	35.4	ug/L	EPA 8260B	11/17/14	87.8	88.5	0.844	70.0-130	25

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

Report Number : 89646

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

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														
	89654-02	<50	1000	1000	971	950	ug/L	EPA 8260B	11/17/14	97.1	95.0	2.23	65.0-150	25
Methyl-t-butyl ether														
	89654-02	0.62	40.0	40.0	39.7	39.1	ug/L	EPA 8260B	11/17/14	97.8	96.1	1.73	70.0-130	25
P + M Xylene														
	89654-02	<0.50	40.0	40.0	27.1	27.7	ug/L	EPA 8260B	11/17/14	**67.8**	**69.2**	2.14	70.0-130	25
Tert-Butanol														
	89654-02	140	200	200	336	334	ug/L	EPA 8260B	11/17/14	96.6	95.9	0.817	70.0-130	25
Tert-amyl-methyl ether														
	89654-02	<0.50	40.0	40.0	40.6	40.3	ug/L	EPA 8260B	11/17/14	102	101	0.958	70.0-130	25
Toluene														
	89654-02	<0.50	40.0	40.0	35.5	35.5	ug/L	EPA 8260B	11/17/14	88.8	88.8	0.0327	70.0-130	25
1,2-Dibromoethane														
	89655-02	<0.50	40.0	40.0	41.4	42.1	ug/L	EPA 8260B	11/17/14	104	105	1.50	70.0-130	25
1,2-Dichloroethane														
	89655-02	<0.50	40.0	40.0	37.6	37.8	ug/L	EPA 8260B	11/17/14	94.1	94.5	0.426	70.0-130	25
Benzene														
	89655-02	<0.50	40.0	40.0	38.2	38.9	ug/L	EPA 8260B	11/17/14	95.4	97.2	1.83	70.0-130	25

Report Number : 89646

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

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														
	89655-02	<0.50	40.0	40.0	40.5	40.0	ug/L	EPA 8260B	11/17/14	101	100	1.18	70.0-130	25
Ethanol														
	89655-02	<5.0	100	100	97.5	97.8	ug/L	EPA 8260B	11/17/14	97.5	97.8	0.263	55.0-150	25
Ethyl-tert-butyl ether														
	89655-02	<0.50	40.0	40.0	41.1	41.9	ug/L	EPA 8260B	11/17/14	103	105	1.93	70.0-130	25
Ethylbenzene														
	89655-02	<0.50	40.0	40.0	41.1	41.6	ug/L	EPA 8260B	11/17/14	103	104	1.29	70.0-130	25
Methanol														
	89655-02	<50	1000	1000	987	990	ug/L	EPA 8260B	11/17/14	98.7	99.0	0.336	65.0-150	25
Methyl-t-butyl ether														
	89655-02	<0.50	40.0	40.0	38.8	39.5	ug/L	EPA 8260B	11/17/14	96.9	98.8	1.96	70.0-130	25
P + M Xylene														
	89655-02	<0.50	40.0	40.0	41.0	41.6	ug/L	EPA 8260B	11/17/14	102	104	1.44	70.0-130	25
Tert-Butanol														
	89655-02	<5.0	200	200	199	202	ug/L	EPA 8260B	11/17/14	99.6	101	1.59	70.0-130	25
Tert-amyl-methyl ether														
	89655-02	<0.50	40.0	40.0	39.9	41.2	ug/L	EPA 8260B	11/17/14	99.8	103	3.22	70.0-130	25
Toluene														
	89655-02	<0.50	40.0	40.0	38.8	39.8	ug/L	EPA 8260B	11/17/14	97.1	99.4	2.34	70.0-130	25

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Report Number : 89646

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

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														
	89654-03	<0.50	40.0	40.0	38.9	39.1	ug/L	EPA 8260B	11/17/14	97.2	97.8	0.630	70.0-130	25
1,2-Dichloroethane														
	89654-03	<0.50	40.0	40.0	37.1	38.1	ug/L	EPA 8260B	11/17/14	92.7	95.2	2.57	70.0-130	25
Benzene														
	89654-03	3.1	40.0	40.0	41.6	42.0	ug/L	EPA 8260B	11/17/14	96.3	97.2	0.965	70.0-130	25
Diisopropyl ether														
	89654-03	<0.50	40.0	40.0	38.7	38.3	ug/L	EPA 8260B	11/17/14	96.7	95.6	1.12	70.0-130	25
Ethanol														
	89654-03	6.9	100	100	157	122	ug/L	EPA 8260B	11/17/14	150	116	**25.6**	55.0-150	25
Ethyl-tert-butyl ether														
	89654-03	<0.50	40.0	40.0	35.0	36.2	ug/L	EPA 8260B	11/17/14	87.4	90.6	3.54	70.0-130	25
Ethylbenzene														
	89654-03	93	40.0	40.0	136	127	ug/L	EPA 8260B	11/17/14	106	83.7	23.4	70.0-130	25
Methanol														
	89654-03	56	1000	1000	1200	1010	ug/L	EPA 8260B	11/17/14	115	95.6	18.1	65.0-150	25
Methyl-t-butyl ether														
	89654-03	17	40.0	40.0	52.1	56.6	ug/L	EPA 8260B	11/17/14	86.9	98.1	12.1	70.0-130	25

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Report Number : 89646

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

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														
	89654-03	6.0	40.0	40.0	46.4	45.9	ug/L	EPA 8260B	11/17/14	101	99.6	1.36	70.0-130	25
Tert-Butanol														
	89654-03	<5.0	200	200	194	197	ug/L	EPA 8260B	11/17/14	97.1	98.4	1.38	70.0-130	25
Tert-amyl-methyl ether														
	89654-03	<0.50	40.0	40.0	37.0	37.6	ug/L	EPA 8260B	11/17/14	92.6	93.9	1.38	70.0-130	25
Toluene														
	89654-03	20	40.0	40.0	59.4	58.0	ug/L	EPA 8260B	11/17/14	97.2	93.6	3.81	70.0-130	25
Nitrate as N														
	89646-01	< 0.10	5.00	5.00	4.87	4.93	mg/L	EPA 300.0	11/14/14	96.5	97.8	1.30	90.0-110	10
Sulfate														
	89646-01	25	25.0	25.0	49.2	49.4	mg/L	EPA 300.0	11/14/14	95.5	96.7	0.608	90.0-110	10
Arsenic, (Dis)														
	89646-01	< 0.015	0.400	0.400	0.420	0.424	mg/L	EPA 6010B	11/18/14	104	105	1.02	75-125	20
Chromium, (Dis)														
	89646-01	< 0.0050	0.400	0.400	0.390	0.393	mg/L	EPA 6010B	11/18/14	97.4	98.3	0.868	75-125	20
Iron, (Dis)														
	89646-01	0.69	4.00	4.00	4.42	4.53	mg/L	EPA 6010B	11/18/14	93.3	95.9	2.39	75-125	20

KIFF ANALYTICAL, LLC

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Report Number : 89646

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 11/19/2014

Project Name : **Tesoro - Livermore #67076**

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
Manganese, (Dis)														
	89646-01	2.4	0.400	0.400	2.68	2.78	mg/L	EPA 6010B	11/18/14	**74.8**	99.8	3.66	75-125	20
Sodium, (Dis)														
	89646-01	110	40.0	40.0	155	158	mg/L	EPA 6010B	11/18/14	104	112	2.11	75-125	20

KIFF ANALYTICAL, LLC

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QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	11/18/14	101	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	11/18/14	98.0	85-115
Iron, (Dis)	4.00	mg/L	EPA 6010B	11/18/14	95.4	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	11/18/14	95.1	85-115
Sodium, (Dis)	40.0	mg/L	EPA 6010B	11/18/14	102	85-115
1,2-Dibromoethane	39.9	ug/L	EPA 8260B	11/17/14	104	70.0-130
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	11/17/14	96.4	70.0-130
Benzene	39.9	ug/L	EPA 8260B	11/17/14	97.1	70.0-130
Diisopropyl ether	39.9	ug/L	EPA 8260B	11/17/14	99.3	70.0-130
Ethanol	99.8	ug/L	EPA 8260B	11/17/14	91.6	55.0-150
Ethyl-tert-butyl ether	39.9	ug/L	EPA 8260B	11/17/14	104	70.0-130
Ethylbenzene	39.9	ug/L	EPA 8260B	11/17/14	95.6	70.0-130
Methanol	998	ug/L	EPA 8260B	11/17/14	101	65.0-150
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	11/17/14	97.9	70.0-130
P + M Xylene	39.9	ug/L	EPA 8260B	11/17/14	96.7	70.0-130
TPH as Gasoline	502	ug/L	EPA 8260B	11/17/14	88.8	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	11/17/14	96.8	70.0-130
Tert-amyl-methyl ether	39.9	ug/L	EPA 8260B	11/17/14	101	70.0-130
Toluene	39.9	ug/L	EPA 8260B	11/17/14	98.3	70.0-130
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	11/17/14	93.1	70.0-130

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dichloroethane	40.1	ug/L	EPA 8260B	11/17/14	84.8	70.0-130
Benzene	40.1	ug/L	EPA 8260B	11/17/14	86.4	70.0-130
Diisopropyl ether	40.1	ug/L	EPA 8260B	11/17/14	88.1	70.0-130
Ethanol	100	ug/L	EPA 8260B	11/17/14	85.5	55.0-150
Ethyl-tert-butyl ether	40.1	ug/L	EPA 8260B	11/17/14	92.6	70.0-130
Ethylbenzene	40.1	ug/L	EPA 8260B	11/17/14	90.6	70.0-130
Methanol	1000	ug/L	EPA 8260B	11/17/14	92.4	65.0-150
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	11/17/14	87.0	70.0-130
P + M Xylene	40.1	ug/L	EPA 8260B	11/17/14	92.1	70.0-130
TPH as Gasoline	496	ug/L	EPA 8260B	11/17/14	91.9	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	11/17/14	87.9	70.0-130
Tert-amyl-methyl ether	40.1	ug/L	EPA 8260B	11/17/14	91.3	70.0-130
Toluene	40.1	ug/L	EPA 8260B	11/17/14	87.8	70.0-130
1,2-Dibromoethane	39.7	ug/L	EPA 8260B	11/17/14	103	70.0-130
1,2-Dichloroethane	39.7	ug/L	EPA 8260B	11/17/14	98.1	70.0-130
Benzene	39.7	ug/L	EPA 8260B	11/17/14	102	70.0-130
Diisopropyl ether	39.7	ug/L	EPA 8260B	11/17/14	102	70.0-130
Ethanol	99.3	ug/L	EPA 8260B	11/17/14	91.1	55.0-150
Ethyl-tert-butyl ether	39.7	ug/L	EPA 8260B	11/17/14	108	70.0-130
Ethylbenzene	39.7	ug/L	EPA 8260B	11/17/14	105	70.0-130
Methanol	993	ug/L	EPA 8260B	11/17/14	105	65.0-150
Methyl-t-butyl ether	39.7	ug/L	EPA 8260B	11/17/14	110	70.0-130

KIFF ANALYTICAL, LLC

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

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore #67076**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
P + M Xylene	39.7	ug/L	EPA 8260B	11/17/14	101	70.0-130
TPH as Gasoline	499	ug/L	EPA 8260B	11/17/14	82.7	70.0-130
Tert-Butanol	198	ug/L	EPA 8260B	11/17/14	99.9	70.0-130
Tert-amyl-methyl ether	39.7	ug/L	EPA 8260B	11/17/14	108	70.0-130
Toluene	39.7	ug/L	EPA 8260B	11/17/14	102	70.0-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	11/13/14	94.3	90.0-110
Ferrous Iron	0.251	mg/L	SM 3500-Fe D	11/13/14	103	70.0-130
Nitrate as N	5.00	mg/L	EPA 300.0	11/14/14	99.0	90.0-110
Sulfate	25.0	mg/L	EPA 300.0	11/14/14	99.4	90.0-110

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

896046

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Confluence Environmental, Inc.
3308 El Camino Ave, Suite 300 #148
Sacramento, CA 95821
916-760-7641 - main
916-473-8617 - fax
www.confluence-env.com

Chain of Custody

Project Name: Tesoro - Livermore #67076

Job Number: FI-14117

TAT: (STANDARD) 5 DAY 2 DAY 24 HOUR OTHER:

Lab: **Kiff**	Site Address: 1619 1st St, Livermore	Confluence PM: Jason Brown
Address: 2795 2nd St, Suite 300, Davis CA 95616	California Global ID No.: TO600101410	Phone / Fax: 916-760-7641 / 916-473-8617
Contact: Troy Turpen	Include EDF w/ Report: (Yes) No	Confluence Log Code: **CESC**
Phone/ Fax: 530-297-4800 x.111	Consultant / PM: Orion / Mike Purchase	Report to: Mike Purchase
	Phone / Fax: 510-525-2180 / 510-525-2392	Invoice to: Mike Purchase

	Sample ID	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Requested Analysis: TPH-G, BTEX (8260)	Oxygenates(7) & Lead Scavengers (8260)	Ferrous Iron (SM 3500-Fe-D)	Hexavalent Chromium (7199)	Nitrate & Sulfate (300)	Total Alkalinity (SM2320B)	Metals by ICP (6010B)*	Methane (RSK 175M)	Carbon Dioxide (RSK 175M)	TDS (2540C)	Notes and Comments
1	DW-2	0940	11/13/14		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	01
2	DW-6	0930	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	02
3	DW-9	0945	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	03
4	IP-1	1015	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	04
5	DW-8	1045	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	05
6	IP-8	1100	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	06
	DW-5 *	1130	"		X			12	6		1	5		X	X	X	X	X	X	X	X	X	X	07

Sampler's Name: A. Feeney / Confluence	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Confluence Environmental	A. Feeney	11/13/14	1207			
Shipment Date:						
Shipment Method:				Michelle Spencer KIFF Analytical	11/13/14	1207

Special Instructions: ***Metals list to include: Fe, Cr, Na, As & Mn; Metals samples have been filtered in the field**

*DW-5 - hot sample

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

SRG #: 896046

Sample Receipt	Initials/Date: MAS 111314	Storage Time: 1446	Sample Login	Initials/Date: TJB 111314

TAT: ☒ Standard ☐ Rush ☐ Split ☐ None Method of Receipt: ☒ Courier ☐ Over-the-counter ☐ Shipped

Temp °C 1.0/2.4 ☐ N/A Therm ID IR 3 Time 1439 Coolant present ☒ Yes ☐ No ☐ Water ☐ Temp Excursion

For Shipments Only: Cooler Receipt Initials/Date/Time: Custody Seals ☐ N/A ☐ Intact ☐ Broken

Chain-of-Custody:	Yes	No
Is COC present?	X	
Is COC signed by relinquisher?	X	
Is COC dated by relinquisher?	X	
Is the sampler's name on the COC?	X	
Are there analyses or hold for all samples?	X	

Documented on	COC	Labels	Discrepancies:
Sample ID	X	X	
Project ID	X	X	
Sample Date	X	X	
Sample Time	X	X	
Does COC match project history?	☐ N/A	☒ Yes	☐ No

Samples:	N/A	Yes	No
Are sample custody seals intact?	X		
Are sample containers intact?		X	
Is preservation documented?		X	
In-house Analysis:	**N/A**	**Yes**	**No**
Are preservatives acceptable?		X	
Are samples within holding time?		X	
Are sample container types correct?		X	
Is there adequate sample volume?		MAS 111314	X

Comments: Sample -07 emitted a strong odor and sampler indicated it was a hot sample. It was transported in a separate cooler and put in the Product fridge upon arrival at Kiff per J. DeuPree of Lab Ops. MAS 111314 1454

Sediment in sample -02 (all VOAs). TJB 111314 1850

Sediment and bubbles in sample -07 (all VOAs). TJB 111314 1857

Receipt Details:

Matrix	Container Type	# of Containers
WA	VOA	MAS 111314 37 49
WA	Poly	35

CS Required: ☒

Proceed With Analysis: ☐ YES ☐ NO Init/Date:

Client Communication:

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

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WORK ORDER NUMBER: 14-11-1200

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro - Livermore #67076

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

Amanda Porter

Approved for release on 11/26/2014 by:
Amanda Porter
Project Manager

ResultLink

Email your PM

Eurofins Calscience, 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.

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Client Project Name: Tesoro - Livermore #67076
Work Order Number: 14-11-1200

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Work Order Narrative

Work Order: 14-11-1200 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 11/14/14. They were assigned to Work Order 14-11-1200.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

New York NELAP air certification does not certify for all reported methods and analytes, reference the accredited items here: http://www.calscience.com/PDF/New_York.pdf

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

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

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Analytical Report

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

Date Received:	11/14/14
Work Order:	14-11-1200
Preparation:	N/A
Method:	RSK-175M
Units:	ug/L

Project: Tesoro - Livermore #67076

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-2	**14-11-1200-1-C**	**11/13/14 09:00**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 16:13**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	27500	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-6	**14-11-1200-2-C**	**11/13/14 09:30**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 16:31**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	11700	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-9	**14-11-1200-3-C**	**11/13/14 09:45**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 16:50**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	28100	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-1	**14-11-1200-4-C**	**11/13/14 10:15**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 17:48**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	1340	1.70	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-8	**14-11-1200-5-C**	**11/13/14 10:45**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 18:30**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	42500	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-8	**14-11-1200-6-C**	**11/13/14 11:00**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 19:09**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	628	1.70	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-5	**14-11-1200-7-C**	**11/13/14 11:30**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 19:31**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	8090	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-659-752**	**N/A**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 12:12**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	ND	1.70	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

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

Date Received: 11/14/14
Work Order: 14-11-1200
Preparation: N/A
Method: RSK-175M
Units: ug/L

Project: Tesoro - Livermore #67076

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-2	**14-11-1200-1-A**	**11/13/14 09:00**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 11:40**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Methane	553	1.00	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-6	**14-11-1200-2-A**	**11/13/14 09:30**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 12:39**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Methane	878	4.00	4.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-9	**14-11-1200-3-B**	**11/13/14 09:45**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 14:56**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Methane	3780	8.00	8.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-1	**14-11-1200-4-A**	**11/13/14 10:15**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 14:30**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Methane	1770	8.00	8.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-8	**14-11-1200-5-A**	**11/13/14 10:45**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 15:48**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Methane	4680	20.0	20.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-8	**14-11-1200-6-A**	**11/13/14 11:00**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 16:40**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Methane	716	4.00	4.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-5	**14-11-1200-7-A**	**11/13/14 11:30**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 18:33**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Methane	962	4.00	4.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-663-2290**	**N/A**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 11:08**	**141118L01**

Parameter	Result	RL	DF	Qualifiers
Methane	ND	1.00	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

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

Date Received: 11/14/14
Work Order: 14-11-1200
Preparation: EPA 3005A Filt.
Method: EPA 6010B
Units: mg/L

Project: Tesoro - Livermore #67076

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-5	**14-11-1200-7-E**	**11/13/14 11:30**	**Aqueous**	**ICP 7300**	**11/17/14**	**11/19/14 13:21**	**141117LA6A**

Parameter	Result	RL	DF	Qualifiers
Arsenic	0.0166	0.0100	1.00	
Chromium	ND	0.0100	1.00	
Iron	0.171	0.100	1.00	
Manganese	0.164	0.00500	1.00	
Sodium	638	0.500	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-683-1039**	**N/A**	**Aqueous**	**ICP 7300**	**11/17/14**	**11/24/14 14:22**	**141117LA6A**

Parameter	Result	RL	DF	Qualifiers
Arsenic	ND	0.0100	1.00	
Chromium	ND	0.0100	1.00	
Iron	ND	0.100	1.00	
Manganese	ND	0.00500	1.00	
Sodium	ND	0.500	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505
Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1200

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
DW-2	**14-11-1200-1**	**11/13/14 09:00**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	576	5.00	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	810	1.00	1.00		mg/L	11/19/14	11/19/14	SM 2540 C

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
DW-6	**14-11-1200-2**	**11/13/14 09:30**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	419	5.00	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	585	1.00	1.00		mg/L	11/19/14	11/19/14	SM 2540 C

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
DW-9	**14-11-1200-3**	**11/13/14 09:45**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	470	5.00	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	590	1.00	1.00		mg/L	11/19/14	11/19/14	SM 2540 C

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
IP-1	**14-11-1200-4**	**11/13/14 10:15**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	3800	10.0	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	4820	10.0	1.00		mg/L	11/19/14	11/19/14	SM 2540 C

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
DW-8	**14-11-1200-5**	**11/13/14 10:45**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	755	5.00	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	935	1.00	1.00		mg/L	11/19/14	11/19/14	SM 2540 C

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
IP-8	**14-11-1200-6**	**11/13/14 11:00**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	4200	10.0	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	5700	10.0	1.00		mg/L	11/19/14	11/19/14	SM 2540 C

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix
DW-5	**14-11-1200-7**	**11/13/14 11:30**	**Aqueous**

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	1340	10.0	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	1600	10.0	1.00		mg/L	11/19/14	11/19/14	SM 2540 C

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95618-6505
Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1200

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

Parameter	Results	RL	DF	Qualifiers	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	ND	1.0	1.00		mg/L	N/A	11/19/14	SM 2320B
Solids, Total Dissolved	ND	1.0	1.00		mg/L	11/19/14	11/19/14	SM 2540 C

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - Spike/Spike Duplicate

Kiff Analytical		Date Received:	11/14/14
2795 2nd Street, Suite 300		Work Order:	14-11-1200
Davis, CA 95618-6505		Preparation:	EPA 3010A Total
		Method:	EPA 6010B
Project: Tesoro - Livermore #67076			Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
14-11-1208-1	**Sample**	**Aqueous**	**ICP 7300**	**11/17/14**	**11/18/14 17:52**	**141117SA6**
14-11-1208-1	**Matrix Spike**	**Aqueous**	**ICP 7300**	**11/17/14**	**11/18/14 17:53**	**141117SA6**
14-11-1208-1	**Matrix Spike Duplicate**	**Aqueous**	**ICP 7300**	**11/17/14**	**11/18/14 17:54**	**141117SA6**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Arsenic	0.02219	0.5000	0.5314	102	0.5602	108	80-140	5	0-11	
Chromium	ND	0.5000	0.4881	98	0.5098	102	86-122	4	0-8	
Iron	3.711	0.5000	4.249	4X	4.408	4X	65-149	4X	0-21	Q
Manganese	2.465	0.5000	2.983	4X	3.050	4X	86-116	4X	0-7	Q
Sodium	143.4	5.000	147.6	4X	149.8	4X	73-127	4X	0-9	Q

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

Kiff Analytical		Date Received:	11/14/14
2795 2nd Street, Suite 300		Work Order:	14-11-1200
Davis, CA 95618-6505		Preparation:	N/A
		Method:	SM 2320B
Project: Tesoro - Livermore #67076			Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
14-11-1197-1	**Sample**	**Aqueous**	**PH1/BUR03**	**N/A**	**11/19/14 20:05**	**E1119ALKD1**
14-11-1197-1	**Sample Duplicate**	**Aqueous**	**PH1/BUR03**	**N/A**	**11/19/14 20:05**	**E1119ALKD1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	306.0	306.0	0	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

Kiff Analytical		Date Received:	11/14/14
2795 2nd Street, Suite 300		Work Order:	14-11-1200
Davis, CA 95618-6505		Preparation:	N/A
		Method:	SM 2540 C
Project: Tesoro - Livermore #67076			Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
DW-2	**Sample**	**Aqueous**	**SC 5**	**11/19/14 00:00**	**11/19/14 17:30**	**E1119TDSD1**
DW-2	**Sample Duplicate**	**Aqueous**	**SC 5**	**11/19/14 00:00**	**11/19/14 17:30**	**E1119TDSD1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	810.0	820.0	1	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

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

Date Received: 11/14/14
Work Order: 14-11-1200
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore #67076

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-752	**LCS**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 11:31**	**141118L01**
099-12-659-752	**LCSD**	**Aqueous**	**GC 14**	**N/A**	**11/18/14 11:50**	**141118L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon Dioxide	104.0	98.88	95	96.11	92	80-120	3	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

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

Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1200
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-2290	**LCS**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 10:12**	**141118L01**
099-12-663-2290	**LCSD**	**Aqueous**	**GC 52**	**N/A**	**11/18/14 10:43**	**141118L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Methane	102.0	95.26	93	95.37	93	80-120	0	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

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

Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1200
Preparation: N/A
Method: SM 2320B

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-859-514	**LCS**	**Aqueous**	**PH1/BUR03**	**N/A**	**11/19/14 20:05**	**E1119ALKB1**
099-15-859-514	**LCSD**	**Aqueous**	**PH1/BUR03**	**N/A**	**11/19/14 20:05**	**E1119ALKB1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Alkalinity, Total (as CaCO3)	100.0	98.00	98	98.00	98	80-120	0	0-20	

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

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

Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1200
Preparation: N/A
Method: SM 2540 C

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-180-4313	**LCS**	**Aqueous**	**SC 5**	**11/19/14**	**11/19/14 17:30**	**E1119TDSL1**
099-12-180-4313	**LCSD**	**Aqueous**	**SC 5**	**11/19/14**	**11/19/14 17:30**	**E1119TDSL1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Solids, Total Dissolved	100.0	100.0	100	90.00	90	80-120	11	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

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

Project: Tesoro - Livermore #67076

Date Received: 11/14/14
Work Order: 14-11-1200
Preparation: EPA 3005A Filt.
Method: EPA 6010B

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-15-683-1039	**LCS**	**Aqueous**	**ICP 7300**	**11/17/14**	**11/24/14 14:24**	**141117LA6A**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Arsenic	0.5000	0.4444	89	80-120	
Chromium	0.5000	0.4832	97	80-120	
Iron	0.5000	0.5436	109	80-120	
Manganese	0.5000	0.5192	104	80-120	
Sodium	5.000	4.609	92	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

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Sample Analysis Summary Report

Work Order: 14-11-1200 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 6010B	EPA 3005A Filt.	771	ICP 7300	1
RSK-175M	N/A	884	GC 14	2
RSK-175M	N/A	884	GC 52	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	929	GC 52	2
SM 2320B	N/A	688	PH1/BUR03	1
SM 2540 C	N/A	722	SC 5	1

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Glossary of Terms and Qualifiers

Work Order: 14-11-1200 Page 1 of 1

Qualifiers	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 suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
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.
BV	Sample received 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.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
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.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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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

14-11-1200

COC No. **89646** Page 1 of 1

Project Contact (Hardcopy or PDF to): Scott Forbes

EDF Report? YES

Chain-of-Custody Record and Analysis Request

Company/Address: Kiff Analytical

Recommended but not mandatory to complete this section:

Sampling Company Log Code: CESC

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

Global ID: T0600101410

Project Number: F1-141112 | P.O. No.: **89646**

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

Project Name: Tesoro - Livermore #67076

Project Address:

Sample Designation	Sampling Date	Sampling Time	Container / Preservative: 1-L Poly None	250ml Poly None	250ml Poly Filt+HNO3	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)	ICP 6010 Dissolved SUB (1)	Total Dissolved Solids	TAT: 4-Days	For Lab Use Only
DW-2	11/13/14	09:00	1	1		2	2	X	X	X	X		X	X	1
DW-6	11/13/14	09:30	1	1		2	2	X	X	X	X		X	X	2
DW-9	11/13/14	09:45	1	1		2	2	X	X	X	X		X	X	3
IP-1	11/13/14	10:15	1	1		2	2	X	X	X	X		X	X	4
DW-8	11/13/14	10:45	1	1		2	2	X	X	X	X		X	X	5
IP-8	11/13/14	11:00	1	1		2	2	X	X	X	X		X	X	6
DW-5	11/13/14	11:30	1	1	1	2	2	X	X	X	X	X	X	X	7

Relinquished by:	Date	Time	Received by:
Kiff Analytical LLC	111314	1700	
	11/14/14	1000	

Remarks: Please refer to attached Test Detail.

Bill to: Accounts Payable

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Test Detail for Kiff Work Order: 89646

1200

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

Carbon Dioxide by RSK 175 (1)
Carbon Dioxide

Hydrocarbons in Water by RSK 175 (1)
Methane

ICP 6010 Dissolved SUB (1)
Arsenic, Dissolved
Chromium, Dissolved
Iron, Dissolved
Manganese, Dissolved
Sodium, Dissolved

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DAVIS, CA 95618

Sent By: SAMPLE RECEIVINGX125
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wgt(lbs): 20
Reference: SUBS 89642, 40, 46
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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DAVIS, CA 95618

Sent By: SAMPLE RECEIVINGX125
Phone#: (530)297-4800
wgt(lbs): 60
Reference: SUBS 89642, 40, 46
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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WORK ORDER #: 14-11-1200

SAMPLE RECEIPT FORM

Cooler 1 of 2

CLIENT: Kiff

DATE: 11/14/14

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

Temperature 2.5 °C - 0.2 °C (CF) = 2.6 °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 **Checked by:** IS

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A **Checked by:** IS

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Checked by:** 262

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	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
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® ☐_____

Aqueous: ☑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**(3) ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na**$_2$ ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** 262

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** 776

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:** 776

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WORK ORDER #: 14-11-1 2 0 0

SAMPLE RECEIPT FORM

Cooler 2 of 2

CLIENT: Kiffl

DATE: 11/14/14

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

Temperature 3.1 °C - 0.2 °C (CF) = 2.9 °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 **Checked by:** 15

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A **Checked by:** 15

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Checked by:** AG2

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	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
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® ☐_____

Aqueous: ☑VOA ☑VOA**h** ☐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:** AG2

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** 776

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:** 776

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ATTACHMENT F

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.

Manifest Document No.

2. Page 1 of 1

3. Generator's Name and Mailing Address Tesoro Livermore
1619 1st St, Livermore CA

4. Generator's Phone ( )

5. Transporter 1 Company Name: Confluence Env.

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone (916) 760 7641

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
IST
1105 Airport Rd.
Rio Vista, CA

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone (707) 374-3834

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Haz Waste Purge water	1	Poly	66	Gal
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

GENERATOR

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

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Adam Feeney | Signature: Adam Feeney | Date: Month 11 / Day 13 / Year 14

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month / Day / Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: MICHAEL WHITEHEAD | Signature | Date: Month 12 / Day 31 / Year 14

NON-HAZARDOUS WASTE