

August 18, 2014



TESORO

Tesoro Companies, Inc.
3450 South 344th Way, Suite 201
Auburn, WA 98001
253 896 8700

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

RECEIVED

By Alameda County Environmental Health at 10:17 am, Sep 15, 2014

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

Dear Mr. Wickham:

Enclosed please find a copy of the *Second Quarter 2013 Status Report* for the subject site, dated 15 October 2013. 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,

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

Attachments

CC: Arctos – Scott Stromberg



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

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

15 October 2013
Project No. 01LV

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

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

Dear Mr. Wickham:

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

Executive Summary

A quarterly groundwater monitoring event was conducted from 22 to 24 April 2013. There was an average 2-foot decrease in water levels since the first quarter 2013. The highest onsite petroleum hydrocarbon concentrations were along the western side of the property at wells DW-8, MW-11, and TP-1. The highest offsite petroleum hydrocarbon concentrations were at well MW-6 located northwest of the site. The soil vapor extraction (SVE) system and oxygen injection system remained shut off during the second quarter 2013.

Arctos installed seven deep offsite injection wells in April 2013 in preparation for the expanded in-situ chemical oxidation (ISCO) pilot test. The injection wells were installed in accordance with a work plan dated 28 February 2013 and approved in a letter from Alameda County Environmental Health (ACEH) dated 25 March 2013. The expanded onsite and offsite ISCO pilot test was conducted during the second quarter 2013. A description of the expanded ISCO pilot test including the results of the pilot test will be submitted in a separate report.

During the third quarter 2013, Tesoro will continue to monitor groundwater wells in the vicinity of the ISCO pilot test to evaluate the effectiveness of the ISCO pilot test on and off site.

Site Background

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

Groundwater Monitoring

Arctos's subcontractor, Environmental Field Services, LLC (EFS), of Patterson, California, performed a quarterly groundwater monitoring event from 22 to 24 April 2013. Samples were collected from wells MW-1 through MW-12, DW-1 through DW-9, IP-1 through IP-10, TP-1, TP-2, VW-2, and VW-3 (Figure 2) in accordance with the site monitoring plan (Attachment A) and the ISCO pilot test work plan. Groundwater monitoring was performed in accordance with the guidelines of the California Underground Storage Tank Regulations, Title 23, Division 3, Chapter 16, California Code of Regulations. Groundwater sampling quality assurance/quality control (QA/QC) procedures are in Attachment A. Field data sheets are in Attachment B.

Analytical Program

Groundwater samples were analyzed in accordance with the analytical plan in Attachment A. Groundwater samples collected from wells MW-2, MW-6 through MW-12, DW-1 through DW-3, DW-5 through DW-9, IP-1, IP-5, and IP-10 were tested for additional analytes in accordance with the ISCO pilot test work plan (Arctos, 2011).

Groundwater Results

Groundwater elevations were approximately 433 to 441 feet above mean sea level (MSL; 33 to 37 feet below ground surface [bgs]). Water levels decreased an average of 2 feet compared to the first quarter 2013 and were an average of 2 feet higher than water levels in the second quarter 2012 (Table 1). The water level data indicate that the general direction of water flow is toward the northwest with an estimated gradient of 0.016 (1 foot/62 feet; Figure 2). The gradient is consistent with historical data collected since 1993 (Attachment C).

During the second quarter 2013, the highest onsite concentration of total petroleum hydrocarbons as gasoline (TPHg) of 5,800 micrograms per liter ($\mu\text{g/l}$) was detected at MW-11. Benzene was detected onsite at a maximum concentration of 350 mg/l at DW-8. Methyl tert-butyl ether (MTBE) and tert-butyl alcohol (TBA) were detected onsite at maximum concentrations of 76 and 33 $\mu\text{g/l}$, respectively, at TP-1.

Historically, a direct relationship between dissolved-phase hydrocarbons and water levels has been observed at shallow source area wells and an indirect relationship has

historically been observed at deep source area wells. Compared to when water levels were at the same elevation, dissolved-phase hydrocarbon concentrations in both shallow and deep source area wells have decreased by 71 to 94 percent, with the exception of shallow source area wells TP-1, TP-2, and VW-2. Concentrations at shallow source area well VW-2 have not changed compared to concentrations when the water levels were at the same elevation in October 2011. Concentrations at shallow source area wells TP-1 and TP-2 have increased compared to when water levels were at the same elevation in May 2012. However, concentrations at TP-1, TP-2, and VW-2 have decreased by over 90 percent compared to concentrations before the SVE and oxygen injection systems were started in June and October 2010, respectively. The reductions in hydrocarbon concentrations for shallow and deep source area wells are summarized in the following table:

Well ID	Date	Groundwater Elevation (ft. MSL)	Petroleum Hydrocarbon Concentration ^(a) (µg/l)			Percent Reduction
			TPHg	Benzene	MTBE	
MW-2	10/11/11	439.47	7,000	810	370	94
	4/23/13	438.83	430	10	13	
MW-11	2/2/11	440.66	20,000	210	ND<5	71
	4/24/13	440.22	5,800	16	ND<0.9	
TP-1	5/5/10	440.50	15,000	2,100	3,400	90
	5/8/12	437.94	590	1.6	28	
	4/24/13	438.93	2,000	35	76	
TP-2	5/6/10	441.08	6,400	740	14,000	99
	5/7/12	438.37	ND<50	ND<0.5	ND<0.5	
	4/24/13	439.08	100	1.2	0.54	
VW-2	5/5/10	441.44	2,800	130	1,300	99
	10/10/11	439.28	ND<50	ND<0.5	0.79	
	4/24/13	439.06	ND<50	ND<0.5	ND<0.5	
DW-1	10/11/11	438.45	180	3	0.77	72
	4/22/13	439.13	ND<50	ND<0.5	ND<0.5	

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

The highest offsite TPHg, benzene, MTBE, and TBA concentrations of 8,600, 880, 190, and 700 µg/l, respectively, were at well MW-6, located northwest of the intersection of 1st Street and P Street.

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

3,200, 18, 21, and 67 µg/l, respectively. TPHg and benzene were detected in shallow well MW-12 at concentrations of 1,400 and 2.2 µg/l, respectively. MTBE and TBA were not detected in well MW-12. All offsite benzene concentrations were below the environmental screening level (ESL) of 1,800 µg/l established by the San Francisco Regional Water Quality Control Board for evaluation of potential vapor intrusion concerns.

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

Expanded ISCO Pilot Test

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

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

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

Arctos installed seven offsite injection wells in April 2013. Well installation activities are discussed further in this report. Arctos's subcontractor, Confluence Environmental of Sacramento, California, conducted the expanded ISCO pilot test from May to August 2013. Results of the expanded ISCO pilot test will be included in a separate report.

Source Area Remediation

SVE System

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

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

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

(a) Vapor-phase petroleum hydrocarbons as analyzed by EPA Method 8260B and reported in milligrams per cubic meter (mg/m³).

(b) NS – Not sampled. A sample was not collected because of submerged screen.

(c) NA – Not applicable.

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

(e) Percent reduction calculated using TPHg concentrations.

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

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

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

Oxygen Injection System

The oxygen injection system was shut down on 28 March in preparation for the expanded ISCO pilot test and remained shut off during the second quarter 2013. The system delivered oxygen to the subsurface in pulsed intervals to increase oxygen levels while decreasing the potential for “pushing” dissolved hydrocarbons away from injection wells. The oxygen purity was approximately 88 percent and the average flow rate was 35 standard cubic feet per hour. DO readings are summarized in Attachment G.

Source Area Reduction

Concentrations in groundwater have decreased by up to 94 percent in source area wells and the plume has decreased in area. Figures 9A through 9C show onsite concentration contour maps for TPHg, benzene, and MTBE in May 2010, prior to startup of the SVE and oxygen injection systems, and in the second quarter 2013. Onsite remediation has effectively reduced the lateral extent of source area petroleum hydrocarbons by over 60 percent. As of 28 March, both the SVE and oxygen injection systems are shut down. Based on the expanded treatment area of the ISCO pilot test and the reduced concentrations in the source area, the source area treatment systems are no longer required for soil and groundwater remediation.

Well Installation

Arctos installed seven deep offsite injection wells during the second quarter 2013 as described in the work plan dated 28 February 2013 and approved in a letter from ACEH dated 25 March 2013. The purpose of the offsite injection wells was to perform the offsite expanded ISCO pilot test. The completed scope of work included the following tasks:

- Obtained permits from Zone 7 Water Agency for well installation
- Installed seven deep offsite injection wells, designated as IP-11 through IP-17 (Figure 10)
- Developed seven deep offsite injection wells.

Well Installation

Gregg Drilling & Testing, Inc. (Gregg Drilling), of Martinez, California, drilled the soil borings for the deep injection wells in April 2013 using a hollow-stem auger rig. Borings IP-12, IP-13, IP-14, and IP-17 were blind drilled and soil was not logged or sampled; however vapor screening was conducted using the soil cuttings. Borings IP-11, IP-15, and IP-16 were blind drilled to 45 feet bgs and then sampled using core barrel from 45 to 65 feet bgs. Soil samples were collected for visual logging and vapor screening.

The deep injection wells were designed for the offsite expanded ISCO pilot test injections. The wells were constructed using 4-inch-diameter, flush-threaded Schedule 40 polyvinyl chloride (PVC) casing. The wells were screened using 0.010-inch slotted screen from 50 to 60 feet below grade at the depth of the highest vapor readings. The boring and well construction logs are in Attachment H.

Well Development

Gregg Drilling developed wells IP-11 through IP-17 on 18 April 2013 and 19 April 2013 by surging, bailing, and pumping to (1) remove fines from the filter pack and well screen, and (2) reduce sediment in the water. A minimum of 10 casing volumes of water was removed from each well. The well development logs are in Attachment H.

Conclusions

The SVE and oxygen injection systems remained off during the second quarter 2013. Results of groundwater sampling indicate the following conclusions:

1. Onsite hydrocarbon concentrations in groundwater have decreased following SVE and oxygen injection.
2. Based on the expanded treatment area of the ISCO pilot test and the reduced concentrations in the source area, the source area treatment systems are no longer required for soil and groundwater remediation.
3. Downgradient groundwater concentrations are consistent with the previous results and all offsite benzene concentrations are below the ESL for potential vapor intrusion concerns.

Recommendations

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

- Submit a report documenting the results and evaluating the effectiveness of the expanded ISCO pilot test.
- Continue groundwater monitoring activities.

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

Very truly yours,

ARCTOS ENVIRONMENTAL



Emily Chow
Staff Scientist



Michael P. Purchase, P.E.
Principal Engineer



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

Attachments: Table 1 – Well and Groundwater Elevations
Table 2 – Groundwater Analytical Results
Table 3 – Groundwater Analytical Results – Injection Wells
Table 4 – ISCO Pilot Test General Chemistry Concentrations
Table 5 – Soil Vapor Analytical Results
Table 6 – SVE Influent Analytical Results
Table 7 – SVE System Parameters
Figure 1 – Site Location Map
Figure 2 – Groundwater Elevation Contours
Figure 3 – TPHg Concentration Contours
Figure 4 – Benzene Concentration Contours
Figure 5 – MTBE Concentration Contours
Figure 6 – Soil Vapor Influent Concentrations
Figure 7 – Mass Removal by Volatilization
Figure 8 – Mass Removal by Biodegradation
Figure 9A – Onsite TPHg Concentration Contours
Figure 9B – Onsite Benzene Concentration Contours
Figure 9C – Onsite MTBE Concentration Contours
Figure 10 – Expanded ISCO Pilot Test Injection Wells
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 – Soil Vapor Sampling QA/QC Procedures
Attachment G – Oxygen System Monitoring Results
Attachment H – Boring Logs, Well Construction Logs, and Well Development Logs
Attachment I – Waste Manifests

References

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

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

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

TABLE 1

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

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
MW-1	5/7/12	36.14	474.21 ^(c)	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
MW-2	5/7/12	36.89	472.98	436.09
	8/6/12	40.95		432.03
	11/12/12	39.03		433.95
	2/12/13	32.13		440.85
	4/22/13	34.15		438.83
MW-3	5/7/12	36.03	473.37	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
MW-4	5/7/12	36.24	473.64	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
MW-5	5/7/12	37.29	472.67	435.38
	8/6/12	NM ^(d)		--
	11/12/12	40.72		431.95
	2/12/13	32.68		439.99
	4/22/13	35.09		437.58
MW-6	5/7/12	39.11	471.93	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
MW-7	5/7/12	35.97	472.33	436.36
	8/6/12	39.85		432.48
	11/12/12	38.73		433.60

TABLE 1

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

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
MW-7 (cont.)	2/12/13	31.46	472.33	440.87
	4/22/13	33.19		439.14
MW-8	5/7/12	37.38	471.18	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
MW-9	5/7/12	39.43	470.78	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
MW-10	5/7/12	38.14	471.63	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
MW-11	5/7/12	31.61	472.96 ^(c)	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
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
VW-2	5/7/12	31.50	472.57 ^(c)	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
VW-3	5/7/12	DRY ^(e)	474.38	--
	8/6/12	DRY		--

TABLE 1

WELL AND GROUNDWATER ELEVATIONS
TESORO - LIVERMORE, 67076

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation ^(a) (feet MSL)	Water Table Elevation ^(b) (feet MSL)
VW-3 (cont.)	11/12/12	DRY	474.38	--
	2/12/13	31.70		442.68
	4/22/13	33.49		440.89
TP-1	5/7/12	34.70	472.64 ^(c)	437.94
	8/6/12	36.59		436.05
	11/12/12	37.00		435.64
	2/12/13	31.96		440.68
	4/22/13	33.71		438.93
TP-2	5/7/12	34.41	472.78 ^(c)	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
DW-1	5/7/12	36.35	472.85	436.50
	8/6/12	40.60		432.25
	11/12/12	39.29		433.56
	2/12/13	31.63		441.22
	4/22/13	33.72		439.13
DW-2	5/7/12	39.10	471.61	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
DW-3	5/7/12	38.70	470.33	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
DW-4	5/7/12	38.26	468.48	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

TABLE 1

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

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
DW-5	5/7/12	38.98	471.86	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
DW-6	5/7/12	39.82	471.77	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
DW-7	5/7/12	39.30	470.07	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
DW-8	5/7/12	35.52	472.31	436.79
	8/6/12	39.61		432.70
	11/12/12	38.00		434.31
	2/12/13	30.46		441.85
	4/22/13	32.66		439.65
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

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

TABLE 2

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

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
MW-1	5/9/12	3,300	2.2	5.5	52	89	ND<0.5 ^(b)	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
MW-2	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
MW-3	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
MW-4	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 ^(c)	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
MW-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
	8/6/12	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
MW-6	5/10/12	11,000	1,200	60	140	69	150	ND<0.9	ND<0.9	ND<2	290	ND<250	ND<9	ND<0.9	ND<0.9
	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

TABLE 2

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

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
MW-6 (cont.)	11/14/12	17,000	1,600	68	120	96	190	ND<2.5	ND<2.5	ND<2.5	86	ND<500	ND<25	ND<2.5	ND<2.5
	2/14/13	12,000	1,400	42	230	56	200	ND<2.5	ND<2.5	2.5	100	ND<250	ND<25	ND<2.5	ND<2.5
	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
MW-7	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
MW-8	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
MW-9	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
MW-10	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
MW-11	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

TABLE 2

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

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
MW-11 (cont.)	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
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
VW-2	5/7/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.83	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
VW-3	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
TP-1	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
TP-2	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 2

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

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
DW-1	5/9/12	2,000	24	5.6	75	160	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/6/12	140	1.7	1.0	3.2	7.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/12	250	ND<0.5	ND<0.5	2.7	5.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	ND<50	ND<0.5	ND<0.5	0.54	0.68	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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
DW-2	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
DW-3	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
DW-4	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
DW-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
DW-6	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

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
DW-6 (cont.)	11/14/12	3,000	5.4	1.8	11	4.7	2.1	ND<0.5	ND<0.5	ND<0.5	6.8	ND<50	ND<5	ND<0.5	ND<0.5
	2/12/13	4,600	25	4.0	53	8.7	10	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<9	ND<0.5	ND<0.5
	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
DW-7	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
DW-8	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
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

8,600

700.0

- (a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), methanol, ethanol, 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) analyzed by EPA Method 8260; reported in micrograms per liter (µg/l).
- (b) ND - Not detected at the reporting limit listed.
- (c) NS - Not sampled.

TABLE 3

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

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

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
IP-3 (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
	4/22/13	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
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
IP-5	7/23/08	2,000 ^(e)	3.0	17	5.1	31	4.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	10/13/08	720	14	13	8.7	32	19	ND<0.5	ND<0.5	ND<0.5	26	ND<50	ND<5	ND<0.5	ND<0.5
	5/6/10 ^(c)	270	5.7	25	5.9	29	20	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.72	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/1/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/8/12	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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
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

TABLE 3

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

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

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - INJECTION WELLS
TESORO - LIVERMORE, 67076

Monitoring Well	Sample Date	TPHg ^(a) (µg/l)	Benzene ^(a) (µg/l)	Toluene ^(a) (µg/l)	Ethylbenzene ^(a) (µg/l)	Total Xylenes ^(a) (µg/l)	MTBE ^(a) (µg/l)	DIPE ^(a) (µg/l)	ETBE ^(a) (µg/l)	TAME ^(a) (µg/l)	TBA ^(a) (µg/l)	Methanol ^(a) (µg/l)	Ethanol ^(a) (µg/l)	1,2-DCA ^(a) (µg/l)	EDB ^(a) (µg/l)
IP-8 (cont.)	2/14/13	65,000	3,300	7,100	1,600	9,200	ND<7	ND<7	ND<7	ND<7	110	ND<700	ND<150	ND<7	ND<7
	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
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
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

- (a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) analyzed by EPA Method 8260; reported in micrograms per liter (µg/l).
- (b) ND - Not detected at the reporting limit listed.
- (c) Baseline remediation system values.
- (d) NS - Not sampled.
- (e) Primarily compounds not found in typical Gasoline.

TABLE 4

**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	12/15/11	ND<0.1 ^(h)	23	ND<0.015	0.026	7.4	2.2	51	ND<1	ND<0.1	64,200	2,040	574	540
	2/1/12	ND<0.1	7.6	0.030	0.18	55	5.9	52	ND<1	ND<0.1	100 ⁽ⁱ⁾	3,080	562	655
	5/11/12	ND<0.1	12	ND<0.015	0.098	29	5.5	46	ND<1	ND<0.1	120 ⁽ⁱ⁾	1,670	496	600
	8/8/12	ND<0.5	2.9	ND<0.015	0.092	25	4.2	45	ND<1	ND<0.1	70 ⁽ⁱ⁾	2,000	504	525
	11/14/12	ND<0.1	8.3	ND<0.015	0.095	28	3.5	44	ND<1	ND<0.1	51,200	1,190	584	680
	2/13/13	4.0	99	ND<0.015	0.0088	3.2	0.50	54	ND<1	ND<0.1	82,200	94	647	915
	4/23/13	1.7	92	ND<0.015	ND<0.005	ND<0.1	0.12	54	ND<1	ND<0.1	57,800	439	643	925
	6/24/13	0.83	88	ND<0.015	ND<0.005	1.8	0.61	54	ND<1	ND<0.1	73,100	798	602	875
	8/21/13	ND<1	39	ND<0.015	ND<0.005	0.71	2.3	65	ND<1	0.33	58,600	2,020	637	780
	11/7/13	ND<1	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	
MW-6	6/25/13	ND<1	120	0.048	0.017	5.8	1.4	240	ND<1	0.37	27,900	1,390	847	1,360
	8/22/13	ND<0.5	2.6	ND<0.015	ND<0.005	0.90	1.9	87	ND<1	0.40	53,400	5,370	586	745
	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
MW-7	12/15/11	ND<0.1	6.5	ND<0.015	0.32	88	5.4	58	ND<1	ND<0.1	28,100	1,080	433	515
	5/9/12	ND<0.1	7.3	0.037	0.36	110	7.1	59	ND<1	ND<0.1	55 ⁽ⁱ⁾	1,210	377	540
	8/7/12	ND<0.5	72	0.031	0.32	84	9.6	68	ND<1	ND<0.1	37 ⁽ⁱ⁾	806	416	450
	11/13/12	ND<0.1	81	0.046	0.40	130	12	57	ND<1	ND<0.1	14,000	663	302	620
	2/12/13	ND<0.1	27	ND<0.015	0.10	30	2.7	56	ND<1	ND<0.1	17,500	1,420	366	525
	4/23/13	ND<0.1	21	ND<0.015	ND<0.005	ND<0.1	1.9	58	ND<1	ND<0.1	21,500	1,190	418	615
	6/24/13	0.13	27	ND<0.015	0.18	53	5.2	68	ND<1	0.12	24,900	1,300	437	670
	8/21/13	ND<1	34	ND<0.015	ND<0.005	0.36	1.7	110	ND<1	0.11	21,400	2,770	598	790
	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	
MW-8	6/25/13	1.5	64	ND<0.015	0.042	12	2.0	54	ND<1	ND<0.1	17,700	3.8	370	730
	8/22/13	1.3	63	ND<0.015	ND<0.005	ND<0.1	0.90	50	ND<1	ND<0.1	21,500	4.4	378	680

TABLE 4

**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-8 (cont.)	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
MW-9	6/25/13	ND<0.5	10	ND<0.015	0.029	9.0	2.3	71	ND<1	0.44	25,400	385	510	705
	8/22/13	ND<0.5	4.1	ND<0.015	ND<0.005	1.9	1.8	95	ND<1	0.29	35,200	381	583	760
	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
MW-10	6/25/13	1.2	80	ND<0.015	0.066	18	0.57	54	9.6	ND<0.1	13,100	ND<1	552	840
	8/21/13	1.1	83	ND<0.015	0.0091	ND<0.1	0.058	56	9.6	ND<0.1	16,700	ND<1	561	900
	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
MW-11	9/20/11	ND<0.1	30	ND<0.015	0.0056	1.8	3.6	67	ND<1	ND<0.1	90,300	36	702	840
	10/25/11	ND<0.5	85	ND<0.015	0.011	3.2	2.8	290	ND<1	ND<0.1	60,100	55	1,200	1,520
	11/17/11	ND<0.1	170	0.030	0.010	2.9	1.2	740	ND<1	ND<0.15	1,870	6.5	1,630	2,340
	12/14/11	0.12	140	0.021	0.034	9.6	0.84	540	2.6	ND<0.1	29,200	10	316	2,270
	2/1/12	ND<0.1	76	0.14	1.6	680	36	470	ND<1	ND<0.1	170 ⁽ⁱ⁾	27	1,430	1,640
	5/11/12	0.34	14	ND<0.015	0.050	15	2.8	210	ND<1	0.11	140 ⁽ⁱ⁾	99	771	870
	8/7/12	ND<0.5	51	0.021	0.066	21	3.2	610	ND<1	0.10	110 ⁽ⁱ⁾	284	1,760	1,960
	11/13/12	1.2	53	0.10	1.4	410	16	230	ND<1	ND<0.1	34,200	173	730	955
	2/13/13	0.49	95	0.062	0.39	130	5.8	730	ND<1	ND<0.1	64,900	139	1,960	2,380
	4/24/13	0.32	80	0.020	ND<0.005	ND<0.1	1.3	670	ND<1	ND<0.1	75,400	65	2,020	2,260
	6/24/13	ND<0.5	190	0.056	0.021	10	2.0	1,600	1.4	ND<0.1	4,560	325	3,100	4,210
	8/22/13	ND<0.5	260	0.048	ND<0.005	0.12	0.25	1,200	ND<1	ND<0.1	612	133	2,610	3,510
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	
MW-12	6/25/13	1.3	23	ND<0.015	0.045	14	1.7	80	ND<1	ND<0.1	9,940	2,410	450	675
	8/22/13	0.92	15	ND<0.015	ND<0.005	0.14	1.6	64	ND<1	ND<0.1	24,600	2,800	420	640

TABLE 4

**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-12 (cont.)	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
IP-1	9/20/11	ND<0.1	3.9	ND<0.015	ND<0.005	1.3	2.6	34	ND<1	ND<0.1	24,000	474	369	483
	10/25/11	ND<0.5	11	ND<0.015	0.018	2.6	2.4	64	ND<1	ND<0.1	20,600	311	378	557
	11/17/11	ND<0.1	24	0.02	0.012	3.9	3.8	93	ND<1	ND<0.1	34,300	1,180	576	660
	12/15/11	0.20	26	0.02	0.017	5.5	3.3	110	ND<1	0.11	12,800	916	580	620
	2/1/12	ND<0.1	1.2	ND<0.015	ND<0.005	2.0	3.6	73	ND<1	ND<0.1	72 ⁽ⁱ⁾	1,130	542	635
	5/9/12	ND<0.1	ND<0.5	ND<0.015	0.011	5.8	3.7	76	ND<1	ND<0.1	96 ⁽ⁱ⁾	1,060	530	650
	8/8/12	ND<0.5	ND<0.5	0.023	0.50	140	8.0	71	ND<1	ND<0.1	38 ⁽ⁱ⁾	1,570	444	435
	11/13/12	ND<0.1	ND<0.5	ND<0.015	0.028	9.7	3.0	68	ND<1	ND<0.1	22,200	1,070	418	540
	2/13/13	ND<0.1	ND<0.5	ND<0.015	0.056	18	3.6	60	ND<1	0.37	26,000	2,980	406	585
	4/24/13	ND<0.1	0.54	ND<0.015	ND<0.005	ND<0.1	2.9	68	ND<1	ND<0.1	19,200	1,400	408	525
	6/24/13	0.61	620	0.37	0.043	26	0.95	4,400	36	ND<0.1	596	317	9,160	11,100
	8/22/13	ND<1	730	0.13	0.012	ND<0.1	0.021	2,800	13	ND<0.1	702	1,040	5,340	7,740
	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	
IP-5	6/24/13	0.14	32	0.017	0.23	74	4.6	43	ND<1	ND<0.1	14,900	271	334	545
	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
IP-8	9/20/11	0.17	10	ND<0.015	ND<0.005	0.54	2.0	35	ND<1	ND<0.1	6,930	50	229	350
	10/25/11	ND<0.5	44	ND<0.015	ND<0.005	1.6	3.8	140	ND<1	ND<0.1	12,300	109	692	1,020
	11/17/11	ND<0.1	69	ND<0.015	0.011	3.2	3.3	160	ND<1	ND<0.1	4,470	184	795	960
	11/22/11	0.31	34	ND<0.015	0.011	2.9	2.4	81	ND<1	ND<0.1	32,800	1,150	562	715
	12/14/11	0.24	52	ND<0.015	0.023	6.2	3.7	110	ND<1	ND<0.1	11,800	81	650	920
	2/1/12	ND<0.1	42	ND<0.015	0.036	11	3.0	110	ND<1	ND<0.1	48 ⁽ⁱ⁾	262	688	890
	5/9/12	ND<0.1	26	ND<0.015	0.0098	3.1	2.5	100	ND<1	ND<0.1	44 ⁽ⁱ⁾	143	686	925
	8/8/12	ND<0.5	15	ND<0.015	0.013	4.4	3.3	110	ND<1	ND<0.1	40 ⁽ⁱ⁾	447	664	735

TABLE 4

**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 (cont.)	11/14/12	ND<0.1	1.6	ND<0.015	ND<0.005	0.45	3.0	84	ND<1	ND<0.1	26,400	105	588	710
	2/14/13	0.11	14	ND<0.015	ND<0.005	0.46	3.2	100	ND<1	ND<0.1	30,700	1,550	659	810
	8/22/13	1.5	1,200	0.24	0.044	ND<0.1	0.0056	13,000	49	ND<0.1	338	17	28,200	34,900
	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
IP-9	9/20/11	ND<0.1	11	ND<0.015	ND<0.005	0.34	1.1	41	ND<1	ND<0.1	10,100	65	305	413
	10/25/11	ND<2.5	630	0.24	0.21	50	0.92	4,700	84	ND<0.1	935	7.5	9,770	12,200
	11/17/11	2.5	710	0.16	0.15	34	0.54	8,500	79	ND<0.15	14,500	3.9	18,700	21,300
	11/22/11	ND<0.5	300	0.049	0.017	1.8	0.10	1,500	12	ND<0.1	1,080	302	3,010	3,960
	12/14/11	ND<2	1,400	0.42	0.15	30	0.65	18,000	90	ND<0.1	5,130	5.1	35,100	44,300
	2/1/12	0.76	850	0.56	0.074	9.2	0.14	7,200	79	ND<0.1	ND<5 ⁽ⁱ⁾	54	14,000	20,400
	5/9/12	0.62	620	0.66	0.074	12	0.14	4,600	60	ND<0.1	ND<5 ⁽ⁱ⁾	59	9,490	7,480
	8/7/12	ND<2.5	810	0.90	0.14	75	0.74	5,900	60	ND<0.1	ND<5 ⁽ⁱ⁾	41	10,600	13,000
	11/13/12	ND<0.2	580	0.71	0.050	6.3	0.12	4,300	48	ND<0.1	81	62	8,020	10,200
	2/13/13	ND<0.5	440	0.57	0.039	2.2	0.16	3,000	30	ND>0.1	5,990	112	6,100	7,920
	8/22/13	1.4	880	0.24	0.099	0.14	0.0067	10,000	110	ND<0.1	266	1.5	25,200	38,800
	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	
IP-10	9/20/11	ND<0.1	26	ND<0.015	ND<0.005	0.46	1.4	48	ND<1	ND<0.1	5,530	39	290	483
	10/25/11	ND<0.5	37	ND<0.015	ND<0.005	0.79	4.2	74	ND<1	ND<0.1	15,500	139	390	625
	11/17/11	ND<0.1	34	ND<0.015	0.015	4.2	2.8	96	ND<1	ND<0.1	26,700	711	458	510
	12/14/11	ND<0.1	31	ND<0.015	ND<0.01	3.2	3.5	92	ND<1	ND<0.1	14,000	644	455	640
	2/1/12	ND<0.1	21	ND<0.015	ND<0.005	0.54	2.8	64	ND<1	ND<0.1	36 ⁽ⁱ⁾	237	353	505
	5/9/12	ND<0.1	4.2	ND<0.015	ND<0.005	1.0	3.0	66	ND<1	ND<0.1	46 ⁽ⁱ⁾	478	368	530
	8/7/12	ND<0.5	3.2	ND<0.015	ND<0.005	1.4	2.6	60	ND<1	ND<0.1	30 ⁽ⁱ⁾	535	335	435
	11/13/12	ND<0.1	0.86	ND<0.015	ND<0.005	1.6	2.8	57	ND<1	ND<0.1	11,900	747	304	445
2/12/13	ND<0.1	ND<0.5	ND<0.015	ND<0.005	1.4	2.7	52	ND<1	0.26	12,600	1,420	311	390	

TABLE 4

**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-10 (cont.)	4/24/13	ND<0.1	1.4	ND<0.015	ND<0.005	0.12	2.8	52	ND<1	0.11	10,300	597	296	420
	6/24/13	ND<0.5	ND<2.5	ND<0.015	ND<0.005	0.83	2.7	57	ND<1	0.19	5,050	795	290	505
	8/22/13	ND<0.5	2.7	ND<0.015	ND<0.005	0.60	2.6	55	ND<1	0.14	12,800	480	285	480
	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
DW-1	6/24/13	ND<0.1	45	ND<0.015	0.0096	3.0	1.2	200	ND<1	ND<0.1	36,000	817	744	1,030
	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
DW-2	6/25/13	ND<1	79	0.021	0.032	11	1.5	210	ND<1	ND<0.25	13,700	1,420	715	1,100
	8/22/13	ND<0.5	12	ND<0.015	ND<0.005	0.39	2.2	100	ND<1	ND<0.1	64,300	2,580	638	800
	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
DW-3	6/25/13	1.2	51	ND<0.015	0.030	8.6	2.1	51	ND<1	ND<0.1	12,900	666	379	645
	8/21/13	2.4	53	ND<0.015	ND<0.005	ND<0.1	1.0	53	ND<1	ND<0.1	14,600	1,390	380	595
	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
DW-5	6/25/13	ND<1	140	0.041	0.20	73	3.0	470	ND<1	ND<0.25	1,560	1,500	1,040	1,600
	8/22/13	ND<2	290	0.025	ND<0.005	ND<0.1	0.41	620	ND<1	ND<0.1	3,510	1,620	1,220	2,020
	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
DW-6	6/25/13	ND<0.5	12	0.028	0.32	96	4.4	79	ND<1	0.14	20,400	2,670	460	655
	8/22/13	ND<0.5	7.8	ND<0.015	ND<0.005	0.83	2.2	57	ND<1	0.59	27,700	2,070	430	600
	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
DW-7	6/25/13	ND<0.5	76	0.033	0.28	93	4.1	260	ND<1	ND<0.25	12,100	4,540	760	1,200
	8/22/13	ND<1	50	ND<0.015	ND<0.005	0.12	1.2	170	ND<1	ND<0.1	20,100	3,720	680	955

TABLE 4

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-7 (cont.)	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
DW-8	9/20/11	ND<0.1	6.7	ND<0.015	ND<0.005	1.9	2.8	45	ND<1	ND<0.1	27,600	1,110	502	615
	10/25/11	ND<0.5	85	ND<0.015	ND<0.005	1.4	1.2	100	ND<1	ND<0.1	16,000	519	564	780
	11/17/11	ND<0.1	48	ND<0.015	ND<0.005	0.76	1.5	92	ND<1	ND<0.1	19,100	140	591	610
	11/22/11	ND<0.1	24	ND<0.015	0.031	9.1	2.4	64	ND<1	0.16	23,200	1,480	498	560
	12/15/11	ND<0.1	36	ND<0.015	ND<0.005	0.88	2.4	78	ND<1	ND<0.1	19,100	1,210	510	560
	2/1/12	ND<0.1	37	ND<0.015	0.0055	1.9	3.0	90	ND<1	ND<0.1	51 ⁽ⁱ⁾	1,170	598	795
	5/11/12	ND<0.1	14	ND<0.015	ND<0.005	0.12	0.14	77	2.2	ND<0.1	ND<5 ⁽ⁱ⁾	306	195	330
	8/8/12	ND<0.5	14	ND<0.015	0.0057	2.4	2.7	100	ND<1	ND<0.1	38 ⁽ⁱ⁾	404	556	600
	11/14/12	ND<0.1	1.6	ND<0.015	ND<0.005	1.2	2.5	91	ND<1	ND<0.1	15,300	632	472	600
	2/14/13	ND<0.1	10	ND<0.015	0.0056	2.4	3.3	150	ND<1	ND<0.1	34,400	1,520	786	930
	4/24/13	ND<0.1	5.1	ND<0.015	ND<0.005	ND<0.1	ND<0.005	41	2.2	ND<0.1	13.9	470	232	310
	6/24/13	ND<0.5	10	ND<0.015	0.013	8.8	4.1	140	ND<1	ND<0.1	22,500	1,710	750	1,020
	8/22/13	ND<1	ND<5	ND<0.015	ND<0.005	0.13	2.5	74	ND<1	0.10	22,900	1,230	398	570
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	
DW-9	6/25/13	ND<1	6.6	0.020	0.34	110	4.8	69	ND<1	0.40	30,300	4,070	460	660
	8/22/13	ND<1	ND<5	ND<0.015	ND<0.005	1.0	2.3	68	ND<1	0.17	29,600	3,000	470	610
	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

- (a) Nitrate and sulfate analyzed by EPA Method 300.0; reported in milligrams per liter (mg/l).
- (b) Arsenic, chromium, iron, manganese, and sodium analyzed by EPA Method 6010B; reported in milligrams per liter (mg/l).
- (c) Hexavalent chromium (Hex Chrome) analyzed by EPA Method 7199; reported in micrograms per liter (µg/l).
- (d) Ferrous Iron (Fe (2+)) analyzed by Standard Method 3500-Fe D; reported in milligrams per liter (mg/l).
- (e) Carbon dioxide (CO₂) and methane (CH₄) analyzed by EPA Method RSK-175M; reported in micrograms per liter (µg/l).
- (f) Total alkalinity as CaCO₃ analyzed by Standard Method 2320B; reported in milligrams per liter (mg/l).
- (g) Total dissolved solids (TDS) analyzed by Standard Method 2540 C; reported in milligrams per liter (mg/l).
- (h) ND - Not detected at the reporting limit listed.
- (i) CO₂ analyzed by Standard Method 4500 C; reported in milligrams per liter (mg/l).

TABLE 5

SOIL VAPOR ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

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

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

TABLE 6

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

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

TABLE 6

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

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

TABLE 6

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

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

- (a) Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, and methyl tert-butyl ether (MTBE), analyzed by EPA Method 8260; reported in parts per million by volume (ppmv).
- (b) Fixed gases analyzed by Method ASTM D-1946; reported in percent (%).
- (c) "--" - Not analyzed.
- (d) ND - Not detected at the reporting limit listed.
- (e) SVE manifold influent vapor sample damaged during shipping to lab. Results of total well inlet and recirculation air used for data analysis.

TABLE 7

**SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076**

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

TABLE 7

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

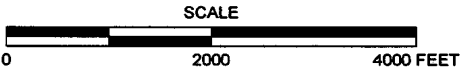
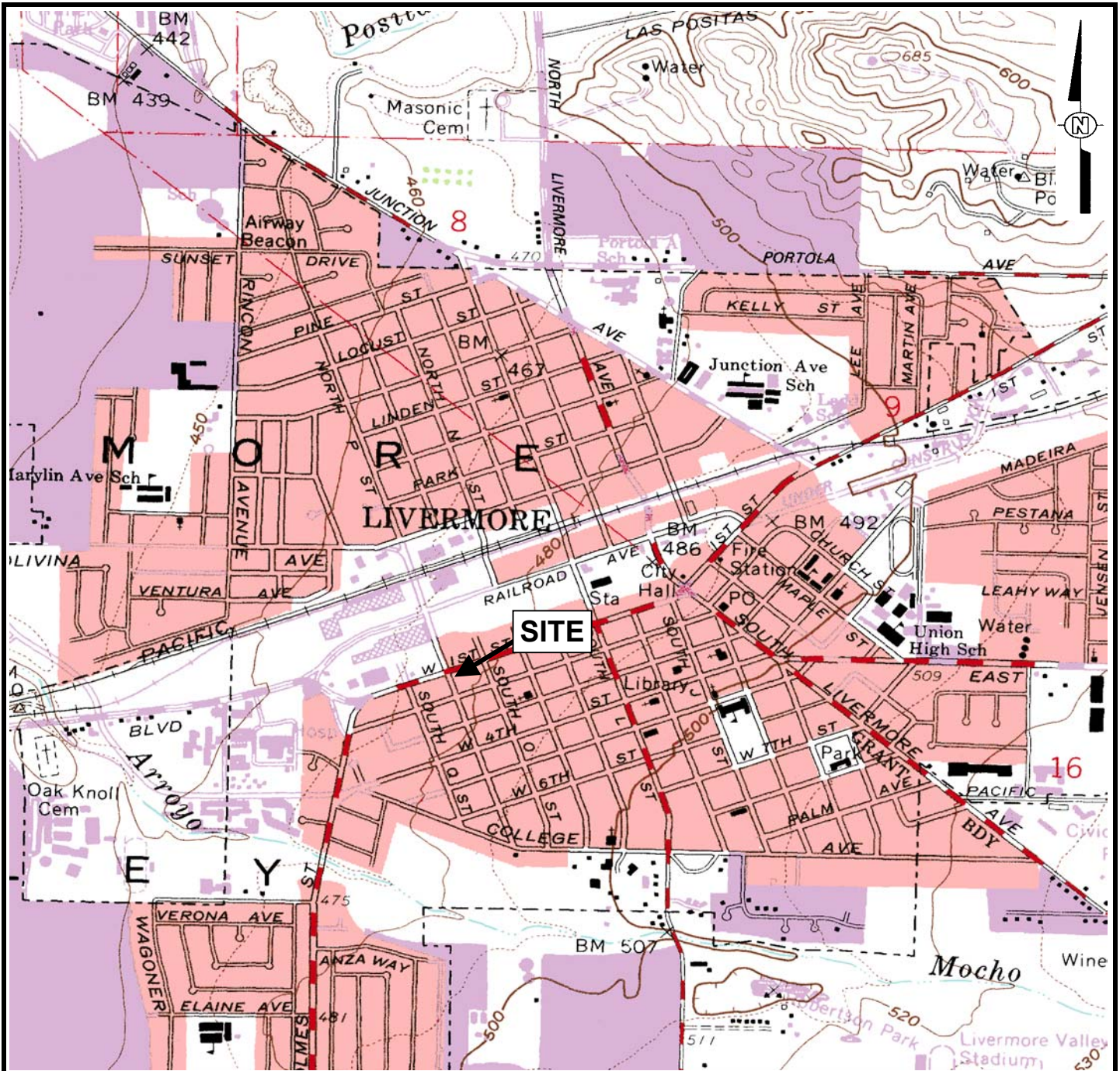
Influent Sample Number	Sample Date	Hours of Operation (hours)	Days of Operation (Days)	TPHg Concentration (ppmv)	Differential Pressure (in. wc)	Temp (°F)	Vacuum (in. Hg)	Standard Flow (scfm)	Volatilization	Biological	
									Mass Removal Rate (lbs/day)	Concentration of Carbon Dioxide (%)	Mass Removal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

TABLE 7

SVE SYSTEM PARAMETERS
TESORO - LIVERMORE, 67076

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

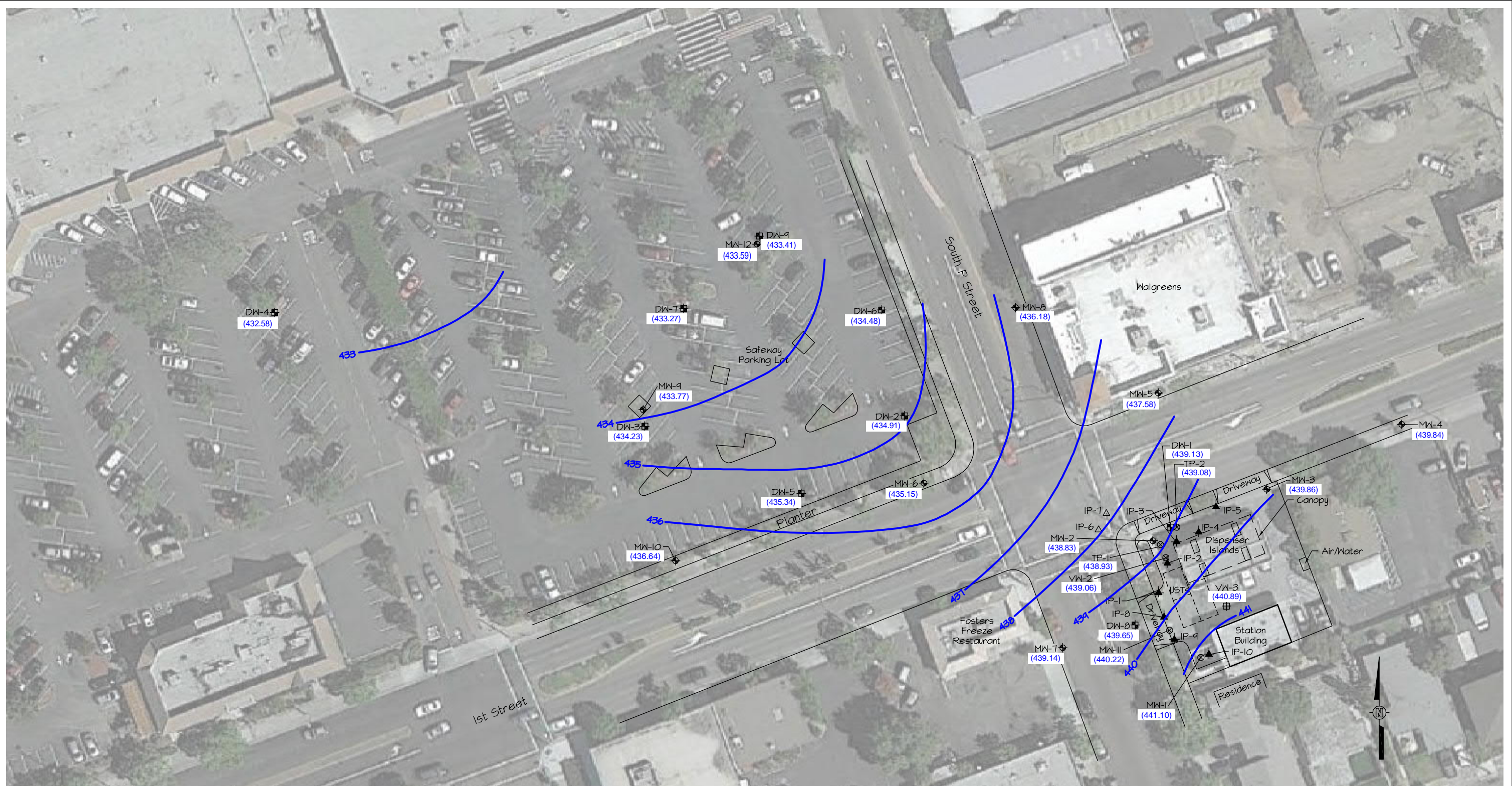
- (a) "--" - Not sampled, analyzed, or collected.
- (b) An average flow rate was used due to inaccurate system parameter readings.
- (c) NA - Not applicable.
- (d) Only operating on well VW-2 due to high water levels.
- (e) Flow measurements taken with a TSI anemometer for better accuracy at low flow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



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

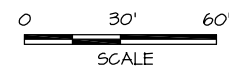
ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
SITE LOCATION MAP			
PROJECT NO. 01LV	DRAWN BY MP	CHECKED BY MP	APPROVED BY JG
FILE NO. Site Map.xls		FIGURE 1	

8/12/2013 6:06PM 01LV11B-20420.dwg



Legend

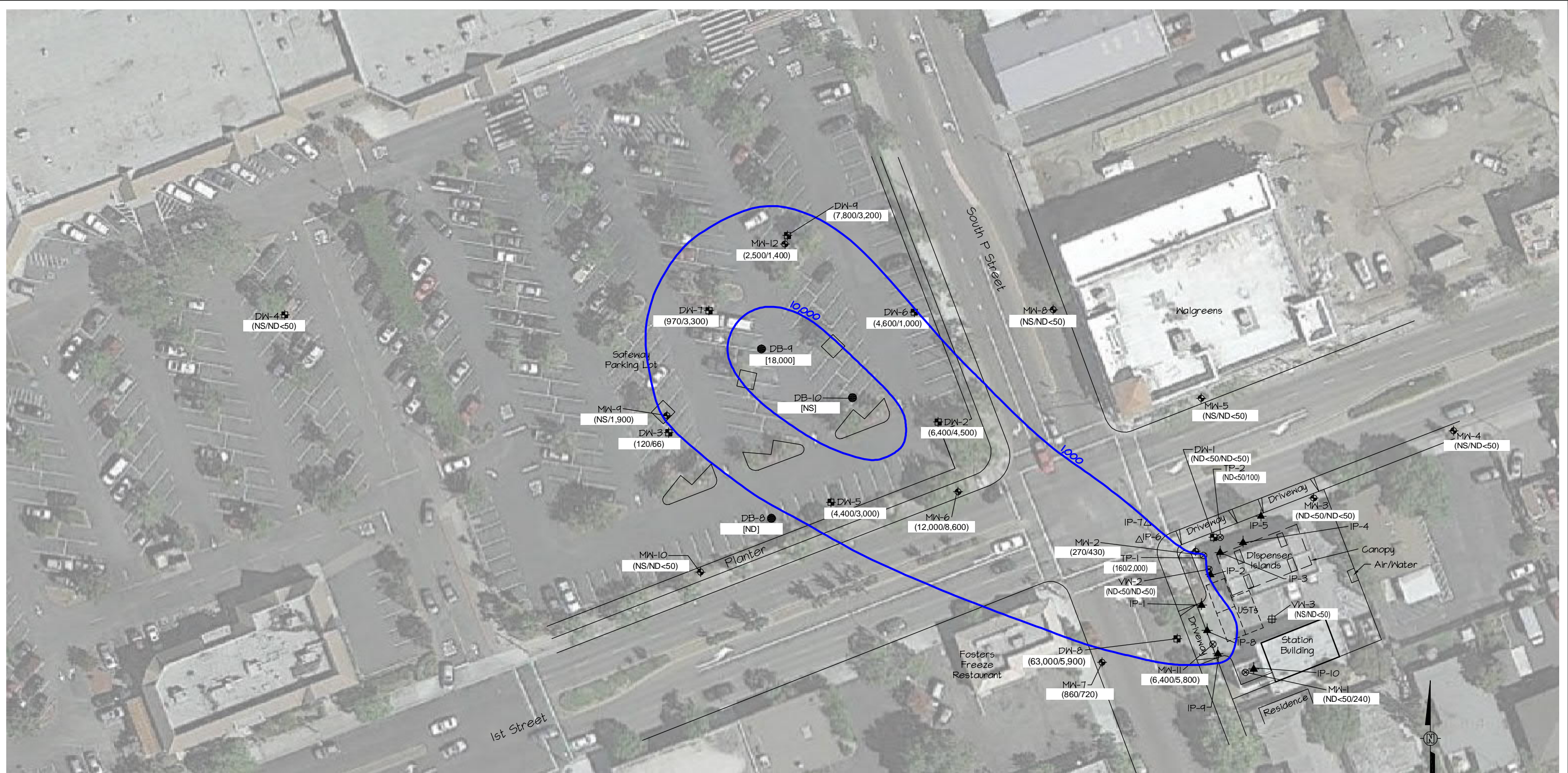
- MW-7 Groundwater Monitoring Well
- DW-1 Deep Groundwater Monitoring Well
- IP-1 Injection Well
- IP-6 Angled Injection Well Screen
- VN-2 Vapor Extraction Well
- TP-1 Monitoring Well/Vapor Extraction Well
- (439.06) Groundwater Elevation (Feet, MSL) Measured 22 April 2013
- 436 Groundwater Elevation Contour



REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
20	15	MY	5/15/12	First Quarter 2012 Monitoring Report
	16	MY	8/15/12	Second Quarter 2012 Monitoring Report
	17	MY	11/15/12	Third Quarter 2012 Monitoring Report
	18	MY	2/15/13	Fourth Quarter 2012 Monitoring Report
	19	MY	5/15/13	First Quarter 2013 Monitoring Report
	20	MY	8/15/13	Second Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
GROUNDWATER ELEVATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B-20420.DWG		FIGURE 2	

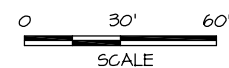
8/12/2013 6:13PM 01LV11B-20520.dwg



Legend

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

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



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

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
TPHg CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B-20520.DWG		FIGURE 3	

8/13/2013 1:26PM 01LV11B-20620.dwg



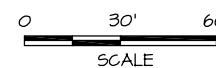
Legend

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

(ND<0.5/ND<0.5) Previous Quarter/Current Quarter Benzene Results in µg/L

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

- ND Not Detected at Laboratory Reporting Limit
- NS Not Sampled
- DB-8 June 2012 Soil Boring with 55-Foot Grab Groundwater Sample Benzene Results in µg/L



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

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
BENZENE CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B-20620.DWG		FIGURE 4	

8/9/2013 6:10PM 01LV11B-20720.dwg



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

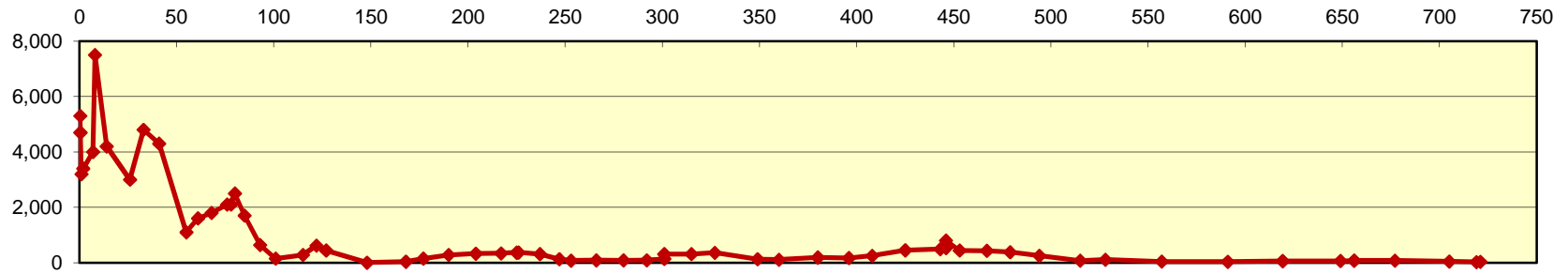
- (ND<0.5/ND<0.5) Previous Quarter/Current Quarter Methyl Tert-Butyl Ether (MTBE) Results in $\mu\text{g/L}$
- 100 MTBE Concentration Contour ($\mu\text{g/L}$), Queried Where Uncertain
- ND Not Detected at Laboratory Reporting Limit
- NS Not Sampled
- DB-8 June 2012 Soil Boring with 55-Foot Grab Groundwater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

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

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
MTBE CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B-20720.DWG		FIGURE 5	

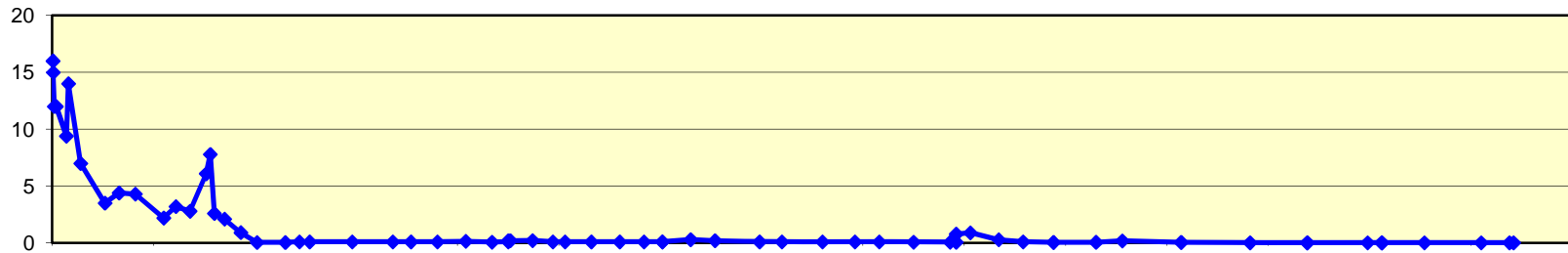
TPHg

Days of Operation

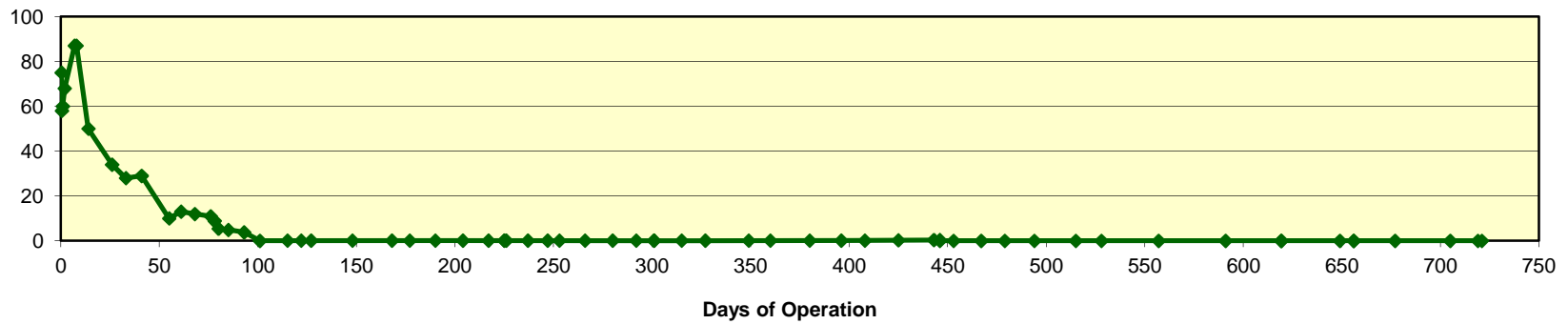


Benzene

Concentration (ppmv)

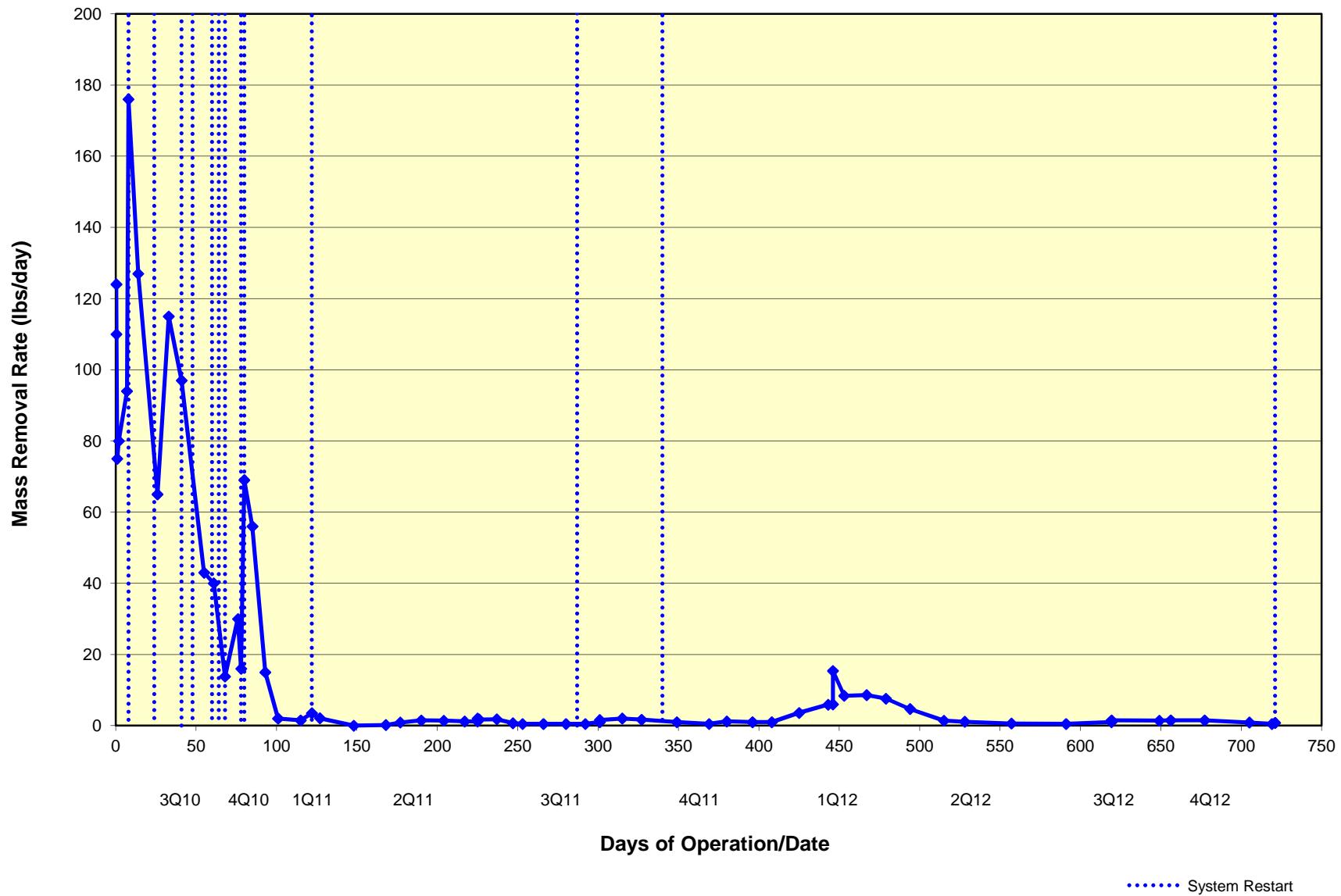


MTBE

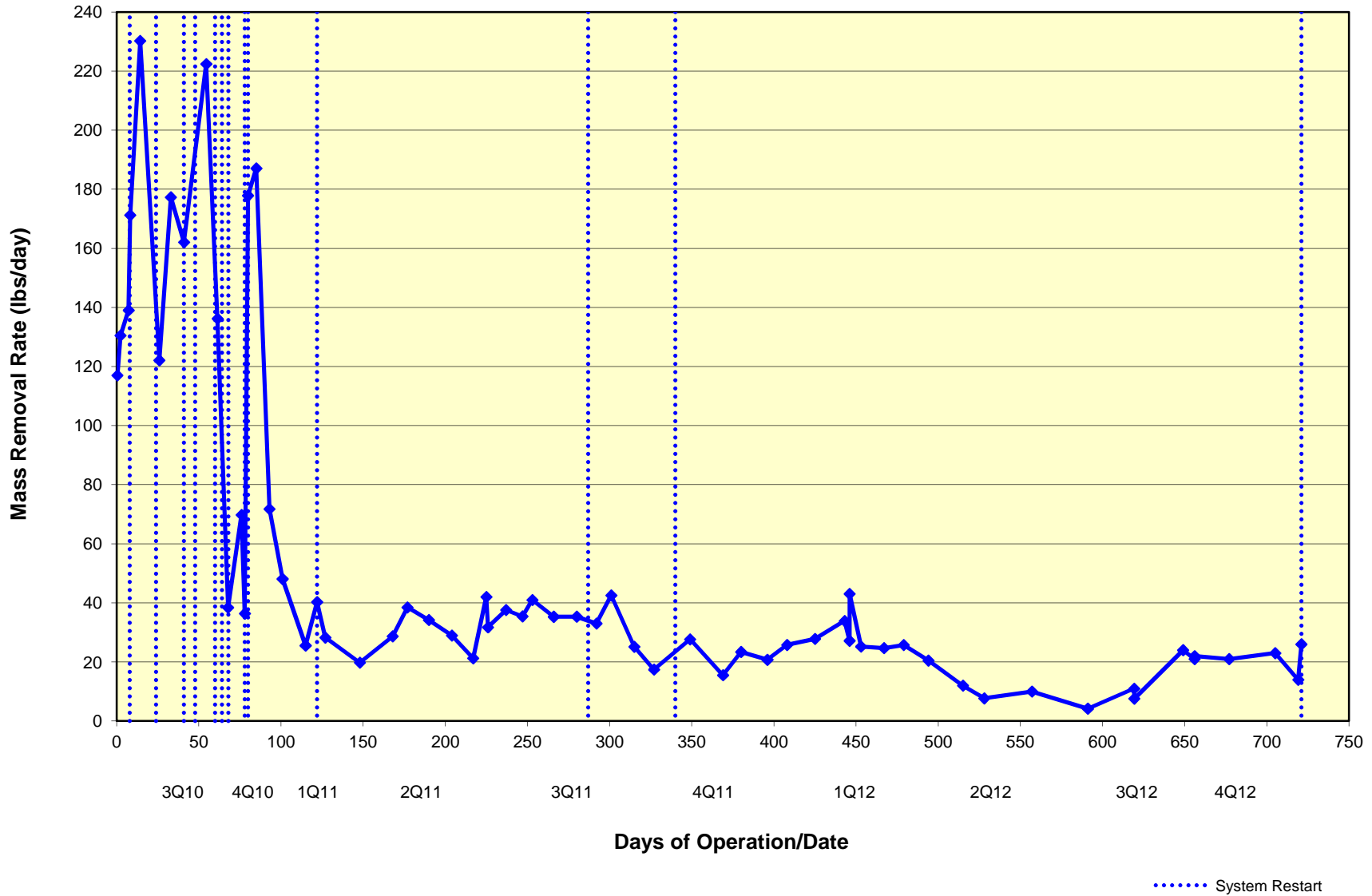


—◆— TPHg —◆— Benzene —◆— MTBE

HYDROCARBON MASS REMOVED BY VOLATILIZATION = 7,950 lbs



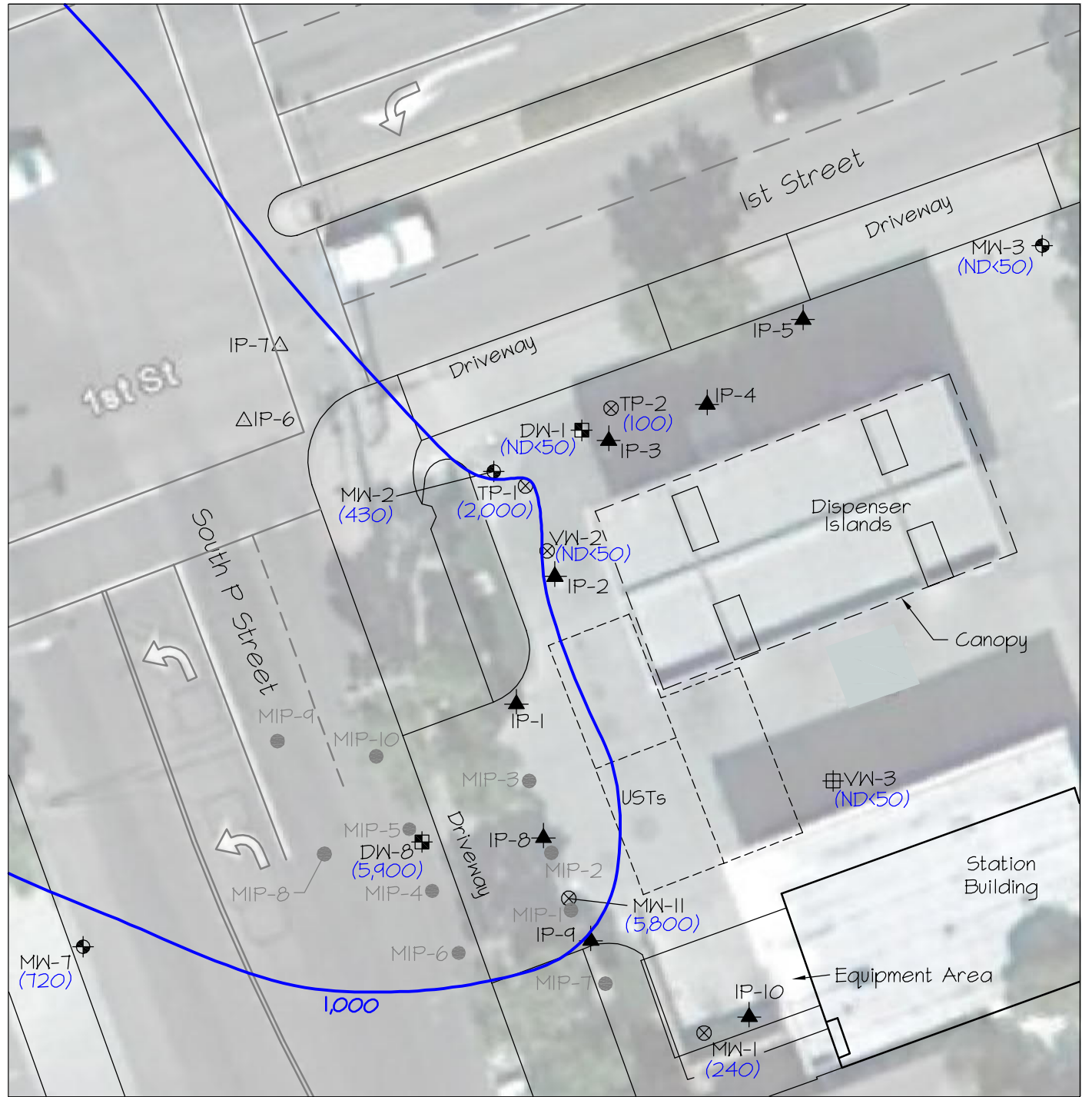
HYDROCARBON MASS REMOVED BY BIODEGRADATION = 30,300 lbs



01LV11B2301.dwg
9/25/2013 3:32PM

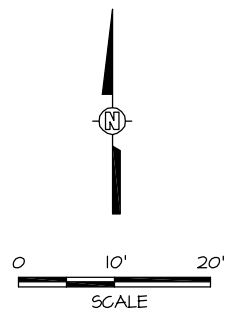


May 2010



April 2013

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

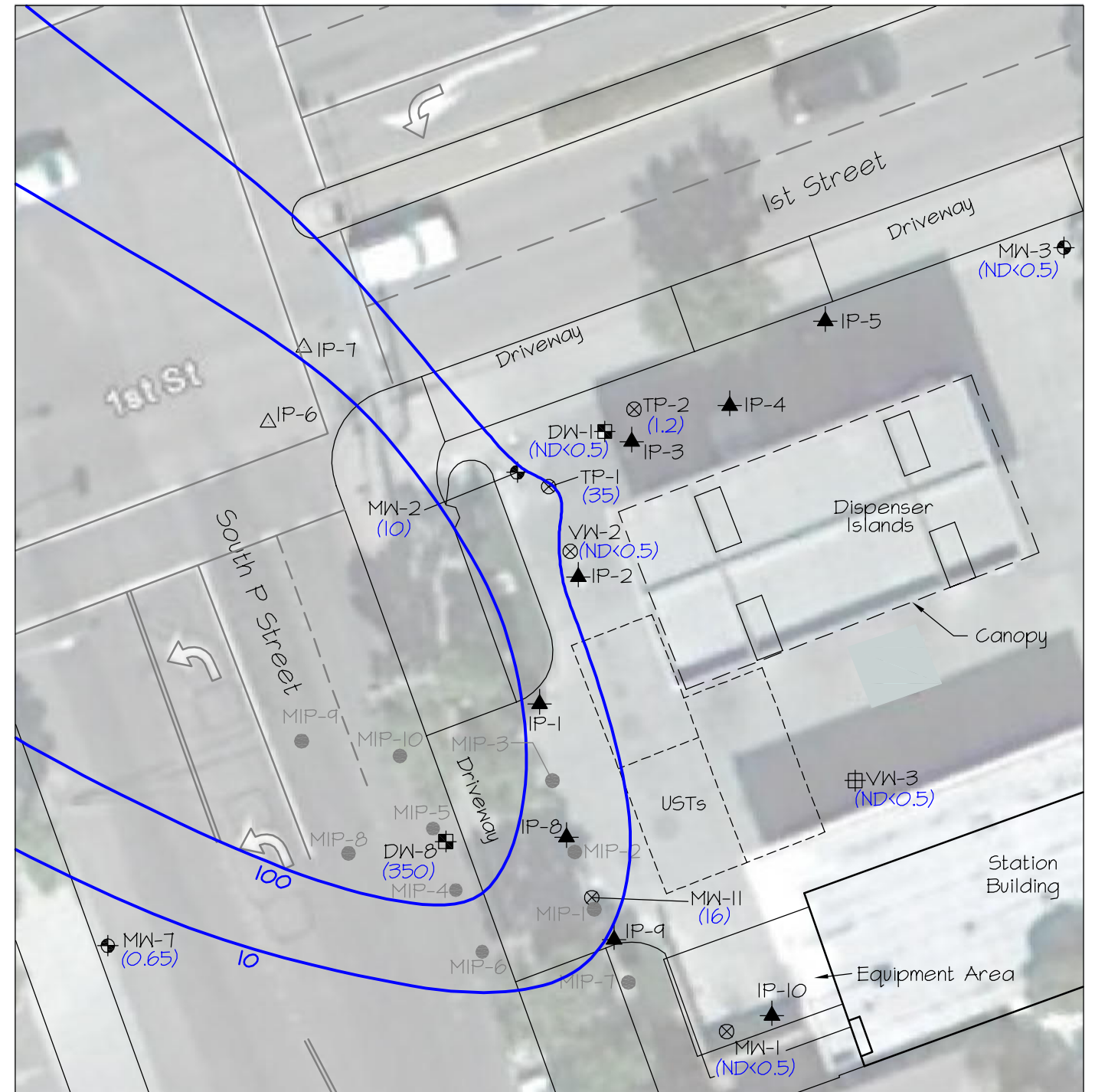


REVISION	REVISIONS		
	NO.	BY	DATE
1	MY	5/15/13	First Quarter 2013 Monitoring Report
1	MY	10/15/13	Second Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
ONSITE TPHg CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MN	APPROVED BY JPG
FILE NO. OILV11B2301.DWG		FIGURE 9A	

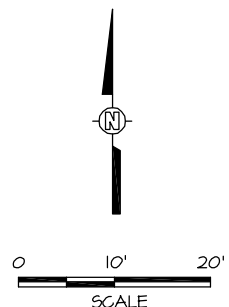


May 2010



April 2013

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



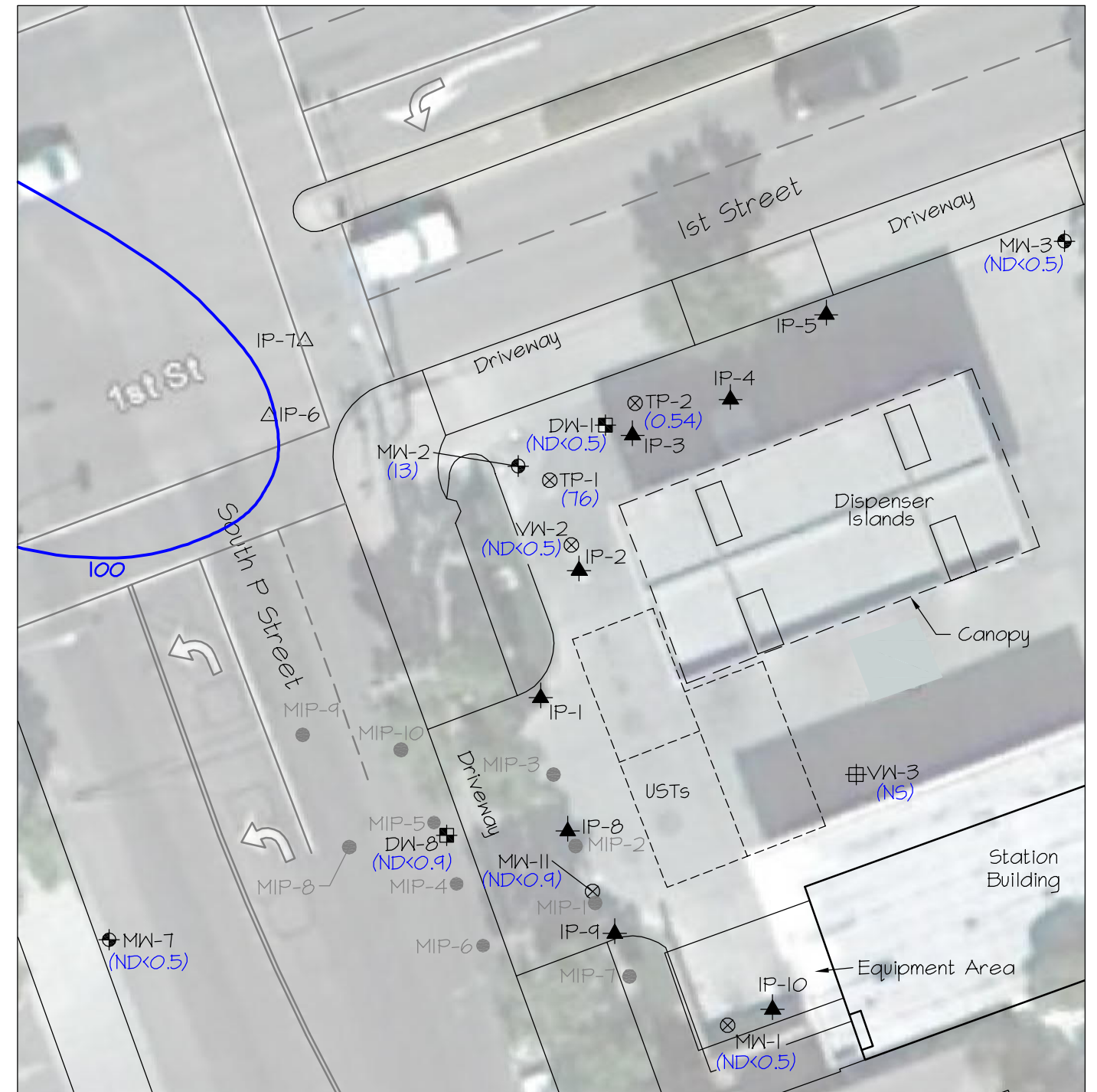
REVISION	REVISIONS		
	NO.	BY	DATE
0	MY	5/15/13	First Quarter 2013 Monitoring Report
1	MY	10/15/13	Second Quarter 2013 Monitoring Report

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
ONSITE BENZENE CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MN	APPROVED BY JPG
FILE NO. OILVIB2401.DWG		FIGURE 9B	

01LV11B2401.dwg 9/25/2013 3:52PM

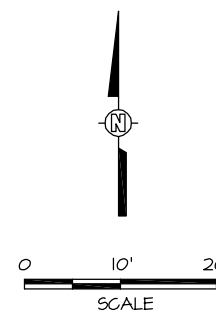


May 2010



April 2013

- Legend
- MW-1 Groundwater Monitoring Well
 - DW-1 Deep Groundwater Monitoring Well
 - IP-1 Injection Well
 - IP-6 Angled Injection Well Screen
 - VW-3 Vapor Extraction Well (Not Connected to System)
 - TP-1 Monitoring Well/Vapor Extraction Well
 - MIP-1 January 2011 Membrane Interface Probe (MIP) Boring
 - MTBE Concentration Contour ($\mu\text{g/L}$), Queried Where Uncertain



REVISION	REVISIONS		
	NO.	BY	DATE
1	0	MY	5/15/13
	1	MY	10/15/13

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
ONSITE MTBE CONCENTRATION CONTOURS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MN	APPROVED BY JPG
FILE NO. OILVIB2501.DWG		FIGURE 9C	

01LV11B1602.dwg 3/4/2014 10:41AM



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-2 Monitoring Well/Vapor Extraction Well

- DB-8 Soil Boring
- IP-2 Expanded ISCO Pilot Test Onsite Injection Well
- IP-11 Offsite Injection Well Installed April 2013

ARCTOS ENVIRONMENTAL			
TESORO - LIVERMORE			
EXPANDED ISCO PILOT TEST INJECTION WELLS			
PROJECT NO. OILV	DRAWN BY MY	CHECKED BY MP	APPROVED BY JPG
FILE NO. OILV11B1601.DWG	FIGURE 10		

REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
0	MY		10/1/12	Work Plan for Expanded ISCO Pilot Test
1	MY		2/19/13	Work Plan for Expanded ISCO Pilot Test
2	MY		3/15/14	Fourth Quarter 2013 Monitoring Report

ATTACHMENT A
GROUNDWATER SAMPLING QA/QC PROCEDURES

ATTACHMENT A GROUNDWATER SAMPLING QA/QC PROCEDURES

Monitoring Plan

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

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

Analytical Plan

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

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

Purge-and-Bail Sampling Procedures

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

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

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

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

General Field QA/QC Procedures

Chain-of-Custody Records

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

Equipment Decontamination Procedures

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

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

Personal Decontamination Procedures

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

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

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

Wastewater and Solid Waste Storage and Disposal

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

Field Data Sheet

Date: 4/22/2013

Project Name: Tesoro #67076

Project Number: 01LV

Technician: P. Arroyo

Location: Livermore, CA

Global ID : T0600101410

Well ID	Casing Diameter	Total Depth	DTP	DTW	Thickness	Comments
MW-1	4"	54.55	-	33.11	-	
MW-2	4"	54.10	-	34.15	-	
MW-3	4"	52.90	-	33.51	-	
MW-4	2"	46.80	-	33.80	-	
MW-5	2"	46.27	-	35.09	-	
MW-6	2"	47.65	-	36.78	-	
MW-7	2"	46.80	-	33.19	-	
MW-8	2"	44.50	-	35.00	-	
MW-9	2"	44.58	-	37.01	-	
MW-10	2"	45.10	-	34.99	-	
MW-11	4"	42.85	-	32.74	-	
MW-12	4"	44.80	-	36.18	-	
DW-1	4"	64.75	-	33.72	-	
DW-2	4"	59.84	-	36.70	-	
DW-3	4"	59.74	-	36.10	-	
DW-4	4"	70.04	-	35.90	-	
DW-5	4"	59.80	-	36.52	-	
DW-6	4"	60.15	-	37.29	-	
DW-7	4"	65.20	-	36.80	-	
DW-8	4"	64.65	-	32.66	-	
DW-9	4"	59.80	-	36.39	-	
TP-1	2"	43.22	-	33.71	-	
TP-2	2"	41.21	-	33.70	-	
VW-2	2"	34.85	-	33.51	-	
VW-3	2"	36.34	-	33.49	-	

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-22-13
 Well Number: MW-1 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
<u>4</u>	<u>54.55</u>	<u>33.11</u>	<u>21.44</u> X	<u>0.66</u>	<u>= 14.15</u>
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Int.</u>	<u>0852</u>	<u>987</u>	<u>6.89</u>	<u>19.61</u>	<u>218.5</u>	<u>0.715</u>	<u>3.56</u>
1	<u>14.5</u>	<u>0857</u>	<u>978</u>	<u>6.90</u>	<u>19.61</u>	<u>236.3</u>	<u>0.709</u>	<u>2.06</u>
2	<u>29</u>	<u>0902</u>	<u>991</u>	<u>6.90</u>	<u>19.59</u>	<u>236.4</u>	<u>0.719</u>	<u>1.92</u>
3	<u>43.5</u>	<u>0907</u>	<u>977</u>	<u>6.88</u>	<u>19.63</u>	<u>231.7</u>	<u>0.708</u>	<u>2.29</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)

(I) Initially	<u>33.11</u>		
(P) After Purging	<u>41.50</u>		
P - 0.8(P-I) =	<u>34.78</u>	80% Recovery	
(S) Before Sampling	<u>34.78</u>		
Sampled 80% - 100%	<u>46.5</u>		

Sample Containers:

1 Liter Amber Glass		No.	Preservation
8 oz. Glass amber			
40ml VOA	<u>3</u>		<u>HCL</u>
250 polypropylene			
500 ml polypropylene			

Sample Date: 4-22-13 Time: 0920 Turbidity: 127

Sampling Equipment: Disposable Bailor

Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: MW-2 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	-	=	X	0.17	=	
3	-	=	X	0.38	=	
<u>4</u>	<u>54.10</u>	<u>34.15</u>	<u>19.95</u>	<u>X</u>	<u>0.66</u>	<u>= 13.16</u>
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Int.</u>	<u>1040</u>	<u>1420</u>	<u>6.98</u>	<u>21.86</u>	<u>117.5</u>	<u>0.912</u>	<u>4.91</u>
1	<u>13.5</u>	<u>1046</u>	<u>1313</u>	<u>6.69</u>	<u>21.75</u>	<u>95.5</u>	<u>0.910</u>	<u>3.53</u>
2	<u>27</u>	<u>1052</u>	<u>1312</u>	<u>6.89</u>	<u>21.71</u>	<u>83.9</u>	<u>0.909</u>	<u>4.25</u>
3	<u>40.5</u>	<u>1059</u>	<u>1310</u>	<u>6.91</u>	<u>21.70</u>	<u>86.4</u>	<u>0.910</u>	<u>4.61</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

Sample Containers:

(I) Initially 34.15
 (P) After Purging 39.60
 P- 0.8(P-I) = 35.24 80% Recovery
 (S) Before Sampling 34.91
 Sampled 80% - 100% Yes

No.	Preservation
<u>1</u>	<u>None</u>
<u>7</u>	<u>HCL/NONE</u>
<u>4</u>	<u>None</u>

Sample Date : 4-23-13 Time: 1100
 Sampling Equipment : Disposable Bailor
 Calibrate Date: 4/22/13

Turbidity 61.2

Comments:

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-22-13
 Well Number: MW-3 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth To Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
<u>4</u>	<u>52.90</u>	<u>33.51</u>	<u>19.39</u>	<u>X</u>	<u>0.66</u>
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Inst.</u>	<u>0939</u>	<u>955</u>	<u>7.14</u>	<u>20.23</u>	<u>260.7</u>	<u>0.683</u>	<u>2.84</u>
1	<u>13</u>	<u>0944</u>	<u>954</u>	<u>7.12</u>	<u>19.86</u>	<u>262.3</u>	<u>0.688</u>	<u>1.90</u>
2	<u>26</u>	<u>0948</u>	<u>953</u>	<u>7.11</u>	<u>19.81</u>	<u>254.8</u>	<u>0.688</u>	<u>1.69</u>
3	<u>39</u>	<u>0953</u>	<u>955</u>	<u>7.12</u>	<u>19.81</u>	<u>252.6</u>	<u>0.689</u>	<u>1.55</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)
 Sample Containers:

(I) Initially <u>33.51</u> (P) After Purging <u>38.75</u> P- 0.8(P-I) = <u>34.55</u> 80% Recovery (S) Before Sampling <u>34.26</u> Sampled 80% - 100% <u>4.85</u>	1 Liter Amber Glass _____ 8 oz. Glass amber _____ 40ml VOA <u>3</u> 250 polypropylene _____ 500 ml polypropylene _____
---	--

No. Preservation

Sample Date : 4-22-13 Time: 1005 Turbidity 38.1

Sampling Equipment : Disposable Bailer

Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-22-13
 Well Number: MW-4 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	46.80	33.80	13.00	X 0.17	= 2.21	
3	-	=	X	0.38	=	
4	-	=	X	0.66	=	
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Inv.</u>	<u>1010</u>	<u>1061</u>	<u>7.24</u>	<u>21.49</u>	<u>338.2</u> 0.738	<u>0.742</u>	<u>3.25</u>
1	<u>2.5</u>	<u>1012</u>	<u>1058</u>	<u>7.10</u>	<u>20.59</u>	<u>308.8</u>	<u>0.751</u>	<u>2.47</u>
2	<u>5.0</u>	<u>1014</u>	<u>1094</u>	<u>7.08</u>	<u>20.47</u>	<u>290.6</u>	<u>0.779</u>	<u>2.08</u>
3	<u>7.5</u>	<u>1016</u>	<u>1106</u>	<u>7.09</u>	<u>20.79</u>	<u>275.3</u>	<u>0.799</u>	<u>1.41</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: **Depth to GW (ft.)** **Sample Containers:**

	No.	Preservation
(I) Initially <u>33.80</u>		
(P) After Purging <u>40.10</u>		
P- 0.8(P-I) = <u>35.06</u> 80% Recovery	<u>3</u>	<u>HCL</u>
(S) Before Sampling <u>35.06</u>		
Sampled 80% - 100% <u>yes</u>		

Sample Date: 4-22-13 Time: 1025 Turbidity 361
 Sampling Equipment: Disposable Bailer
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 **Project Number:** 01LV
Location: Livermore, CA **Date:** 4-22-13
Well Number: MN-5 **Well Integrity:** Good
Technician: P. Arroyo **Ambient Conditions:** Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
②	46.27	35.09	11.18 X	0.17	= 1.90	
3	-	-	X	0.38	=	
4	-	-	X	0.66	=	
4.5	-	-	X	0.83	=	
6	-	-	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp. (°C)	ORP	Tds g/L	DO mg/L
0	<u>Inc.</u>	<u>1032</u>	<u>1201</u>	<u>6.79</u>	<u>20.77</u>	<u>266.7</u>	<u>0.850</u>	<u>2.85</u>
1	<u>2</u>	<u>1035</u>	<u>1208</u>	<u>6.77</u>	<u>20.67</u>	<u>223.3</u>	<u>0.856</u>	<u>2.66</u>
2	<u>4</u>	<u>1038</u>	<u>1210</u>	<u>6.81</u>	<u>20.53</u>	<u>201.6</u>	<u>0.860</u>	<u>3.06</u>
3	<u>6</u>	<u>1041</u>	<u>1217</u>	<u>6.79</u>	<u>20.60</u>	<u>197.5</u>	<u>0.863</u>	<u>2.44</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)

(I) Initially	<u>35.09</u>		
(P) After Purging	<u>39.20</u>		
P - 0.8(P-I) =	<u>35.91</u>	80% Recovery	
(S) Before Sampling	<u>35.86</u>		
Sampled 80% - 100%	<u>Yes</u>		

Sample Containers:

	No.	Preservation
1 Liter Amber Glass	_____	_____
8 oz. Glass amber	_____	_____
40ml VOA	<u>3</u>	<u>HCL</u>
250 polypropylene	_____	_____
500 ml polypropylene	_____	_____

Sample Date : 4-22-13 **Time:** 1050 **Turbidity** 43.1
Sampling Equipment : Disposable Bailer
Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: MW-6 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	47.65	36.78	10.87 X	0.17	=	1.84
3	-	=	X	0.38	=	
4	-	=	X	0.66	=	
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	INT.	1047	1280	6.73	21.23	-75.0	0.896	1.33
1	2	1051	1305	6.67	20.94	-77.1	0.920	1.23
2	4	1055	1304	6.67	20.93	-79.1	0.919	1.15
3	6	1059	1301	6.74	20.94	-81.9	0.903	1.41
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: **Depth to GW (ft.)** **Sample Containers:**

(I) Initially	<u>36.78</u>		
(P) After Purging	<u>38.10</u>		
P- 0.8(P-I) =	<u>37.04</u>	80% Recovery	
(S) Before Sampling	<u>36.78</u>		
Sampled 80% - 100%	<u>Yes</u>		

Sample Date : <u>4-24-13</u> Time: <u>1115</u>	Turbidity <u>10.9</u>
Sampling Equipment : <u>Disposable Bailer</u>	
Calibrate Date: <u>4/22/13</u>	

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: MW-7 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
<u>2</u>	<u>46.80</u>	<u>33.19</u>	<u>13.61</u> X	<u>0.17</u>	<u>= 2.31</u>
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Inv.</u>	<u>1310</u>	<u>1116</u>	<u>7.08</u>	<u>31.04</u>	<u>-93.2</u>	<u>0.647</u>	<u>2.94</u>
1	<u>2.5</u>	<u>1312</u>	<u>948</u>	<u>7.19</u>	<u>23.45</u>	<u>-92.1</u>	<u>0.630</u>	<u>3.20</u>
2	<u>5</u>	<u>1314</u>	<u>942</u>	<u>7.10</u>	<u>22.52</u>	<u>-88.4</u>	<u>0.642</u>	<u>2.49</u>
3	<u>7.5</u>	<u>1316</u>	<u>953</u>	<u>7.09</u>	<u>22.22</u>	<u>-83.9</u>	<u>0.660</u>	<u>2.66</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 33.19
 (P) After Purging 38.60
 P- 0.8(P-I) = 34.27 80% Recovery
 (S) Before Sampling 34.10
 Sampled 80% - 100% yes

Sample Containers:

	No.	Preservation
1 Liter ^{Amber} Amber Glass	<u>1</u>	<u>None</u>
8 oz. Glass amber		
40ml VOA	<u>7</u>	<u>None / HCL</u>
250 polypropylene	<u>4</u>	<u>None</u>
500 ml polypropylene		

Sample Date : 4-23-13 Time: 1330

Turbidity 237

Sampling Equipment : Disposable Bailer

Calibrate Date: 4/22/13

Comments:

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: MW-8 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth To Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	44.50	35.00	9.50 X	0.17	=	1.61
3	-	=	X	0.38	=	
4	-	=	X	0.66	=	
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp. (°C)	ORP	Tds g/L	DO mg/L
0	<u>Int.</u>	<u>1118</u>	<u>1222</u>	<u>7.45</u>	<u>25.10</u>	<u>96.7</u>	<u>0.794</u>	<u>3.22</u>
1	<u>2</u>	<u>1125</u>	<u>1124</u>	<u>7.27</u>	<u>22.60</u>	<u>100.3</u>	<u>0.765</u>	<u>2.80</u>
2	<u>4</u>	<u>1124</u>	<u>1110</u>	<u>7.19</u>	<u>22.29</u>	<u>101.7</u>	<u>0.762</u>	<u>3.35</u>
3	<u>6</u>	<u>1127</u>	<u>1107</u>	<u>7.21</u>	<u>22.10</u>	<u>100.7</u>	<u>0.761</u>	<u>3.30</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)
 (I) Initially 35.00
 (P) After Purging 39.70
 P - 0.8(P-I) = 35.94 80% Recovery
 (S) Before Sampling 35.90
 Sampled 80% - 100% Yes

Sample Containers:

	No.	Preservation
1 Liter Amber Glass ^{Pump}	<u>1</u>	<u>None</u>
8 oz. Glass amber		
40ml VOA	<u>7</u>	<u>None/HCL</u>
250 polypropylene	<u>4</u>	<u>None</u>
500 ml polypropylene		

Sample Date: 4-23-13 Time: 1140
 Sampling Equipment: Disposable Bailer
 Calibrate Date: 4/22/13

Turbidity 27.3

Comments:

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: MW-9 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth To Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot		1 Well Volume (ml.)
2	44.58	37.01	7.57 X	0.17	=	1.28
3	-	=	X	0.38	=	
4	-	=	X	0.66	=	
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Int.</u>	<u>1236</u>	<u>1368</u>	<u>6.93</u>	<u>30.70</u>	<u>-87.8</u>	<u>0.801</u>	<u>1.20</u>
1	<u>1.5</u>	<u>1238</u>	<u>1295</u>	<u>6.97</u>	<u>25.08</u>	<u>-100.6</u>	<u>0.841</u>	<u>2.11</u>
2	<u>3</u>	<u>1240</u>	<u>1281</u>	<u>6.99</u>	<u>24.86</u>	<u>-100.6</u>	<u>0.835</u>	<u>2.13</u>
3	<u>4.5</u>	<u>1242</u>	<u>1276</u>	<u>6.96</u>	<u>25.42</u>	<u>-99.6</u>	<u>0.829</u>	<u>2.17</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: **Sample Containers:**
 Depth to GW (ft.) No. Preservation
 (I) Initially 37.01 1 Liter Amber Glass ^{Poly} 1 None
 (P) After Purging 41.30 8 oz. Glass amber _____ _____
 P- 0.8(P-I) = 37.86 40ml VOA 7 None/None
 (S) Before Sampling 37.14 250 polypropylene 4 None
 Sampled 80% - 100% Yes 500 ml polypropylene _____ _____
 Sample Date : 4-23-13 Time: 1300 Turbidity 42.6
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-22-13
 Well Number: MW-10 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth To Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
②	45.10	34.99	10.11	X 0.17	= 1.71	
3	-	-	-	X 0.38	=	
4	-	-	-	X 0.66	=	
4.5	-	-	-	X 0.83	=	
6	-	-	-	X 1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Ins.</u>	<u>1103</u>	<u>1514</u>	<u>7.58</u>	<u>22.59</u>	<u>279.7</u>	<u>1.031</u>	<u>5.48</u>
1	<u>2</u>	<u>1105</u>	<u>1491</u>	<u>7.44</u>	<u>21.65</u>	<u>250.3</u>	<u>1.035</u>	<u>5.06</u>
2	<u>4</u>	<u>1107</u>	<u>1470</u>	<u>7.53</u>	<u>21.51</u>	<u>248.4</u>	<u>1.026</u>	<u>4.43</u>
3	<u>6</u>	<u>1109</u>	<u>1462</u>	<u>7.50</u>	<u>22.78</u>	<u>239.5</u>	<u>1.035</u>	<u>6.50</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 34.99
 (P) After Purging 40.35
 P- 0.8(P-I) = 36.06 80% Recovery
 (S) Before Sampling 36.06
 Sampled 80% - 100% yes

Sample Containers:

	No.	Preservation
^{POLY} 1 Liter Amber Glass	<u>2</u>	<u>NONE</u>
8 oz. Glass amber		
40ml VOA	<u>3</u>	<u>HCL/NONE</u>
250 polypropylene		
500 ml polypropylene		

Sample Date : 4-22-13 Time: 1130

Turbidity 127

Sampling Equipment : Disposable Bailer

Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: MW-11 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	-	=	X	0.17	=	
3	-	=	X	0.38	=	
<u>4</u>	<u>42.85</u>	<u>32.74</u>	<u>10.11</u>	<u>X</u>	<u>0.66</u>	<u>= 6.67</u>
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Inv.</u>	<u>0843</u>	<u>1623</u>	<u>7.19</u>	<u>18.51</u>	<u>44.6</u>	<u>1.205</u>	<u>4.11</u>
1	<u>7</u>	<u>0847</u>	<u>1387</u>	<u>7.01</u>	<u>20.14</u>	<u>-42.8</u>	<u>0.995</u>	<u>2.42</u>
2	<u>14</u>	<u>0851</u>	<u>1372</u>	<u>6.96</u>	<u>20.10</u>	<u>-30.2</u>	<u>0.991</u>	<u>3.16</u>
3	<u>21</u>	<u>0856</u>						
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 32.74
 (P) After Purging 42.85 (Dry)
 P- 0.8(P-I) = 50.34.76 80% Recovery
 (S) Before Sampling 34.13
 Sampled 80% - 100% yes

Sample Containers:

No.	Preservation
<u>1</u>	<u>None</u>
<u>7</u>	<u>None/HCL</u>
<u>4</u>	<u>None</u>

Sample Date: 4-24-13 Time: 0920

Turbidity 536

Sampling Equipment: Disposable Bailer

Calibrate Date: 4/22/13

Comments: Well Dry @ 11 gal.

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: MW-12 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	-	=	X	0.17	=	
3	-	=	X	0.38	=	
<u>4</u>	<u>44.80</u>	<u>36.18</u>	<u>8.62</u>	<u>X</u>	<u>0.66</u>	<u>= 5.68</u>
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Imm.</u>	<u>0941</u>	<u>971</u>	<u>7.26</u>	<u>20.18</u>	<u>-24.8</u>	<u>0.696</u>	<u>3.71</u>
1	<u>6</u>	<u>0944</u>	<u>1012</u>	<u>7.26</u>	<u>21.18</u>	<u>-29.6</u>	<u>0.710</u>	<u>3.23</u>
2	<u>12</u>	<u>0947</u>	<u>988</u>	<u>7.21</u>	<u>21.16</u>	<u>-40.6</u>	<u>0.693</u>	<u>3.07</u>
3	<u>18</u>	<u>0950</u>	<u>987</u>	<u>7.21</u>	<u>21.46</u>	<u>-45.8</u>	<u>0.687</u>	<u>4.16</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)
 (I) Initially 36.18
 (P) After Purging 39.40
 P- 0.8(P-I) = 30.82 80% Recovery
 (S) Before Sampling 36.27
 Sampled 80% - 100% Yes

Sample Containers:

	No.	Preservation
1 Liter Amber Glass	<u>1</u>	<u>NONE</u>
8 oz. Glass amber		
40ml VOA	<u>7</u>	<u>HCL/NONE</u>
250 polypropylene	<u>4</u>	<u>NONE</u>
500 ml polypropylene		

Sample Date: 4-24-13 Time: 1005
 Sampling Equipment: Disposable Bailer
 Calibrate Date: 4/22/13

Turbidity 17.6

Comments:

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-22-13
 Well Number: DN-1 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	-	=	X	0.17	=	
3	-	=	X	0.38	=	
<u>4</u>	<u>64.75</u>	<u>33.72</u>	<u>31.03</u>	X 0.66	=	<u>20.48</u>
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump _____ Hand Bail _____ Low Flow _____

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp. (°C)	ORP	Tds g/L	DO mg/L
0	<u>INT.</u>	<u>1210</u>	<u>981</u>	<u>7.61</u>	<u>22.35</u>	<u>270.6</u>	<u>0.672</u>	<u>9.73</u>
1	<u>20.5</u>	<u>1216</u>	<u>964</u>	<u>7.53</u>	<u>21.06</u>	<u>295.0</u>	<u>0.680</u>	<u>3.19</u>
2	<u>41</u>	<u>1223</u>	<u>981</u>	<u>7.34</u>	<u>21.02</u>	<u>299.3</u>	<u>0.690</u>	<u>2.68</u>
3	<u>61.5</u>	<u>1230</u>	<u>985</u>	<u>7.30</u>	<u>20.75</u>	<u>297.2</u>	<u>0.697</u>	<u>1.86</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 33.72
 (P) After Purging 40.60
 P - 0.8(P-I) = 35.10 80% Recovery
 (S) Before Sampling 34.15
 Sampled 80% - 100% YES

Sample Containers:

	No.	Preservation
1 Liter Amber Glass ^{Poly}	<u>1</u>	<u>NONE</u>
8 oz. Glass amber		
40ml VOA	<u>7</u>	<u>HCL/NONE</u>
250 polypropylene	<u>4</u>	<u>NONE</u>
500 ml polypropylene		

Sample Date: 4-22-13 Time: 1245

Turbidity 21

Sampling Equipment: Disposable Bailer

Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: DW-2 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
(4)	59.84	36.70	23.14 X	0.66	= 15.27
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Ins.</u>	<u>1031</u>	<u>1012</u>	<u>7.15</u>	<u>21.04</u>	<u>-69.9</u>	<u>0.712</u>	<u>2.72</u>
1	<u>15.5</u>	<u>1039</u>	<u>1016</u>	<u>7.07</u>	<u>21.12</u>	<u>-82.7</u>	<u>0.713</u>	<u>2.71</u>
2	<u>31</u>	<u>1047</u>	<u>1022</u>	<u>7.00</u>	<u>21.15</u>	<u>-86.6</u>	<u>0.717</u>	<u>2.55</u>
3	<u>46.5</u>	<u>1055</u>	<u>1027</u>	<u>6.94</u>	<u>21.18</u>	<u>-92.0</u>	<u>0.725</u>	<u>2.20</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)
 (I) Initially 36.70
 (P) After Purging 40.10
 P - 0.8(P-I) = 37.38 80% Recovery
 (S) Before Sampling 36.70
 Sampled 80% - 100% yes

Sample Containers:

	No.	Preservation
1 Liter ^{Poly} Amber Glass	<u>1</u>	<u>None</u>
8 oz. Glass amber		
40ml VOA	<u>7</u>	<u>HCL/None</u>
250 polypropylene	<u>4</u>	<u>None</u>
500 ml polypropylene		

Sample Date: 4-24-13 Time: 1100
 Sampling Equipment: Disposable Bailer
 Calibrate Date: 4/22/13

Turbidity 27.3

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: DN-3 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
<u>4</u>	<u>59.74</u>	<u>36.10</u>	<u>23.64</u>	<u>0.66</u>	<u>15.60</u>
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Init.</u>	<u>1154</u>	<u>1165</u>	<u>7.45</u>	<u>29.02</u>	<u>128.4</u>	<u>0.703</u>	<u>3.07</u>
1	<u>16</u>	<u>1202</u>	<u>1037</u>	<u>7.39</u>	<u>23.74</u>	<u>123.1</u>	<u>0.691</u>	<u>2.55</u>
2	<u>32</u>	<u>1210</u>	<u>1027</u>	<u>7.31</u>	<u>23.62</u>	<u>87.1</u>	<u>0.685</u>	<u>2.12</u>
3	<u>48</u>	<u>1218</u>	<u>1019</u>	<u>7.27</u>	<u>23.60</u>	<u>75.6</u>	<u>0.681</u>	<u>1.93</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: **Sample Containers:**
 Depth to GW (ft.) No. Preservation
 (I) Initially 36.10 1 NONE
 (P) After Purging 39.30
 P- 0.8(P-I) = 36.74 80% Recovery
 (S) Before Sampling 36.10
 Sampled 80% - 100% yes
 Sample Date : 4-23-13 Time: 1230 Turbidity 6
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-22-13
 Well Number: DW-4 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
<u>4</u>	<u>70.04</u>	<u>35.90</u>	<u>34.14</u>	<u>X</u>	<u>0.66</u>
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=
					<u>= 22.33</u>

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp. (-C)	ORP	Tds g/L	DO mg/L
0	<u>Int.</u>	<u>1345</u>	<u>1530</u>	<u>7.59</u>	<u>22.43</u>	<u>203.7</u>	<u>0.884</u>	<u>4.36</u>
1	<u>23</u>	<u>1352</u>	<u>1480</u>	<u>7.50</u>	<u>21.60</u>	<u>198.6</u>	<u>0.861</u>	<u>3.89</u>
2	<u>46</u>	<u>1359</u>	<u>1474</u>	<u>7.43</u>	<u>21.52</u>	<u>194.3</u>	<u>0.854</u>	<u>3.81</u>
3	<u>69</u>	<u>1408</u>	<u>1470</u>	<u>7.41</u>	<u>21.46</u>	<u>191.7</u>	<u>0.850</u>	<u>3.70</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 35.90
 (P) After Purging 42.70
 P- 0.8(P-I) = 37.26 80% Recovery
 (S) Before Sampling 36.10
 Sampled 80% - 100% yes

Sample Containers:

	No.	Preservation
1 Liter Amber Glass		
8 oz. Glass amber		
40ml VOA	<u>3</u>	<u>HCL</u>
250 polypropylene		
500 ml polypropylene		

Sample Date: 4-22-13 Time: 1430

Turbidity 13

Sampling Equipment: Disposable Bailer

Calibrate Date: 4/22/13

Comments:

* _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: DW-5 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
<u>4</u>	<u>59.80</u>	<u>36.52</u>	<u>23.28</u>	<u>X</u>	<u>0.66</u> = <u>15.36</u>
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump _____ Hand Bail _____ Low Flow _____

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>INT.</u>	<u>1104</u>	<u>969</u>	<u>7.52</u>	<u>22.18</u>	<u>-92.6</u>	<u>0.665</u>	<u>4.92</u>
1	<u>15.5</u>	<u>1112</u>	<u>881</u>	<u>7.47</u>	<u>21.85</u>	<u>-86.0</u>	<u>0.610</u>	<u>2.48</u>
2	<u>31</u>	<u>1120</u>	<u>883</u>	<u>7.37</u>	<u>21.78</u>	<u>-77.9</u>	<u>0.612</u>	<u>2.40</u>
3	<u>46.5</u>	<u>1129</u>	<u>885</u>	<u>7.32</u>	<u>21.70</u>	<u>-86.7</u>	<u>0.614</u>	<u>2.13</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: _____ Sample Containers: _____
 Depth to GW (ft.) _____
 (I) Initially 36.52
 (P) After Purging 39.00
 P- 0.8(P-I) = 37.01 80% Recovery
 (S) Before Sampling 36.52
 Sampled 80% - 100% yes

1 Liter ^{Poly} Amber Glass _____ No. 1 Preservation None
 8 oz. Glass amber _____
 40ml VOA _____ No. 7 Preservation HCL/None
 250 polypropylene _____ No. 4 Preservation None
 500 ml polypropylene _____

Sample Date : 4-24-13 Time: 1140 Turbidity 31.9
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: DW-6 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
<u>4</u>	<u>60.15</u>	<u>37.29</u>	<u>2286</u>	<u>X</u>	<u>0.66</u> = <u>15.08</u>
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Int.</u>	<u>0906</u>	<u>1282</u>	<u>7.61</u>	<u>19.32</u>	<u>-43.1</u>	<u>0.933</u>	<u>5.32</u>
1	<u>15.5</u>	<u>0914</u>	<u>929</u>	<u>7.22</u>	<u>20.59</u>	<u>-71.9</u>	<u>0.660</u>	<u>2.70</u>
2	<u>31</u>	<u>0922</u>	<u>932</u>	<u>7.11</u>	<u>20.90</u>	<u>-92.9</u>	<u>0.657</u>	<u>2.55</u>
3	<u>46.5</u>	<u>0930</u>	<u>932</u>	<u>7.10</u>	<u>20.82</u>	<u>-95.4</u>	<u>0.658</u>	<u>2.62</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.) Sample Containers:

(I) Initially	<u>37.29</u>	1 Liter Amber ^{Am} Glass	No. <u>1</u>	Preservation <u>None</u>
(P) After Purging	<u>42.25</u>	8 oz. Glass amber		
P- 0.8(P-I) =	<u>38.28</u>	40ml VOA	<u>7</u>	<u>None/HCL</u>
(S) Before Sampling	<u>37.29</u>	250 polypropylene	<u>4</u>	<u>None</u>
Sampled 80% - 100%	<u>Yes</u>	500 ml polypropylene		

Sample Date: 4-24-13 Time: 0945 Turbidity 28.3
 Sampling Equipment: Disposable Bailor
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: DW-7 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
④	65.20	36.80	28.40X	0.66	= 18.74
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	INT.	1408	1119	7.07	29.69	-64.3	0.668	3.29
1	19	1417	1076	6.94	23.49	-76.6	0.720	2.14
2	38	1426	1065	6.93	23.05	-77.5	0.719	1.97
3	57	1435	1063	6.97	23.13	-78.6	0.718	2.11
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)
 (I) Initially: 36.80
 (P) After Purging: 40.10
 P- 0.8(P-I) = 37.46 80% Recovery
 (S) Before Sampling: 36.91
 Sampled 80% - 100%: yes

Sample Containers:
 1 Liter Amber Glass: 1 No. 1 Preservation None
 8 oz. Glass amber: _____
 40ml VOA: 7 None/None
 250 polypropylene: 4 None
 500 ml polypropylene: _____

Sample Date: 4-23-13 Time: 1445 Turbidity: 13.4
 Sampling Equipment: Disposable Bailer
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: DW-8 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
<u>4</u>	<u>64.65</u>	<u>32.66</u>	<u>31.99</u>	<u>X</u>	<u>0.66</u>
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>INT.</u>	<u>1324</u>	<u>3773</u>	<u>10.58</u>	<u>28.91</u>	<u>-31.7</u>	<u>2.282</u>	<u>5.42</u>
1	<u>21.5</u>	<u>1334</u>	<u>861</u>	<u>9.08</u>	<u>22.86</u>	<u>-55.6</u>	<u>0.583</u>	<u>2.24</u>
2	<u>43</u>	<u>1344</u>	<u>962</u>	<u>8.09</u>	<u>22.23</u>	<u>-104.6</u>	<u>0.660</u>	<u>2.26</u>
3	<u>64.5</u>	<u>1354</u>	<u>973</u>	<u>7.57</u>	<u>22.08</u>	<u>-124.5</u>	<u>0.671</u>	<u>2.31</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: _____ Sample Containers: _____
 Depth to GW (ft.) _____

(I) Initially <u>32.66</u> (P) After Purging <u>35.10</u> P- 0.8(P-I) = <u>33.15</u> 80% Recovery (S) Before Sampling <u>32.66</u> Sampled 80% - 100% <u>Yes</u>	1 Liter ^{PL1} Amber Glass <u>1</u> No. <u>1</u> Preservation <u>None</u> 8 oz. Glass amber _____ 40ml VOA <u>7</u> <u>HCL/NONE</u> 250 polypropylene <u>4</u> <u>None</u> 500 ml polypropylene _____
--	---

Sample Date: 4-24-13 Time: 1410 Turbidity 36.1
 Sampling Equipment: Disposable Bailor
 Calibrate Date: 4/22/13
 Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: DW-9 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	-	=	X	0.17	=
3	-	=	X	0.38	=
<u>4</u>	<u>59.80</u>	<u>36.39</u>	<u>23.41</u>	<u>0.66</u>	<u>15.45</u>
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump

Hand Bail

Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Ins.</u>	<u>0959</u>	<u>962</u>	<u>7.04</u>	<u>20.97</u>	<u>-82.8</u>	<u>0.677</u>	<u>2.92</u>
1	<u>15.5</u>	<u>1007</u>	<u>976</u>	<u>7.03</u>	<u>21.12</u>	<u>-87.5</u>	<u>0.685</u>	<u>2.82</u>
2	<u>31</u>	<u>1016</u>	<u>976</u>	<u>7.02</u>	<u>21.17</u>	<u>-90.1</u>	<u>0.685</u>	<u>2.56</u>
3	<u>46.5</u>	<u>1024</u>	<u>978</u>	<u>7.04</u>	<u>21.16</u>	<u>-89.0</u>	<u>0.685</u>	<u>2.76</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 36.39
 (P) After Purging 40.35
 P- 0.8(P-I) = 37.18 80% Recovery
 (S) Before Sampling 36.39
 Sampled 80% - 100% Yes

Sample Containers:

	No.	Preservation
1 Liter ^{Poly} Amber Glass	<u>1</u>	<u>None</u>
8 oz. Glass amber		
40ml VOA	<u>7</u>	<u>HCL/None</u>
250 polypropylene	<u>4</u>	<u>None</u>
500 ml polypropylene		

Sample Date: 4-24-13 Time: 1030

Turbidity 16.3

Sampling Equipment: Disposable Bailer

Calibrate Date: 4/22/13

Comments:

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: TP-1 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
(2)	43.22	33.71	9.51 X	0.17	= 1.61
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump

Hand Bail

Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Inst.</u>	<u>0804</u>	<u>1185</u>	<u>7.14</u>	<u>14.34</u>	<u>87.6</u>	<u>0.964</u>	<u>10.64</u>
1	<u>2</u>	<u>0806</u>	<u>1332</u>	<u>6.71</u>	<u>19.29</u>	<u>55.5</u>	<u>0.972</u>	<u>7.87</u>
2	<u>4</u>	<u>0808</u>	<u>1383</u>	<u>6.70</u>	<u>20.49</u>	<u>56.1</u>	<u>0.983</u>	<u>5.10</u>
3	<u>6</u>	<u>0810</u>	<u>1388</u>	<u>6.79</u>	<u>20.71</u>	<u>58.0</u>	<u>0.982</u>	<u>4.25</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially

33.71

(P) After Purging

57.20

P- 0.8(P-I) =

34.41

80% Recovery

(S) Before Sampling

34.00

Sampled 80% - 100%

Yes

Sample Containers:

1 Liter Amber Glass

8 oz. Glass amber

40ml VOA

250 polypropylene

500 ml polypropylene

No.

Preservation

3

HCl

Sample Date :

4-24-13

Time:

0815

Turbidity

47.6

Sampling Equipment :

Disposable Bailer

Calibrate Date:

4/22/13

Comments:

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: TP-2 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
(2)	41.21	33.70	7.51	X 0.17	= 1.27
3	-	-	-	X 0.38	=
4	-	-	-	X 0.66	=
4.5	-	-	-	X 0.83	=
6	-	-	-	X 1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Ins.</u>	<u>0824</u>	<u>1161</u>	<u>7.38</u>	<u>16.76</u>	<u>77.6</u>	<u>0.896</u>	<u>12.65</u>
1	<u>1.5</u>	<u>0826</u>	<u>1178</u>	<u>7.06</u>	<u>19.69</u>	<u>81.1</u>	<u>0.851</u>	<u>6.29</u>
2	<u>3.0</u>	<u>0828</u>	<u>1202</u>	<u>6.98</u>	<u>20.07</u>	<u>83.6</u>	<u>0.863</u>	<u>6.98</u>
3	<u>4.5</u>	<u>0830</u>	<u>1199</u>	<u>6.97</u>	<u>20.15</u>	<u>87.5</u>	<u>0.860</u>	<u>6.97</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)
 (I) Initially 33.70
 (P) After Purging 37.80
 P - 0.8(P-I) = 34.52 80% Recovery
 (S) Before Sampling 33.86
 Sampled 80% - 100% Yes

Sample Containers:
 1 Liter Amber Glass _____
 8 oz. Glass amber _____
 40ml VOA 3
 250 polypropylene _____
 500 ml polypropylene _____

Sample Date: 4-24-13 Time: 0835 Turbidity 411
 Sampling Equipment: Disposable Bailer
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: VW-2 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	34.85	33.51 =	X	0.17	=
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp. (°C)	ORP	Tds g/L	DO mg/L
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.) 33.51
 (I) Initially 33.51
 (P) After Purging _____
 P- 0.8(P-I) = _____ 80% Recovery
 (S) Before Sampling _____
 Sampled 80% - 100% _____

Sample Containers:
 1 Liter Amber Glass _____
 8 oz. Glass amber _____
 40ml VOA 3 HCL
 250 polypropylene _____
 500 ml polypropylene _____

Sample Date: 4-24-13 Time: 0750 Turbidity 26
 Sampling Equipment: Disposable Bailer
 Calibrate Date: 4/22/13

Comments: Grab Sample

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-22-13
 Well Number: VN-3 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	36.34	33.49	X	0.17	=	
3	-	=	X	0.38	=	
4	-	=	X	0.66	=	
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Low Flow Grab

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)
 (I) Initially 33.49
 (P) After Purging _____
 P- 0.8(P-I) = _____ 80% Recovery
 (S) Before Sampling _____
 Sampled 80% - 100% _____

Sample Containers:
 1 Liter Amber Glass _____
 8 oz. Glass amber _____
 40ml VOA 3
 250 polypropylene _____
 500 ml polypropylene _____

Sample Date: 4-22-13 Time: 1335 Turbidity 6

Sampling Equipment: Disposable Bailor
 Calibrate Date: 4/22/13

Comments: Grab Sample

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: IP-1 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	64.45	33.28	31.17 X	0.17	= 5.29	
3	-	=	X	0.38	=	
4	-	=	X	0.66	=	
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump _____ Hand Bail _____ Low Flow _____

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	1m.	1219	1068	7.33	29.97	-55.1	0.634	5.66
1	5.5	1222	946	7.21	23.49	-96.7	0.632	3.20
2	11.0	1225	970	7.10	22.26	-100.4	0.664	3.07
3	16.5	1228	979	7.06	22.04	-100.2	0.675	3.49
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 33.28
 (P) After Purging 36.10
 P- 0.8(P-I) = 33.84 80% Recovery
 (S) Before Sampling 33.40
 Sampled 80% - 100% Yes

Sample Containers:

	No.	Preservation
1 Liter Amber Glass ^{Poly}	1	None
8 oz. Glass amber		
40ml VOA	7	HCL/None
250 polypropylene	3	None
500 ml polypropylene		

Sample Date: 4-24-13 Time: 1240

Turbidity _____

Sampling Equipment: Disposable Bailor

Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: IP-2 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	64.54	33.86	30.68 X	0.17	= 5.21
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump

Hand Bail

Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	INT.	1337	1064	7.21	29.72	-76.6	0.636	7.87
1	S.S	1340	922	7.41	22.98	-58.3	0.622	2.72
2	IP	1343	901	7.35	22.01	-48.7	0.622	2.43
3	16.5	1346	900	7.33	21.74	-38.9	0.625	2.65
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

Sample Containers:

(I) Initially 33.86
 (P) After Purging 39.20
 P - 0.8(P-I) = 34.93 80% Recovery
 (S) Before Sampling 34.93
 Sampled 80% - 100% yes

	No.	Preservation
1 Liter Amber Glass		
8 oz. Glass amber		
40ml VOA	<u>3</u>	<u>HCL</u>
250 polypropylene		
500 ml polypropylene		

Sample Date: 4-23-13 Time: 1400

Turbidity 426

Sampling Equipment: Disposable Bailer

Calibrate Date: 4/22/13

Comments:

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-22-13
 Well Number: IP-3 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
<u>2</u>	<u>64.70</u>	<u>34.12</u>	<u>30.58</u> X	0.17	= <u>5.19</u>
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump

Honda Pump _____ Hand Bail _____ Low Flow _____

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	<u>Inst.</u>	<u>1300</u>	<u>876</u>	<u>8.13</u>	<u>20.60</u>	<u>-120.5</u>	<u>0.670</u>	<u>2.74</u>
1	<u>5.5</u>	<u>1303</u>	<u>870</u>	<u>7.86</u>	<u>20.43</u>	<u>-116.4</u>	<u>0.661</u>	<u>2.19</u>
2	<u>11</u>	<u>1306</u>	<u>864</u>	<u>7.84</u>	<u>20.21</u>	<u>-89.5</u>	<u>0.654</u>	<u>1.86</u>
3	<u>16.5</u>	<u>1310</u>	<u>860</u>	<u>7.80</u>	<u>20.18</u>	<u>-86.1</u>	<u>0.651</u>	<u>1.70</u>
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: _____ Depth to GW (ft.): _____ Sample Containers: _____
 (I) Initially 34.12 1 Liter Amber Glass _____ No. _____ Preservation _____
 (P) After Purging 39.20 8 oz. Glass amber _____
 P- 0.8(P-I) = 35.13 80% Recovery 40ml VOA 3 HCL
 (S) Before Sampling 34.79 250 polypropylene _____
 Sampled 80% - 100% Yes 500 ml polypropylene _____
 Sample Date : 4-22-13 Time: 1325 Turbidity 116
 Sampling Equipment : Disposable Bailer
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: IP-4 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	64.75	33.76	30.99 X	0.17	= 5.26
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	Int.	0813	1316	7.60	20.36	270.3	0.661	2.76
1	5.5	0816	1284	7.43	19.84	261.4	0.659	1.94
2	11	0819	1270	7.40	19.80	258.9	0.654	1.90
3	16.5	0821	1274	7.39	19.76	257.6	0.651	1.84
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 33.76
 (P) After Purging 38.60
 P- 0.8(P-I) = 34.72 80% Recovery
 (S) Before Sampling 34.72
 Sampled 80% - 100% yes

Sample Containers:

	No.	Preservation
1 Liter Amber Glass	_____	_____
8 oz. Glass amber	_____	_____
40ml VOA	<u>3</u>	<u>HCL</u>
250 polypropylene	_____	_____
500 ml polypropylene	_____	_____

Sample Date : 4-23-13 Time: 0830

Turbidity 14.4

Sampling Equipment : Disposable Bailor

Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: IP-5 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	64.27	33.78	30.49 X	0.17	= 5.18
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump Honda Pump Hand Bail Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	Inc.	0851	1103	7.63	20.07	14.6	0.617	2.47
1	5.5	0855	1086	7.54	19.83	10.3	0.620	1.98
2	11	0859	1054	7.44	19.76	9.4	0.629	1.83
3	16.5	0904	1047	7.40	19.70	8.7	0.628	1.74
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 33.78
 (P) After Purging 36.80
 P- 0.8(P-I) = 34.38 80% Recovery
 (S) Before Sampling 33.86
 Sampled 80% - 100% yes

Sample Containers:

	No.	Preservation
1 Liter ^{Poly} Amber-Glass	1	None
8 oz. Glass amber		
40ml VOA	7	HCL/None
250 polypropylene	4	None
500 ml polypropylene		

Sample Date: 4-23-13 Time: 0925

Turbidity 39.2

Sampling Equipment: Disposable Bailer

Calibrate Date: 4/22/13

Comments:

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: IP-6 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
(2)	71.60	37.05	34.55 X	0.17	= 5.87
3	-	-	X	0.38	=
4	-	-	X	0.66	=
4.5	-	-	X	0.83	=
6	-	-	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump		Honda Pump	Hand Bail	Low Flow					
Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L	
0	<u>Ins.</u>	<u>0944</u>	<u>1016</u>	<u>7.96</u>	<u>20.63</u>	<u>-130.6</u>	<u>0.683</u>	<u>2.28</u>	
1	<u>6</u>	<u>0947</u>	<u>1086</u>	<u>7.76</u>	<u>20.41</u>	<u>-117.3</u>	<u>0.661</u>	<u>1.13</u>	
2	<u>12</u>	<u>0950</u>	<u>1051</u>	<u>7.40</u>	<u>20.21</u>	<u>-110.1</u>	<u>0.660</u>	<u>1.10</u>	
3	<u>18</u>	<u>0954</u>	<u>1047</u>	<u>7.37</u>	<u>20.26</u>	<u>-106.7</u>	<u>0.661</u>	<u>1.03</u>	
4									
5									
6									
7									
8									
9									
10									

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)
 (I) Initially 37.05
 (P) After Purging 42.10
 P- 0.8(P-I) = 38.06 80% Recovery
 (S) Before Sampling 38.06
 Sampled 80% - 100% Yes

Sample Containers:
 1 Liter Amber Glass _____
 8 oz. Glass amber _____
 40ml VOA 3 HCL
 250 polypropylene _____
 500 ml polypropylene _____

Sample Date: 4-23-13 Time: 1005 Turbidity 26
 Sampling Equipment: Disposable Bailer
 Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-23-13
 Well Number: IP-7 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
②	71.84	38.34	33.50 X	0.17	= 5.70
3	-	-	X	0.38	=
4	-	-	X	0.66	=
4.5	-	-	X	0.83	=
6	-	-	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp. (°C)	ORP	Tds g/L	DO mg/L
0	Inx.	1010	1217	7.23	20.36	-79.3	0.749	9.76
1	6	1014	1183	7.10	20.14	-66.4	0.740	4.13
2	12	1018	1179	7.06	20.06	-60.1	0.741	3.86
3	18	1023	1170	7.05	20.10	-58.4	0.741	3.51
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)

(I) Initially	<u>38.34</u>		
(P) After Purging	<u>47.20</u>		
P - 0.8(P-I) =	<u>40.11</u>	80% Recovery	
(S) Before Sampling	<u>39.73</u>		
Sampled 80% - 100%	<u>Yes</u>		

Sample Containers:

	No.	Preservation
1 Liter Amber Glass	_____	_____
8 oz. Glass amber	_____	_____
40ml VOA	<u>3</u>	<u>HCL</u>
250 polypropylene	_____	_____
500 ml polypropylene	_____	_____

Sample Date: 4-23-13 Time: 1035 Turbidity: 19.1

Sampling Equipment: Disposable Bailer

Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: IP-8 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	64.45	33.75	30.70 X	0.17	= 5.21	
3	-	=	X	0.38	=	
4	-	=	X	0.66	=	
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	Int.	1400	1289	7.46	24.61	-67.9	0.845	15.11
1	5.5	1403	1242	7.32	22.36	-25.7	0.850	17.13
2	11.0	1406	1291	7.14	21.79	-70.3	0.894	6.30
3	16.5	1410	1296	7.12	21.68	-76.4	0.906	4.22
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)

(I) Initially	<u>33.75</u>		
(P) After Purging	<u>35.20</u>		
P - 0.8(P-I) =	<u>34.04</u>	80% Recovery	
(S) Before Sampling	<u>33.75</u>		
Sampled 80% - 100%	<u>Yes</u>		

Sample Date: 4-24-13 **Time:** 1420

Sampling Equipment: Disposable Bailer

Calibrate Date: 4/22/13

Sample Containers:

1 Liter Amber Glass	No.	Preservation
8 oz. Glass amber		
40ml VOA	<u>3</u>	<u>HCL</u>
250 polypropylene		
500 ml polypropylene		

Turbidity: 20.3

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: IP-9 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation						
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)	
2	64.75	33.85	30.90	X 0.17	= 5.25	
3	-	=	X	0.38	=	
4	-	=	X	0.66	=	
4.5	-	=	X	0.83	=	
6	-	=	X	1.5	=	

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp.(°C)	ORP	Tds g/L	DO mg/L
0	INT.	1301	3755	10.24	27.03	-119.1	2.351	5.26
1	5.5	1304	5680	10.40	22.38	-93.4	3.886	3.36
2	11	1307	5606	10.40	21.73	-79.6	3.886	3.76
3	16.5	1311	5605	10.38	21.87	-57.9	3.876	3.65
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery: Depth to GW (ft.)

(I) Initially	<u>33.85</u>	
(P) After Purging	<u>37.10</u>	
P - 0.8(P-I) =	<u>34.50</u>	80% Recovery
(S) Before Sampling	<u>33.85</u>	
Sampled 80% - 100%	<u>Yes</u>	

Sample Containers:

	No.	Preservation
1 Liter Amber Glass		
8 oz. Glass amber		
40ml VOA	<u>3</u>	<u>HCL</u>
250 polypropylene		
500 ml polypropylene		

Sample Date: 4-24-13 Time: 1325 Turbidity: 28.3

Sampling Equipment: Disposable Bailor

Calibrate Date: 4/22/13

Comments: _____

Groundwater Sampling Form

Project Name: Tesoro #67076 Project Number: 01LV
 Location: Livermore, CA Date: 4-24-13
 Well Number: IP-10 Well Integrity: Good
 Technician: P. Arroyo Ambient Conditions: Sunny

Well Volume Calculation					
Well Casing Diameter (in.)	Total Well Depth	Depth to Ground-water (GW)	Linear Feet of GW	Gallons Per Linear Foot	1 Well Volume (ml.)
2	63.02	33.40	29.62 X	0.17	= 5.03
3	-	=	X	0.38	=
4	-	=	X	0.66	=
4.5	-	=	X	0.83	=
6	-	=	X	1.5	=

Groundwater Surface Inspection

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

Groundwater Purging Purge Method

Submersible Pump
 Honda Pump
 Hand Bail
 Low Flow

Volumes Purged	Volume Purge (ml.)	Time	Conductivity (uS/cm)	pH	Temp. (°C)	ORP	Tds g/L	DO mg/L
0	Inr.	1240	927	7.38	25.51	-75.7	0.597	5.40
1	5.5	1243	803	7.35	21.74	-86.0	0.557	3.24
2	11.0	1246	797	7.25	21.83	-87.7	0.552	3.23
3	16.5	1249	795	7.19	21.95	-89.3	0.549	2.61
4								
5								
6								
7								
8								
9								
10								

Groundwater Sampling

Water Level Recovery:

Depth to GW (ft.)

(I) Initially 33.40
 (P) After Purging 36.70
 P - 0.8(P-I) = 34.06 80% Recovery
 (S) Before Sampling 33.40
 Sampled 80% - 100% URS

Sample Containers:

	No.	Preservation
1 Liter Amber Glass ^{BCU}	1	None
8 oz. Glass amber		
40ml VOA	7	HCl/None
250 polypropylene	4	None
500 ml polypropylene		

Sample Date: 4-24-13 Time: 1305

Turbidity 37.6

Sampling Equipment: Disposable Bailor

Calibrate Date: 4/22/13

Comments: _____

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		

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	3/27/01	30.43	474.29	443.86
(cont.)	6/30/01	36.61		437.68
	9/26/01	45.10		429.19
	12/18/01	39.39		434.90
	3/18/02	38.24		436.05
	8/21/02	36.71		436.05
	12/3/02	36.85		437.44
	3/4/03	33.72		440.57
	6/10/03	31.31		442.98
	9/9/03	35.05		439.24
	12/23/03	30.15		444.14
	3/23/04	26.61		447.68
	5/10/04	30.31		443.98
	8/4/04	34.77		439.52
	11/4/04	33.93		440.36
	1/12/05	27.82		446.47
	5/2/05	24.87		449.42
	7/19/05	29.26		445.03
	11/21/05	31.15		443.14
	2/9/06	26.24		448.05
	5/16/06	24.87		449.42
	8/9/06	31.64		442.65
	11/8/06	31.16		443.13
	2/14/07	30.00		444.29
	5/17/07	33.75		440.54
	8/2/07	40.00		434.29
	11/12/07	48.55		425.74
	2/14/08	34.74		439.55
	5/8/08	36.15	438.14	
	7/23/08	45.76	428.53	
	10/13/08	51.00	423.29	
	2/11/09	48.69	425.60	

TABLE C-1

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

Well No.	Date of Measurement	Depth to Water (feet below casing)	PVC Casing Elevation^(a) (feet MSL)	Water Table Elevation^(b) (feet MSL)
MW-1 (cont.)	4/27/09	41.90	474.29	432.39
	8/4/09	51.44		422.85
	12/8/09	39.87		434.42
	2/11/10	35.20		439.09
	5/3/10	31.23		443.06
	8/2/10	34.56		474.21 ^(c)
	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	
	MW-2	6/1/93	38.02	472.98
6/22/93		39.07	433.91	
10/6/93		43.72	429.26	
1/13/94		35.85	437.13	
3/30/94		32.82	440.16	
4/25/94		34.76	438.22	
8/12/94		44.33	428.65	
12/14/94		40.00	432.98	
2/10/95		32.16	440.82	
6/15/95		25.93	447.05	
9/26/95		32.42	440.56	
12/15/95		29.41	443.57	
3/21/96		17.47	455.51	
6/13/96		23.69	449.29	
9/16/96		31.24	441.74	

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 (cont.)	12/2/96	26.90	472.98	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		
5/10/04	30.91	442.07		
8/4/04	35.36	437.62		

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-2	11/4/04	34.92	472.98	438.06
(cont.)	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	
	8/6/12	40.95	432.03	

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 (cont.)	11/12/12	39.03	472.98	433.95
	2/12/13	32.13		440.85
	4/22/13	34.15		438.83
MW-3	6/1/93	36.18	473.37	437.19
	6/22/93	37.11		436.26
	10/6/93	41.15		432.22
	1/13/94	33.95		439.42
	3/30/94	30.97		442.40
	4/25/94	32.46		440.91
	8/12/94	41.72		431.65
	12/14/94	37.62		435.75
	2/10/95	29.96		443.41
	6/15/95	23.66		449.71
	9/26/95	29.62		443.75
	12/15/95	27.10		446.27
	3/21/96	15.85		457.52
	6/13/96	21.31		452.06
	9/16/96	28.62		444.75
	12/2/96	25.55		447.82
	3/7/97	19.77		453.60
	6/12/97	27.67		445.70
	9/29/97	29.60		443.77
	12/1/97	33.37		440.00
	3/19/98	18.76		454.61
	5/29/98	20.64		452.73
	9/15/98	30.70		442.67
	11/30/98	34.96		438.41
1/17/99	28.81	444.56		
6/10/99	28.10	445.27		
9/7/99	30.38	442.99		
12/13/99	31.46	441.91		
3/13/00	24.28	449.09		

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	6/12/00	26.80	473.37	446.57
(cont.)	11/10/00	29.47		443.90
	12/31/00	31.38		441.99
	3/27/01	29.94		443.43
	6/30/01	37.54		435.83
	9/26/01	45.17		428.20
	12/18/01	39.41		433.96
	3/18/02	37.73		435.64
	6/5/02	35.35		438.02
	8/21/02	36.21		437.16
	12/3/02	35.62		437.75
	3/4/03	32.75		440.62
	6/10/03	31.26		442.11
	9/9/03	34.72		438.65
	12/23/03	30.47		442.90
	3/23/04	26.67		446.70
	5/10/04	30.25		443.12
	8/4/04	34.70		438.67
	11/4/04	33.94		439.43
	1/12/05	28.21		445.16
	5/2/05	24.56		448.81
	7/19/05	29.39		443.98
	11/21/05	31.30		442.07
	2/9/06	26.21		447.16
	5/16/06	24.36		449.01
	8/9/06	31.90		441.47
	11/8/06	31.30		442.07
	2/14/07	30.20		443.17
	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	

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 (cont.)	5/8/08	35.60	473.37	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		
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

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 (cont.)	12/2/96	26.04	473.64	447.60
	3/7/97	19.69		453.95
	6/12/97	28.04		445.60
	9/29/97	29.91		443.73
	12/1/97	33.88		439.76
	3/19/98	18.67		454.97
	5/29/98	20.16		453.48
	9/15/98	30.46		443.18
	11/30/98	34.50		439.14
	1/17/99	28.30		445.34
	6/10/99	27.60		446.04
	9/7/99	30.79		442.85
	12/13/99	31.60		442.04
	3/13/00	24.35		449.29
	6/12/00	26.91		446.73
	11/10/00	29.71		443.93
	12/31/00	31.79		441.85
	3/27/01	29.98		443.66
	6/30/01	36.88		436.76
	9/26/01	43.87		429.77
	12/18/01	39.30		434.34
	3/18/02	37.75		435.89
	6/5/02	35.68		437.96
	8/21/02	36.58		437.06
	12/3/02	35.90		437.74
	3/4/03	32.73		440.91
	6/10/03	31.20		442.44
	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		

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 (cont.)	11/4/04	34.28	473.64	439.36
	1/12/05	28.67		444.97
	5/2/05	24.46		449.18
	7/19/05	29.36		444.28
	11/21/05	31.80		441.84
	2/9/06	26.34		447.30
	5/16/06	24.30		449.34
	8/9/06	32.05		441.59
	11/8/06	32.85		440.79
	2/14/07	30.46		443.18
	5/17/07	33.92		439.72
	8/2/07	40.68		432.96
	11/12/07	DRY ^(d)		--
	2/14/08	34.53		439.11
	5/8/08	35.55		438.09
	7/23/08	43.87		429.77
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	40.64		433.00
	8/4/09	DRY		--
	12/8/09	39.46		434.18
	2/11/10	35.31		438.33
	5/3/10	31.55		442.09
	8/2/10	35.15		438.49
	11/2/10	37.55		436.09
	2/1/11	32.86		440.78
	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		

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 (cont.)	11/12/12	39.65	473.64	433.99
	2/12/13	31.56		442.08
	4/22/13	33.80		439.84
MW-5	3/30/94	32.07	472.67	440.60
	4/25/94	33.65		439.02
	8/12/94	42.73		429.94
	12/14/94	38.89		433.78
	2/10/95	31.44		441.23
	6/15/95	24.99		447.68
	9/26/95	30.20		442.47
	12/15/95	28.56		444.11
	3/21/96	16.82		455.85
	6/13/96	22.61		450.06
	9/16/96	29.78		442.89
	12/2/96	26.51		446.16
	3/7/97	21.91		450.76
	9/29/97	31.74		440.93
	12/1/97	34.05		438.62
	3/19/98	20.93		451.74
	5/29/98	21.30		451.37
	9/15/98	31.32		441.35
	11/30/98	35.44		437.23
	1/17/99	29.59		443.08
	6/10/99	28.05		444.62
	9/7/99	31.11		441.56
	12/13/99	32.66		440.01
	3/13/00	25.87		446.80
	6/12/00	28.15		444.52
	11/10/00	30.05		442.62
12/31/00	31.81	440.86		
3/27/01	30.57	442.10		
6/30/01	37.24	435.43		

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	9/26/01	44.53	472.67	428.14
(cont.)	12/18/01	40.65		432.02
	3/18/02	38.75		433.92
	6/5/02	36.21		436.46
	8/21/02	36.76		435.91
	12/3/02	36.12		436.55
	3/4/03	32.90		439.77
	6/10/03	33.04		439.63
	9/9/03	34.20		438.47
	12/23/03	31.38		441.29
	3/23/04	27.51		445.16
	5/10/04	31.12		441.55
	8/4/04	35.09		437.58
	11/4/04	34.34		438.33
	1/12/05	29.19		443.48
	5/2/05	25.31		447.36
	7/19/05	30.49		442.18
	11/21/05	32.35		440.32
	2/9/06	27.19		445.48
	5/16/06	25.30		447.37
	8/9/06	32.68		439.99
	11/8/06	32.22		440.45
	2/14/07	34.00		438.67
	5/17/07	34.29		438.38
	8/2/07	41.72		430.95
	11/12/07	DRY		--
	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	

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 (cont.)	8/4/09	DRY	472.67	--
	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		
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		

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 (cont.)	3/19/98	21.10	471.93	450.83
	5/29/98	23.26		448.67
	9/15/98	33.50		438.43
	11/30/98	38.73		433.20
	1/17/99	32.05		439.88
	6/10/99	31.44		440.49
	9/7/99	33.94		437.99
	12/13/99	35.84		436.09
	3/13/00	28.45		443.48
	6/12/00	30.52		441.41
	11/10/00	32.99		438.94
	12/31/00	34.95		436.98
	3/27/01	32.72		439.21
	6/30/01	39.86		432.07
	9/26/01	DRY		--
	12/18/01	43.36		428.57
	3/18/02	41.29		430.64
	6/5/02	38.85		433.08
	8/21/02	39.02		432.91
	12/3/02	38.76		433.17
	3/4/03	35.13		436.80
	6/10/03	34.15		437.78
	9/9/03	37.66		434.27
	12/23/03	33.43		438.50
	3/23/04	29.96		441.97
	5/10/04	32.98		438.95
	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		

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 (cont.)	2/9/06	29.07	471.93	442.86
	5/17/06	27.23		444.70
	8/9/06	35.22		436.71
	11/8/06	33.41		438.52
	2/14/07	33.43		438.50
	5/17/07	36.50		435.43
	8/2/07	42.24		429.69
	11/12/07	DRY		--
	2/14/08	38.67		433.26
	5/8/08	38.50		433.43
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	44.87		427.06
	8/4/09	DRY		--
	12/8/09	43.02		428.91
	2/11/10	38.89		433.04
	5/3/10	34.56		437.37
	8/2/10	37.87		434.06
	11/2/10	40.45		431.48
	2/1/11	35.73		436.20
	4/25/11	30.72		441.21
	8/3/11	34.95		436.98
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		
MW-7	3/30/94	31.98	472.33	440.35
	4/25/94	33.56		438.77

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 (cont.)	8/12/94	43.35	472.33	428.98
	12/14/94	39.34		432.99
	2/10/95	32.11		440.22
	6/15/95	25.51		446.82
	9/26/95	31.43		440.90
	12/15/95	28.97		443.36
	3/21/96	17.36		454.97
	6/13/96	23.47		448.86
	9/16/96	31.35		440.98
	12/2/96	27.11		445.22
	3/7/97	21.33		451.00
	6/12/97	29.90		442.43
	9/29/97	34.37		437.96
	12/1/97	36.46		435.87
	3/19/98	20.33		452.00
	5/29/98	22.30		450.03
	9/15/98	32.54		439.79
	11/30/98	37.96		434.37
	1/17/99	31.04		441.29
	6/10/99	29.89		442.44
	9/7/99	32.38		439.95
	12/13/99	33.98		438.35
	3/13/00	27.09		445.24
	6/12/00	28.76		443.57
	11/10/00	31.54		440.79
	12/31/00	32.76		439.57
	3/27/01	30.97		441.36
	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		

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 (cont.)	8/21/02	36.81	472.33	435.52
	12/3/02	36.52		435.81
	3/4/03	32.60		439.73
	6/10/03	31.33		441.00
	9/9/03	34.71		437.62
	12/23/03	30.80		441.53
	3/23/04	26.41		445.92
	5/10/04	29.86		442.47
	8/4/04	34.06		438.27
	11/4/04	34.12		438.21
	1/12/05	28.83		443.50
	5/2/05	24.66		447.67
	7/19/05	29.07		443.26
	11/21/05	30.42		441.91
	2/9/06	26.15		446.18
	5/16/06	24.44		447.89
	8/9/06	31.77		440.56
	11/8/06	31.14		441.19
	2/14/07	30.39		441.94
	5/17/07	33.31		439.02
	8/2/07	37.09		435.24
	11/12/07	DRY		--
	2/14/08	36.51		435.82
	5/8/08	36.00		436.33
	7/23/08	44.42		427.91
	10/13/08	DRY		--
	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		

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 (cont.)	8/2/10	34.31	472.33	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
MW-8	12/23/03	32.01	471.18	439.17
	3/23/04	28.50		442.68
	5/10/04	31.44		439.74
	8/4/04	35.11		436.07
	11/4/04	34.77		436.41
	1/12/05	29.66		441.52
	5/2/05	25.91		445.27
	7/19/05	30.56		440.62
	11/21/05	32.48		438.70
	2/9/06	27.40		443.78
	5/16/06	25.60		445.58
	8/9/06	32.77		438.41
	11/8/06	32.10		439.08
	2/14/07	30.94		440.24
	5/17/07	34.14		437.04
	8/2/07	41.24		429.94
	11/12/07	DRY		--
	2/14/08	35.55		435.63
5/8/08	36.64	434.54		
7/23/08	DRY	--		

TABLE 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 (cont.)	10/13/08	DRY	471.18	--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/17/09	39.92		431.26
	2/11/10	36.72		434.46
	5/3/10	32.81		438.37
	8/2/10	36.08		435.10
	11/2/10	38.44		432.74
	2/1/11	34.11		437.07
	4/25/11	28.72		442.46
	8/3/11	33.09		438.09
	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		
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 (cont.)	5/17/07	36.88	470.78	433.90
	8/2/07	44.11		426.67
	11/12/07	DRY		--
	2/14/08	39.32		431.46
	5/8/08	38.90		431.88
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	43.79		426.99
	8/4/09	DRY		--
	12/8/09	43.61		427.17
	2/11/10	39.48		431.30
	5/3/10	34.96		435.82
	8/2/10	38.00		432.78
	11/2/10	40.30		430.48
	2/1/11	35.97		434.81
	4/25/11	30.64		440.14
	8/3/11	35.17		435.61
	10/10/11	37.64		433.14
	1/31/12	42.06		428.72
	5/7/12	39.43		431.35
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		
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

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	7/19/05	31.59	471.63	440.04
(cont.)	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
	1/31/12	39.67		431.96
	5/7/12	38.14		433.49
	8/6/12	40.65	430.98	
	11/12/12	40.53	431.10	
	2/12/13	33.19	438.44	
	4/22/13	34.99	436.64	

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)
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		
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
VW-2	8/4/04	34.13	473.28	439.15
	11/4/04	34.75		438.53
	1/12/05	29.35		443.93
	5/2/05	25.34		447.94
	7/19/05	29.76		443.52
	11/21/05	31.81		441.47
	2/9/06	27.21		446.07
	5/17/06	25.26		448.02

TABLE 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 (cont.)	8/9/06	31.74	473.28	441.54
	11/8/06	33.52		439.76
	2/14/07	30.77		442.51
	5/17/07	33.17		440.11
	8/2/07	36.33		436.95
	11/12/07	DRY		--
	2/14/08	35.55		437.73
	5/8/08	35.31		437.97
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
	2/11/10	NM		--
	5/3/10	31.84		441.44
	8/2/10	33.15		472.57 ^(c)
	11/2/10	DRY	--	
	2/1/11	32.80	439.77	
	4/25/11	25.43	447.14	
	8/3/11	26.82	445.75	
	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		
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

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	7/19/05	28.91	474.38	445.47
(cont.)	11/21/05	31.07		443.31
	2/9/06	26.60		447.78
	5/16/06	24.19		450.19
	8/9/06	30.53		443.85
	11/8/06	31.62		442.76
	2/14/07	30.48		443.90
	5/17/07	31.70		442.68
	8/2/07	35.55		438.83
	11/12/07	DRY		--
	2/14/08	DRY		--
	5/8/08	34.80		439.58
	7/23/08	DRY		--
	10/13/08	DRY		--
	2/11/09	DRY		--
	4/27/09	DRY		--
	8/4/09	DRY		--
	12/8/09	DRY		--
	2/11/10	DRY		--
	5/3/10	31.85		442.53
	8/2/10	34.72		439.66
	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	

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	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
2/12/13	31.96	440.68		
4/22/13	33.71	438.93		

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)
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
	10/10/11	32.14		440.64
	1/31/12	34.32		438.46
	5/7/12	34.41		438.37
	8/6/12	36.00		436.78
	11/12/12	36.25		436.53
2/12/13	31.81	440.97		
4/22/13	33.70	439.08		

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	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
4/22/13	33.72	439.13		
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

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.)	2/1/11	35.66	471.61	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
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		

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	5/22/08	40.20	468.48	428.28
	7/23/08	49.50		418.98
	10/13/08	54.90		413.58
	2/11/09	51.71		416.77
	4/27/09	45.10		423.38
	8/4/09	56.46		412.02
	12/8/09	42.26		426.22
	2/11/10	37.98		430.50
	5/3/10	34.04		434.44
	8/2/10	36.94		431.54
	11/2/10	39.50		428.98
	2/1/11	35.11		433.37
	4/25/11	30.12		438.36
	8/3/11	34.54		433.94
	10/10/11	36.60		431.88
	1/31/12	42.10		426.38
	5/7/12	38.26		430.22
	8/6/12	42.80		425.68
	11/12/12	40.86		427.62
	2/12/13	33.29		435.19
4/22/13	35.90	432.58		
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
	10/10/11	37.00		434.86
	1/31/12	42.31		429.55
	5/7/12	38.98		432.88

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 (cont.)	8/6/12	46.32	471.86	425.54
	11/12/12	41.65		430.21
	2/12/13	34.10		437.76
	4/22/13	36.52		435.34
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		
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

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-7 (cont.)	2/12/13	34.54	470.07	435.53
	4/22/13	36.80		433.27
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
	4/22/13	32.66		439.65
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
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
	11/12/12	38.76		434.30
	2/12/13	31.25		441.81
	4/22/13	33.28		439.78

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)
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
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		--
	4/22/13	34.12		438.93
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
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

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 (cont.)	8/6/12	40.65	473.05	432.40
	11/12/12	39.16		433.89
	2/12/13	NM		--
	4/22/13	33.78		439.27
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
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
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

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-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
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

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

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-1 (cont.)	12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	3/13/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	6/12/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
	11/10/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	
	12/31/00	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	
	3/27/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	6/30/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/01	90	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	12/18/01	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	11/4/04	4,500	2.5	5.8	79	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/2/05	78	0.80	0.70	0.86	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<40	ND<5	ND<0.5	ND<0.5	
	7/19/05	290	ND<0.5	ND<0.5	4.0	4.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/21/05	370	ND<0.5	ND<0.5	0.75	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/9/06	140	ND<0.5	ND<0.5	0.67	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/9/06	100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/8/06	400	ND<0.5	ND<0.5	1.7	1.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/07	410	ND<0.5	ND<0.5	2.2	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/17/07	2,300	ND<0.5	0.66	17	21	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	--	--	
8/2/07	580	5.7	0.64	6.8	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
11/12/07	750	0.85	2.7	4.2	9.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5		
2/14/08	1,700	3.3	17	38	83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
5/8/08	620	1.8	ND<0.5	12	12	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
7/23/08	270	0.52	ND<0.5	3.9	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5		
10/13/08	730	ND<0.5	ND<0.5	0.68	0.80	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<10	ND<0.5	ND<0.5		
2/11/09	2,100	4.1	8.1	18	36	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5		

TABLE 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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-1 (cont.)	4/27/09	2,800	9.9	34	94	170	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	8/4/09	890	ND<0.5	ND<0.5	1.7	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	12/8/09	3,200	16	18	81	110	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<20	ND<0.5	ND<0.5
	2/11/10	1,300	3.7	1.7	13	6.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	5/5/10	710	2.2	0.92	5.9	2.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	1,200	2.4	3.7	22	23	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/3/10	1,100	7.3	34	18	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	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	
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	--	--	--	--	--	--	--	--	--

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-2 (cont.)	9/26/95	61,000	9,400	11,000	2,300	12,000	--	--	--	--	--	--	--	--	--
	12/15/95	48,000	8,000	8,300	2,200	12,000	--	--	--	--	--	--	--	--	--
	3/21/96	48,000	8,000	7,700	2,400	12,000	--	--	--	--	--	--	--	--	--
	6/13/96	33,000	7,300	8,800	1,900	12,000	ND<250	--	--	--	--	--	--	--	--
	9/16/96	8,600	510	640	180	1,300	ND<250	--	--	--	--	--	--	--	--
	12/2/96	29,000	4,400	4,000	1,300	6,100	ND<130	--	--	--	--	--	--	--	--
	3/7/97	13,000	1,800	1,100	270	2,000	ND<250	--	--	--	--	--	--	--	--
	6/12/97	68,000	7,800	6,600	2,300	11,000	ND<500	--	--	--	--	--	--	--	--
	9/29/97	15,000	1,500	97	740	1,800	ND<250	--	--	--	--	--	--	--	--
	12/1/97	13,000	900	37	860	2,400	ND<250	--	--	--	--	--	--	--	--
	3/19/98	42,000	5,000	3,600	2,000	8,300	ND<250	--	--	--	--	--	--	--	--
	5/29/98	68,000	5,600	4,700	2,400	11,000	ND<250	--	--	--	--	--	--	--	--
	9/15/98	36,000	3,900	1,200	1,400	7,800	ND<250	--	--	--	--	--	--	--	--
	11/30/98	16,000	2,200	59	1,200	1,500	ND<250	--	--	--	--	--	--	--	--
	1/17/99	30,000	4,000	2,200	2,100	9,500	ND<250	--	--	--	--	--	--	--	--
	6/10/99	70,000	6,300	1,800	3,600	14,000	ND<500	--	--	--	--	--	--	--	--
	9/7/99	42,000	3,800	840	1,900	8,000	150	--	--	--	--	--	--	--	--
	12/13/99	14,000	1,400	87	690	110	34	--	--	--	--	--	--	--	--
	3/13/00	38,000	2,400	2,300	1,600	6,400	2,400	--	--	--	--	--	--	--	--
	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	

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

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-2 (cont.)	10/13/08	31,000	7,600	160	1,800	440	1,600	ND<9	ND<9	20	710	ND<1,500	ND<90	ND<9	ND<9
	2/11/09	22,000	4,400	120	1,500	430	650	ND<9	ND<9	12	330	ND<3,000	ND<90	ND<9	ND<9
	4/28/09	28,000	3,400	600	1,500	1,700	380	ND<8	ND<8	8.1	150	ND<1,000	ND<80	ND<8	ND<8
	8/4/09	30,000	5,800	170	1,500	370	1,400	ND<9	ND<9	18	670	ND<3,000	ND<90	ND<9	ND<9
	12/8/09	24,000	3,100	200	1,200	830	520	ND<7	ND<7	8.0	250	ND<700	ND<70	ND<7	ND<7
	2/12/10	19,000	2,900	440	940	1,300	820	ND<7	ND<7	9.5	400	ND<700	ND<70	ND<7	ND<7
	5/3/10	26,000	3,100	870	1,100	2,200	530	ND<7	ND<7	8.0	370	ND<700	ND<70	ND<7	ND<7
	8/3/10	19,000	2,000	150	840	730	280	ND<4	ND<4	4.4	200	ND<400	ND<40	ND<4	ND<4
	11/4/10	13,000	2,000	160	420	390	540	ND<4	ND<4	5.7	510	ND<400	ND<40	ND<4	ND<4
	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	
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	--	--	--	--	--	--	--	--	--

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-3 (cont.)	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	ND<0.5	0.81	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.6	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.71	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.54	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--	
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/12/07	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/08	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.83	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	57	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
10/13/08	280	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	61	ND<5	ND<0.5	ND<0.5		
2/11/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.64	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
8/4/09	190	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
12/8/09	150	3.6	1.1	2.4	2.6	0.82	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<50	ND<0.5	ND<0.5		
2/11/10	61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	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		

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-3 (cont.)	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	
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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-4 (cont.)	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/8/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--	
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/8/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	ND<50	2.4	1.8	2.3	4.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/1/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/26/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
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	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	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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-4	2/12/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(cont.)	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
MW-5	3/30/94	7,500	1,300	20	ND<13	160	--	--	--	--	--	--	--	--	--
	4/25/94	6,500	1,100	41	130	740	--	--	--	--	--	--	--	--	--
	8/12/94	4,000	420	2.9	41	98	--	--	--	--	--	--	--	--	--
	12/14/94	4,800	660	ND<2.5	33	13	--	--	--	--	--	--	--	--	--
	2/10/95	5,200	490	ND<13	23	19	--	--	--	--	--	--	--	--	--
	6/15/95	460	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	--	--	--
	9/26/95	1,400	61	ND<0.5	3.1	ND<0.5	--	--	--	--	--	--	--	--	--
	12/15/95	2,100	77	1.5	10	1.5	--	--	--	--	--	--	--	--	--
	3/21/96	930	35	2.0	2.0	18	--	--	--	--	--	--	--	--	--
	6/13/96	610	38	0.72	1.9	2.0	ND<5	--	--	--	--	--	--	--	--
	9/16/96	380	29	ND<0.5	0.95	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/2/96	200	1.1	0.64	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/7/97	520	74	ND<0.5	0.58	1.5	ND<5	--	--	--	--	--	--	--	--
	6/12/97	140	5.3	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	9/29/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	12/1/97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	3/19/98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	5/29/98	540	4.1	ND<0.5	ND<0.5	0.52	ND<5	--	--	--	--	--	--	--	--
	9/15/98	67	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
	11/30/98	430	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--
1/17/99	500	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
6/10/99	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
9/7/99	820	46	1.7	10	21	ND<5	--	--	--	--	--	--	--	--	
12/13/99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	
3/13/00	270	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	--	--	--	--	--	--	--	--	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-5 (cont.)	6/12/00	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	NS
	3/18/02	890	0.65	ND<0.5	ND<0.5	ND<0.5	3.1	--	--	--	--	--	--	--	--	
	6/5/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	8/21/02	2,100	20	ND<0.5	63	4.0	7.0	--	--	--	--	--	--	--	--	
	12/3/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	3/4/03	490	10	ND<0.5	2.2	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	6/10/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	9/9/03	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	12/23/03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	3/23/04	440	2.3	ND<0.5	1.0	5.9	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/10/04	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	8/4/04	160	ND<0.5	ND<0.5	ND<0.5	0.71	0.94	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/4/04	290	0.74	ND<0.5	0.58	1.3	0.61	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/12/05	300	ND<0.5	ND<0.5	0.51	1.6	0.73	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/2/05	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/20/05	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
11/21/05	210	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.2	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
2/9/06	ND<50	ND<0.5	ND<0.5	0.63	1.0	1.0	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
5/16/06	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.79	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		
8/9/06	220	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.8	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5		

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-5 (cont.)	11/8/06	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	200	ND<0.5	ND<0.5	ND<0.5	1.1	2.1	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	85	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.9	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	980	ND<0.5	ND<0.5	2.1	ND<0.5	1.0	ND<0.5	ND<0.5	ND<0.5	34	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	580	ND<0.5	ND<0.5	1.8	ND<0.5	0.60	ND<0.5	ND<0.5	ND<0.5	6.1	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	250	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	140	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	220	ND<0.5	ND<0.5	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-6	3/30/94	63,000	21,000	8,600	1,700	12,000	--	--	--	--	--	--	--	--	--	
	4/25/94	77,000	22,000	12,000	2,300	16,000	--	--	--	--	--	--	--	--	--	
	8/12/94	65,000	12,000	8,100	2,200	16,000	--	--	--	--	--	--	--	--	--	
	12/14/94	65,000	18,000	9,500	2,200	14,000	--	--	--	--	--	--	--	--	--	
	2/10/95	63,000	21,000	8,400	2,000	14,000	--	--	--	--	--	--	--	--	--	
	6/15/95	75,000	20,000	11,000	2,100	15,000	--	--	--	--	--	--	--	--	--	
	9/26/95	62,000	15,000	9,600	1,700	12,000	--	--	--	--	--	--	--	--	--	
	12/15/95	61,000	15,000	9,000	2,300	15,000	--	--	--	--	--	--	--	--	--	
	3/21/96	65,000	18,000	9,800	2,400	16,000	--	--	--	--	--	--	--	--	--	
	6/13/96	29,000	8,600	3,300	2,200	12,000	ND<250	--	--	--	--	--	--	--	--	--
	9/16/96	42,000	6,400	1,800	2,100	11,000	ND<250	--	--	--	--	--	--	--	--	--
	12/2/96	28,000	3,000	1,100	970	8,300	ND<500	--	--	--	--	--	--	--	--	--
	3/7/97	12,000	2,000	190	520	2,300	ND<250	--	--	--	--	--	--	--	--	--
	6/12/97	37,000	3,900	470	1,600	6,200	ND<100	--	--	--	--	--	--	--	--	--
	9/29/97	34,000	3,500	370	1,600	5,200	ND<100	--	--	--	--	--	--	--	--	--
	12/1/97	20,000	2,100	ND<10	1,200	2,200	ND<100	--	--	--	--	--	--	--	--	--
	3/19/98	24,000	2,900	460	1,100	3,400	ND<100	--	--	--	--	--	--	--	--	--
	5/29/98	38,000	3,500	700	1,800	5,200	ND<100	--	--	--	--	--	--	--	--	--
	9/15/98	22,000	1,900	110	1,400	3,000	ND<100	--	--	--	--	--	--	--	--	--
	11/30/98	9,900	770	16	820	710	ND<100	--	--	--	--	--	--	--	--	--
	1/17/99	14,000	2,200	160	1,700	3,600	ND<100	--	--	--	--	--	--	--	--	--
	6/10/99	22,000	1,600	160	1,400	2,900	5.5	--	--	--	--	--	--	--	--	--
	9/7/99	17,000	1,400	33	1,300	1,800	ND<50	--	--	--	--	--	--	--	--	--
12/13/99	16,000	790	9.2	840	780	ND<25	--	--	--	--	--	--	--	--	--	
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	--	--	--	--	--	--	--	--	--	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-6 (cont.)	12/31/00	12,000	680	8.0	820	190	1,400	--	--	--	--	--	--	--	--
	3/27/01	14,000	330	17	940	670	380	--	--	--	--	--	--	--	--
	6/30/01	750	45	0.93	47	14	54	--	--	--	--	--	--	--	--
	9/26/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/18/01	43,000	3,800	350	1,900	3,000	900	--	--	--	--	--	--	--	--
	1/22/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/18/02	33,000	2,600	120	1,800	2,800	740	--	--	--	--	--	--	--	--
	6/5/02	10,000	1,100	16	700	180	600	--	--	--	--	--	--	--	--
	8/21/02	10,000	1,200	23	710	290	370	--	--	--	--	--	--	--	--
	12/3/02	16,000	1,700	63	970	630	1,500	--	--	--	--	--	--	--	--
	3/4/03	16,000	1,700	25	1,200	40	7,700	ND<20	ND<20	ND<70	ND<200	ND<2,000	ND<200	ND<20	ND<20
	6/10/03	9,500	860	15	380	47	2,600	ND<5	ND<5	18	ND<50	ND<500	ND<50	ND<5	ND<5
	9/9/03	11,000	1,000	16	630	120	2,500	ND<5	ND<5	20	52	ND<500	ND<50	ND<5	ND<5
	12/23/03	18,000	2,100	41	1,100	390	4,900	ND<10	ND<10	42	ND<100	ND<1,000	ND<100	ND<10	ND<10
	3/23/04	24,000	1,400	71	1,500	2,000	7,500	ND<20	ND<20	66	ND<200	ND<2,000	ND<200	ND<20	ND<20
	5/10/04	6,500	550	ND<10	71	43	3,700	ND<10	ND<10	31	ND<100	ND<1,000	ND<100	ND<10	ND<10
	8/4/04	8,200	990	19	300	120	3,300	ND<5	ND<5	23	ND<50	ND<500	ND<50	ND<5	ND<5
	11/4/04	9,600	1,100	30	320	160	2,200	ND<4	ND<4	18	22	ND<400	ND<40	ND<4	ND<4
	1/12/05	12,000	1,100	34	600	500	3,600	ND<4	ND<4	31	30	ND<400	ND<40	ND<4	ND<4
	5/2/05	14,000	630	22	610	920	4,000	ND<10	ND<10	32	120	ND<3,000	ND<100	ND<10	ND<10
	7/20/05	9,800	1,200	21	340	150	1,800	ND<2.5	ND<2.5	14	140	ND<500	ND<25	ND<2.5	ND<2.5
	11/21/05	6,600	150	26	580	640	100	ND<1	ND<1	ND<1	13	ND<100	ND<10	ND<1	ND<1
	2/9/06	7,100	340	11	370	360	910	ND<2	ND<2	9.3	120	ND<200	ND<20	ND<2	ND<2
	5/17/06	7,100	270	5.1	320	290	930	ND<2	ND<2	8.4	260	ND<200	ND<20	ND<2	ND<2
	8/9/06	5,800	440	7.5	120	45	670	ND<2	ND<2	7.3	380	ND<2,000	ND<50	ND<2	ND<2
	11/8/06	9,200	990	37	390	140	310	ND<2	ND<2	3.2	110	ND<200	ND<20	ND<2	ND<2
2/14/07	5,900	480	10	73	23	1,600	ND<2	ND<2	14	1,100	ND<500	ND<20	ND<2	ND<2	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-6 (cont.)	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	
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	
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	
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	--	--	--	--	--	--	--	--	--

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-7 (cont.)	8/12/94	30,000	3,800	1,400	1,300	7,500	--	--	--	--	--	--	--	--	--
	12/14/94	31,000	3,600	1,200	900	6,400	--	--	--	--	--	--	--	--	--
	2/10/95	27,000	4,000	900	890	5,100	--	--	--	--	--	--	--	--	--
	6/15/95	17,000	920	680	740	4,100	--	--	--	--	--	--	--	--	--
	9/26/95	7,000	200	150	170	810	--	--	--	--	--	--	--	--	--
	12/15/95	11,000	350	170	540	1,900	--	--	--	--	--	--	--	--	--
	3/21/96	12,000	320	100	730	2,500	--	--	--	--	--	--	--	--	--
	6/13/96	5,900	98	19	370	620	ND<50	--	--	--	--	--	--	--	--
	9/16/96	7,800	140	43	440	590	ND<25	--	--	--	--	--	--	--	--
	12/2/96	6,300	87	29	290	430	ND<50	--	--	--	--	--	--	--	--
	3/7/97	4,500	35	19	360	470	ND<25	--	--	--	--	--	--	--	--
	6/12/97	3,900	29	5.2	170	48	ND<5	--	--	--	--	--	--	--	--
	9/29/97	6,100	56	9.0	340	190	ND<25	--	--	--	--	--	--	--	--
	12/1/97	6,500	24	ND<2.5	400	250	ND<25	--	--	--	--	--	--	--	--
	3/19/98	2,000	20	ND<2.5	73	79	ND<25	--	--	--	--	--	--	--	--
	5/29/98	5,700	22	7.3	290	350	ND<25	--	--	--	--	--	--	--	--
	9/15/98	1,700	15	ND<2.5	44	5.1	ND<25	--	--	--	--	--	--	--	--
	11/30/98	4,800	42	12	270	640	ND<25	--	--	--	--	--	--	--	--
	1/17/99	3,400	33	ND<5	200	190	ND<50	--	--	--	--	--	--	--	--
	6/10/99	1,700	7.8	1.5	23	4.1	ND<5	--	--	--	--	--	--	--	--
	9/7/99	1,900	9.7	2.1	70	2.9	ND<5	--	--	--	--	--	--	--	--
	12/13/99	1,900	8.0	1.1	10	1.1	ND<5	--	--	--	--	--	--	--	--
	3/13/00	1,500	7.5	ND<0.5	6.7	2.9	ND<5	--	--	--	--	--	--	--	--
6/12/00	1,200	5.4	ND<0.5	5.2	1.0	ND<5	--	--	--	--	--	--	--	--	
11/10/00	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	--	--	--	--	--	--	--	--	

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

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-8 (cont.)	8/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	0.86	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/4/04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	1/12/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/2/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/19/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/21/05	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.57	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/16/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/9/06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/8/06	ND<50	1.2	1.9	ND<0.5	0.66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/14/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/17/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	--	--
	8/2/07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
12/17/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
11/3/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
2/2/11	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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-8 (cont.)	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	
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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-9 (cont.)	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	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	1,200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/4/10	2,700	120	7.0	35	14	44	ND<0.5	ND<0.5	0.52	31	ND<200	ND<5	ND<0.5	ND<0.5	
	8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	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	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	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	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	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		
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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
MW-10 (cont.)	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	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	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/6/10	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
8/3/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
11/2/10	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<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-10 (cont.)	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
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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
MW-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
VW-2	8/4/04	5,700	480	ND<20	600	ND<20	12,000	ND<20	ND<20	110	ND<90	ND<2,000	ND<200	ND<20	ND<20
	11/4/04	5,800	340	ND<20	38	ND<20	10,000	ND<20	ND<20	120	ND<90	ND<2,000	ND<200	ND<20	ND<20
	1/12/05	3,800	210	ND<5	90	54	2,900	ND<5	ND<5	33	26 ^(f)	ND<500	ND<50	ND<5	ND<5
	5/2/05	2,600	84	ND<2	13	7.0	960	ND<2	ND<2	12	57	ND<500	ND<20	ND<2	ND<2
	7/20/05	6,200	240	13	290	480	6,600	ND<2	ND<2	56	59 ^(f)	ND<2,000	ND<20	ND<2	ND<2
	11/21/05	3,100	100	ND<9	22	10	5,300	ND<9	ND<9	54	76 ^(f)	ND<900	ND<90	ND<9	ND<9
	2/9/06	3,500	140	ND<25	130	36	12,000	ND<25	ND<25	65	2,800	ND<2,500	ND<250	ND<25	ND<25
	5/17/06	1,800	90	2.6	39	11	1,200	ND<2.5	ND<2.5	12	700	ND<250	ND<25	ND<2.5	ND<2.5
	8/9/06	4,300	86	3.5	200	16	2,500	ND<2.5	ND<2.5	28	2,800	ND<5,000	ND<25	ND<2.5	ND<2.5
	11/8/06	3,200	46	3.1	10	4.8	1,500	ND<3	ND<3	11	7,100	ND<800	ND<30	ND<3	ND<3
	2/14/07	3,300	75	4.6	50	82	580	ND<2	ND<2	7.0	4,100	ND<500	ND<20	ND<2	ND<2
	5/17/07	3,500	51	7.3	17	24	100	ND<2.5	ND<2.5	ND<2.5	7,100	ND<250	ND<25	--	--
	8/2/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/14/08	5,700	180	14	150	120	530	ND<2.5	ND<2.5	4.1	5,000	ND<250	ND<25	ND<2.5	ND<2.5
	5/8/08	3,000	40	3.8	32	34	270	ND<1.5	ND<1.5	2.7	4,500	ND<250	ND<15	ND<1.5	ND<1.5
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
12/9/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

TABLE D-1

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

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

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
VW-3 (cont.)	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/14/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	5/8/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/9/09	NS	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	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	NS
	11/4/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/25/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	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	NS
	5/7/12	NS	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	NS
11/12/12	NS	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	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<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
TP-1 (cont.)	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	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	
	2/2/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	4/28/11	6,600	350	64	170	730	2,600	ND<5	ND<5	15	1,400	ND<500	ND<50	ND<5	ND<5	
8/4/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
10/11/11	2,000	32	4.3	49	220	1,500	ND<3	ND<3	9.7	1,000	ND<800	ND<30	ND<3	ND<3		
1/31/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
5/8/12	590	1.6	ND<0.5	7.1	22	28	ND<0.5	ND<0.5	ND<0.5	27	ND<80	ND<5	ND<0.5	ND<0.5		
8/7/12	2,800	24	3.7	74	68	110	ND<0.5	ND<0.5	0.94	62	ND<400	ND<5	ND<0.5	ND<0.5		
11/13/12	180	2.3	0.63	4.7	2.3	17	ND<0.5	ND<0.5	ND<0.5	9.6	ND<50	ND<5	ND<0.5	ND<0.5		

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
TP-1 (cont.)	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	
TP-2	7/20/05	26,000	1,800	1,100	1,100	2,500	63,000	ND<150	ND<150	400	ND<700	ND<15,000	ND<1,500	ND<150	ND<150	
	11/22/05	16,000	1,200	140	840	820	52,000	ND<90	ND<90	340	1,200	ND<9,000	ND<900	ND<90	ND<90	
	2/9/06	2,700	94	2.9	28	14	1,200	ND<2.5	ND<2.5	13	1,600	ND<250	ND<25	ND<2.5	ND<2.5	
	5/17/06	31,000	2,200	1,100	1,500	3,300	87,000	ND<90	ND<90	680	4,800	ND<15,000	ND<1,500	ND<90	ND<90	
	8/9/06	14,000	1,400	86	1,200	830	56,000	ND<2.5	ND<2.5	350	2,800	ND<4,000	ND<25	ND<2.5	ND<2.5	
	11/8/06	16,000	1,300	ND<90	930	370	38,000	ND<90	ND<90	280	3,600	ND<40,000	ND<900	ND<90	ND<90	
	2/14/07	22,000	1,900	230	1,700	1,600	53,000	ND<90	ND<90	400	2,800	ND<20,000	ND<900	ND<90	ND<90	
	5/17/07	ND<25,000	2,400	51	1,500	510	69,000	ND<2	ND<0.5	550	4,300	ND<25,000	ND<5	--	--	
	8/2/07	10,000	1,200	ND<25	640	140	14,000	ND<25	ND<25	110	16,000	ND<10,000	ND<250	ND<25	ND<25	
	11/12/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	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	NS
	10/13/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/11/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	4/27/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/4/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/09	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	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	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	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	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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
TP-2 (cont.)	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
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
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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
DW-1 (cont.)	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
DW-2	5/22/08	11,000	1,300	170	460	230	620	ND<2.5	ND<2.5	9.6	870	ND<400	ND<25	ND<2.5	ND<2.5
	7/23/08	7,600	980	44	180	55	420	ND<2	ND<2	5.7	720	ND<200	ND<20	ND<2	ND<2
	10/13/08	7,300	910	23	120	18	280	ND<1.5	ND<1.5	3.1	650	ND<2,000	ND<50	ND<1.5	ND<1.5
	2/11/09	8,000	1,100	31	230	46	290	ND<2.5	ND<2.5	3.9	600	ND<800	ND<25	ND<2.5	ND<2.5
	4/28/09	5,800	500	27	110	55	330	ND<1	ND<1	4.4	600	ND<400	ND<10	ND<1	ND<1
	8/4/09	6,800	910	19	37	27	200	ND<1	ND<1	2.7	530	ND<200	ND<10	ND<1	ND<1
	12/9/09	6,600	450	14	55	34	210	ND<0.9	ND<0.9	2.6	410	ND<200	ND<9	ND<0.9	ND<0.9
	2/11/10	4,500	340	14	44	25	320	ND<0.9	ND<0.9	3.9	520	ND<300	ND<9	ND<0.9	ND<0.9
	5/4/10	2,300	110	7.1	17	16	350	ND<0.9	ND<0.9	4.1	550	ND<200	ND<9	ND<0.9	ND<0.9
	8/2/10	3,800	420	22	21	28	300	ND<0.9	ND<0.9	3.5	600	ND<300	ND<20	ND<0.9	ND<0.9
	11/2/10	2,600	230	7.0	11	4.0	300	ND<0.5	ND<0.5	3.3	660	ND<300	ND<8	ND<0.5	ND<0.5
	2/1/11	3,300	220	6.8	18	10	210	ND<0.5	ND<0.5	2.7	620	ND<300	ND<5	ND<0.5	ND<0.5
	4/27/11	1,900	78	2.6	2.6	5.6	200	ND<0.5	ND<0.5	2.2	590	ND<300	ND<5	ND<0.5	ND<0.5
	8/4/11	4,400	420	10	24	13	160	ND<0.5	ND<0.5	2.1	500	ND<100	ND<10	ND<0.5	ND<0.5
	10/11/11	2,700	110	5.0	4.0	11	170	ND<0.5	ND<0.5	1.9	440	ND<100	ND<5	ND<0.5	ND<0.5
	1/31/12	4,400	220	7.0	15	8.9	130	ND<0.5	ND<0.5	1.2	400	ND<50	ND<5	ND<0.5	ND<0.5
	5/10/12	2,200	140	8.6	0.63	15	98	ND<0.5	ND<0.5	1.1	430	ND<200	ND<8	ND<0.5	ND<0.5
	8/7/12	4,000	360	8.9	14	15	110	ND<0.5	ND<0.5	1.2	380	ND<400	ND<5	ND<0.5	ND<0.5
	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	
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

TABLE D-1

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

Monitoring Well	Sample Date ^(a)	TPH ^(b) (µg/l)	Benzene ^(b) (µg/l)	Toluene ^(b) (µg/l)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
DW-3 (cont.)	4/27/09	1,800	16	2.3	26	10	3.0	ND<0.5	ND<0.5	ND<0.5	12	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/09	1,200	6.8	0.99	4.3	3.4	18	ND<0.5	ND<0.5	ND<0.5	35	ND<50	ND<5	ND<0.5	ND<0.5	
	12/9/09	2,200	24	5.9	56	29	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.2	ND<300	ND<20	ND<0.5	ND<0.5	
	2/11/10	700	9.5	2.0	18	6.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<8	ND<0.5	ND<0.5	
	5/4/10	420	5.5	0.93	8.8	3.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5	
	8/2/10	640	4.0	ND<0.5	5.3	3.9	0.59	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/3/10	170	0.85	ND<0.5	ND<0.5	0.59	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/1/11	60	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	4/27/11	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/4/11	310	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	10/10/11	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	1/31/12	1,300	1.0	ND<0.5	19	15	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/8/12	750	1.2	ND<0.5	5.4	4.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<80	ND<5	ND<0.5	ND<0.5	
	8/6/12	900	0.56	ND<0.5	7.0	4.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	11/13/12	410	ND<0.5	ND<0.5	1.7	2.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/12/13	120	ND<0.5	ND<0.5	1.2	0.50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
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		
DW-4	5/22/08	1,200	4.2	8.6	16	200	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	7/23/08	91	0.79	ND<0.5	6.5	7.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	10/13/08	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	43	ND<0.5	ND<0.5	
	2/11/09	ND<50	0.68	ND<0.5	1.4	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	4/27/09	ND<50	0.50	ND<0.5	1.1	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/5/09	52	1.7	ND<0.5	1.4	0.83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	12/9/09	ND<50	3.0	ND<0.5	2.0	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	2/11/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	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	NS

TABLE D-1

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
TESORO - LIVERMORE, 67076

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

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

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
DW-7 (cont.)	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
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	
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
MW-A	1/17/99	5,800	1,700	85	65	320	ND<5	--	--	--	--	--	--	--	--
MW-B	1/17/99	4,400	240	30	21	39	ND<5	--	--	--	--	--	--	--	--
MW-C	1/17/99	1,800	0.80	ND<0.5	ND<0.5	0.55	ND<5	--	--	--	--	--	--	--	--
MW-D	1/17/99	5,600	1,600	130	66	220	ND<5	--	--	--	--	--	--	--	--
MW-E	1/17/99	5,700	1,600	180	180	310	ND<50	--	--	--	--	--	--	--	--
	6/10/99	5,000	1,300	130	320	450	ND<25	--	--	--	--	--	--	--	--
MW-W	1/17/99	23,000	7,600	760	1,400	5,000	ND<50	--	--	--	--	--	--	--	--
	6/10/99	16,000	4,100	420	1,300	4,000	ND<50	--	--	--	--	--	--	--	--
IP-1	7/23/08	62,000	2,100	6,800	2,700	11,000	16	ND<15	ND<15	ND<15	ND<70	ND<1,500	ND<150	ND<15	ND<15
	10/13/08	55,000	3,100	3,300	2,300	7,700	ND<15	ND<15	ND<15	ND<15	98	ND<1,500	ND<150	ND<15	ND<15

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
IP-1 (cont.)	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	
IP-2	7/23/08	5,500	160	43	130	350	10	ND<0.9	ND<0.9	ND<0.9	ND<5	ND<90	ND<9	ND<0.9	ND<0.9	
	10/13/08	13,000	1,900	58	600	630	180	ND<0.9	ND<0.9	9.4	46	ND<90	ND<20	ND<0.9	ND<0.9	
	5/5/10 ^(g)	2,700	66	220	61	240	3.3	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	4/26/11	350	8.9	1.7	4.7	5.7	0.90	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	5/8/12	340	10	4.8	6.3	13	2.4	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5	
	8/7/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/12/12	NS	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	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	
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	NS
	11/12/12	NS	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	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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
IP-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	NS
	11/12/12	NS	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	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	
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	NS
	11/12/12	NS	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	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	
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	NS
	11/12/12	NS	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	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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)	
IP-7	7/23/08	4,200	190	12	99	190	49	ND<0.9	ND<0.9	1.1	58	ND<90	ND<9	ND<0.9	ND<0.9	
	10/13/08	6,000	350	6.6	150	60	97	ND<0.9	ND<0.9	2.5	76	ND<90	ND<50	ND<0.9	ND<0.9	
	5/5/10 ^(g)	33,000	49	62	38	69	14	ND<0.9	ND<0.9	ND<0.9	20	ND<90	ND<9	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	NS
	11/12/12	NS	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	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	
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	
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	

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)	Ethylbenzene ^(b) (µg/l)	Xylenes ^(b) (µg/l)	MTBE ^(b) (µg/l)	DIPE ^(b) (µg/l)	ETBE ^(b) (µg/l)	TAME ^(b) (µg/l)	TBA ^(b) (µg/l)	Methanol ^(b) (µg/l)	Ethanol ^(b) (µg/l)	1,2-DCA ^(b) (µg/l)	EDB ^(b) (µg/l)
IP-10	2/11/09	8,100	29	58	170	1,200	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<7	ND<150	ND<20	ND<1.5	ND<1.5
	5/3/10 ^(g)	3,600	73	80	140	240	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	4/26/11	4,300	28	140	110	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5	10	ND<50	ND<8	ND<0.5	ND<0.5
	2/1/12	3,200	8.2	4.6	93	2.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	NS	NS
	5/9/12	3,900	24	38	110	58.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	8/7/12	2,700	15	5.8	31	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<5	ND<0.5	ND<0.5
	11/13/12	2,600	12	7.6	4.7	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<8	ND<0.5	ND<0.5
	2/12/13	6,500	26	270	180	590	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<50	ND<20	ND<0.5	ND<0.5
	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

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

ATTACHMENT E

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

Laboratory Results

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

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

Dear Mr. Stromberg,

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

Sincerely,



Troy Turpen

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

Case Narrative

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

Samples DW-1 and MW-10 were filtered in the laboratory for metals analysis.

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

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-1 and MW-10 for the analyte Sulfate were affected by the analyte concentration present in the un-spiked sample.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-1 and MW-10 for the analyte Dissolved Sodium were affected by the analyte concentrations already present in the un-spiked sample.

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-1**

Matrix : Water

Lab Number : 84667-01

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 22:30
Methanol	< 50	50	ug/L	EPA 8260B	04/23/13 22:30
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 22:30
TPH as Gasoline	240	50	ug/L	EPA 8260B	04/23/13 22:30
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 22:30
1,2-Dichloroethane-d4 (Surr)	99.3		% Recovery	EPA 8260B	04/23/13 22:30
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/23/13 22:30

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-3**

Matrix : Water

Lab Number : 84667-02

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 23:05
Methanol	< 50	50	ug/L	EPA 8260B	04/23/13 23:05
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 23:05
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/23/13 23:05
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:05
1,2-Dichloroethane-d4 (Surr)	98.9		% Recovery	EPA 8260B	04/23/13 23:05
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/23/13 23:05

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-4**

Matrix : Water

Lab Number : 84667-03

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 23:39
Methanol	< 50	50	ug/L	EPA 8260B	04/23/13 23:39
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 23:39
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/23/13 23:39
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 23:39
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	04/23/13 23:39
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/23/13 23:39

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-5**

Matrix : Water

Lab Number : 84667-04

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 00:14
Methanol	< 50	50	ug/L	EPA 8260B	04/24/13 00:14
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 00:14
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/13 00:14
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:14
1,2-Dichloroethane-d4 (Surr)	98.2		% Recovery	EPA 8260B	04/24/13 00:14
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/24/13 00:14

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-1**

Matrix : Water

Lab Number : 84667-05

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	0.82	0.10	mg/L	EPA 300.0	04/23/13 14:22
Sulfate	45	0.50	mg/L	EPA 300.0	04/23/13 12:17
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/22/13 21:25
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/23/13 09:44
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 12:41
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/13 12:41
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/13 12:41
Manganese, Dissolved	0.036	0.0050	mg/L	EPA 6010B	04/29/13 12:41
Sodium, Dissolved	39	0.50	mg/L	EPA 6010B	04/29/13 12:41
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
Total Xylenes	0.78	0.50	ug/L	EPA 8260B	04/23/13 19:37
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 19:37
Methanol	< 50	50	ug/L	EPA 8260B	04/23/13 19:37
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 19:37
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/23/13 19:37
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 19:37
1,2-Dichloroethane-d4 (Surr)	99.5		% Recovery	EPA 8260B	04/23/13 19:37
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/23/13 19:37

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-10**

Matrix : Water

Lab Number : 84667-06

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	1.2	0.10	mg/L	EPA 300.0	04/23/13 14:44
Sulfate	74	1.0	mg/L	EPA 300.0	04/23/13 13:41
Hexavalent Chromium	9.9	1.0	ug/L	EPA 7199	04/22/13 22:01
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/23/13 09:45
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 12:53
Chromium, Dissolved	0.0097	0.0050	mg/L	EPA 6010B	04/29/13 12:53
Iron, Dissolved	0.12	0.10	mg/L	EPA 6010B	04/29/13 12:53
Manganese, Dissolved	0.0096	0.0050	mg/L	EPA 6010B	04/29/13 12:53
Sodium, Dissolved	54	0.50	mg/L	EPA 6010B	04/29/13 12:53
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 00:49
Methanol	< 50	50	ug/L	EPA 8260B	04/24/13 00:49
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 00:49
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/13 00:49
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 00:49
1,2-Dichloroethane-d4 (Surr)	99.0		% Recovery	EPA 8260B	04/24/13 00:49
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/24/13 00:49

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-4**

Matrix : Water

Lab Number : 84667-07

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 01:23
Methanol	< 50	50	ug/L	EPA 8260B	04/24/13 01:23
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 01:23
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/13 01:23
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:23
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	04/24/13 01:23
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/24/13 01:23

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **VW-3**

Matrix : Water

Lab Number : 84667-08

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 01:58
Methanol	< 50	50	ug/L	EPA 8260B	04/24/13 01:58
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 01:58
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/13 01:58
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 01:58
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	04/24/13 01:58
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/24/13 01:58

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-3**

Matrix : Water

Lab Number : 84667-09

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	0.51	0.50	ug/L	EPA 8260B	04/24/13 02:32
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 02:32
Methanol	< 50	50	ug/L	EPA 8260B	04/24/13 02:32
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 02:32
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/13 02:32
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 02:32
1,2-Dichloroethane-d4 (Surr)	99.1		% Recovery	EPA 8260B	04/24/13 02:32
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/24/13 02:32

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **Trip Blank-01**

Matrix : Water

Lab Number : 84667-10

Sample Date :04/22/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 21:56
Methanol	< 50	50	ug/L	EPA 8260B	04/23/13 21:56
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/13 21:56
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/23/13 21:56
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/13 21:56
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	04/23/13 21:56
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/23/13 21:56

Report Number : 84667

Date : 04/29/2013

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/2013	Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	04/22/2013
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/2013	Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	04/23/2013
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/2013	Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	04/23/2013
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/2013	Sulfate	<0.50	0.50	mg/L	EPA 300.0	04/23/2013
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	04/29/2013						
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/2013						
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
Methanol	< 50	50	ug/L	EPA 8260B	04/23/2013						
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/23/2013						
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/23/2013						
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/23/2013						
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	04/23/2013						
Toluene - d8 (Surr)	100		%	EPA 8260B	04/23/2013						

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ferrous Iron	84667-05	<0.10	0.506	0.506	0.266	0.269	mg/L	SM 3500-Fe D	4/23/13	49.4	50.0	1.12	70.0-130	25
1,2-Dibromoethane	84667-05	<0.50	40.1	40.1	40.9	40.9	ug/L	EPA 8260B	4/23/13	102	102	0.0359	70-130	25
1,2-Dichloroethane	84667-05	<0.50	40.0	40.0	41.7	40.5	ug/L	EPA 8260B	4/23/13	104	101	2.96	70-130	25
Benzene	84667-05	<0.50	40.0	40.0	39.4	39.2	ug/L	EPA 8260B	4/23/13	98.6	98.0	0.628	70-130	25
Diisopropyl ether	84667-05	<0.50	40.0	40.0	39.4	39.2	ug/L	EPA 8260B	4/23/13	98.6	98.1	0.488	70-130	25
Ethanol	84667-05	<5.0	101	101	85.7	93.6	ug/L	EPA 8260B	4/23/13	84.9	92.8	8.90	55.1-159	25
Ethyl-tert-butyl ether	84667-05	<0.50	39.1	39.1	41.3	41.2	ug/L	EPA 8260B	4/23/13	106	105	0.392	70-130	25
Ethylbenzene	84667-05	<0.50	40.0	40.0	39.6	39.9	ug/L	EPA 8260B	4/23/13	99.0	99.7	0.731	70-130	25
Methanol	84667-05	<50	1000	1000	1100	1130	ug/L	EPA 8260B	4/23/13	110	113	1.92	53.2-147	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Methyl-t-butyl ether	84667-05	<0.50	39.4	39.4	40.3	40.2	ug/L	EPA 8260B	4/23/13	102	102	0.449	69.7-130	25
P + M Xylene	84667-05	0.78	40.0	40.0	40.6	41.0	ug/L	EPA 8260B	4/23/13	99.5	100	0.975	70-130	25
Tert-Butanol	84667-05	<5.0	201	201	201	205	ug/L	EPA 8260B	4/23/13	100	102	1.98	70-130	25
Tert-amyl-methyl ether	84667-05	<0.50	39.3	39.3	41.4	41.0	ug/L	EPA 8260B	4/23/13	105	104	0.961	70-130	25
Toluene	84667-05	<0.50	40.0	40.0	40.3	40.2	ug/L	EPA 8260B	4/23/13	101	100	0.212	70-130	25
Hexavalent Chromium	84667-05	< 1.0	5.00	5.00	5.04	5.24	ug/L	EPA 7199	4/22/13	99.8	104	3.94	90.0-110	10
Nitrate as N	84667-05	0.91	0.500	0.500	1.13	1.15	mg/L	EPA 300.0	4/23/13	43.2	48.1	2.17	90.0-110	10
Sulfate	84667-05	45	2.50	2.50	46.8	46.1	mg/L	EPA 300.0	4/23/13	82.1	53.2	1.56	90.0-110	10
Arsenic, (Dis)	84667-05	< 0.015	0.400	0.400	0.417	0.417	mg/L	EPA 6010B	4/29/13	104	104	0.0720	75-125	20

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Chromium, (Dis)	84667-05	< 0.0050	0.400	0.400	0.393	0.394	mg/L	EPA 6010B	4/29/13	98.2	98.5	0.305	75-125	20
Iron, (Dis)	84667-05	< 0.10	0.400	0.400	0.427	0.386	mg/L	EPA 6010B	4/29/13	106	95.8	10.0	75-125	20
Manganese, (Dis)	84667-05	0.036	0.400	0.400	0.395	0.395	mg/L	EPA 6010B	4/29/13	89.7	89.7	0.0506	75-125	20
Sodium, (Dis)	84667-05	39	0.400	0.400	38.0	37.7	mg/L	EPA 6010B	4/29/13	0.00	0.00	0.951	75-125	20

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	103	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	101	85-115
Iron, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	99.6	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	92.9	85-115
Sodium, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	106	85-115
1,2-Dibromoethane	40.0	ug/L	EPA 8260B	4/23/13	100	70-130
1,2-Dichloroethane	39.9	ug/L	EPA 8260B	4/23/13	98.8	70-130
Benzene	39.9	ug/L	EPA 8260B	4/23/13	97.4	70-130
Diisopropyl ether	39.9	ug/L	EPA 8260B	4/23/13	97.2	70-130
Ethanol	101	ug/L	EPA 8260B	4/23/13	89.6	55.1-159
Ethyl-tert-butyl ether	39.0	ug/L	EPA 8260B	4/23/13	102	70-130
Ethylbenzene	39.9	ug/L	EPA 8260B	4/23/13	96.8	70-130
Methanol	998	ug/L	EPA 8260B	4/23/13	114	53.2-147
Methyl-t-butyl ether	39.3	ug/L	EPA 8260B	4/23/13	98.4	69.7-130
P + M Xylene	39.9	ug/L	EPA 8260B	4/23/13	99.1	70-130
TPH as Gasoline	504	ug/L	EPA 8260B	4/23/13	96.0	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	4/23/13	99.2	70-130
Tert-amyl-methyl ether	39.2	ug/L	EPA 8260B	4/23/13	102	70-130
Toluene	39.9	ug/L	EPA 8260B	4/23/13	98.9	70-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	4/22/13	102	90.0-110

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Ferrous Iron	0.253	mg/L	SM 3500-Fe D	4/23/13	97.7	70.0-130
Nitrate as N	0.500	mg/L	EPA 300.0	4/23/13	98.6	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	4/23/13	93.9	90.0-110



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

SRG # / Lab No. **84667**

Page 1 of 1

Project Contact (Hardcopy or PDF To): Scott Stromberg		California EDF Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No												
Company / Address: Arctos Environmental 1332 Peralta Avenue, Berkeley, CA 94702		Sampling Company Log Code: EFSP												
Phone Number: 510-525-2180		Global ID: T0600101410												
Fax Number: 510-525-2392		EDF Deliverable To (Email Address): amelson@arctosenv.com stromberg@arctosenv.com												
Project #: 01LV		Bill to: Jeff Baker												
Project Name: Tesoro - Livermore		Sampler Signature: 												
Project Address: 1619 1st Street Livermore, CA														
Sample Designation	Sampling		Container		Preservative			Matrix						
	Date	Time	40 ml VOA	Gleeve	Poly	Glass	Tedlar	HCl	HNO ₃	None	H ₂ SO ₄	Water	Soil	Air
MW-1	4-22-13	0920	3				3				X			
MW-3		1005	3				3				X			
MW-4		1025	3				3				X			
MW-5		1050	3				3				X			
MW-6 DW-1		1245	7	5			5	7			X			
MW-10		1130	7	5			5	7			X			
MW-11 DW-4		1430	3				3				X			
VW-3		1335	3				3				X			
VW-4 IP-3		1325	3				3				X			
VW-5 Trip Blank-01		0802	3				3				X			
Relinquished by:	Date	Time	Received by:			Time			Remarks:					
	4-22-13		Received by:						* Lab Filter					
Relinquished by:	Date	Time	Received by:			Time			Remarks:					
			Received by:											
Relinquished by:	Date	Time	Received by Laboratory:			Time			Remarks:					
	042213	1511	Received by Laboratory:						* Lab Filter					
Project Contact (Hardcopy or PDF To): Scott Stromberg		California EDF Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No												
Company / Address: Arctos Environmental 1332 Peralta Avenue, Berkeley, CA 94702		Sampling Company Log Code: EFSP												
Phone Number: 510-525-2180		Global ID: T0600101410												
Fax Number: 510-525-2392		EDF Deliverable To (Email Address): amelson@arctosenv.com stromberg@arctosenv.com												
Project #: 01LV		Bill to: Jeff Baker												
Project Name: Tesoro - Livermore		Sampler Signature: 												
Project Address: 1619 1st Street Livermore, CA														
Sample Designation	Sampling		Container		Preservative			Matrix						
	Date	Time	40 ml VOA	Gleeve	Poly	Glass	Tedlar	HCl	HNO ₃	None	H ₂ SO ₄	Water	Soil	Air
MW-1	4-22-13	0920	3				3				X			
MW-3		1005	3				3				X			
MW-4		1025	3				3				X			
MW-5		1050	3				3				X			
MW-6 DW-1		1245	7	5			5	7			X			
MW-10		1130	7	5			5	7			X			
MW-11 DW-4		1430	3				3				X			
VW-3		1335	3				3				X			
VW-4 IP-3		1325	3				3				X			
VW-5 Trip Blank-01		0802	3				3				X			
Relinquished by:	Date	Time	Received by:			Time			Remarks:					
	4-22-13		Received by:						* Lab Filter					
Relinquished by:	Date	Time	Received by:			Time			Remarks:					
			Received by:											
Relinquished by:	Date	Time	Received by Laboratory:			Time			Remarks:					
	042213	1511	Received by Laboratory:						* Lab Filter					

SAMPLE RECEIPT CHECKLIST

SRG#: 84667 Date: 042213

Project ID: Tesoro-Livermore

Method of Receipt: Courier Over-the-counter Shipper

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

COC Inspection

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

Sample Inspection

Coolant Present: Yes No (includes water)
 Temperature °C 1.6 Therm. ID# 12-1 Initial WJ Date/Time 042213 1728 N/A
 Are there custody seals on sample containers? Intact Broken Not present
 Do containers match COC? Yes No No, COC lists absent sample(s) No, Extra sample(s) present
 Are there samples matrices other than soil, water, air or carbon? Yes No
 Are any sample containers broken, leaking or damaged? Yes No
 Are preservatives indicated? Yes, on sample containers Yes, on COC Not indicated N/A
 Are preservatives correct for analyses requested? Yes No N/A
 Are samples within holding time for analyses requested? Yes No
 Are the correct sample containers used for the analyses requested? Yes No
 Is there sufficient sample to perform testing? Yes No
 Does any sample contain product, have strong odor or are otherwise suspected to be hot? Yes No

Receipt Details

Matrix WA Container type VOA # of containers received 37
 Matrix WA Container type Poly # of containers received 10
 Matrix _____ Container type _____ # of containers received _____
 Date and Time Sample Put into Temp Storage Date: 042213 Time: 1740

Quicklog

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

COMMENTS: Per the sampler, sample -10 containers are unpreserved. He also stated that the gray-capped VOAs are HCl-preserved and the white-capped VOAs are unpreserved for samples -05 and -06. TJB 042213 1517



Subcontract Laboratory Report Attachments



CALSCIENCE

WORK ORDER NUMBER: 13-04-1673

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro - Livermore

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

Amanda Porter

Approved for release on 04/30/2013 by:
Amanda Porter
Project Manager

ResultLink ▶

Email your PM ▶



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





Contents

Client Project Name: Tesoro - Livermore
Work Order Number: 13-04-1673

1	Work Order Narrative	3
2	Client Sample Data	4
	2.1 RSK-175M Carbon Dioxide (Aqueous)	4
	2.2 RSK-175M Methane (Aqueous)	5
	2.3 Combined Inorganic Tests	6
3	Quality Control Sample Data	7
	3.1 MS/MSD and/or Duplicate	7
	3.2 LCS/LCSD	8
4	Glossary of Terms and Qualifiers	12
5	Chain of Custody/Sample Receipt Form	13

Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 04/24/2013. They were assigned to Work Order 13-04-1673.

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 an immediate holding time (HT \leq 15 minutes --40CFR-136.3 Table II footnote 4), is considered a "field" test and reported samples results are not flagged unless the analysis is performed beyond 24 hours of the time of collection.

Quality Control:

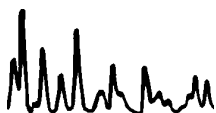
All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

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.

Subcontract Information:

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



Analytical Report



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

Date Received: 04/24/13
 Work Order No: 13-04-1673
 Preparation: N/A
 Method: RSK-175M

Project: Tesoro - Livermore

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-1	13-04-1673-1-A	04/22/13 12:45	Aqueous	GC 14	N/A	04/25/13 13:08	130425L01

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Carbon Dioxide	4590	1.70	1		ug/L

MW-10	13-04-1673-2-A	04/22/13 11:30	Aqueous	GC 14	N/A	04/25/13 12:48	130425L01
-------	----------------	----------------	---------	-------	-----	----------------	-----------

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Carbon Dioxide	177000	68.0	40		ug/L

Method Blank	099-12-659-529	N/A	Aqueous	GC 14	N/A	04/25/13 10:03	130425L01
--------------	----------------	-----	---------	-------	-----	----------------	-----------

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

Return to Contents

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

Analytical Report



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

Date Received: 04/24/13
 Work Order No: 13-04-1673
 Preparation: N/A
 Method: RSK-175M

Project: Tesoro - Livermore

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-1	13-04-1673-1-C	04/22/13 12:45	Aqueous	GC 61	N/A	04/25/13 14:32	130425L01

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Methane	6.83	1.00	1		ug/L

MW-10	13-04-1673-2-C	04/22/13 11:30	Aqueous	GC 61	N/A	04/25/13 15:01	130425L01
-------	----------------	----------------	---------	-------	-----	----------------	-----------

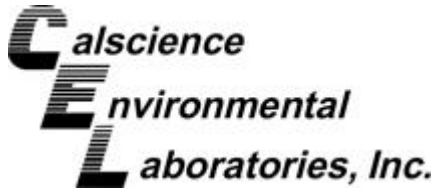
<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Methane	ND	1.00	1		ug/L

Method Blank	099-12-663-1,885	N/A	Aqueous	GC 61	N/A	04/25/13 12:08	130425L01
--------------	------------------	-----	---------	-------	-----	----------------	-----------

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

Return to Contents

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



Analytical Report



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

Date Received: 04/24/13
Work Order No: 13-04-1673

Project: Tesoro - Livermore

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-1	13-04-1673-1	04/22/13	Aqueous

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	298	5.00	1		mg/L	N/A	04/27/13	SM 2320B
Solids, Total Dissolved	495	1.00	1		mg/L	04/24/13	04/24/13	SM 2540 C

MW-10	13-04-1673-2	04/22/13	Aqueous
--------------	---------------------	-----------------	----------------

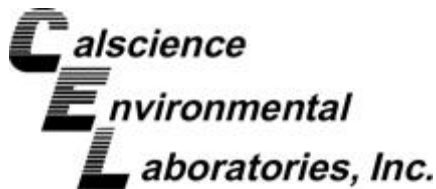
Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	550	5.00	1		mg/L	N/A	04/27/13	SM 2320B
Solids, Total Dissolved	765	1.00	1		mg/L	04/24/13	04/24/13	SM 2540 C

Method Blank	N/A	Aqueous
---------------------	------------	----------------

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	04/27/13	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	04/24/13	04/24/13	SM 2540 C

Return to Contents

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



Quality Control - Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1673

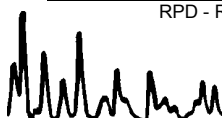
Project: Tesoro - Livermore

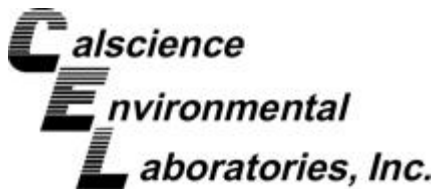
Matrix: Aqueous or Solid

<u>Parameter</u>	<u>Method</u>	<u>QC Sample ID</u>	<u>Date Analyzed</u>	<u>Sample Conc</u>	<u>DUP Conc</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	SM 2320B	DW-1	04/27/13	298	296	1	0-25	
Solids, Total Dissolved	SM 2540 C	13-04-1631-1	04/24/13	855	890	4	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
Work Order No: 13-04-1673
Preparation: N/A
Method: RSK-175M

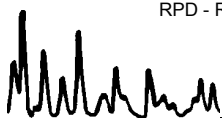
Project: Tesoro - Livermore

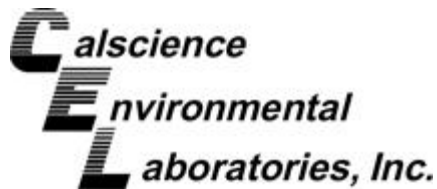
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-529	Aqueous	GC 14	N/A	04/25/13	130425L01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Carbon Dioxide	102.0	98.17	96	97.51	96	80-120	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1673
 Preparation: N/A
 Method: RSK-175M

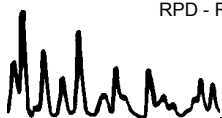
Project: Tesoro - Livermore

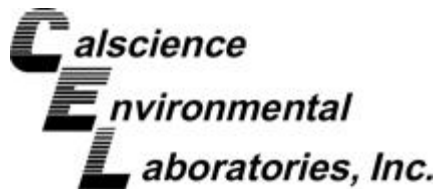
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,885	Aqueous	GC 61	N/A	04/25/13	130425L01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Methane	98.50	96.42	98	95.22	97	80-120	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
Work Order No: 13-04-1673
Preparation: N/A
Method: SM 2320B

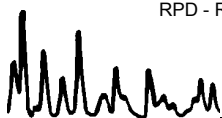
Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-859-42	Aqueous	PH1/BUR03	N/A	04/27/13	D0427ALKB1

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	100	99.4	99	99.6	100	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Laboratory Control Sample



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

Date Received: N/A
 Work Order No: 13-04-1673
 Preparation: N/A
 Method: SM 2540 C

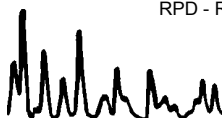
Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-12-180-3,659	Aqueous	N/A	04/24/13	NONE	D0429TDSB1

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Solids, Total Dissolved	100	90	90	80-120	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit



Work Order Number: 13-04-1673

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

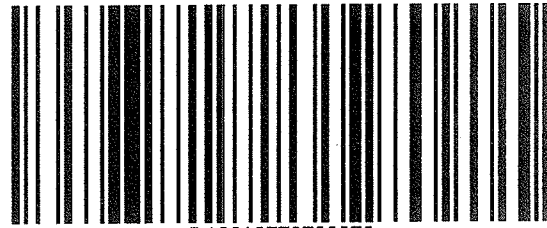
Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

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





800.334.5000
ontrac.com



D10010572503956

1673

Date Printed 4/23/2013

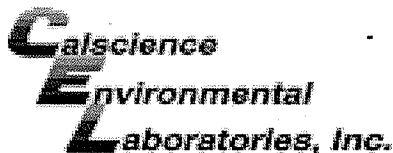
Tracking#D10010572503956

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

Sent By: SAMPLE RECEIVINGX125
Phone#: (530)297-4800
wgt(lbs): 15
Reference: SUB 84667
Reference 2:

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





WORK ORDER #: 13-04-1673

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: KIFF

DATE: 04/24/13

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

Temperature 1.9 °C - 0.2 °C (CF) = 1.7 °C [X] Blank [] Sample

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

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

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

Ambient Temperature: [] Air [] Filter

Initial: JS

CUSTODY SEALS INTACT:

[X] Cooler [] _____ [] No (Not Intact) [] Not Present [] N/A

Initial: JS

[] Sample [] _____ [] No (Not Intact) [X] Not Present

Initial: JS

SAMPLE CONDITION:

Chain-Of-Custody (COC) document(s) received with samples..... [X] Yes [] No [] N/A

COC document(s) received complete..... [X] Yes [] No [] N/A

[] 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..... [] Yes [] No [X] N/A

Sample container label(s) consistent with COC..... [X] Yes [] No [] N/A

Sample container(s) intact and good condition..... [X] Yes [] No [] N/A

Proper containers and sufficient volume for analyses requested..... [X] Yes [] No [] N/A

Analyses received within holding time..... [X] Yes [] No [] N/A

pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours... [] Yes [] No [X] N/A

Proper preservation noted on COC or sample container..... [X] Yes [] No [] N/A

[] Unpreserved vials received for Volatiles analysis

Volatile analysis container(s) free of headspace..... [X] Yes [] No [] N/A

Tedlar bag(s) free of condensation..... [] Yes [] No [X] N/A

CONTAINER TYPE:

Solid: [] 4ozCGJ [] 8ozCGJ [] 16ozCGJ [] Sleeve (____) [] EnCores® [] TerraCores® [] _____

Water: [X] VOA [X] VOA^h [] VOAna₂ [] 125AGB [] 125AGB^h [] 125AGB^p [] 1AGB [] 1AGBna₂ [] 1AGBs

[] 500AGB [] 500AGJ [] 500AGJs [] 250AGB [] 250CGB [] 250CGBs [X] 1PB [] 1PBna [] 500PB

[X] 250PB [] 250PBⁿ [] 125PB [] 125PBz^{na} [] 100PJ [] 100PJna₂ [] _____ [] _____ [] _____

Air: [] Tedlar® [] Canister Other: [] _____ Trip Blank Lot#: _____ Labeled/Checked by: JS

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

Preservative: h: HCL n: HNO₃ na₂:Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure z^{na}: ZnAc₂+NaOH f: Filtered Scanned by: JS





Laboratory Results

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

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

Dear Mr. Stromberg,

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

Sincerely,

Troy Turpen

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

Case Narrative

Samples IP-5, MW-2, MW-8, DW-3, MW-9, MW-7 and DW-7 were filtered in the laboratory for metals analysis.

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

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-3, DW-7, IP-5, MW-2, MW-7, MW-8, and MW-9 for the analyte Nitrate as N were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-3, DW-7, IP-5, MW-2, MW-7, MW-8, and MW-9 for the analyte Ferrous Iron were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-3, DW-7, IP-5, MW-2, MW-7, MW-8, and MW-9 for the analyte Sulfate were affected by the analyte concentration present in the un-spiked sample. Recoveries were calculated using data points beyond the calibration range.

Matrix Spike/Matrix Spike Duplicate results associated with samples IP-5, MW-2, MW-8, DW-3, MW-9, MW-7, and DW-7 for the analyte Dissolved Sodium were affected by the analyte concentrations already present in the un-spiked sample.

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-5**

Matrix : Water

Lab Number : 84677-01

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	0.72	0.10	mg/L	EPA 300.0	04/24/13 13:47
Sulfate	42	0.50	mg/L	EPA 300.0	04/24/13 10:32
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/23/13 19:50
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/24/13 09:00
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 14:47
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/13 14:47
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/13 14:47
Manganese, Dissolved	0.065	0.0050	mg/L	EPA 6010B	04/29/13 14:47
Sodium, Dissolved	38	0.50	mg/L	EPA 6010B	04/29/13 14:47
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
Toluene	4.1	0.50	ug/L	EPA 8260B	04/25/13 00:01
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 00:01
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 00:01
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 00:01
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/25/13 00:01
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:01
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	04/25/13 00:01
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/25/13 00:01

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-4**

Matrix : Water

Lab Number : 84677-02

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
Toluene	43	0.50	ug/L	EPA 8260B	04/25/13 00:35
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 00:35
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 00:35
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 00:35
TPH as Gasoline	140	50	ug/L	EPA 8260B	04/25/13 00:35
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 00:35
1,2-Dichloroethane-d4 (Surr)	99.0		% Recovery	EPA 8260B	04/25/13 00:35
Toluene - d8 (Surr)	99.8		% Recovery	EPA 8260B	04/25/13 00:35

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-6**

Matrix : Water

Lab Number : 84677-03

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
Toluene	11	0.50	ug/L	EPA 8260B	04/25/13 01:10
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 01:10
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 01:10
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 01:10
TPH as Gasoline	57	50	ug/L	EPA 8260B	04/25/13 01:10
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:10
1,2-Dichloroethane-d4 (Surr)	98.7		% Recovery	EPA 8260B	04/25/13 01:10
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/25/13 01:10

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-7**

Matrix : Water

Lab Number : 84677-04

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
Toluene	5.1	0.50	ug/L	EPA 8260B	04/25/13 01:45
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 01:45
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 01:45
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 01:45
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/25/13 01:45
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 01:45
1,2-Dichloroethane-d4 (Surr)	98.3		% Recovery	EPA 8260B	04/25/13 01:45
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/25/13 01:45

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-2**

Matrix : Water

Lab Number : 84677-05

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	1.7	0.10	mg/L	EPA 300.0	04/24/13 10:46
Sulfate	92	2.5	mg/L	EPA 300.0	04/24/13 12:06
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/23/13 19:18
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/24/13 09:01
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 14:51
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/13 14:51
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/13 14:51
Manganese, Dissolved	0.12	0.0050	mg/L	EPA 6010B	04/29/13 14:51
Sodium, Dissolved	54	0.50	mg/L	EPA 6010B	04/29/13 14:51
Benzene	10	0.50	ug/L	EPA 8260B	04/25/13 02:19
Toluene	2.2	0.50	ug/L	EPA 8260B	04/25/13 02:19
Ethylbenzene	3.8	0.50	ug/L	EPA 8260B	04/25/13 02:19
Total Xylenes	8.5	0.50	ug/L	EPA 8260B	04/25/13 02:19
Methyl-t-butyl ether (MTBE)	13	0.50	ug/L	EPA 8260B	04/25/13 02:19
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:19
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:19
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:19
Tert-Butanol	6.6	5.0	ug/L	EPA 8260B	04/25/13 02:19
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 02:19
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	04/25/13 02:19
TPH as Gasoline	430	50	ug/L	EPA 8260B	04/25/13 02:19
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:19
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:19
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	04/25/13 02:19
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/25/13 02:19

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-8**

Matrix : Water

Lab Number : 84677-06

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	0.46	0.10	mg/L	EPA 300.0	04/24/13 10:59
Sulfate	63	1.0	mg/L	EPA 300.0	04/24/13 12:19
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/23/13 19:59
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/24/13 09:01
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 14:55
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/13 14:55
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/13 14:55
Manganese, Dissolved	0.75	0.0050	mg/L	EPA 6010B	04/29/13 14:55
Sodium, Dissolved	50	0.50	mg/L	EPA 6010B	04/29/13 14:55
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 02:54
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 02:54
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 02:54
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/25/13 02:54
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:54
1,2-Dichloroethane-d4 (Surr)	99.4		% Recovery	EPA 8260B	04/25/13 02:54
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/25/13 02:54

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-3**

Matrix : Water

Lab Number : 84677-07

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	5.4	0.10	mg/L	EPA 300.0	04/24/13 11:12
Sulfate	64	2.5	mg/L	EPA 300.0	04/24/13 12:59
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/23/13 20:08
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/24/13 09:02
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 14:59
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/13 14:59
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/13 14:59
Manganese, Dissolved	0.065	0.0050	mg/L	EPA 6010B	04/29/13 14:59
Sodium, Dissolved	50	0.50	mg/L	EPA 6010B	04/29/13 14:59
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
Toluene	2.3	0.50	ug/L	EPA 8260B	04/25/13 03:28
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 03:28
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 03:28
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 03:28
TPH as Gasoline	66	50	ug/L	EPA 8260B	04/25/13 03:28
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:28
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	04/25/13 03:28
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/25/13 03:28

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-9**

Matrix : Water

Lab Number : 84677-08

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/24/13 14:13
Sulfate	0.78	0.50	mg/L	EPA 300.0	04/24/13 11:26
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/23/13 20:18
Ferrous Iron	0.11	0.10	mg/L	SM 3500-Fe D	04/24/13 09:02
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 15:03
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/13 15:03
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/13 15:03
Manganese, Dissolved	1.9	0.0050	mg/L	EPA 6010B	04/29/13 15:03
Sodium, Dissolved	47	0.50	mg/L	EPA 6010B	04/29/13 15:03
Benzene	4.5	0.50	ug/L	EPA 8260B	04/25/13 04:03
Toluene	0.75	0.50	ug/L	EPA 8260B	04/25/13 04:03
Ethylbenzene	1.7	0.50	ug/L	EPA 8260B	04/25/13 04:03
Total Xylenes	1.0	0.50	ug/L	EPA 8260B	04/25/13 04:03
Methyl-t-butyl ether (MTBE)	3.4	0.50	ug/L	EPA 8260B	04/25/13 04:03
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:03
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:03
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:03
Tert-Butanol	5.0	5.0	ug/L	EPA 8260B	04/25/13 04:03
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 04:03
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 04:03
TPH as Gasoline	1900	50	ug/L	EPA 8260B	04/25/13 04:03
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:03
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:03
1,2-Dichloroethane-d4 (Surr)	98.0		% Recovery	EPA 8260B	04/25/13 04:03
Toluene - d8 (Surr)	99.2		% Recovery	EPA 8260B	04/25/13 04:03

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-7**

Matrix : Water

Lab Number : 84677-09

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/24/13 11:39
Sulfate	21	0.50	mg/L	EPA 300.0	04/24/13 11:39
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/23/13 20:27
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/24/13 09:02
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 15:07
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/13 15:07
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/13 15:07
Manganese, Dissolved	1.9	0.0050	mg/L	EPA 6010B	04/29/13 15:07
Sodium, Dissolved	58	0.50	mg/L	EPA 6010B	04/29/13 15:07
Benzene	0.65	0.50	ug/L	EPA 8260B	04/25/13 04:38
Toluene	0.61	0.50	ug/L	EPA 8260B	04/25/13 04:38
Ethylbenzene	1.0	0.50	ug/L	EPA 8260B	04/25/13 04:38
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:38
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:38
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:38
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:38
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:38
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 04:38
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 04:38
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 04:38
TPH as Gasoline	720	50	ug/L	EPA 8260B	04/25/13 04:38
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:38
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:38
1,2-Dichloroethane-d4 (Surr)	98.8		% Recovery	EPA 8260B	04/25/13 04:38
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/25/13 04:38

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-2**

Matrix : Water

Lab Number : 84677-10

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	5.6	0.50	ug/L	EPA 8260B	04/25/13 05:12
Toluene	3.7	0.50	ug/L	EPA 8260B	04/25/13 05:12
Ethylbenzene	1.3	0.50	ug/L	EPA 8260B	04/25/13 05:12
Total Xylenes	3.6	0.50	ug/L	EPA 8260B	04/25/13 05:12
Methyl-t-butyl ether (MTBE)	1.4	0.50	ug/L	EPA 8260B	04/25/13 05:12
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:12
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:12
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:12
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 05:12
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 05:12
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 05:12
TPH as Gasoline	160	50	ug/L	EPA 8260B	04/25/13 05:12
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:12
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:12
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	04/25/13 05:12
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/25/13 05:12

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-7**

Matrix : Water

Lab Number : 84677-11

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/24/13 11:53
Sulfate	5.3	0.50	mg/L	EPA 300.0	04/24/13 11:53
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/23/13 20:55
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/24/13 09:03
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/13 15:11
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/13 15:11
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/13 15:11
Manganese, Dissolved	1.1	0.0050	mg/L	EPA 6010B	04/29/13 15:11
Sodium, Dissolved	30	0.50	mg/L	EPA 6010B	04/29/13 15:11
Benzene	230	0.50	ug/L	EPA 8260B	04/25/13 05:47
Toluene	9.2	0.50	ug/L	EPA 8260B	04/25/13 05:47
Ethylbenzene	22	0.50	ug/L	EPA 8260B	04/25/13 05:47
Total Xylenes	10	0.50	ug/L	EPA 8260B	04/25/13 05:47
Methyl-t-butyl ether (MTBE)	50	0.50	ug/L	EPA 8260B	04/25/13 05:47
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:47
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:47
Tert-amyl methyl ether (TAME)	0.55	0.50	ug/L	EPA 8260B	04/25/13 05:47
Tert-Butanol	160	5.0	ug/L	EPA 8260B	04/25/13 05:47
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 05:47
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 05:47
TPH as Gasoline	3300	50	ug/L	EPA 8260B	04/25/13 05:47
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:47
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 05:47
1,2-Dichloroethane-d4 (Surr)	94.2		% Recovery	EPA 8260B	04/25/13 05:47
Toluene - d8 (Surr)	96.9		% Recovery	EPA 8260B	04/25/13 05:47

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **Trip Blank - 02**

Matrix : Water

Lab Number : 84677-12

Sample Date :04/23/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 23:26
Methanol	< 50	50	ug/L	EPA 8260B	04/24/13 23:26
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 23:26
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/13 23:26
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:26
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	04/24/13 23:26
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/24/13 23:26

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

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	04/29/2013
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/2013
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	04/29/2013
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	04/29/2013
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	04/29/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
Methanol	< 50	50	ug/L	EPA 8260B	04/24/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013
1,2-Dichloroethane-d4 (Surr)	98.5		%	EPA 8260B	04/24/2013
Toluene - d8 (Surr)	101		%	EPA 8260B	04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	04/23/2013
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	04/24/2013
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	04/24/2013
Sulfate	<0.50	0.50	mg/L	EPA 300.0	04/24/2013

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Hexavalent Chromium														
	84672-01	< 1.0	5.00	5.00	4.56	4.91	ug/L	EPA 7199	4/23/13	91.2	98.2	7.42	90.0-110	10
Ferrous Iron														
	84677-01	< 0.10	0.506	0.506	0.250	0.271	mg/L	SM 3500-Fe D	4/24/13	48.8	53.0	8.06	70.0-130	25
Nitrate as N														
	84677-05	1.7	0.500	0.500	2.11	2.15	mg/L	EPA 300.0	4/24/13	85.4	93.7	1.95	90.0-110	10
Sulfate														
	84677-05	87	2.50	2.50	90.0	90.1	mg/L	EPA 300.0	4/24/13	112	112	0.0155	90.0-110	10
Arsenic, (Dis)														
	84667-05	< 0.015	0.400	0.400	0.417	0.417	mg/L	EPA 6010B	4/29/13	104	104	0.0720	75-125	20
Chromium, (Dis)														
	84667-05	< 0.0050	0.400	0.400	0.393	0.394	mg/L	EPA 6010B	4/29/13	98.2	98.5	0.305	75-125	20
Iron, (Dis)														
	84667-05	< 0.10	0.400	0.400	0.427	0.386	mg/L	EPA 6010B	4/29/13	106	95.8	10.0	75-125	20
Manganese, (Dis)														
	84667-05	0.036	0.400	0.400	0.395	0.395	mg/L	EPA 6010B	4/29/13	89.7	89.7	0.0506	75-125	20

QC Report : Matrix Spike/ Matrix Spike Duplicate

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Sodium, (Dis)	84667-05	39	0.400	0.400	38.0	37.7	mg/L	EPA 6010B	4/29/13	0.00	0.00	0.951	75-125	20
1,2-Dibromoethane	84684-08	<0.50	40.1	40.1	40.8	40.0	ug/L	EPA 8260B	4/24/13	102	99.9	1.88	70-130	25
1,2-Dichloroethane	84684-08	<0.50	40.0	40.0	42.2	40.1	ug/L	EPA 8260B	4/24/13	105	100	5.01	70-130	25
Benzene	84684-08	<0.50	40.0	40.0	38.5	37.4	ug/L	EPA 8260B	4/24/13	96.2	93.4	2.90	70-130	25
Diisopropyl ether	84684-08	<0.50	40.0	40.0	37.8	36.8	ug/L	EPA 8260B	4/24/13	94.6	92.0	2.72	70-130	25
Ethanol	84684-08	<5.0	101	101	91.8	99.4	ug/L	EPA 8260B	4/24/13	91.0	98.6	7.95	55.1-159	25
Ethyl-tert-butyl ether	84684-08	<0.50	39.1	39.1	39.7	38.7	ug/L	EPA 8260B	4/24/13	101	98.9	2.48	70-130	25
Ethylbenzene	84684-08	<0.50	40.0	40.0	39.6	38.4	ug/L	EPA 8260B	4/24/13	98.9	96.0	2.96	70-130	25
Methanol	84684-08	<50	1000	1000	1140	1120	ug/L	EPA 8260B	4/24/13	114	112	1.09	53.2-147	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Methyl-t-butyl ether	84684-08	40	39.4	39.4	81.6	78.6	ug/L	EPA 8260B	4/24/13	104	96.5	7.49	69.7-130	25
P + M Xylene	84684-08	<0.50	40.0	40.0	40.0	39.0	ug/L	EPA 8260B	4/24/13	100	97.4	2.54	70-130	25
Tert-Butanol	84684-08	<5.0	201	201	201	201	ug/L	EPA 8260B	4/24/13	100	100	0.0210	70-130	25
Tert-amyl-methyl ether	84684-08	0.80	39.3	39.3	41.0	39.2	ug/L	EPA 8260B	4/24/13	102	97.8	4.48	70-130	25
Toluene	84684-08	<0.50	40.0	40.0	40.0	38.8	ug/L	EPA 8260B	4/24/13	100	96.9	3.20	70-130	25

QC Report : Laboratory Control Sample (LCS)

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

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	103	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	101	85-115
Iron, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	99.6	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	92.9	85-115
Sodium, (Dis)	0.400	mg/L	EPA 6010B	4/29/13	106	85-115
1,2-Dibromoethane	39.9	ug/L	EPA 8260B	4/24/13	103	70-130
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	4/24/13	107	70-130
Benzene	39.8	ug/L	EPA 8260B	4/24/13	99.1	70-130
Diisopropyl ether	39.8	ug/L	EPA 8260B	4/24/13	99.5	70-130
Ethanol	100	ug/L	EPA 8260B	4/24/13	89.2	55.1-159
Ethyl-tert-butyl ether	38.9	ug/L	EPA 8260B	4/24/13	107	70-130
Ethylbenzene	39.8	ug/L	EPA 8260B	4/24/13	97.8	70-130
Methanol	995	ug/L	EPA 8260B	4/24/13	112	53.2-147
Methyl-t-butyl ether	39.2	ug/L	EPA 8260B	4/24/13	104	69.7-130
P + M Xylene	39.8	ug/L	EPA 8260B	4/24/13	99.6	70-130
TPH as Gasoline	503	ug/L	EPA 8260B	4/24/13	93.7	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	4/24/13	100	70-130
Tert-amyl-methyl ether	39.1	ug/L	EPA 8260B	4/24/13	106	70-130
Toluene	39.8	ug/L	EPA 8260B	4/24/13	101	70-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	4/23/13	101	90.0-110

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

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Ferrous Iron	0.253	mg/L	SM 3500-Fe D	4/24/13	99.7	70.0-130
Nitrate as N	0.500	mg/L	EPA 300.0	4/24/13	97.1	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	4/24/13	94.0	90.0-110

Project Contact (Hardcopy or PDF To): Scott Stromberg
 Company / Address: Arctos Environmental
 1332 Peralta Avenue, Berkeley, CA 94702
 Phone Number: 510-525-2180
 Fax Number: 510-525-2392
 Project #: 01LV P.O. #:
 Project Name: Tesoro - Livermore

California EDF Report? Yes No
 Sampling Company Log Code: EFSP
 Global ID: T0600101410
 EDF Deliverable To (Email Address): sstromberg@orionenv.com
 Bill to: Jeff Baker
 Sampler Signature: *[Signature]*

Chain-of-Custody Record and Analysis Request

Sample Designation	Sampling		Container				Preservative				Matrix			Analysis Request													TAT	For Lab Use Only									
	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Teclar	HCl	HNO ₃	None	H ₂ SO ₄	Water	Soil	Air	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Dissolved Solids (SM 2540C)	Methane and Carbonyl Sulfide by RSK 175M	Chromium VI (EPA 7199)	Total Metals by EPA 6010 (As, Cr, Fe, Mn, Na)			12 hr	24 hr	48hr	72hr	1 wk				
IP-5	4-23-13	0925	7		5			5		7		X			X	X	X	X		X	X	X	X	X	X	X	X							Std.	01		
IP-4		0830	3					3				X			X	X	X	X																	Std.	02	
IP-6		1005	3					3				X			X	X	X	X																		Std.	03
IP-7		1035	3					3				X			X	X	X	X																		Std.	04
MW-2		1110	7	5				5		5		X			X	X	X	X	X	X	X	X	X	X	X	X	X								Std.	05	
MW-8		1140	7	5				5		5		X			X	X	X	X	X	X	X	X	X	X	X	X	X								Std.	06	
DW-3		1230	7	5				5		5		X			X	X	X	X	X	X	X	X	X	X	X	X	X								Std.	07	
MW-9		1300	7	5				5		5		X			X	X	X	X	X	X	X	X	X	X	X	X	X								Std.	08	
MW-7		1330	7	5				5		5		X			X	X	X	X	X	X	X	X	X	X	X	X	X								Std.	09	
IP-2		1400	3					3				X			X	X	X	X																	Std.	10	

Relinquished by: *[Signature]* Date: 4-23-13 Time: _____ Received by: _____

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

Relinquished by: _____ Date: 042313 Time: 1517 Received by Laboratory: *[Signature]* **KIFF Analytical LLC**

Remarks:

For Lab Use Only: Sample Receipt

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

Project Contact (Hardcopy or PDF To):
Scott Stromberg
Company / Address: Arctos Environmental
1332 Peralta Avenue, Berkeley, CA 94702
Phone Number: 510-525-2180
Fax Number: 510-525-2392
Project #: 01LV P.O. #:
Project Name: Tesoro - Livermore

California EDF Report? Yes No
Sampling Company Log Code: EFSP
Global ID: T0600101410
EDF Deliverable To (Email Address): sstromberg@orionenv.com
Bill to: Jeff Baker
Sampler Signature: *[Signature]*

Chain-of-Custody Record and Analysis Request

Sample Designation	Sampling		Container				Preservative				Matrix			Analysis Request														TAT	For Lab Use Only									
	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar	HCl	HNO ₃	None	H ₂ SO ₄	Water	Soil	Air	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Dissolved Solids (SM 2540C)	Methane and Carbonyl Dioxide by RSK 175M	Chromium VI (EPA 7199)	Total Metals by EPA 6010 (As, Cr, Fe, Mn, Na)	12 hr			24 hr	48hr	72hr	1 wk					
DW-7	4-23-13	1445	7		5				5	7		X			X	X	X	X		X	X	X	X	X	X	X									Std.	11		
Tip Blank - 02	↓	0800	2						2			X			X	X	X	X																		Std.	12	
																																				Std.		
																																					Std.	
																																					Std.	
																																					Std.	
																																					Std.	
																																					Std.	
																																					Std.	

Relinquished by: *[Signature]* Date: 4-23-13 Time: Received by: *[Signature]*

Relinquished by: *[Signature]* Date: Date: Time: Received by: *[Signature]*

Relinquished by: *[Signature]* Date: 042313 Time: 1517 Received by Laboratory: *[Signature]* KIFF Analytical LLC

Remarks:

For Lab Use Only: Sample Receipt

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

SAMPLE RECEIPT CHECKLIST

RECEIVER
TJB
Initials

SRG#: 84677 Date: 042313

Project ID: Tesoro - Livermore

Method of Receipt: Courier Over-the-counter Shipper

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

COC Inspection

Is COC present? Yes No

Custody seals on shipping container? Intact Broken Not present N/A

Is COC Signed by Relinquisher? Yes No Dated? Yes No

Is sampler name legibly indicated on COC? Yes No

Is analysis or hold requested for all samples? Yes No

Is the turnaround time indicated on COC? Yes No

Is COC free of whiteout and uninitialed cross-outs? Yes No, Whiteout No, Cross-outs

Sample Inspection

Coolant Present: Yes No (includes water)

Temperature °C 1.6 Therm. ID# IR-1 Initial TJB Date/Time 042313/1743 N/A

Are there custody seals on sample containers? Intact Broken Not present

Do containers match COC? Yes No No, COC lists absent sample(s) No, Extra sample(s) present

Are there samples matrices other than soil, water, air or carbon? Yes No

Are any sample containers broken, leaking or damaged? Yes No

Are preservatives indicated? Yes, on sample containers Yes, on COC Not indicated N/A

Are preservatives correct for analyses requested? Yes No N/A

Are samples within holding time for analyses requested? Yes No

Are the correct sample containers used for the analyses requested? Yes No

Is there sufficient sample to perform testing? Yes No

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

Receipt Details

Matrix WA Container type VOA # of containers received 63

Matrix WA Container type Poly # of containers received 35

Matrix _____ Container type _____ # of containers received _____

Date and Time Sample Put into Temp Storage Date: 042313 Time: 1808

Quicklog

Are the Sample ID's indicated: On COC On sample container(s) On Both Not indicated

If Sample ID's are listed on both COC and containers, do they all match? Yes No N/A

Is the Project ID indicated: On COC On sample container(s) On Both Not indicated

If project ID is listed on both COC and containers, do they all match? Yes No N/A

Are the sample collection dates indicated: On COC On sample container(s) On Both Not indicated

If collection dates are listed on both COC and containers, do they all match? Yes No N/A

Are the sample collection times indicated: On COC On sample container(s) On Both Not indicated

If collection times are listed on both COC and containers, do they all match? Yes No N/A

COMMENTS: TGT confirmed with client that metals analysis ^{request} should be for dissolved, not total, metals, and that all white capped VOAs are unpreserved - all grey capped VOAs - HCl preserved. MAS 0424130827



Subcontract Laboratory Report Attachments



CALSCIENCE

WORK ORDER NUMBER: 13-04-1777

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro - Livermore

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

Amanda Porter

Approved for release on 05/1/2013 by:
Amanda Porter
Project Manager

ResultLink ▶

Email your PM ▶



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





Contents

Client Project Name: Tesoro - Livermore
Work Order Number: 13-04-1777

1	Work Order Narrative	3
2	Client Sample Data	4
	2.1 RSK-175M Carbon Dioxide (Aqueous)	4
	2.2 RSK-175M Methane (Aqueous)	6
	2.3 Combined Inorganic Tests	8
3	Quality Control Sample Data	10
	3.1 MS/MSD and/or Duplicate	10
	3.2 LCS/LCSD	11
4	Glossary of Terms and Qualifiers	16
5	Chain of Custody/Sample Receipt Form	17

Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 04/25/2013. They were assigned to Work Order 13-04-1777.

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 an immediate holding time (HT \leq 15 minutes --40CFR-136.3 Table II footnote 4), is considered a "field" test and reported samples results are not flagged unless the analysis is performed beyond 24 hours of the time of collection.

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:

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.

Subcontract Information:

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



Analytical Report



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

Date Received: 04/25/13
Work Order No: 13-04-1777
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-5	13-04-1777-1-C	04/23/13 09:25	Aqueous	GC 14	N/A	04/26/13 11:34	130426L01

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	6830	17.0	10		ug/L

MW-2	13-04-1777-2-C	04/23/13 11:20	Aqueous	GC 14	N/A	04/26/13 11:53	130426L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	57800	17.0	10		ug/L

MW-8	13-04-1777-3-C	04/23/13 11:40	Aqueous	GC 14	N/A	04/27/13 03:01	130426L02
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	15500	17.0	10		ug/L

DW-3	13-04-1777-4-C	04/23/13 12:30	Aqueous	GC 14	N/A	04/27/13 07:36	130426L02
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	7850	1.70	1		ug/L

MW-9	13-04-1777-5-C	04/23/13 13:00	Aqueous	GC 14	N/A	04/27/13 04:46	130426L02
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	27800	17.0	10		ug/L

MW-7	13-04-1777-6-C	04/23/13 13:30	Aqueous	GC 14	N/A	04/27/13 05:26	130426L02
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	21500	17.0	10		ug/L

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

Analytical Report



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

Date Received: 04/25/13
 Work Order No: 13-04-1777
 Preparation: N/A
 Method: RSK-175M

Project: Tesoro - Livermore

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-7	13-04-1777-7-C	04/23/13 14:45	Aqueous	GC 14	N/A	04/27/13 19:17	130426L02

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Carbon Dioxide	11200	17.0	10		ug/L

Method Blank	099-12-659-530	N/A	Aqueous	GC 14	N/A	04/26/13 10:16	130426L01
---------------------	-----------------------	------------	----------------	--------------	------------	-----------------------	------------------

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

Method Blank	099-12-659-531	N/A	Aqueous	GC 14	N/A	04/27/13 01:37	130426L02
---------------------	-----------------------	------------	----------------	--------------	------------	-----------------------	------------------

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

Return to Contents

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

Analytical Report



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

Date Received: 04/25/13
Work Order No: 13-04-1777
Preparation: N/A
Method: RSK-175M

Project: Tesoro - Livermore

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
IP-5	13-04-1777-1-A	04/23/13 09:25	Aqueous	GC 52	N/A	04/26/13 12:03	130426L01

Parameter	Result	RL	DF	Qual	Units
Methane	39.9	1.00	1		ug/L

MW-2	13-04-1777-2-A	04/23/13 11:20	Aqueous	GC 52	N/A	04/26/13 12:31	130426L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	439	1.00	1		ug/L

MW-8	13-04-1777-3-A	04/23/13 11:40	Aqueous	GC 52	N/A	04/26/13 12:58	130426L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	6.77	1.00	1		ug/L

DW-3	13-04-1777-4-A	04/23/13 12:30	Aqueous	GC 52	N/A	04/26/13 13:26	130426L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	69.8	1.00	1		ug/L

MW-9	13-04-1777-5-A	04/23/13 13:00	Aqueous	GC 52	N/A	04/26/13 14:07	130426L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	236	1.00	1		ug/L

MW-7	13-04-1777-6-A	04/23/13 13:30	Aqueous	GC 52	N/A	04/26/13 15:58	130426L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	1190	2.00	2		ug/L

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

Analytical Report



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

Date Received: 04/25/13
 Work Order No: 13-04-1777
 Preparation: N/A
 Method: RSK-175M

Project: Tesoro - Livermore

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-7	13-04-1777-7-A	04/23/13 14:45	Aqueous	GC 52	N/A	04/26/13 15:25	130426L01

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Methane	2540	8.00	8		ug/L

Method Blank	099-12-663-1,887	N/A	Aqueous	GC 52	N/A	04/26/13 10:37	130426L01
---------------------	-------------------------	------------	----------------	--------------	------------	-----------------------	------------------

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

Return to Contents

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

Analytical Report



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

Date Received: 04/25/13
Work Order No: 13-04-1777

Project: Tesoro - Livermore

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix
IP-5	13-04-1777-1	04/23/13	Aqueous

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO ₃)	312	5.00	1		mg/L	N/A	04/30/13	SM 2320B
Solids, Total Dissolved	600	1.00	1		mg/L	04/30/13	04/30/13	SM 2540 C

MW-2	13-04-1777-2	04/23/13	Aqueous
-------------	---------------------	-----------------	----------------

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO ₃)	643	5.00	1		mg/L	N/A	04/30/13	SM 2320B
Solids, Total Dissolved	925	1.00	1		mg/L	04/30/13	04/30/13	SM 2540 C

MW-8	13-04-1777-3	04/23/13	Aqueous
-------------	---------------------	-----------------	----------------

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO ₃)	401	5.00	1		mg/L	N/A	04/30/13	SM 2320B
Solids, Total Dissolved	720	1.00	1		mg/L	04/30/13	04/30/13	SM 2540 C

DW-3	13-04-1777-4	04/23/13	Aqueous
-------------	---------------------	-----------------	----------------

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO ₃)	357	5.00	1		mg/L	N/A	04/30/13	SM 2320B
Solids, Total Dissolved	660	1.00	1		mg/L	04/30/13	04/30/13	SM 2540 C

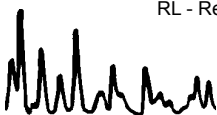
MW-9	13-04-1777-5	04/23/13	Aqueous
-------------	---------------------	-----------------	----------------

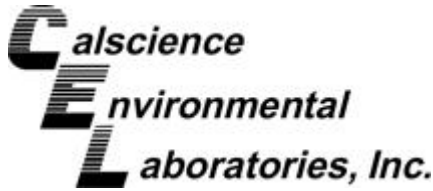
Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO ₃)	456	5.00	1		mg/L	N/A	04/30/13	SM 2320B
Solids, Total Dissolved	730	1.00	1		mg/L	04/30/13	04/30/13	SM 2540 C

MW-7	13-04-1777-6	04/23/13	Aqueous
-------------	---------------------	-----------------	----------------

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO ₃)	418	5.00	1		mg/L	N/A	04/30/13	SM 2320B
Solids, Total Dissolved	615	1.00	1		mg/L	04/30/13	04/30/13	SM 2540 C

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





Analytical Report



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

Date Received: 04/25/13
Work Order No: 13-04-1777

Project: Tesoro - Livermore

Page 2 of 2

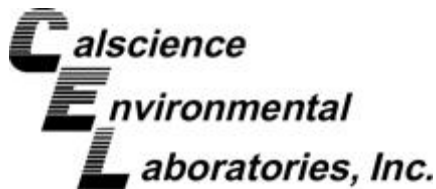
Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-7	13-04-1777-7	04/23/13	Aqueous

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	324	5.00	1		mg/L	N/A	04/30/13	SM 2320B
Solids, Total Dissolved	415	1.00	1		mg/L	04/30/13	04/30/13	SM 2540 C
Method Blank					N/A			Aqueous

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	N/A	04/30/13	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	04/30/13	04/30/13	SM 2540 C

Return to Contents

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



Quality Control - Duplicate



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

Date Received: N/A
Work Order No: 13-04-1777

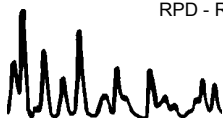
Project: Tesoro - Livermore

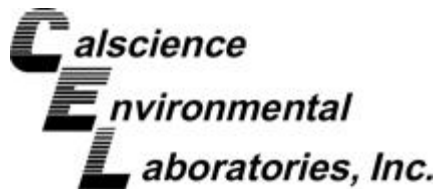
Matrix: Aqueous or Solid

<u>Parameter</u>	<u>Method</u>	<u>QC Sample ID</u>	<u>Date Analyzed</u>	<u>Sample Conc</u>	<u>DUP Conc</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	SM 2320B	IP-5	04/30/13	312	314	1	0-25	
Solids, Total Dissolved	SM 2540 C	13-04-1733-7	04/30/13	525	515	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1777
 Preparation: N/A
 Method: RSK-175M

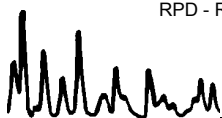
Project: Tesoro - Livermore

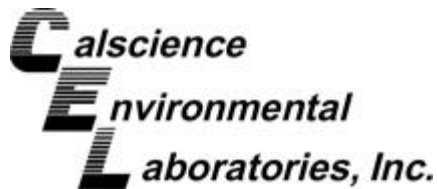
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-530	Aqueous	GC 14	N/A	04/26/13	130426L01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Carbon Dioxide	102.0	98.37	96	98.73	97	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1777
 Preparation: N/A
 Method: RSK-175M

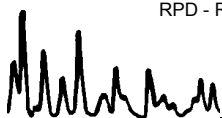
Project: Tesoro - Livermore

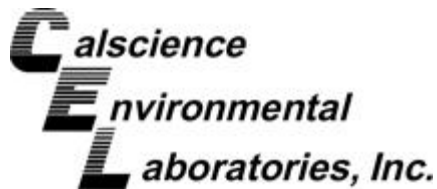
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-531	Aqueous	GC 14	N/A	04/26/13	130426L02

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Carbon Dioxide	102.0	96.85	95	97.18	95	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1777
 Preparation: N/A
 Method: RSK-175M

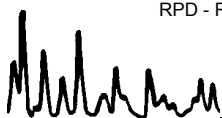
Project: Tesoro - Livermore

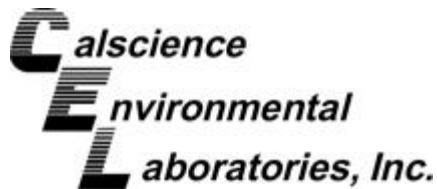
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,887	Aqueous	GC 52	N/A	04/26/13	130426L01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Methane	98.50	93.72	95	93.75	95	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1777
 Preparation: N/A
 Method: SM 2320B

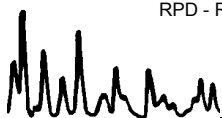
Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-859-43	Aqueous	PH1/BUR03	N/A	04/30/13	D0430ALKB1

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	100	99.6	100	99.0	99	80-120	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Kiff Analytical	Date Received:	N/A
2795 2nd Street, Suite 300	Work Order No:	13-04-1777
Davis, CA 95618-6505	Preparation:	N/A
	Method:	SM 2540 C

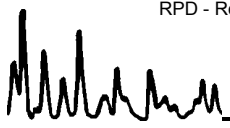
Project: Tesoro - Livermore

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-12-180-3,660	Aqueous	N/A	04/30/13	NONE	D0430TDSL1

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Solids, Total Dissolved	100	105	105	80-120	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit



Work Order Number: 13-04-1777

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

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

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





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

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

13-04-1777

COC No. **84677** 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: **EFSP** Analysis Request TAT

Phone No.: **530-297-4800** FAX No.: **530-297-4808** Global ID: **T0600101410**

Project Number: **01LV** P.O. No.: **84677** Deliverables to (Email Address): **inbox@kiffanalytical.com**

Project Name: **Tesoro - Livermore** Container / Preservative Matrix

Project Address: Sampling

Sample Designation Date Time 1-L Poly None 250ml Poly None VOA 40 ml None VOA 40 ml HCl Water Alkalinity SM 2320 (1) Carbon Dioxide by RSK 175 (1) Hydrocarbons in Water by RSK 175 (1) Total Dissolved Solids 4-Days For Lab Use Only

Sample Designation	Date	Time	1-L Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Water	Alkalinity SM 2320 (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	4-Days	For Lab Use Only
IP-5	04/23/13	09:25	1	1	2	2	X	X	X	X		X	1
MW-2	04/23/13	11:20	1	1	2	2	X	X	X	X		X	2
MW-8	04/23/13	11:40	1	1	2	2	X	X	X	X		X	3
DW-3	04/23/13	12:30	1	1	2	2	X	X	X	X		X	4
MW-9	04/23/13	13:00	1	1	2	2	X	X	X	X		X	5
MW-7	04/23/13	13:30	1	1	2	2	X	X	X	X		X	6
DW-7	04/23/13	14:45	1	1	2	2	X	X	X	X		X	7

Relinquished by: *[Signature]* Date: **04/24/13** Time: **1700** Received by:

Relinquished by: Date: Time: Received by:

Relinquished by: **(CONTRAC)** Date: **4/25/13** Time: **0900** Received by Laboratory: *[Signature]*

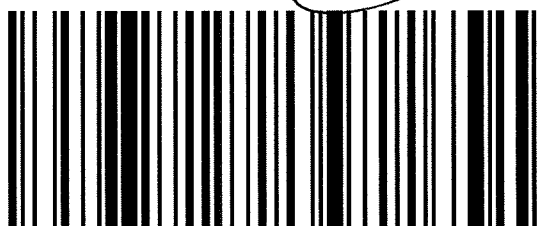
Remarks: Please refer to attached Test Detail.

Bill to: **Accounts Payable**

1777



800.334.5000
ontrac.com



D10010572950876

Date Printed 4/24/2013

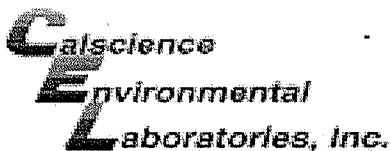
Tracking#D10010572950876

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

Sent By: SAMPLE RECEIVINGX125
Phone#: (530)297-4800
wgt(lbs): 45
Reference: SUBS 84635...
Reference 2: 600

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

Return to Contents



WORK ORDER #: 13-04-1777

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Kiff

DATE: 04/25/13

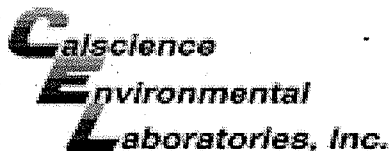
TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0°C - 6.0°C, not frozen except sediment/tissue)
Temperature 2.4°C - 0.2°C (CF) = 2.2°C [X] Blank [] Sample
[] Sample(s) outside temperature criteria (PM/APM contacted by: _____).
[] Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.
[] Received at ambient temperature, placed on ice for transport by Courier.
Ambient Temperature: [] Air [] Filter Initial: AR

CUSTODY SEALS INTACT:
[X] Cooler [] _____ [] No (Not Intact) [] Not Present [] N/A Initial: AR
[] Sample [] _____ [] No (Not Intact) [X] Not Present Initial: WSC

Table with columns: SAMPLE CONDITION, Yes, No, N/A. Rows include Chain-Of-Custody (COC) document(s) received with samples, COC document(s) received complete, Sampler's name indicated on COC, Sample container label(s) consistent with COC, etc.

CONTAINER TYPE:
Solid: [] 4ozCGJ [] 8ozCGJ [] 16ozCGJ [] Sleeve (____) [] EnCores® [] TerraCores® [] _____
Water: [X] VOA [X] VOAh [] VOAna2 [] 125AGB [] 125AGBh [] 125AGBp [] 1AGB [] 1AGBna2 [] 1AGBs
[] 500AGB [] 500AGJ [] 500AGJs [] 250AGB [] 250CGB [] 250CGBs [X] 1PB [] 1PBna [] 500PB
[X] 250PB [] 250PBn [] 125PB [] 125PBzanna [] 100PJ [] 100PJna2 [] _____ [] _____ [] _____
Air: [] Tedlar® [] Canister Other: [] _____ Trip Blank Lot#: _____ Labeled/Checked by: WSC
Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: WSC
Preservative: h: HCL n: HNO3 na2: Na2S2O3 na: NaOH p: H3PO4 s: H2SO4 u: Ultra-pure zanna: ZnAc2+NaOH f: Filtered Scanned by: WSC

Return to Contents



WORK ORDER #: 13-04-1229

SAMPLE ANOMALY FORM

SAMPLES - CONTAINERS & LABELS:

Comments:

- Sample(s) NOT RECEIVED but listed on COC
- Sample(s) received but NOT LISTED on COC
- Holding time expired – list sample ID(s) and test
- Insufficient quantities for analysis – list test
- Improper container(s) used – list test
- Improper preservative used – list test
- No preservative noted on COC or label – list test & notify lab
- Sample labels illegible – note test/container type
- Sample label(s) do not match COC – Note in comments
 - Sample ID
 - Date and/or Time Collected
 - Project Information
 - # of Container(s)
 - Analysis
- Sample container(s) compromised – Note in comments
 - Water present in sample container
 - Broken
- Sample container(s) not labeled
- Air sample container(s) compromised – Note in comments
 - Flat
 - Very low in volume
 - Leaking (Not transferred - duplicate bag submitted)
 - Leaking (transferred into Calscience Tedlar® Bag*)
 - Leaking (transferred into Client's Tedlar® Bag*)
- Other: _____

(-2) Collection time per label is 110

HEADSPACE – Containers with Bubble > 6mm or ¼ inch:

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Cont. received	Analysis

Comments: _____

*Transferred at Client's request.

Initial / Date: WJ 04/25/13





Laboratory Results

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

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

Dear Mr. Stromberg,

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

Sincerely,

Troy Turpen

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

Case Narrative

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for samples DW-2, MW-12, MW-6 and DW-8.

The Method Reporting Limit for Ethanol has been increased due to the presence of an interfering compound for samples MW-12, DW-5, DW-8 and IP-10.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-2, DW-5, DW-6, DW-8, DW-9, IP-1, IP-10, MW-11, MW-12, and MW-6 for the analyte Nitrate as N were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-2, DW-5, DW-6, DW-8, DW-9, IP-1, IP-10, MW-11, MW-12, and MW-6 for the analyte Ferrous Iron were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Samples DW-2, DW-9, MW-12, DW-6, MW-11, DW-5, MW-6, DW-8, IP-1 and IP-10 were filtered in the laboratory for metals analysis.

Matrix Spike/Matrix Spike Duplicate results associated with samples DW-2, DW-9, MW-12, DW-6, MW-11, DW-5, MW-6, DW-8, IP-1, and IP-10 for the analyte Dissolved Sodium were affected by the analyte concentrations already present in the un-spiked sample.

For sample MW-6, the result for Ferrous Iron was unexpectedly higher than the result for Dissolved Iron. This discrepancy may be due to varying concentrations between the bottles.

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-2**

Matrix : Water

Lab Number : 84690-01

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/25/13 11:38
Sulfate	1.3	0.50	mg/L	EPA 300.0	04/25/13 11:38
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 21:27
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/25/13 09:38
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 11:11
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:11
Iron, Dissolved	0.12	0.10	mg/L	EPA 6010B	05/01/13 11:11
Manganese, Dissolved	2.4	0.0050	mg/L	EPA 6010B	05/01/13 11:11
Sodium, Dissolved	47	0.50	mg/L	EPA 6010B	05/01/13 11:11
Benzene	320	0.50	ug/L	EPA 8260B	05/01/13 12:08
Toluene	7.2	0.50	ug/L	EPA 8260B	05/01/13 12:08
Ethylbenzene	26	0.50	ug/L	EPA 8260B	05/01/13 12:08
Total Xylenes	9.5	0.50	ug/L	EPA 8260B	05/01/13 12:08
Methyl-t-butyl ether (MTBE)	100	0.50	ug/L	EPA 8260B	05/01/13 12:08
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	05/01/13 12:08
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	05/01/13 12:08
Tert-amyl methyl ether (TAME)	1.3	0.50	ug/L	EPA 8260B	05/01/13 12:08
Tert-Butanol	370	5.0	ug/L	EPA 8260B	05/01/13 12:08
Methanol	< 80	80	ug/L	EPA 8260B	05/01/13 12:08
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	05/01/13 12:08
TPH as Gasoline	4500	50	ug/L	EPA 8260B	05/01/13 12:08
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	05/01/13 12:08
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	05/01/13 12:08
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	05/01/13 12:08
Toluene - d8 (Surr)	97.1		% Recovery	EPA 8260B	05/01/13 12:08

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-9**

Matrix : Water

Lab Number : 84690-02

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/25/13 11:52
Sulfate	1.7	0.50	mg/L	EPA 300.0	04/25/13 11:52
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 21:55
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/25/13 09:38
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 11:22
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:22
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	05/01/13 11:22
Manganese, Dissolved	2.1	0.0050	mg/L	EPA 6010B	05/01/13 11:22
Sodium, Dissolved	47	0.50	mg/L	EPA 6010B	05/01/13 11:22
Benzene	18	0.50	ug/L	EPA 8260B	04/26/13 14:47
Toluene	1.7	0.50	ug/L	EPA 8260B	04/26/13 14:47
Ethylbenzene	7.8	0.50	ug/L	EPA 8260B	04/26/13 14:47
Total Xylenes	7.2	0.50	ug/L	EPA 8260B	04/26/13 14:47
Methyl-t-butyl ether (MTBE)	21	0.50	ug/L	EPA 8260B	04/26/13 14:47
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 14:47
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 14:47
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 14:47
Tert-Butanol	67	5.0	ug/L	EPA 8260B	04/26/13 14:47
Methanol	< 50	50	ug/L	EPA 8260B	04/26/13 14:47
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/26/13 14:47
TPH as Gasoline	3200	50	ug/L	EPA 8260B	04/26/13 14:47
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 14:47
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 14:47
1,2-Dichloroethane-d4 (Surr)	94.8		% Recovery	EPA 8260B	04/26/13 14:47
Toluene - d8 (Surr)	97.6		% Recovery	EPA 8260B	04/26/13 14:47

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-12**

Matrix : Water

Lab Number : 84690-03

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	2.6	0.50	mg/L	EPA 300.0	04/25/13 14:19
Sulfate	34	2.5	mg/L	EPA 300.0	04/25/13 14:19
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 22:05
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/25/13 09:39
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 11:26
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:26
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	05/01/13 11:26
Manganese, Dissolved	1.7	0.0050	mg/L	EPA 6010B	05/01/13 11:26
Sodium, Dissolved	52	0.50	mg/L	EPA 6010B	05/01/13 11:26
Benzene	2.2	0.50	ug/L	EPA 8260B	04/25/13 04:11
Toluene	0.78	0.50	ug/L	EPA 8260B	04/25/13 04:11
Ethylbenzene	7.7	0.50	ug/L	EPA 8260B	04/25/13 04:11
Total Xylenes	1.1	0.50	ug/L	EPA 8260B	04/25/13 04:11
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:11
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:11
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:11
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:11
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 04:11
Methanol	< 100	100	ug/L	EPA 8260B	04/25/13 04:11
Ethanol	< 20	20	ug/L	EPA 8260B	04/25/13 04:11
TPH as Gasoline	1400	50	ug/L	EPA 8260B	04/25/13 04:11
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:11
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 04:11
1,2-Dichloroethane-d4 (Surr)	98.6		% Recovery	EPA 8260B	04/25/13 04:11
Toluene - d8 (Surr)	98.0		% Recovery	EPA 8260B	04/25/13 04:11

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-6**

Matrix : Water

Lab Number : 84690-04

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/25/13 12:19
Sulfate	4.8	0.50	mg/L	EPA 300.0	04/25/13 12:19
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 22:14
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/25/13 09:14
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 11:30
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:30
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	05/01/13 11:30
Manganese, Dissolved	2.1	0.0050	mg/L	EPA 6010B	05/01/13 11:30
Sodium, Dissolved	44	0.50	mg/L	EPA 6010B	05/01/13 11:30
Benzene	2.9	0.50	ug/L	EPA 8260B	04/26/13 15:22
Toluene	1.1	0.50	ug/L	EPA 8260B	04/26/13 15:22
Ethylbenzene	2.1	0.50	ug/L	EPA 8260B	04/26/13 15:22
Total Xylenes	0.98	0.50	ug/L	EPA 8260B	04/26/13 15:22
Methyl-t-butyl ether (MTBE)	1.8	0.50	ug/L	EPA 8260B	04/26/13 15:22
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 15:22
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 15:22
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 15:22
Tert-Butanol	6.2	5.0	ug/L	EPA 8260B	04/26/13 15:22
Methanol	< 50	50	ug/L	EPA 8260B	04/26/13 15:22
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/26/13 15:22
TPH as Gasoline	1000	50	ug/L	EPA 8260B	04/26/13 15:22
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 15:22
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/26/13 15:22
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	04/26/13 15:22
Toluene - d8 (Surr)	99.6		% Recovery	EPA 8260B	04/26/13 15:22

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-11**

Matrix : Water

Lab Number : 84690-05

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	0.32	0.20	mg/L	EPA 300.0	04/25/13 16:11
Sulfate	80	1.0	mg/L	EPA 300.0	04/25/13 14:32
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 20:12
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/25/13 09:14
Arsenic, Dissolved	0.020	0.015	mg/L	EPA 6010B	05/01/13 11:41
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:41
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	05/01/13 11:41
Manganese, Dissolved	1.3	0.0050	mg/L	EPA 6010B	05/01/13 11:41
Sodium, Dissolved	670	5.0	mg/L	EPA 6010B	05/01/13 12:05
Benzene	16	0.90	ug/L	EPA 8260B	04/29/13 22:49
Toluene	18	0.90	ug/L	EPA 8260B	04/29/13 22:49
Ethylbenzene	140	0.90	ug/L	EPA 8260B	04/29/13 22:49
Total Xylenes	640	0.90	ug/L	EPA 8260B	04/29/13 22:49
Methyl-t-butyl ether (MTBE)	< 0.90	0.90	ug/L	EPA 8260B	04/29/13 22:49
Diisopropyl ether (DIPE)	< 0.90	0.90	ug/L	EPA 8260B	04/29/13 22:49
Ethyl-t-butyl ether (ETBE)	< 0.90	0.90	ug/L	EPA 8260B	04/29/13 22:49
Tert-amyl methyl ether (TAME)	< 0.90	0.90	ug/L	EPA 8260B	04/29/13 22:49
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/29/13 22:49
Methanol	< 90	90	ug/L	EPA 8260B	04/29/13 22:49
Ethanol	< 9.0	9.0	ug/L	EPA 8260B	04/29/13 22:49
TPH as Gasoline	5800	90	ug/L	EPA 8260B	04/29/13 22:49
1,2-Dichloroethane	< 0.90	0.90	ug/L	EPA 8260B	04/29/13 22:49
1,2-Dibromoethane	< 0.90	0.90	ug/L	EPA 8260B	04/29/13 22:49
1,2-Dichloroethane-d4 (Surr)	97.9		% Recovery	EPA 8260B	04/29/13 22:49
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	04/29/13 22:49

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-5**

Matrix : Water

Lab Number : 84690-06

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	0.43	0.20	mg/L	EPA 300.0	04/25/13 14:46
Sulfate	22	0.50	mg/L	EPA 300.0	04/25/13 12:45
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 22:23
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/25/13 09:39
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 11:45
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:45
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	05/01/13 11:45
Manganese, Dissolved	1.3	0.0050	mg/L	EPA 6010B	05/01/13 11:45
Sodium, Dissolved	47	0.50	mg/L	EPA 6010B	05/01/13 11:45
Benzene	32	0.50	ug/L	EPA 8260B	04/29/13 16:26
Toluene	2.5	0.50	ug/L	EPA 8260B	04/29/13 16:26
Ethylbenzene	38	0.50	ug/L	EPA 8260B	04/29/13 16:26
Total Xylenes	31	0.50	ug/L	EPA 8260B	04/29/13 16:26
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 16:26
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 16:26
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 16:26
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 16:26
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/29/13 16:26
Methanol	< 50	50	ug/L	EPA 8260B	04/29/13 16:26
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	04/29/13 16:26
TPH as Gasoline	3000	50	ug/L	EPA 8260B	04/29/13 16:26
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 16:26
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 16:26
1,2-Dichloroethane-d4 (Surr)	98.8		% Recovery	EPA 8260B	04/29/13 16:26
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/29/13 16:26

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **MW-6**

Matrix : Water

Lab Number : 84690-07

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/25/13 14:59
Sulfate	2.2	0.50	mg/L	EPA 300.0	04/25/13 12:59
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 22:33
Ferrous Iron	0.34	0.10	mg/L	SM 3500-Fe D	04/25/13 09:53
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 11:49
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:49
Iron, Dissolved	0.22	0.10	mg/L	EPA 6010B	05/01/13 11:49
Manganese, Dissolved	2.4	0.0050	mg/L	EPA 6010B	05/01/13 11:49
Sodium, Dissolved	68	0.50	mg/L	EPA 6010B	05/01/13 11:49
Benzene	880	1.5	ug/L	EPA 8260B	04/26/13 18:10
Toluene	22	1.5	ug/L	EPA 8260B	04/26/13 18:10
Ethylbenzene	89	1.5	ug/L	EPA 8260B	04/26/13 18:10
Total Xylenes	25	1.5	ug/L	EPA 8260B	04/26/13 18:10
Methyl-t-butyl ether (MTBE)	190	1.5	ug/L	EPA 8260B	04/26/13 18:10
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:10
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:10
Tert-amyl methyl ether (TAME)	2.7	1.5	ug/L	EPA 8260B	04/26/13 18:10
Tert-Butanol	700	7.0	ug/L	EPA 8260B	04/26/13 18:10
Methanol	< 400	400	ug/L	EPA 8260B	04/26/13 18:10
Ethanol	< 15	15	ug/L	EPA 8260B	04/26/13 18:10
TPH as Gasoline	8600	150	ug/L	EPA 8260B	04/26/13 18:10
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:10
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:10
1,2-Dichloroethane-d4 (Surr)	92.3		% Recovery	EPA 8260B	04/26/13 18:10
Toluene - d8 (Surr)	95.9		% Recovery	EPA 8260B	04/26/13 18:10

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **DW-8**

Matrix : Water

Lab Number : 84690-08

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/25/13 13:12
Sulfate	5.1	1.0	mg/L	EPA 300.0	04/25/13 15:31
Hexavalent Chromium	2.2	1.0	ug/L	EPA 7199	04/24/13 20:49
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/25/13 09:54
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 11:53
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:53
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	05/01/13 11:53
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:53
Sodium, Dissolved	41	0.50	mg/L	EPA 6010B	05/01/13 11:53
Benzene	350	0.90	ug/L	EPA 8260B	04/26/13 17:36
Toluene	370	0.90	ug/L	EPA 8260B	04/26/13 17:36
Ethylbenzene	140	0.90	ug/L	EPA 8260B	04/26/13 17:36
Total Xylenes	790	0.90	ug/L	EPA 8260B	04/26/13 17:36
Methyl-t-butyl ether (MTBE)	< 0.90	0.90	ug/L	EPA 8260B	04/26/13 17:36
Diisopropyl ether (DIPE)	< 0.90	0.90	ug/L	EPA 8260B	04/26/13 17:36
Ethyl-t-butyl ether (ETBE)	< 0.90	0.90	ug/L	EPA 8260B	04/26/13 17:36
Tert-amyl methyl ether (TAME)	< 0.90	0.90	ug/L	EPA 8260B	04/26/13 17:36
Tert-Butanol	8.0	5.0	ug/L	EPA 8260B	04/26/13 17:36
Methanol	< 200	200	ug/L	EPA 8260B	04/26/13 17:36
Ethanol	< 80	80	ug/L	EPA 8260B	04/26/13 17:36
TPH as Gasoline	5900	90	ug/L	EPA 8260B	04/26/13 17:36
1,2-Dichloroethane	< 0.90	0.90	ug/L	EPA 8260B	04/26/13 17:36
1,2-Dibromoethane	< 0.90	0.90	ug/L	EPA 8260B	04/26/13 17:36
1,2-Dichloroethane-d4 (Surr)	93.3		% Recovery	EPA 8260B	04/26/13 17:36
Toluene - d8 (Surr)	99.3		% Recovery	EPA 8260B	04/26/13 17:36

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-1**

Matrix : Water

Lab Number : 84690-09

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/25/13 13:26
Sulfate	0.54	0.50	mg/L	EPA 300.0	04/25/13 13:26
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 20:59
Ferrous Iron	< 0.10	0.10	mg/L	SM 3500-Fe D	04/25/13 09:54
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 11:57
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 11:57
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	05/01/13 11:57
Manganese, Dissolved	2.9	0.0050	mg/L	EPA 6010B	05/01/13 11:57
Sodium, Dissolved	68	0.50	mg/L	EPA 6010B	05/01/13 11:57
Benzene	230	2.0	ug/L	EPA 8260B	04/26/13 22:20
Toluene	160	2.0	ug/L	EPA 8260B	04/26/13 22:20
Ethylbenzene	370	2.0	ug/L	EPA 8260B	04/26/13 22:20
Total Xylenes	1200	2.0	ug/L	EPA 8260B	04/26/13 22:20
Methyl-t-butyl ether (MTBE)	< 2.0	2.0	ug/L	EPA 8260B	04/26/13 22:20
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	04/26/13 22:20
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	04/26/13 22:20
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	04/26/13 22:20
Tert-Butanol	< 9.0	9.0	ug/L	EPA 8260B	04/26/13 22:20
Methanol	< 200	200	ug/L	EPA 8260B	04/26/13 22:20
Ethanol	< 20	20	ug/L	EPA 8260B	04/26/13 22:20
TPH as Gasoline	9700	200	ug/L	EPA 8260B	04/26/13 22:20
1,2-Dichloroethane	< 2.0	2.0	ug/L	EPA 8260B	04/26/13 22:20
1,2-Dibromoethane	< 2.0	2.0	ug/L	EPA 8260B	04/26/13 22:20
1,2-Dichloroethane-d4 (Surr)	97.1		% Recovery	EPA 8260B	04/26/13 22:20
Toluene - d8 (Surr)	97.9		% Recovery	EPA 8260B	04/26/13 22:20

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-10**

Matrix : Water

Lab Number : 84690-10

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Nitrate as N	< 0.10	0.10	mg/L	EPA 300.0	04/25/13 14:06
Sulfate	1.4	0.50	mg/L	EPA 300.0	04/25/13 14:06
Hexavalent Chromium	< 1.0	1.0	ug/L	EPA 7199	04/24/13 20:21
Ferrous Iron	0.11	0.10	mg/L	SM 3500-Fe D	04/25/13 09:54
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/13 12:01
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/13 12:01
Iron, Dissolved	0.12	0.10	mg/L	EPA 6010B	05/01/13 12:01
Manganese, Dissolved	2.8	0.0050	mg/L	EPA 6010B	05/01/13 12:01
Sodium, Dissolved	52	0.50	mg/L	EPA 6010B	05/01/13 12:01
Benzene	12	0.50	ug/L	EPA 8260B	04/29/13 17:01
Toluene	11	0.50	ug/L	EPA 8260B	04/29/13 17:01
Ethylbenzene	24	0.50	ug/L	EPA 8260B	04/29/13 17:01
Total Xylenes	81	0.50	ug/L	EPA 8260B	04/29/13 17:01
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 17:01
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 17:01
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 17:01
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 17:01
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/29/13 17:01
Methanol	< 50	50	ug/L	EPA 8260B	04/29/13 17:01
Ethanol	< 8.0	8.0	ug/L	EPA 8260B	04/29/13 17:01
TPH as Gasoline	1800	50	ug/L	EPA 8260B	04/29/13 17:01
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 17:01
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/29/13 17:01
1,2-Dichloroethane-d4 (Surr)	99.2		% Recovery	EPA 8260B	04/29/13 17:01
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/29/13 17:01

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-8**

Matrix : Water

Lab Number : 84690-11

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	1700	6.0	ug/L	EPA 8260B	04/26/13 22:56
Toluene	4200	6.0	ug/L	EPA 8260B	04/26/13 22:56
Ethylbenzene	430	6.0	ug/L	EPA 8260B	04/26/13 22:56
Total Xylenes	5600	6.0	ug/L	EPA 8260B	04/26/13 22:56
Methyl-t-butyl ether (MTBE)	< 6.0	6.0	ug/L	EPA 8260B	04/26/13 22:56
Diisopropyl ether (DIPE)	< 6.0	6.0	ug/L	EPA 8260B	04/26/13 22:56
Ethyl-t-butyl ether (ETBE)	< 6.0	6.0	ug/L	EPA 8260B	04/26/13 22:56
Tert-amyl methyl ether (TAME)	< 6.0	6.0	ug/L	EPA 8260B	04/26/13 22:56
Tert-Butanol	< 30	30	ug/L	EPA 8260B	04/26/13 22:56
Methanol	< 600	600	ug/L	EPA 8260B	04/26/13 22:56
Ethanol	< 60	60	ug/L	EPA 8260B	04/26/13 22:56
TPH as Gasoline	33000	600	ug/L	EPA 8260B	04/26/13 22:56
1,2-Dichloroethane	< 6.0	6.0	ug/L	EPA 8260B	04/26/13 22:56
1,2-Dibromoethane	< 6.0	6.0	ug/L	EPA 8260B	04/26/13 22:56
1,2-Dichloroethane-d4 (Surr)	98.7		% Recovery	EPA 8260B	04/26/13 22:56
Toluene - d8 (Surr)	98.8		% Recovery	EPA 8260B	04/26/13 22:56

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **IP-9**

Matrix : Water

Lab Number : 84690-12

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	42	1.5	ug/L	EPA 8260B	04/26/13 18:47
Toluene	480	1.5	ug/L	EPA 8260B	04/26/13 18:47
Ethylbenzene	210	1.5	ug/L	EPA 8260B	04/26/13 18:47
Total Xylenes	1100	1.5	ug/L	EPA 8260B	04/26/13 18:47
Methyl-t-butyl ether (MTBE)	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:47
Diisopropyl ether (DIPE)	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:47
Ethyl-t-butyl ether (ETBE)	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:47
Tert-amyl methyl ether (TAME)	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:47
Tert-Butanol	11	7.0	ug/L	EPA 8260B	04/26/13 18:47
Methanol	< 150	150	ug/L	EPA 8260B	04/26/13 18:47
Ethanol	< 15	15	ug/L	EPA 8260B	04/26/13 18:47
TPH as Gasoline	8800	150	ug/L	EPA 8260B	04/26/13 18:47
1,2-Dichloroethane	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:47
1,2-Dibromoethane	< 1.5	1.5	ug/L	EPA 8260B	04/26/13 18:47
1,2-Dichloroethane-d4 (Surr)	95.9		% Recovery	EPA 8260B	04/26/13 18:47
Toluene - d8 (Surr)	96.5		% Recovery	EPA 8260B	04/26/13 18:47

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **TP-2**

Matrix : Water

Lab Number : 84690-13

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	1.2	0.50	ug/L	EPA 8260B	04/25/13 02:48
Toluene	0.88	0.50	ug/L	EPA 8260B	04/25/13 02:48
Ethylbenzene	1.6	0.50	ug/L	EPA 8260B	04/25/13 02:48
Total Xylenes	7.4	0.50	ug/L	EPA 8260B	04/25/13 02:48
Methyl-t-butyl ether (MTBE)	0.54	0.50	ug/L	EPA 8260B	04/26/13 05:45
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:48
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:48
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:48
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 02:48
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 02:48
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 02:48
TPH as Gasoline	100	50	ug/L	EPA 8260B	04/25/13 02:48
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:48
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 02:48
1,2-Dichloroethane-d4 (Surr)	97.8		% Recovery	EPA 8260B	04/25/13 02:48
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	04/25/13 02:48

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **TP-1**

Matrix : Water

Lab Number : 84690-14

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	35	0.50	ug/L	EPA 8260B	04/25/13 03:19
Toluene	21	0.50	ug/L	EPA 8260B	04/25/13 03:19
Ethylbenzene	22	0.50	ug/L	EPA 8260B	04/25/13 03:19
Total Xylenes	180	0.50	ug/L	EPA 8260B	04/25/13 03:19
Methyl-t-butyl ether (MTBE)	76	0.50	ug/L	EPA 8260B	04/25/13 03:19
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:19
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:19
Tert-amyl methyl ether (TAME)	0.70	0.50	ug/L	EPA 8260B	04/25/13 03:19
Tert-Butanol	33	5.0	ug/L	EPA 8260B	04/25/13 03:19
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 03:19
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 03:19
TPH as Gasoline	2000	50	ug/L	EPA 8260B	04/25/13 03:19
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:19
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:19
1,2-Dichloroethane-d4 (Surr)	94.8		% Recovery	EPA 8260B	04/25/13 03:19
Toluene - d8 (Surr)	98.5		% Recovery	EPA 8260B	04/25/13 03:19

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **VW-2**

Matrix : Water

Lab Number : 84690-15

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 03:51
Methanol	< 50	50	ug/L	EPA 8260B	04/25/13 03:51
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/13 03:51
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/25/13 03:51
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/13 03:51
1,2-Dichloroethane-d4 (Surr)	98.8		% Recovery	EPA 8260B	04/25/13 03:51
Toluene - d8 (Surr)	99.7		% Recovery	EPA 8260B	04/25/13 03:51

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Sample : **Trip Blank-03**

Matrix : Water

Lab Number : 84690-16

Sample Date :04/24/2013

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 23:07
Methanol	< 50	50	ug/L	EPA 8260B	04/24/13 23:07
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/13 23:07
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/13 23:07
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/13 23:07
1,2-Dichloroethane-d4 (Surr)	96.2		% Recovery	EPA 8260B	04/24/13 23:07
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	04/24/13 23:07

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Arsenic, Dissolved	< 0.015	0.015	mg/L	EPA 6010B	05/01/2013	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013
Chromium, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Iron, Dissolved	< 0.10	0.10	mg/L	EPA 6010B	05/01/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Manganese, Dissolved	< 0.0050	0.0050	mg/L	EPA 6010B	05/01/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Sodium, Dissolved	< 0.50	0.50	mg/L	EPA 6010B	05/01/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/26/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Methanol	< 50	50	ug/L	EPA 8260B	04/26/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/26/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/26/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/2013	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Methanol	< 50	50	ug/L	EPA 8260B	04/25/2013	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/25/2013	1,2-Dichloroethane-d4 (Surr)	99.8		%	EPA 8260B	04/26/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/25/2013	Toluene - d8 (Surr)	99.8		%	EPA 8260B	04/26/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/25/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	04/25/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
Toluene - d8 (Surr)	99.2		%	EPA 8260B	04/25/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
						Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
						Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
						Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
						Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
						Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	05/01/2013
						Methanol	< 50	50	ug/L	EPA 8260B	05/01/2013
						Ethanol	< 5.0	5.0	ug/L	EPA 8260B	05/01/2013
						TPH as Gasoline	< 50	50	ug/L	EPA 8260B	05/01/2013
						1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013
						1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	05/01/2013

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

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
1,2-Dichloroethane-d4 (Surr)	99.8		%	EPA 8260B	05/01/2013	1,2-Dichloroethane-d4 (Surr)	99.8		%	EPA 8260B	04/26/2013
Toluene - d8 (Surr)	100		%	EPA 8260B	05/01/2013	Toluene - d8 (Surr)	101		%	EPA 8260B	04/26/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/2013	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/29/2013
Methanol	< 50	50	ug/L	EPA 8260B	04/24/2013	Methanol	< 50	50	ug/L	EPA 8260B	04/29/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/24/2013	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/29/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/24/2013	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/29/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/24/2013	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
1,2-Dichloroethane-d4 (Surr)	99.1		%	EPA 8260B	04/24/2013	1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	04/29/2013
Toluene - d8 (Surr)	100		%	EPA 8260B	04/24/2013	Toluene - d8 (Surr)	102		%	EPA 8260B	04/29/2013
Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	Benzene	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	Toluene	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/26/2013	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	04/29/2013
Methanol	< 50	50	ug/L	EPA 8260B	04/26/2013	Methanol	< 50	50	ug/L	EPA 8260B	04/29/2013
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/26/2013	Ethanol	< 5.0	5.0	ug/L	EPA 8260B	04/29/2013
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/26/2013	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	04/29/2013
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/26/2013	1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	04/29/2013

QC Report : Method Blank Data

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

<u>Parameter</u>	<u>Measured Value</u>	<u>Method Reporting Limit</u>	<u>Units</u>	<u>Analysis Method</u>	<u>Date Analyzed</u>
1,2-Dichloroethane-d4 (Surr)	99.8		%	EPA 8260B	04/29/2013
Toluene - d8 (Surr)	101		%	EPA 8260B	04/29/2013
Hexavalent Chromium	<1.0	1.0	ug/L	EPA 7199	04/24/2013
Ferrous Iron	<0.10	0.10	mg/L	SM 3500-Fe D	04/25/2013
Nitrate as N	<0.10	0.10	mg/L	EPA 300.0	04/25/2013
Sulfate	<0.50	0.50	mg/L	EPA 300.0	04/25/2013

<u>Parameter</u>	<u>Measured Value</u>	<u>Method Reporting Limit</u>	<u>Units</u>	<u>Analysis Method</u>	<u>Date Analyzed</u>
------------------	-----------------------	-------------------------------	--------------	------------------------	----------------------

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Hexavalent Chromium														
	84690-10	< 1.0	5.00	5.00	5.13	5.19	ug/L	EPA 7199	4/24/13	102	104	1.23	90.0-110	10
Ferrous Iron														
	84690-01	< 0.10	0.506	0.506	0.278	0.269	mg/L	SM 3500-Fe D	4/25/13	46.1	44.3	3.29	70.0-130	25
Nitrate as N														
	84690-01	< 0.10	0.500	0.500	0.586	0.587	mg/L	EPA 300.0	4/25/13	117	117	0.0767	90.0-110	10
Sulfate														
	84690-01	1.3	2.50	2.50	3.56	3.57	mg/L	EPA 300.0	4/25/13	90.3	90.6	0.247	90.0-110	10
1,2-Dibromoethane														
	84690-03	<0.50	40.0	40.0	43.0	43.0	ug/L	EPA 8260B	4/25/13	107	107	0.0761	80-120	25
1,2-Dichloroethane														
	84690-03	<0.50	39.9	39.9	40.7	40.5	ug/L	EPA 8260B	4/25/13	102	102	0.393	75.7-122	25
Benzene														
	84690-03	2.2	39.9	39.9	39.7	40.0	ug/L	EPA 8260B	4/25/13	94.1	94.7	0.570	80-120	25
Diisopropyl ether														
	84690-03	<0.50	39.9	39.9	39.0	39.6	ug/L	EPA 8260B	4/25/13	97.7	99.3	1.68	80-120	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : Tesoro - Livermore

Project Number : 01LV

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ethanol	84690-03	12	101	101	93.8	107	ug/L	EPA 8260B	4/25/13	80.8	93.7	14.8	55.1-159	25
Ethyl-tert-butyl ether	84690-03	<0.50	39.0	39.0	40.0	40.6	ug/L	EPA 8260B	4/25/13	102	104	1.47	76.5-120	25
Ethylbenzene	84690-03	7.7	39.9	39.9	46.4	47.5	ug/L	EPA 8260B	4/25/13	96.9	99.6	2.73	80-120	25
Methanol	84690-03	100	998	998	854	978	ug/L	EPA 8260B	4/25/13	75.6	88.0	15.2	53.2-147	25
Methyl-t-butyl ether	84690-03	<0.50	39.3	39.3	40.0	40.5	ug/L	EPA 8260B	4/25/13	102	103	1.33	69.7-121	25
P + M Xylene	84690-03	1.1	39.9	39.9	39.9	41.0	ug/L	EPA 8260B	4/25/13	97.1	99.9	2.84	76.8-120	25
Tert-Butanol	84690-03	<5.0	200	200	198	200	ug/L	EPA 8260B	4/25/13	98.8	100	1.14	80-120	25
Tert-amyl-methyl ether	84690-03	<0.50	39.2	39.2	39.3	40.2	ug/L	EPA 8260B	4/25/13	100	102	2.12	78.9-120	25
Toluene	84690-03	0.78	39.9	39.9	39.4	39.7	ug/L	EPA 8260B	4/25/13	96.6	97.5	0.904	80-120	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Methyl-t-butyl ether	84696-03	<0.50	39.0	39.4	42.1	41.9	ug/L	EPA 8260B	4/26/13	108	106	1.38	69.7-121	25
1,2-Dibromoethane	84699-13	<0.50	40.0	39.8	40.0	40.4	ug/L	EPA 8260B	4/26/13	100	101	1.30	80-120	25
1,2-Dichloroethane	84699-13	<0.50	39.9	39.8	39.9	40.0	ug/L	EPA 8260B	4/26/13	100	101	0.695	75.7-122	25
Benzene	84699-13	<0.50	39.9	39.8	38.4	38.3	ug/L	EPA 8260B	4/26/13	96.2	96.3	0.103	80-120	25
Diisopropyl ether	84699-13	<0.50	39.9	39.7	38.8	38.4	ug/L	EPA 8260B	4/26/13	97.3	96.8	0.586	80-120	25
Ethanol	84699-13	<5.0	101	100	119	98.0	ug/L	EPA 8260B	4/26/13	118	97.7	19.0	55.1-159	25
Ethyl-tert-butyl ether	84699-13	<0.50	39.0	38.9	39.9	39.6	ug/L	EPA 8260B	4/26/13	102	102	0.450	76.5-120	25
Ethylbenzene	84699-13	<0.50	39.9	39.8	39.8	39.5	ug/L	EPA 8260B	4/26/13	99.8	99.4	0.472	80-120	25
Methanol	84699-13	<50	998	994	1040	939	ug/L	EPA 8260B	4/26/13	104	94.4	9.40	53.2-147	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Methyl-t-butyl ether	84699-13	0.53	39.3	39.2	38.2	38.8	ug/L	EPA 8260B	4/26/13	95.7	97.6	1.93	69.7-121	25
P + M Xylene	84699-13	<0.50	39.9	39.8	39.0	39.4	ug/L	EPA 8260B	4/26/13	97.8	99.2	1.42	76.8-120	25
Tert-Butanol	84699-13	<5.0	200	200	206	194	ug/L	EPA 8260B	4/26/13	103	97.3	5.33	80-120	25
Tert-amyl-methyl ether	84699-13	<0.50	39.2	39.1	38.9	38.7	ug/L	EPA 8260B	4/26/13	99.2	99.2	0.0745	78.9-120	25
Toluene	84699-13	<0.50	39.9	39.8	39.2	39.2	ug/L	EPA 8260B	4/26/13	98.3	98.6	0.289	80-120	25
1,2-Dibromoethane	84720-02	<0.50	40.1	40.1	41.8	41.8	ug/L	EPA 8260B	5/1/13	104	104	0.0301	70.0-130	25
1,2-Dichloroethane	84720-02	<0.50	40.0	40.0	40.8	40.6	ug/L	EPA 8260B	5/1/13	102	102	0.578	70.0-130	25
Benzene	84720-02	<0.50	40.0	40.0	39.8	39.6	ug/L	EPA 8260B	5/1/13	99.5	99.0	0.511	70.0-130	25
Diisopropyl ether	84720-02	<0.50	40.0	40.0	41.0	41.1	ug/L	EPA 8260B	5/1/13	103	103	0.216	70.0-130	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : Tesoro - Livermore

Project Number : 01LV

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ethanol	84720-02	<5.0	101	101	83.5	95.2	ug/L	EPA 8260B	5/1/13	82.8	94.4	13.1	55.0-150	25
Ethyl-tert-butyl ether	84720-02	<0.50	39.1	39.1	39.5	37.9	ug/L	EPA 8260B	5/1/13	101	97.0	4.00	70.0-130	25
Ethylbenzene	84720-02	<0.50	40.0	40.0	37.4	37.3	ug/L	EPA 8260B	5/1/13	93.5	93.2	0.262	70.0-130	25
Methanol	84720-02	<50	1000	1000	871	1010	ug/L	EPA 8260B	5/1/13	87.1	101	14.5	65.0-150	25
Methyl-t-butyl ether	84720-02	14	39.4	39.4	54.5	51.0	ug/L	EPA 8260B	5/1/13	103	94.0	8.84	70.0-130	25
P + M Xylene	84720-02	<0.50	40.0	40.0	35.4	35.1	ug/L	EPA 8260B	5/1/13	88.5	87.9	0.691	70.0-130	25
Tert-Butanol	84720-02	140	201	201	372	374	ug/L	EPA 8260B	5/1/13	118	119	0.882	70.0-130	25
Tert-amyl-methyl ether	84720-02	<0.50	39.3	39.3	39.1	37.8	ug/L	EPA 8260B	5/1/13	99.4	96.2	3.30	70.0-130	25
Toluene	84720-02	<0.50	40.0	40.0	39.3	39.3	ug/L	EPA 8260B	5/1/13	98.2	98.3	0.0596	70.0-130	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : Tesoro - Livermore

Project Number : 01LV

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
1,2-Dibromoethane	84684-05	<0.50	40.1	40.1	43.0	42.6	ug/L	EPA 8260B	4/24/13	107	106	1.16	80-120	25
1,2-Dichloroethane	84684-05	<0.50	40.0	40.0	40.3	39.7	ug/L	EPA 8260B	4/24/13	101	99.4	1.44	75.7-122	25
Benzene	84684-05	<0.50	40.0	40.0	39.6	38.7	ug/L	EPA 8260B	4/24/13	99.0	96.8	2.28	80-120	25
Diisopropyl ether	84684-05	<0.50	40.0	40.0	38.6	38.7	ug/L	EPA 8260B	4/24/13	96.7	96.8	0.0439	80-120	25
Ethanol	84684-05	<5.0	101	101	100	97.7	ug/L	EPA 8260B	4/24/13	99.2	96.8	2.42	55.1-159	25
Ethyl-tert-butyl ether	84684-05	<0.50	39.1	39.1	41.8	41.4	ug/L	EPA 8260B	4/24/13	107	106	0.907	76.5-120	25
Ethylbenzene	84684-05	<0.50	40.0	40.0	41.7	41.1	ug/L	EPA 8260B	4/24/13	104	103	1.46	80-120	25
Methanol	84684-05	<50	1000	1000	1020	1010	ug/L	EPA 8260B	4/24/13	102	101	1.05	53.2-147	25
Methyl-t-butyl ether	84684-05	3.3	39.4	39.4	42.7	42.8	ug/L	EPA 8260B	4/24/13	100	100	0.136	69.7-121	25
P + M Xylene	84684-05	<0.50	40.0	40.0	41.3	40.9	ug/L	EPA 8260B	4/24/13	103	102	0.827	76.8-120	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Tert-Butanol	84684-05	<5.0	201	201	204	205	ug/L	EPA 8260B	4/24/13	102	102	0.558	80-120	25
Tert-amyl-methyl ether	84684-05	<0.50	39.3	39.3	40.7	40.3	ug/L	EPA 8260B	4/24/13	104	103	0.949	78.9-120	25
Toluene	84684-05	<0.50	40.0	40.0	40.8	39.7	ug/L	EPA 8260B	4/24/13	102	99.2	2.80	80-120	25
1,2-Dibromoethane	84676-03	<0.50	40.1	40.1	41.0	40.4	ug/L	EPA 8260B	4/26/13	102	101	1.54	80-120	25
1,2-Dichloroethane	84676-03	<0.50	40.0	40.0	42.2	40.7	ug/L	EPA 8260B	4/26/13	106	102	3.68	75.7-122	25
Benzene	84676-03	<0.50	40.0	40.0	38.4	38.0	ug/L	EPA 8260B	4/26/13	96.0	95.1	0.932	80-120	25
Diisopropyl ether	84676-03	<0.50	40.0	40.0	38.9	37.9	ug/L	EPA 8260B	4/26/13	97.4	94.9	2.70	80-120	25
Ethanol	84676-03	<5.0	101	101	100	85.9	ug/L	EPA 8260B	4/26/13	99.5	85.2	15.5	55.1-159	25
Ethyl-tert-butyl ether	84676-03	<0.50	39.1	39.1	38.5	37.6	ug/L	EPA 8260B	4/26/13	98.4	96.2	2.32	76.5-120	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Ethylbenzene	84676-03	<0.50	40.0	40.0	38.9	38.4	ug/L	EPA 8260B	4/26/13	97.3	96.0	1.34	80-120	25
Methanol	84676-03	<50	1000	1000	1140	1100	ug/L	EPA 8260B	4/26/13	114	110	2.80	53.2-147	25
Methyl-t-butyl ether	84676-03	<0.50	39.4	39.4	36.8	36.2	ug/L	EPA 8260B	4/26/13	93.3	91.7	1.71	69.7-121	25
P + M Xylene	84676-03	<0.50	40.0	40.0	39.4	38.9	ug/L	EPA 8260B	4/26/13	98.6	97.3	1.29	76.8-120	25
Tert-Butanol	84676-03	70	201	201	272	267	ug/L	EPA 8260B	4/26/13	101	98.3	2.30	80-120	25
Tert-amyl-methyl ether	84676-03	<0.50	39.3	39.3	40.6	39.3	ug/L	EPA 8260B	4/26/13	103	100	3.36	78.9-120	25
Toluene	84676-03	<0.50	40.0	40.0	39.9	39.2	ug/L	EPA 8260B	4/26/13	99.6	97.9	1.73	80-120	25
1,2-Dibromoethane	84699-06	<0.50	40.1	40.1	42.4	41.5	ug/L	EPA 8260B	4/29/13	106	104	2.09	70.0-130	25
1,2-Dichloroethane	84699-06	<0.50	40.0	40.0	43.9	41.3	ug/L	EPA 8260B	4/29/13	110	103	6.02	70.0-130	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : Tesoro - Livermore

Project Number : 01LV

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	84699-06	<0.50	40.0	40.0	39.8	38.9	ug/L	EPA 8260B	4/29/13	99.4	97.3	2.10	70.0-130	25
Diisopropyl ether	84699-06	1.6	40.0	40.0	41.5	39.4	ug/L	EPA 8260B	4/29/13	100	94.6	5.61	70.0-130	25
Ethanol	84699-06	<5.0	101	101	91.6	97.2	ug/L	EPA 8260B	4/29/13	90.8	96.4	5.91	55.0-150	25
Ethyl-tert-butyl ether	84699-06	<0.50	39.1	39.1	41.5	40.0	ug/L	EPA 8260B	4/29/13	106	102	3.60	70.0-130	25
Ethylbenzene	84699-06	<0.50	40.0	40.0	40.5	39.1	ug/L	EPA 8260B	4/29/13	101	97.8	3.37	70.0-130	25
Methanol	84699-06	<50	1000	1000	1080	1120	ug/L	EPA 8260B	4/29/13	108	112	2.89	65.0-150	25
Methyl-t-butyl ether	84699-06	12	39.4	39.4	53.2	50.9	ug/L	EPA 8260B	4/29/13	103	97.4	5.60	70.0-130	25
P + M Xylene	84699-06	<0.50	40.0	40.0	40.6	40.2	ug/L	EPA 8260B	4/29/13	101	100	0.869	70.0-130	25
Tert-Butanol	84699-06	66	201	201	269	264	ug/L	EPA 8260B	4/29/13	101	98.7	2.46	70.0-130	25
Tert-amyl-methyl ether	84699-06	<0.50	39.3	39.3	42.5	40.2	ug/L	EPA 8260B	4/29/13	108	102	5.60	70.0-130	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Toluene	84699-06	<0.50	40.0	40.0	41.0	40.0	ug/L	EPA 8260B	4/29/13	102	100	2.54	70.0-130	25
1,2-Dibromoethane	84719-03	<0.50	40.1	40.1	40.1	39.2	ug/L	EPA 8260B	4/29/13	100	97.7	2.44	70.0-130	25
1,2-Dichloroethane	84719-03	<0.50	40.0	40.0	39.6	37.7	ug/L	EPA 8260B	4/29/13	99.0	94.2	4.94	70.0-130	25
Benzene	84719-03	0.52	40.0	40.0	36.5	35.8	ug/L	EPA 8260B	4/29/13	89.9	88.2	1.89	70.0-130	25
Diisopropyl ether	84719-03	<0.50	40.0	40.0	34.1	33.3	ug/L	EPA 8260B	4/29/13	85.4	83.3	2.55	70.0-130	25
Ethanol	84719-03	<5.0	101	101	88.8	102	ug/L	EPA 8260B	4/29/13	88.1	101	13.9	55.0-150	25
Ethyl-tert-butyl ether	84719-03	<0.50	39.1	39.1	35.9	35.1	ug/L	EPA 8260B	4/29/13	91.7	89.7	2.24	70.0-130	25
Ethylbenzene	84719-03	<0.50	40.0	40.0	37.8	37.1	ug/L	EPA 8260B	4/29/13	94.6	92.9	1.84	70.0-130	25
Methanol	84719-03	<50	1000	1000	1100	1100	ug/L	EPA 8260B	4/29/13	110	110	0.196	65.0-150	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

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

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Methyl-t-butyl ether	84719-03	0.60	39.4	39.4	34.8	33.7	ug/L	EPA 8260B	4/29/13	86.8	84.0	3.25	70.0-130	25
P + M Xylene	84719-03	0.68	40.0	40.0	38.6	38.3	ug/L	EPA 8260B	4/29/13	94.9	94.0	0.883	70.0-130	25
Tert-Butanol	84719-03	<5.0	201	201	193	192	ug/L	EPA 8260B	4/29/13	96.3	95.8	0.452	70.0-130	25
Tert-amyl-methyl ether	84719-03	<0.50	39.3	39.3	37.2	36.7	ug/L	EPA 8260B	4/29/13	94.7	93.4	1.38	70.0-130	25
Toluene	84719-03	<0.50	40.0	40.0	38.1	37.5	ug/L	EPA 8260B	4/29/13	95.2	93.8	1.54	70.0-130	25
Arsenic, (Dis)	84690-01	< 0.015	0.400	0.400	0.410	0.419	mg/L	EPA 6010B	5/1/13	102	104	2.05	75-125	20
Chromium, (Dis)	84690-01	< 0.0050	0.400	0.400	0.391	0.399	mg/L	EPA 6010B	5/1/13	97.8	99.8	2.10	75-125	20
Iron, (Dis)	84690-01	0.12	0.400	0.400	0.507	0.512	mg/L	EPA 6010B	5/1/13	97.3	98.7	1.08	75-125	20
Manganese, (Dis)	84690-01	2.4	0.400	0.400	2.74	2.77	mg/L	EPA 6010B	5/1/13	78.0	85.5	1.09	75-125	20

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Sodium, (Dis)	84690-01	47	0.400	0.400	46.8	46.7	mg/L	EPA 6010B	5/1/13	0.00	0.00	0.193	75-125	20

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

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Arsenic, (Dis)	0.400	mg/L	EPA 6010B	5/1/13	101	85-115
Chromium, (Dis)	0.400	mg/L	EPA 6010B	5/1/13	100	85-115
Iron, (Dis)	0.400	mg/L	EPA 6010B	5/1/13	99.8	85-115
Manganese, (Dis)	0.400	mg/L	EPA 6010B	5/1/13	98.9	85-115
Sodium, (Dis)	0.400	mg/L	EPA 6010B	5/1/13	96.8	85-115
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	4/25/13	106	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	4/25/13	103	75.7-122
Benzene	40.0	ug/L	EPA 8260B	4/25/13	95.5	80-120
Diisopropyl ether	40.0	ug/L	EPA 8260B	4/25/13	100	80-120
Ethanol	101	ug/L	EPA 8260B	4/25/13	101	55.1-159
Ethyl-tert-butyl ether	39.1	ug/L	EPA 8260B	4/25/13	105	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	4/25/13	99.1	80-120
Methanol	1000	ug/L	EPA 8260B	4/25/13	82.4	53.2-147
Methyl-t-butyl ether	39.4	ug/L	EPA 8260B	4/25/13	101	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	4/25/13	97.6	76.8-120
Tert-Butanol	201	ug/L	EPA 8260B	4/25/13	99.4	80-120
Tert-amyl-methyl ether	39.3	ug/L	EPA 8260B	4/25/13	103	78.9-120
Toluene	40.0	ug/L	EPA 8260B	4/25/13	97.9	80-120
Methyl-t-butyl ether	39.4	ug/L	EPA 8260B	4/25/13	106	69.7-121

QC Report : Laboratory Control Sample (LCS)

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

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	4/26/13	101	80-120
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	4/26/13	101	75.7-122
Benzene	40.0	ug/L	EPA 8260B	4/26/13	95.9	80-120
Diisopropyl ether	40.0	ug/L	EPA 8260B	4/26/13	97.5	80-120
Ethanol	101	ug/L	EPA 8260B	4/26/13	102	55.1-159
Ethyl-tert-butyl ether	39.1	ug/L	EPA 8260B	4/26/13	100	76.5-120
Ethylbenzene	40.0	ug/L	EPA 8260B	4/26/13	102	80-120
Methanol	1000	ug/L	EPA 8260B	4/26/13	93.8	53.2-147
Methyl-t-butyl ether	39.4	ug/L	EPA 8260B	4/26/13	96.2	69.7-121
P + M Xylene	40.0	ug/L	EPA 8260B	4/26/13	101	76.8-120
Tert-Butanol	201	ug/L	EPA 8260B	4/26/13	100	80-120
Tert-amyl-methyl ether	39.3	ug/L	EPA 8260B	4/26/13	100	78.9-120
Toluene	40.0	ug/L	EPA 8260B	4/26/13	99.1	80-120
1,2-Dibromoethane	39.9	ug/L	EPA 8260B	5/1/13	102	70.0-130
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	5/1/13	101	70.0-130
Benzene	39.8	ug/L	EPA 8260B	5/1/13	97.2	70.0-130
Diisopropyl ether	39.8	ug/L	EPA 8260B	5/1/13	102	70.0-130
Ethanol	100	ug/L	EPA 8260B	5/1/13	76.1	55.0-150
Ethyl-tert-butyl ether	38.9	ug/L	EPA 8260B	5/1/13	100	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	5/1/13	95.1	70.0-130
Methanol	995	ug/L	EPA 8260B	5/1/13	83.5	65.0-150
Methyl-t-butyl ether	39.2	ug/L	EPA 8260B	5/1/13	101	70.0-130

QC Report : Laboratory Control Sample (LCS)

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

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
P + M Xylene	39.8	ug/L	EPA 8260B	5/1/13	92.9	70.0-130
TPH as Gasoline	504	ug/L	EPA 8260B	5/1/13	95.4	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	5/1/13	97.6	70.0-130
Tert-amyl-methyl ether	39.1	ug/L	EPA 8260B	5/1/13	98.0	70.0-130
Toluene	39.8	ug/L	EPA 8260B	5/1/13	99.3	70.0-130
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	4/24/13	107	80-120
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	4/24/13	102	75.7-122
Benzene	40.2	ug/L	EPA 8260B	4/24/13	101	80-120
Diisopropyl ether	40.1	ug/L	EPA 8260B	4/24/13	102	80-120
Ethanol	101	ug/L	EPA 8260B	4/24/13	98.7	55.1-159
Ethyl-tert-butyl ether	39.3	ug/L	EPA 8260B	4/24/13	108	76.5-120
Ethylbenzene	40.2	ug/L	EPA 8260B	4/24/13	104	80-120
Methanol	1000	ug/L	EPA 8260B	4/24/13	109	53.2-147
Methyl-t-butyl ether	39.6	ug/L	EPA 8260B	4/24/13	104	69.7-121
P + M Xylene	40.2	ug/L	EPA 8260B	4/24/13	103	76.8-120
TPH as Gasoline	504	ug/L	EPA 8260B	4/24/13	83.1	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	4/24/13	106	80-120
Tert-amyl-methyl ether	39.5	ug/L	EPA 8260B	4/24/13	106	78.9-120
Toluene	40.2	ug/L	EPA 8260B	4/24/13	104	80-120
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	4/26/13	101	80-120
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	4/26/13	102	75.7-122

QC Report : Laboratory Control Sample (LCS)

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

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.2	ug/L	EPA 8260B	4/26/13	95.9	80-120
Diisopropyl ether	40.1	ug/L	EPA 8260B	4/26/13	95.3	80-120
Ethanol	101	ug/L	EPA 8260B	4/26/13	97.1	55.1-159
Ethyl-tert-butyl ether	39.3	ug/L	EPA 8260B	4/26/13	98.2	76.5-120
Ethylbenzene	40.2	ug/L	EPA 8260B	4/26/13	97.5	80-120
Methanol	1000	ug/L	EPA 8260B	4/26/13	120	53.2-147
Methyl-t-butyl ether	39.6	ug/L	EPA 8260B	4/26/13	93.3	69.7-121
P + M Xylene	40.2	ug/L	EPA 8260B	4/26/13	97.1	76.8-120
TPH as Gasoline	507	ug/L	EPA 8260B	4/26/13	94.9	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	4/26/13	99.1	80-120
Tert-amyl-methyl ether	39.5	ug/L	EPA 8260B	4/26/13	101	78.9-120
Toluene	40.2	ug/L	EPA 8260B	4/26/13	98.8	80-120
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	4/29/13	103	70.0-130
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	4/29/13	107	70.0-130
Benzene	40.2	ug/L	EPA 8260B	4/29/13	97.5	70.0-130
Diisopropyl ether	40.1	ug/L	EPA 8260B	4/29/13	98.3	70.0-130
Ethanol	101	ug/L	EPA 8260B	4/29/13	90.8	55.0-150
Ethyl-tert-butyl ether	39.3	ug/L	EPA 8260B	4/29/13	104	70.0-130
Ethylbenzene	40.2	ug/L	EPA 8260B	4/29/13	96.1	70.0-130
Methanol	1000	ug/L	EPA 8260B	4/29/13	117	65.0-150
Methyl-t-butyl ether	39.6	ug/L	EPA 8260B	4/29/13	100	70.0-130
P + M Xylene	40.2	ug/L	EPA 8260B	4/29/13	96.4	70.0-130

QC Report : Laboratory Control Sample (LCS)

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

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
TPH as Gasoline	503	ug/L	EPA 8260B	4/29/13	95.4	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	4/29/13	99.7	70.0-130
Tert-amyl-methyl ether	39.5	ug/L	EPA 8260B	4/29/13	104	70.0-130
Toluene	40.2	ug/L	EPA 8260B	4/29/13	100	70.0-130
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	4/29/13	99.4	70.0-130
1,2-Dichloroethane	40.2	ug/L	EPA 8260B	4/29/13	96.5	70.0-130
Benzene	40.2	ug/L	EPA 8260B	4/29/13	91.3	70.0-130
Diisopropyl ether	40.1	ug/L	EPA 8260B	4/29/13	86.9	70.0-130
Ethanol	101	ug/L	EPA 8260B	4/29/13	87.5	55.0-150
Ethyl-tert-butyl ether	39.3	ug/L	EPA 8260B	4/29/13	92.2	70.0-130
Ethylbenzene	40.2	ug/L	EPA 8260B	4/29/13	95.4	70.0-130
Methanol	1000	ug/L	EPA 8260B	4/29/13	110	65.0-150
Methyl-t-butyl ether	39.6	ug/L	EPA 8260B	4/29/13	86.5	70.0-130
P + M Xylene	40.2	ug/L	EPA 8260B	4/29/13	96.4	70.0-130
TPH as Gasoline	507	ug/L	EPA 8260B	4/29/13	93.5	70.0-130
Tert-Butanol	202	ug/L	EPA 8260B	4/29/13	95.5	70.0-130
Tert-amyl-methyl ether	39.5	ug/L	EPA 8260B	4/29/13	94.0	70.0-130
Toluene	40.2	ug/L	EPA 8260B	4/29/13	95.7	70.0-130
Hexavalent Chromium	5.00	ug/L	EPA 7199	4/24/13	95.7	90.0-110

QC Report : Laboratory Control Sample (LCS)

Project Name : **Tesoro - Livermore**

Project Number : **01LV**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Ferrous Iron	0.253	mg/L	SM 3500-Fe D	4/25/13	97.3	70.0-130
Nitrate as N	0.500	mg/L	EPA 300.0	4/25/13	100	90.0-110
Sulfate	2.50	mg/L	EPA 300.0	4/25/13	94.6	90.0-110



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

SRG # / Lab No. 84690

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

Chain-of-Custody Record and Analysis Request

Project Address: 1619 1st Street Livermore, CA

Sample Designation	Sampling		Container				Preservative				Matrix			BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Dissolved Solids (SM 2540C)	Methane and Carbene Dioxide by RSK 175M	Chromium VI (EPA 7199)	Total Metals by EPA 6010 (As, Cr, Fe, Mn, Na)	Distilled	TAT	For Lab Use Only
	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar	HCl	HNO ₃	None	H ₂ SO ₄	Water	Soil															
DW-2	4-24-13	1100	7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	01
DW-9		1030	7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	02
DW-12		1005	7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	03
DW-6		0945	7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	04
MW-11		0920	7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	05
DW-5		1140	7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	06
MW-6		1115	7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	07
DW-8		1410	7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	08
IP-1		1240	7		4			5	6			X			X	X	X	X	X	X	X	X	X	X			Std.	09
IP-10			7		5			5	7			X			X	X	X	X	X	X	X	X	X	X			Std.	10

Analysis Request		TAT	For Lab Use Only
<input type="checkbox"/>	12 hr	<input type="checkbox"/>	
<input type="checkbox"/>	48hr	<input type="checkbox"/>	72hr
<input checked="" type="checkbox"/>	1 wk		

Relinquished by: *[Signature]* Date: 4-24-13 Time: 1504 Received by: *[Signature]*
 Relinquished by: *[Signature]* Date: 04/24/13 Time: 1504 Received by: *[Signature]*
 Relinquished by: *[Signature]* Date: 04/24/13 Time: 1504 Received by Laboratory: *[Signature]* KIFF Analytical LLC

Remarks: XLAB FILTER METALS

For Lab Use Only: Sample Receipt

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

Page 40 of 42



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

SRG # / Lab No. 84690

Project Contact (Hardcopy or PDF To): Scott Stromberg
 Company / Address: Arctos Environmental
 1332 Peralta Avenue, Berkeley, CA 94702
 Phone Number: 510-525-2180
 Fax Number: 510-525-2392
 Project #: 01LV P.O. #:
 Project Name: Tesoro - Livermore

California EDF Report? Yes No
 Sampling Company Log Code: EFSP
 Global ID: T0600101410
 EDF Deliverable To (Email Address): sstromberg@orionenv.com
 Bill to: Jeff Baker
 Sampler Signature: *[Signature]*

Chain-of-Custody Record and Analysis Request

Sample Designation	Sampling		Container				Preservative				Matrix			Analysis Request										TAT	For Lab Use Only					
	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar	HCl	HNO ₃	None	H ₂ SO ₄	Water	Soil	Air	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	TCE & PCE (EPA 8260B)	Ferrous Iron (SM 3500-Fe-D)	Nitrate & Sulfate (EPA 300.0)	Total Alkalinity (SM 2320B)	Total Dissolved Solids (SM 2540C)			Methane and Carbene Dioxide by RSK 175M	Chromium VI (EPA 7199)	Trace Metals by EPA 6010 (As, Cr, Fe, Mn, Na)	12 hr	24 hr
IP-10	4-24-13	1305	3					3				X			X	X	X	X	*	*	*	*	*	*	*	*	*	*	Std.	10
IP-8		1420	3					3				X			X	X	X	X											Std.	11
IP-9		1325	3					3				X			X	X	X	X											Std.	12
TP-2		0835	3					3				X			X	X	X	X											Std.	13
TP-1		0815	3					3				X			X	X	X	X											Std.	14
VW-2		0750	3					3				X			X	X	X	X											Std.	15
Trip Blank-03		0730	2					2				X			X	X	X	X											Std.	16

Relinquished by: *[Signature]* Date: 4-24-13 Time: _____ Received by: _____
 Relinquished by: _____ Date: _____ Time: _____ Received by: _____
 Relinquished by: _____ Date: 042413 Time: 1504 Received by Laboratory: *[Signature]* KIFF Analytical LLC

Remarks: * LAB Filter METALS

For Lab Use Only: Sample Receipt					
Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Page 41 of 42

042413

SAMPLE RECEIPT CHECKLIST

RECEIVER

TJB
Initials

SRG#: 84690 Date: 042413

Project ID: Tesoro - Livermore

Method of Receipt: Courier Over-the-counter Shipper

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

COC Inspection

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

Sample Inspection

- Coolant Present: Yes No (includes water)
- Temperature °C 5.0 Therm. ID# IR-1 Initial TJB Date/Time 042413/1736 N/A
- Are there custody seals on sample containers? Intact Broken Not present
- Do containers match COC? Yes No No, COC lists absent sample(s) No, Extra sample(s) present
- Are there samples matrices other than soil, water, air or carbon? Yes No
- Are any sample containers broken, leaking or damaged? Yes No
- Are preservatives indicated? Yes, on sample containers Yes, on COC Not indicated N/A
- Are preservatives correct for analyses requested? Yes No N/A
- Are samples within holding time for analyses requested? Yes No
- Are the correct sample containers used for the analyses requested? Yes No
- Is there sufficient sample to perform testing? Yes No
- Does any sample contain product, have strong odor or are otherwise suspected to be hot? Yes No

Receipt Details

Matrix WA Container type VOA # of containers received 87
 Matrix WA Container type Poly # of containers received 49
 Matrix _____ Container type _____ # of containers received _____
 Date and Time Sample Put into Temp Storage Date: 042413 Time: 1820

Quicklog

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

COMMENTS: Sample 1P-10 is listed twice on the COC with a total of 10 VOA containers. SR only received 7 VOA containers and will log in seven containers until further clarification from CS 2/24/13 1820



Subcontract Laboratory Report Attachments



CALSCIENCE

WORK ORDER NUMBER: 13-04-1874

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Kiff Analytical

Client Project Name: Tesoro Livermore

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

Amanda Porter

Approved for release on 05/2/2013 by:
Amanda Porter
Project Manager

ResultLink ▶

Email your PM ▶



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





Contents

Client Project Name: Tesoro Livermore
Work Order Number: 13-04-1874

1	Work Order Narrative	3
2	Client Sample Data	4
	2.1 RSK-175M Carbon Dioxide (Aqueous)	4
	2.2 RSK-175M Methane (Aqueous)	6
	2.3 Combined Inorganic Tests	8
3	Quality Control Sample Data	10
	3.1 MS/MSD and/or Duplicate	10
	3.2 LCS/LCSD	11
4	Glossary of Terms and Qualifiers	15
5	Chain of Custody/Sample Receipt Form	16

Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 04/26/2013. They were assigned to Work Order 13-04-1874.

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 an immediate holding time (HT \leq 15 minutes --40CFR-136.3 Table II footnote 4), is considered a "field" test and reported samples results are not flagged unless the analysis is performed beyond 24 hours of the time of collection.

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:

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.

Subcontract Information:

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



Analytical Report



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

Date Received: 04/26/13
Work Order No: 13-04-1874
Preparation: N/A
Method: RSK-175M

Project: Tesoro Livermore

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-2	13-04-1874-1-C	04/24/13 11:00	Aqueous	GC 14	N/A	04/29/13 12:55	130429L01

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	16500	17.0	10		ug/L

DW-9	13-04-1874-2-C	04/24/13 10:30	Aqueous	GC 14	N/A	04/29/13 13:15	130429L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	16800	17.0	10		ug/L

MW-12	13-04-1874-3-C	04/24/13 10:05	Aqueous	GC 14	N/A	04/29/13 13:55	130429L01
-------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	17000	17.0	10		ug/L

DW-6	13-04-1874-4-C	04/24/13 09:45	Aqueous	GC 14	N/A	04/29/13 14:16	130429L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	16600	17.0	10		ug/L

MW-11	13-04-1874-5-C	04/24/13 09:20	Aqueous	GC 14	N/A	04/29/13 14:42	130429L01
-------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	75400	17.0	10		ug/L

DW-5	13-04-1874-6-C	04/24/13 11:40	Aqueous	GC 14	N/A	04/29/13 15:09	130429L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Carbon Dioxide	12800	17.0	10		ug/L

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

Analytical Report



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

Date Received: 04/26/13
Work Order No: 13-04-1874
Preparation: N/A
Method: RSK-175M

Project: Tesoro Livermore

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	13-04-1874-7-C	04/24/13 11:15	Aqueous	GC 14	N/A	04/29/13 15:32	130429L01

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Carbon Dioxide	47800	17.0	10		ug/L

DW-8	13-04-1874-8-C	04/24/13 14:10	Aqueous	GC 14	N/A	04/29/13 17:24	130429L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Carbon Dioxide	13.9	1.70	1		ug/L

IP-1	13-04-1874-9-C	04/24/13 12:40	Aqueous	GC 14	N/A	04/29/13 16:12	130429L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Carbon Dioxide	19200	17.0	10		ug/L

IP-10	13-04-1874-10-C	04/24/13 13:05	Aqueous	GC 14	N/A	04/29/13 16:42	130429L01
-------	-----------------	----------------	---------	-------	-----	----------------	-----------

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Carbon Dioxide	10300	17.0	10		ug/L

Method Blank	099-12-659-532	N/A	Aqueous	GC 14	N/A	04/29/13 12:32	130429L01
--------------	----------------	-----	---------	-------	-----	----------------	-----------

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

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

Return to Contents

Analytical Report



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

Date Received: 04/26/13
Work Order No: 13-04-1874
Preparation: N/A
Method: RSK-175M

Project: Tesoro Livermore

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DW-2	13-04-1874-1-A	04/24/13 11:00	Aqueous	GC 61	N/A	04/27/13 23:23	130427L01

Parameter	Result	RL	DF	Qual	Units
Methane	1710	4.00	4		ug/L

DW-9	13-04-1874-2-A	04/24/13 10:30	Aqueous	GC 61	N/A	04/28/13 01:04	130427L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	1670	4.00	4		ug/L

MW-12	13-04-1874-3-A	04/24/13 10:05	Aqueous	GC 61	N/A	04/27/13 17:24	130427L01
-------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	1270	4.00	4		ug/L

DW-6	13-04-1874-4-A	04/24/13 09:45	Aqueous	GC 61	N/A	04/27/13 21:57	130427L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	729	4.00	4		ug/L

MW-11	13-04-1874-5-A	04/24/13 09:20	Aqueous	GC 61	N/A	04/27/13 13:49	130427L01
-------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	64.9	1.00	1		ug/L

DW-5	13-04-1874-6-A	04/24/13 11:40	Aqueous	GC 61	N/A	04/27/13 14:13	130427L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	163	1.00	1		ug/L

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

Analytical Report



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

Date Received: 04/26/13
 Work Order No: 13-04-1874
 Preparation: N/A
 Method: RSK-175M

Project: Tesoro Livermore

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	13-04-1874-7-A	04/24/13 11:15	Aqueous	GC 61	N/A	04/28/13 02:30	130427L01

Parameter	Result	RL	DF	Qual	Units
Methane	1910	4.00	4		ug/L

DW-8	13-04-1874-8-A	04/24/13 14:10	Aqueous	GC 61	N/A	04/27/13 15:01	130427L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	470	1.00	1		ug/L

IP-1	13-04-1874-9-A	04/24/13 12:40	Aqueous	GC 61	N/A	04/28/13 04:11	130427L01
------	----------------	----------------	---------	-------	-----	----------------	-----------

Parameter	Result	RL	DF	Qual	Units
Methane	1400	4.00	4		ug/L

IP-10	13-04-1874-10-A	04/24/13 13:05	Aqueous	GC 61	N/A	04/27/13 15:49	130427L01
-------	-----------------	----------------	---------	-------	-----	----------------	-----------

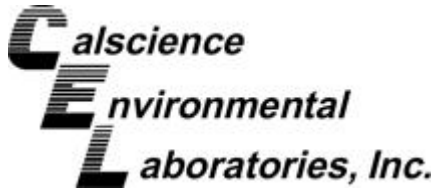
Parameter	Result	RL	DF	Qual	Units
Methane	597	1.00	1		ug/L

Method Blank	099-12-663-1,890	N/A	Aqueous	GC 61	N/A	04/27/13 10:49	130427L01
--------------	------------------	-----	---------	-------	-----	----------------	-----------

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

Return to Contents

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



Analytical Report



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

Date Received: 04/26/13
Work Order No: 13-04-1874

Project: Tesoro Livermore

Page 1 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix
DW-2	13-04-1874-1	04/24/13	Aqueous

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method				
Alkalinity, Total (as CaCO3)	458	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B				
Solids, Total Dissolved	625	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C				
<table border="1"> <tbody> <tr> <td>DW-9</td> <td>13-04-1874-2</td> <td>04/24/13</td> <td>Aqueous</td> </tr> </tbody> </table>									DW-9	13-04-1874-2	04/24/13	Aqueous
DW-9	13-04-1874-2	04/24/13	Aqueous									

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method				
Alkalinity, Total (as CaCO3)	414	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B				
Solids, Total Dissolved	565	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C				
<table border="1"> <tbody> <tr> <td>MW-12</td> <td>13-04-1874-3</td> <td>04/24/13</td> <td>Aqueous</td> </tr> </tbody> </table>									MW-12	13-04-1874-3	04/24/13	Aqueous
MW-12	13-04-1874-3	04/24/13	Aqueous									

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method				
Alkalinity, Total (as CaCO3)	378	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B				
Solids, Total Dissolved	635	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C				
<table border="1"> <tbody> <tr> <td>DW-6</td> <td>13-04-1874-4</td> <td>04/24/13</td> <td>Aqueous</td> </tr> </tbody> </table>									DW-6	13-04-1874-4	04/24/13	Aqueous
DW-6	13-04-1874-4	04/24/13	Aqueous									

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method				
Alkalinity, Total (as CaCO3)	386	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B				
Solids, Total Dissolved	555	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C				
<table border="1"> <tbody> <tr> <td>MW-11</td> <td>13-04-1874-5</td> <td>04/24/13</td> <td>Aqueous</td> </tr> </tbody> </table>									MW-11	13-04-1874-5	04/24/13	Aqueous
MW-11	13-04-1874-5	04/24/13	Aqueous									

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method				
Alkalinity, Total (as CaCO3)	2020	10.0	1		mg/L	05/01/13	05/01/13	SM 2320B				
Solids, Total Dissolved	2260	10.0	1		mg/L	05/01/13	05/01/13	SM 2540 C				
<table border="1"> <tbody> <tr> <td>DW-5</td> <td>13-04-1874-6</td> <td>04/24/13</td> <td>Aqueous</td> </tr> </tbody> </table>									DW-5	13-04-1874-6	04/24/13	Aqueous
DW-5	13-04-1874-6	04/24/13	Aqueous									

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	361	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B
Solids, Total Dissolved	500	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C

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

Return to Contents



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

Date Received: 04/26/13
Work Order No: 13-04-1874

Project: Tesoro Livermore

Page 2 of 2

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-6	13-04-1874-7	04/24/13	Aqueous

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	645	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B
Solids, Total Dissolved	755	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C

DW-8	13-04-1874-8	04/24/13	Aqueous
-------------	---------------------	-----------------	----------------

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	232	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B
Solids, Total Dissolved	310	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C

IP-1	13-04-1874-9	04/24/13	Aqueous
-------------	---------------------	-----------------	----------------

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	408	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B
Solids, Total Dissolved	525	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C

IP-10	13-04-1874-10	04/24/13	Aqueous
--------------	----------------------	-----------------	----------------

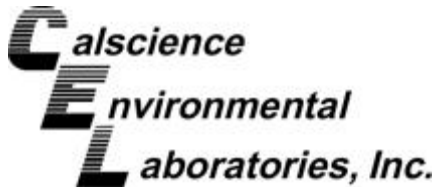
Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	296	5.00	1		mg/L	05/01/13	05/01/13	SM 2320B
Solids, Total Dissolved	420	1.00	1		mg/L	05/01/13	05/01/13	SM 2540 C

Method Blank					N/A			Aqueous
---------------------	--	--	--	--	------------	--	--	----------------

Parameter	Results	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Alkalinity, Total (as CaCO3)	ND	1.0	1		mg/L	05/01/13	05/01/13	SM 2320B
Solids, Total Dissolved	ND	1.0	1		mg/L	05/01/13	05/01/13	SM 2540 C

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

Return to Contents



Quality Control - Duplicate



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

Date Received: N/A
Work Order No: 13-04-1874

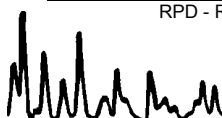
Project: Tesoro Livermore

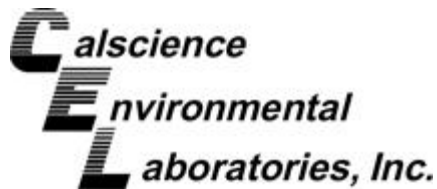
Matrix: Aqueous or Solid

<u>Parameter</u>	<u>Method</u>	<u>QC Sample ID</u>	<u>Date Analyzed</u>	<u>Sample Conc</u>	<u>DUP Conc</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	SM 2320B	MW-11	05/01/13	2020	2030	0	0-25	
Solids, Total Dissolved	SM 2540 C	13-04-1872-8	05/01/13	1260	1280	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1874
 Preparation: N/A
 Method: RSK-175M

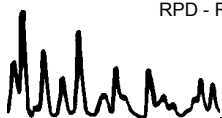
Project: Tesoro Livermore

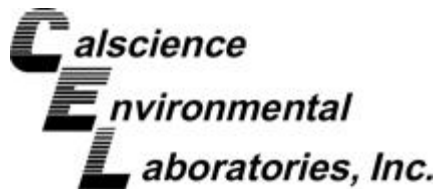
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-532	Aqueous	GC 14	N/A	04/29/13	130429L01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Carbon Dioxide	102.0	96.50	95	102.6	101	80-120	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1874
 Preparation: N/A
 Method: RSK-175M

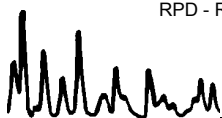
Project: Tesoro Livermore

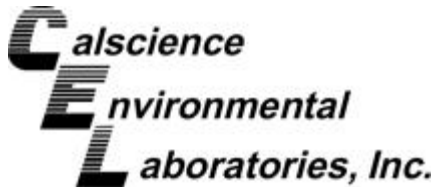
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-663-1,890	Aqueous	GC 61	N/A	04/27/13	130427L01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Methane	98.50	97.07	99	97.15	99	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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

Date Received: N/A
 Work Order No: 13-04-1874
 Preparation: N/A
 Method: SM 2320B

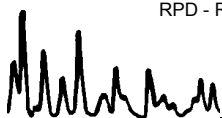
Project: Tesoro Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-859-45	Aqueous	PH1/BUR03	05/01/13	05/01/13	D0501ALKB1

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Alkalinity, Total (as CaCO3)	100	99.6	100	99.2	99	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Laboratory Control Sample



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

Date Received: N/A
 Work Order No: 13-04-1874
 Preparation: N/A
 Method: SM 2540 C

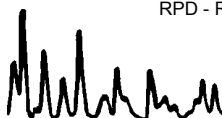
Project: Tesoro Livermore

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-12-180-3,662	Aqueous	N/A	05/01/13	NONE	D0501TDSL1

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Solids, Total Dissolved	100	105	105	80-120	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit



Work Order Number: 13-04-1874

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

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

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





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

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

13-04-1874

COC No. **84690** 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: Analysis Request TAT

Phone No.: **530-297-4800** FAX No.: **530-297-4808** Sampling Company Log Code: **EFSP**

Project Number: **01LV** P.O. No.: **84690** Global ID: **T0600101410**

Project Name: **Tesoro - Livermore** Deliverables to (Email Address): **inbox@kiffanalytical.com**

Project Address: **Sampling** Container / Preservative Matrix

Sample Designation	Date	Time	Container / Preservative					Matrix		Alkalinity SM 2320 (1)	Carbon Dioxide by RSK 175 (1)	Hydrocarbons in Water by RSK 175 (1)	Total Dissolved Solids	4-Days	For Lab Use Only
			1-L Poly None	500 ml Poly None	250ml Poly None	VOA 40 ml None	VOA 40 ml HCl	Water							
DW-2	04/24/13	11:00	1	1	2	2			X	X	X	X	X	X	1
DW-9	04/24/13	10:30	1	1	2	2			X	X	X	X	X	X	2
MW-12	04/24/13	10:05	1	1	2	2			X	X	X	X	X	X	3
DW-6	04/24/13	09:45	1	1	2	2			X	X	X	X	X	X	4
MW-11	04/24/13	09:20	1	1	2	2			X	X	X	X	X	X	5
DW-5	04/24/13	11:40	1	1	2	2			X	X	X	X	X	X	6
MW-6	04/24/13	11:15	1	1	2	2			X	X	X	X	X	X	7
DW-8	04/24/13	14:10	1	1	2	2			X	X	X	X	X	X	8
IP-1	04/24/13	12:40	1	1	2	2			X	X	X	X	X	X	9
IP-10	04/24/13	13:05	1	1	2	2			X	X	X	X	X	X	10

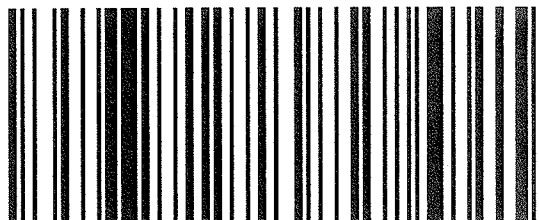
Relinquished by: *[Signature]* Date: **04/25/13** Time: **1700** Received by: _____ Remarks: Please refer to attached Test Detail.

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

Relinquished by: *(GUTRAC)* Date: **4/26/13** Time: **0900** Received by Laboratory: *[Signature]* Bill to: **Accounts Payable**



800.334.5000
ontrac.com



1874

D10010573351180

Date Printed 4/25/2013

Tracking# D10010573351180

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

Sent By: SAMPLE RECEIVINGX125
Phone#: (530)297-4800
wgt(lbs): 35
Reference: SUB 84694
Reference 2:

Ship To Company:
CALSCIENCE ENVIRONMENTAL
7440 LINCOLN WAY
GARDEN GROVE, CA 92841
RECEIVING (714)895-5494

Service: **S**
Sort Code: **ORG**
Special Services:
Signature Required



WORK ORDER #: **13-04-11874**

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Kiff

DATE: 04/26/13

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

Temperature 2.7 °C - 0.2°C (CF) = 2.5 °C Blank Sample

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

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

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

Ambient Temperature: Air Filter

Initial: AF

CUSTODY SEALS INTACT:

Cooler _____ No (Not Intact) Not Present N/A

Sample _____ No (Not Intact) Not Present

Initial: AF

Initial: SA

SAMPLE CONDITION:

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

CONTAINER TYPE:

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

Water: VOA VOAh VOAna₂ 125AGB 125AGBh 125AGBp 1AGB 1AGBna₂ 1AGBs

500AGB 500AGJ 500AGJs 250AGB 250CGB 250CGBs 1PB 1PBna 500PB

250PB 250PBn 125PB 125PBz_{na} 100PJ 100PJna₂ _____ _____ _____

Air: Tedlar® Canister Other: _____ Trip Blank Lot#: _____ Labeled/Checked by: SA

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

Preservative: h: HCL n: HNO₃ na₂:Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ u: Ultra-pure z_{na}: ZnAc₂+NaOH f: Filtered Scanned by: SA

Return to Contents

ATTACHMENT F
SOIL VAPOR SAMPLING QA/QC PROCEDURES

ATTACHMENT F

SOIL VAPOR SAMPLING QA/QC PROCEDURES

Vapor Sample Collection

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

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

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

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

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

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

Analytical Plan

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

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

Analytical Quality Assurance Quality Control (QA/QC) Procedures

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

ATTACHMENT G
OXYGEN SYSTEM MONITORING RESULTS

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-1	10/15/10	0.03	NM ^(c)
	10/18/10	NM	NM
	10/22/10	9.96	NM
	10/25/10	41.75	82.2
	11/1/10	51.19	77.7
	12/9/10	24.66	51.3
	12/14/10	23.67	53.3
	12/23/10	28.27	58.1
	1/5/11	29.06	52.0
	1/18/11	0.0	0.0
	2/1/11	0.25	88.9
	3/4/11	15.02	90.4
	4/8/11	0.12	49.8
	5/3/11	0.01	88.0
	6/27/11	0.01	0.0
	6/28/11	0.24	91.3
	6/30/11	0.08	94.3
	7/5/11	0.13	94.5
	7/7/11	0.01	94.2
	7/13/11	0.01	95.3
	7/22/11	0.01	94.5
	8/9/11	0.01	94.5
	9/1/11	0.05	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	0.01	91.0
	3/20/12	0.02	93.0
	4/26/12	NM	94.7
	5/16/12	0.01	NM
	6/19/12	NM	NM
	7/17/12	0.01	NM
8/16/12	0.01	NM	
9/21/12	NM	NM	
11/20/12	-0.02	NM	
12/11/12	NM	NM	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-1 (cont.)	1/3/13	NM	91.2
	3/28/13	NM	85.4
IP-2	10/15/10	0.03	NM
	10/18/10	NM	NM
	10/22/10	0.05	NM
	10/25/10	0.29	82.2
	11/1/10	0.02	77.7
	12/9/10	0.46	51.3
	12/14/10	0.84	53.3
	12/23/10	0.41	58.1
	1/5/11	NM	52.0
	1/18/11	2.01	0.0
	2/1/11	2.09	88.9
	3/4/11	1.45	90.4
	4/8/11	3.38	49.8
	5/3/11	0.47	88.0
	6/27/11	0.01	0.0
	6/28/11	25.05	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	9.31	94.5
	8/9/11	17.38	94.5
	9/1/11	24.79	92.9
	11/29/11	1.14	0.0
	1/5/12	44.72	93.6
	2/2/12	36.25	91.0
	3/20/12	7.40	93.0
4/26/12	11.27	94.7	
5/16/12	8.48	NM	
6/19/12	18.34	NM	
7/17/12	7.41	NM	
8/16/12	NM	NM	
9/21/12	2.31	NM	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-2 (cont.)	11/20/12	NM	NM
	12/11/12	31.74	NM
	1/3/13	11.65	91.2
	3/28/13	24.84	85.4
IP-3	10/15/10	0.06	NM
	10/18/10	NM	NM
	10/22/10	NM	NM
	10/25/10	NM	82.2
	11/1/10	0.12	77.7
	12/9/10	0.15	51.3
	12/14/10	0.19	53.3
	12/23/10	0.33	58.1
	1/5/11	0.66	52.0
	1/18/11	0.08	0.0
	2/1/11	15.12	88.9
	3/4/11	14.61	90.4
	4/8/11	20.46	49.8
	5/3/11	5.59	88.0
	6/27/11	0.01	0.0
	6/28/11	0.96	91.3
	6/30/11	0.67	94.3
	7/5/11	0.55	94.5
	7/7/11	1.32	94.2
	7/13/11	0.26	95.3
	7/22/11	0.30	94.5
	8/9/11	0.49	94.5
	9/1/11	3.63	92.9
	11/29/11	2.11	0.0
	1/5/12	11.85	93.6
	2/2/12	8.91	91.0
	3/20/12	2.97	93.0
	4/26/12	1.17	94.7
5/16/12	2.11	NM	
6/19/12	11.83	NM	
7/17/12	0.73	NM	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-3 (cont.)	8/16/12	NM	NM
	9/21/12	1.48	NM
	11/20/12	NM	NM
	12/11/12	6.42	NM
	1/3/13	4.42	91.2
	3/28/13	7.62	85.4
IP-4	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	0.04	NM
	10/25/10	0.14	82.2
	11/1/10	0.15	77.7
	12/9/10	0.09	51.3
	12/14/10	0.01	53.3
	12/23/10	0.03	58.1
	1/5/11	0.02	52.0
	1/18/11	1.04	0.0
	2/1/11	1.25	88.9
	3/4/11	0.18	90.4
	4/8/11	1.02	49.8
	5/3/11	13.77	88.0
	6/27/11	1.33	0.0
	6/28/11	7.11	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	9.74	94.5
	8/9/11	15.48	94.5
	9/1/11	16.45	92.9
	11/29/11	0.91	0.0
	1/5/12	15.56	93.6
	2/2/12	26.26	91.0
	3/20/12	0.58	93.0
4/26/12	1.06	94.7	
5/16/12	0.38	NM	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-4 (cont.)	6/19/12	2.22	NM
	7/17/12	1.11	NM
	8/16/12	NM	NM
	9/21/12	4.00	NM
	11/20/12	NM	NM
	12/11/12	3.11	NM
	1/3/13	2.38	91.2
	3/28/13	5.06	85.4
IP-5	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.04	NM
	10/25/10	0.09	82.2
	11/1/10	0.02	77.7
	12/9/10	0.21	51.3
	12/14/10	0.01	53.3
	12/23/10	0.07	58.1
	1/5/11	NM	52.0
	1/18/11	0.72	0.0
	2/1/11	0.77	88.9
	3/4/11	50.28	90.4
	4/8/11	25.82	49.8
	5/3/11	19.23	88
	6/27/11	0.03	0.0
	6/28/11	38.65	91.3
	6/30/11	30.79	94.3
	7/5/11	41.81	94.5
	7/7/11	42.53	94.2
	7/13/11	38.87	95.3
	7/22/11	31.29	94.5
	8/9/11	32.78	94.5
	9/1/11	40.51	92.9
	11/29/11	13.76	0.0
1/5/12	16.42	93.6	
2/2/12	16.21	91.0	
3/20/12	4.49	93.0	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-5 (cont.)	4/26/12	12.87	94.7
	5/16/12	7.53	NM
	6/19/12	11.44	NM
	7/17/12	6.47	NM
	8/16/12	NM	NM
	9/21/12	25.52	NM
	11/20/12	NM	NM
	12/11/12	52.5	NM
	1/3/13	6.32	91.2
3/28/13	2.02	85.4	
IP-6	10/15/10	0.25	NM
	10/18/10	NM	NM
	10/22/10	0.27	NM
	10/25/10	0.44	82.2
	11/1/10	11.22	77.7
	12/9/10	12.55	51.3
	12/14/10	12.79	53.3
	12/23/10	12.82	58.1
	1/5/11	14.3	52
	1/18/11	5.19	0.0
	2/1/11	15.94	88.9
	3/4/11	10.31	90.4
	4/8/11	13.22	49.8
	5/3/11	9.97	88.0
	6/27/11	4.88	0.0
	6/28/11	3.65	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	2.69	94.5
8/9/11	2.40	94.5	
9/1/11	2.79	92.9	
11/29/11	1.17	0.0	
1/5/12	3.30	93.6	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-6 (cont.)	2/2/12	2.72	91.0
	3/20/12	2.43	93.0
	4/26/12	2.29	94.7
	5/16/12	2.36	NM
	6/19/12	10.41	NM
	7/17/12	3.59	NM
	8/16/12	NM	NM
	9/21/12	NM	NM
	11/20/12	NM	NM
	12/11/12	NM	91.8
	1/3/13	1.57	91.2
	3/28/13	2.30	85.4
IP-7	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	0.13	NM
	10/25/10	0.17	82.2
	11/1/10	0.34	77.7
	12/9/10	5.75	51.3
	12/14/10	4.72	53.3
	12/23/10	6.29	58.1
	1/5/11	5.75	52.0
	1/18/11	0.14	0.0
	2/1/11	32.69	88.9
	3/4/11	10.22	90.4
	4/8/11	2.58	49.8
	5/3/11	0.75	88.0
	6/27/11	0.26	0.0
	6/28/11	0.26	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
7/22/11	0.15	94.5	
8/9/11	0.10	94.5	
9/1/11	0.24	92.9	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-7 (cont.)	11/29/11	0.74	0.0
	1/5/12	1.17	93.6
	2/2/12	0.17	91.0
	3/20/12	0.12	93.0
	4/26/12	0.94	94.7
	5/16/12	0.05	NM
	6/19/12	0.06	NM
	7/17/12	0.01	NM
	8/16/12	NM	NM
	9/21/12	NM	NM
	11/20/12	NM	NM
	12/11/12	NM	NM
	1/3/13	0.22	91.2
	3/28/13	0.08	85.4
IP-8	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.27	NM
	10/25/10	0.21	82.2
	11/1/10	NM	77.7
	12/9/10	NM	51.3
	12/14/10	NM	53.3
	12/23/10	NM	58.1
	1/5/11	NM	52.0
	1/18/11	NM	0.0
	2/1/11	NM	88.9
	3/4/11	NM	90.4
	4/8/11	24.74	49.8
	5/3/11	5.15	88.0
	6/27/11	0.01	0.0
	6/28/11	21.98	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
7/22/11	11.34	94.5	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-8 (cont.)	8/9/11	12.88	94.5
	9/1/11	16.02	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	26.83	91.0
	3/20/12	1.94	93.0
	4/26/12	NM	94.7
	5/16/12	1.64	NM
	6/19/12	NM	NM
	7/17/12	5.14	NM
	8/16/12	0.06	NM
	9/21/12	NM	NM
	11/20/12	3.55	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
	3/28/13	NM	85.4
IP-9	10/15/10	0.01	NM
	10/18/10	NM	NM
	10/22/10	11.27	NM
	10/25/10	18.36	82.2
	11/1/10	18.96	77.7
	12/9/10	31.42	51.3
	12/14/10	33.16	53.3
	12/23/10	31.77	58.1
	1/5/11	35.3	52.0
	1/18/11	0.0	0.0
	2/1/11	0.65	88.9
	3/4/11	0.45	90.4
	4/8/11	0.42	49.8
	5/3/11	0.55	88.0
	6/27/11	0.01	0.0
	6/28/11	NM	91.3
	6/30/11	27.14	94.3
	7/5/11	23.48	94.5
7/7/11	22.62	94.2	

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-9 (cont.)	7/13/11	21.37	95.3
	7/22/11	20.65	94.5
	8/9/11	16.24	94.5
	9/1/11	36.38	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	46.40	91.0
	3/20/12	33.17	93.0
	4/26/12	NM	94.7
	5/16/12	28.85	NM
	6/19/12	NM	NM
	7/17/12	1.33	NM
	8/16/12	0.01	NM
	9/21/12	NM	NM
	11/20/12	0.12	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
3/28/13	NM	85.4	
IP-10	10/15/10	0.11	NM
	10/18/10	NM	NM
	10/22/10	0.07	NM
	10/25/10	5.33	82.2
	11/1/10	8.48	77.7
	12/9/10	0.25	51.3
	12/14/10	0.30	53.3
	12/23/10	0.04	58.1
	1/5/11	0.01	52.0
	1/18/11	0.0	0.0
	2/1/11	0.18	88.9
	3/4/11	0.04	90.4
	4/8/11	26.54	49.8
	5/3/11	4.45	88.0
	6/27/11	0.04	0.0
	6/28/11	10.08	91.3
	6/30/11	NM	94.3

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
IP-10 (cont.)	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	NM	95.3
	7/22/11	29.15	94.5
	8/9/11	11.44	94.5
	9/1/11	37.28	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	0.14	91.0
	3/20/12	0.01	93.0
	4/26/12	NM	94.7
	5/16/12	0.09	NM
	6/19/12	NM	NM
	7/17/12	0.04	NM
	8/16/12	0.01	NM
	9/21/12	NM	NM
	11/20/12	0.04	NM
	12/11/12	NM	NM
	1/3/13	NM	91.2
3/28/13	NM	85.4	
MW-1	10/15/10	0.11	NM
	10/18/10	NM	NM
	10/22/10	0.31	NM
	10/25/10	0.35	82.2
	11/1/10	1.79	77.7
	12/9/10	0.21	51.3
	12/14/10	0.01	53.3
	12/23/10	0.01	58.1
	1/5/11	0.0	52.0
	1/18/11	0.0	0.0
	2/1/11	0.66	88.9
	3/4/11	NM	90.4
	4/8/11	10.53	49.8
	5/3/11	10.43	88.0
	6/27/11	0.71	0.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
MW-1 (cont.)	6/28/11	NM	91.3
	6/30/11	NM	94.3
	7/5/11	NM	94.5
	7/7/11	NM	94.2
	7/13/11	11.42	95.3
	7/22/11	16.04	94.5
	8/9/11	27.72	94.5
	9/1/11	32.16	92.9
	11/29/11	NM	0.0
	1/5/12	0.97	93.6
	2/2/12	1.73	91.0
	3/20/12	0.32	93.0
	4/26/12	NM	94.7
	5/16/12	0.01	NM
	6/19/12	NM	NM
	7/17/12	0.01	NM
	8/16/12	0.66	NM
	9/21/12	NM	NM
	11/20/12	NM	NM
	12/11/12	NM	NM
1/3/13	0.01	91.2	
3/28/13	NM	85.4	
MW-2	10/15/10	0.02	NM
	10/18/10	NM	NM
	10/22/10	0.15	NM
	10/25/10	0.04	82.2
	11/1/10	0.08	77.7
	12/9/10	0.03	51.3
	12/14/10	0.21	53.3
	12/23/10	0.01	58.1
	1/5/11	0.06	52.0
	1/18/11	0.0	0.0
	2/1/11	0.15	88.9
	3/4/11	0.44	90.4
	4/8/11	0.06	49.8

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
MW-2 (cont.)	5/3/11	0.01	88.0
	6/27/11	0.02	0.0
	6/28/11	NM	91.3
	6/30/11	0.04	94.3
	7/5/11	0.01	94.5
	7/7/11	0.07	94.2
	7/13/11	0.04	95.3
	7/22/11	0.11	94.5
	8/9/11	1.14	94.5
	9/1/11	0.24	92.9
	11/29/11	0.71	0.0
	1/5/12	1.92	93.6
	2/2/12	0.17	91.0
	3/20/12	0.02	93.0
	4/26/12	0.93	94.7
	5/16/12	0.24	NM
	6/19/12	0.41	NM
	7/17/12	0.01	NM
	8/16/12	0.07	NM
	9/21/12	0.06	NM
11/20/12	0.18	NM	
12/11/12	5.98	NM	
1/3/13	0.07	91.2	
3/28/13	15.51	85.4	
MW-11	10/15/10	0.04	NM
	10/18/10	NM	NM
	10/22/10	29.48	NM
	10/25/10	29.78	82.2
	11/1/10	32.42	77.7
	12/9/10	5.07	51.3
	12/14/10	13.39	53.3
	12/23/10	11.87	58.1
	1/5/11	11.42	52.0
	1/18/11	0.0	0.0
	2/1/11	1.18	88.9

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
MW-11 (cont.)	3/4/11	0.23	90.4
	4/8/11	16.87	49.8
	5/3/11	12.14	88.0
	6/27/11	0.01	0.0
	6/28/11	36.72	91.3
	6/30/11	32.83	94.3
	7/5/11	33.76	94.5
	7/7/11	33.91	94.2
	7/13/11	35.42	95.3
	7/22/11	33.97	94.5
	8/9/11	34.22	94.5
	9/1/11	27.88	92.9
	11/29/11	NM	0.0
	1/5/12	NM	93.6
	2/2/12	0.04	91.0
	3/20/12	0.01	93.0
	4/26/12	NM	94.7
	5/16/12	6.89	NM
	6/19/12	NM	NM
	7/17/12	0.37	NM
	8/16/12	0.04	NM
9/21/12	NM	NM	
11/20/12	12.9	NM	
12/11/12	NM	NM	
1/3/13	NM	91.2	
3/28/13	NM	85.4	
DW-1	10/15/10	0.03	NM
	10/18/10	NM	NM
	10/22/10	NM	NM
	10/25/10	NM	82.2
	11/1/10	0.03	77.7
	12/9/10	10.38	51.3
	12/14/10	9.93	53.3
	12/23/10	7.14	58.1
	1/5/11	15.77	52.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
DW-1 (cont.)	1/18/11	11.58	0.0
	2/1/11	24.42	88.9
	3/4/11	28.71	90.4
	4/8/11	19.81	49.8
	5/3/11	0.01	88.0
	6/27/11	0.02	0.0
	6/28/11	0.24	91.3
	6/30/11	0.05	94.3
	7/5/11	0.08	94.5
	7/7/11	0.16	94.2
	7/13/11	0.04	95.3
	7/22/11	0.08	94.5
	8/9/11	0.46	94.5
	9/1/11	0.09	92.9
	11/29/11	0.94	0.0
	1/5/12	3.25	93.6
	2/2/12	15.07	91.0
	3/20/12	0.17	93.0
	4/26/12	1.30	94.7
	5/16/12	0.42	NM
	6/19/12	0.92	NM
	7/17/12	0.09	NM
	8/16/12	0.08	NM
	9/21/12	2.61	NM
	11/20/12	0.26	NM
	12/11/12	0.36	NM
1/3/13	0.45	91.2	
3/28/13	0.58	85.4	
TP-1	10/15/10	0.12	NM
	10/18/10	NM	NM
	10/22/10	2.11	NM
	10/25/10	16.11	82.2
	11/1/10	5.15	77.7
	12/9/10	0.01	51.3
	12/14/10	0.33	53.3

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
TP-1 (cont.)	12/23/10	0.16	58.1
	1/5/11	0.0	52.0
	1/18/11	0.0	0.0
	2/1/11	27.22	88.9
	3/4/11	12.11	90.4
	4/8/11	15.61	49.8
	5/3/11	1.25	88.0
	6/27/11	0.01	0.0
	6/28/11	7.49	91.3
	6/30/11	0.02	94.3
	7/5/11	0.19	94.5
	7/7/11	8.43	94.2
	7/13/11	0.02	95.3
	7/22/11	11.89	94.5
	8/9/11	18.19	94.5
	9/1/11	10.35	92.9
	11/29/11	0.67	0.0
	1/5/12	12.64	93.6
	2/2/12	2.75	91.0
	3/20/12	0.03	93.0
	4/26/12	16.6	94.7
	5/16/12	16.03	NM
	6/19/12	7.31	NM
	7/17/12	7.01	NM
	8/16/12	1.25	NM
	9/21/12	0.01	NM
	11/20/12	8.32	NM
	12/11/12	28.48	NM
1/3/13	34.85	91.2	
3/28/13	23.98	85.4	
TP-2	10/15/10	0.05	NM
	10/18/10	NM	NM
	10/22/10	25.44	NM
	10/25/10	24.90	82.2
	11/1/10	25.83	77.7

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
TP-2 (cont.)	12/9/10	6.03	51.3
	12/14/10	5.12	53.3
	12/23/10	0.63	58.1
	1/5/11	0.43	52.0
	1/18/11	0.0	0.0
	2/1/11	33.44	88.9
	3/4/11	34.15	90.4
	4/8/11	19.31	49.8
	5/3/11	11.95	88
	6/27/11	0.01	0.0
	6/28/11	24.27	91.3
	6/30/11	23.57	94.3
	7/5/11	31.33	94.5
	7/7/11	33.74	94.2
	7/13/11	33.16	95.3
	7/22/11	33.72	94.5
	8/9/11	35.64	94.5
	9/1/11	26.08	92.9
	11/29/11	0.69	0.0
	1/5/12	14.77	93.6
	2/2/12	21.95	91.0
	3/20/12	16.32	93.0
	4/26/12	8.75	94.7
	5/16/12	19.78	NM
	6/19/12	19.87	NM
	7/17/12	15.29	NM
	8/16/12	3.22	NM
	9/21/12	8.70	NM
11/20/12	28.4	NM	
12/11/12	2.64	NM	
1/3/13	37.35	91.2	
3/28/13	35.85	85.4	
VW-2	1/5/12	13.24	93.6
	2/2/12	5.56	91.0
	3/20/12	6.11	93.0

TABLE G-1

OXYGEN SYSTEM MONITORING RESULTS
TESORO - LIVERMORE, 67076

Well	Date	Dissolved Oxygen ^(a) (mg/l)	Oxygen Purity ^(b) (%)
VW-2 (cont.)	4/26/12	10.57	94.7
	5/16/12	10.52	NM
	6/19/12	5.87	NM
	7/17/12	5.13	NM
	8/16/12	4.93	NM
	9/21/12	8.11	NM
	11/20/12	3.64	NM
	12/11/12	32.72	NM
	1/3/13	32.77	91.2
	3/28/13	32.14	85.4

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

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

(c) Not measured.

ATTACHMENT H
BORING LOGS, WELL CONSTRUCTION LOGS, AND WELL
DEVELOPMENT LOGS

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Key to Log of Boring / Well













Sheet 1 of 1

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







COLUMN DESCRIPTIONS

- | | |
|---|---|
| <p>1 Elevation: Elevation in feet relative to mean sea level (MSL).</p> <p>2 Depth: Depth in feet below the ground surface.</p> <p>3 Sample Type: Type of soil sample collected at depth interval shown; sampler symbols are explained below.</p> <p>4 Sample Number: Sample identification number.</p> <p>5 Graphic Log: Graphic depiction of subsurface material encountered; typical symbols are explained below.</p> <p>6 Material Description: Description of material encountered; in addition to soil classification and USCS, may include consistency, moisture, color, plasticity, and grain size.</p> | <p>7 Well Completion Diagram: Schematic of well installation in borehole; materials and depths are listed in header block; graphics are explained below.</p> <p>8 Headspace PID: Photoionization device (PID) field sample headspace reading in parts per million (ppm).</p> <p>9 Background PID: Photoionization device (PID) background reading in parts per million (ppm).</p> <p>10 Drilling Progress: Time (in 24-hour clock) at sampling and other events during downhole advance.</p> <p>11 Remarks: Comments and observations regarding drilling or sampling made by driller or field personnel.</p> |
|---|---|




TYPICAL SOIL GRAPHIC SYMBOLS

 POORLY GRADED SAND (SP)	 WELL-GRADED SAND (SW)	 SAND WITH SILT (SP-SM)	 SILTY SAND (SM)
 LEAN CLAY (CL)	 SILTY CLAY (CL)	 CLAYEY SILT (ML)	 CLAYEY SAND (SC)
 SILT (ML)	 SANDY SILT (ML)	 POORLY GRADED GRAVEL (GP)	 CLAYEY GRAVEL (GC)




TYPICAL WATER SAMPLING GRAPHIC SYMBOLS

 Blank casing in concrete	 Blank casing in filter sand
 Blank casing in portland cement grout	 Slotted casing in filter sand
 Blank casing in bentonite pellets	 Natural fill / slough

TYPICAL SAMPLER GRAPHIC SYMBOLS

 Soil core barrel (5 ft long, 2.5 in. dia.)
 No recovery interval in core barrel
 Portion of sample retained for analysis

OTHER GRAPHIC SYMBOLS

-  First water encountered at time of drilling
-  Static water level measured in well
-  Change in material properties within a stratum
- Inferred contact or gradational change

GENERAL NOTES

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

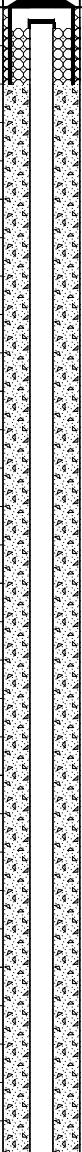
ORION_3WS_KEY: TESLMOR.GPJ-wellipkey2013; 1/1/13

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-11

Sheet 1 of 2

Date(s) Drilled	4/9/11 and 4/11/13			Logged By	E. Chow	Checked By	M. Purchase
Drilling Method	Hollow-Stem Auger			Drill Bit Size/Type	8-inch-OD auger (sample), 10-inch-OD auger (ream for well)	Total Depth of Borehole	65.0 feet
Drill Rig Type	Marl M11			Drilling Contractor	Gregg Drilling & Testing	Surface Elevation	To be determined
Groundwater Level (feet bgs)	First --	Completion --	Development --	Sampling Method	5-ft-long, 2.5-inch-dia. core barrel	Top of Casing Elevation	To be determined
Diameter of Hole (inches)	10	Diameter of Well (inches)	4	Type of Well Casing	4-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot (50-60 ft)
Type of Sand Pack	Monterey #2/16 (48-65 feet)			Type and Depth of Seal(s)	Hydrated bentonite chips 44-48 ft, portland cement 2-44 ft, concrete 0-2 ft		
Comments	Well completed at surface with EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete.						

Elevation, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	Type	Number							
0				Asphalt 13 inches thick				1015	Start on 4/9/13. Break asphalt, then clear to 5 ft using airknife, hand auger, and water pressure.
5				IP-11 was installed adjacent to DW-5. The borehole for well IP-11 was cleared to 5 feet with airknife and hand auger, then was blind-drilled to depth of 45 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-5 for lithology to 45 feet at this location.				1140 0730	End for 4/9/13. Start hollow-stem auger drilling on 4/11/13. Blind drill to 45 ft using 8-in.-OD augers.
10									
15									
20									
25									
30									

ORION_1WC: TESLMOR.GPJ:IP-11: 5/16/13

Elevation, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	Type	Number							
30				IP-11 was installed adjacent to DW-5. The borehole for well IP-11 was cleared to 5 feet with airknife and hand auger, then was blind-drilled to depth of 45 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-5 for lithology to 45 feet at this location.					
35									
40									
45				CLAYEY GRAVEL WITH SAND (GC), medium brown, wet, ~45% well-graded, subangular to subrounded gravel to 2 inches, ~40% well-graded sand, ~15% fines, no odor ↓ Becomes moist, increase in clay, zones of rust coloring		6.2	0.3	0810	Start soil sampling with 5-ft core barrel.
50				↓ Becomes wet, odor ↓ Becomes moist, with zones of rust coloring and zones of greenish gray staining		12	0.4		
55				↓ Becomes orange-brown with zones of rust coloring and gray staining		12	0.3	0817	
60				SANDY LEAN / FAT CLAY (CL/CH), orange-brown, very soft, moist, ~55% medium to high plasticity fines, ~30% sand, <15% fine to coarse, subangular to subrounded gravel to 1 inch, no odor		12	0.5		
65				CLAYEY GRAVEL WITH SAND (GC), orange-brown, wet, ~45% well-graded, subangular to subrounded gravel, ~40% well-graded sand, ~15% fines, no odor		74	0.4	0825	
						21	0.8		
						28	0.7	0832	
						32	1.0		
				Bottom of boring at 65.0 feet					End drilling and sampling with 8-in.-OD auger. Ream boring with 10-in.-OD auger for well installation.
70									


ORION_1WC: TESLMOR.GPJ-IP-11: 5/18/13

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-12

Sheet 1 of 2

Date(s) Drilled	4/9/11 - 4/10/13			Logged By	E. Chow	Checked By	M. Purchase
Drilling Method	Hollow-Stem Auger			Drill Bit Size/Type	10-inch-OD auger	Total Depth of Borehole	61.0 feet
Drill Rig Type	Marl M11			Drilling Contractor	Gregg Drilling & Testing	Surface Elevation	To be determined
Groundwater Level (feet bgs)	First	Completion	Development	Sampling Method	No sampling performed	Top of Casing Elevation	To be determined
	40	--	--				
Diameter of Hole (inches)	10	Diameter of Well (inches)	4	Type of Well Casing	4-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot (50-60 ft)
Type of Sand Pack	Monterey #2/16 (48-61 feet)			Type and Depth of Seal(s)	Hydrated bentonite chips 44-48 ft, portland cement 2-44 ft, concrete 0-2 ft		
Comments	Well completed at surface with EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete.						

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
0		[no sampling performed]			Asphalt 10 inches thick				1230	Start on 4/9/13. Break asphalt, then clear to 5.3 ft using airknife, hand auger, and water pressure.
5					IP-12 was installed adjacent to DW-5. The borehole for well IP-12 was cleared to 5.3 feet with airknife and hand auger, then was blind-drilled to total depth of 61 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-5 for lithology at this location.				1405 0725	End for 4/9/13. Start hollow-stem auger drilling on 4/10/13. Blind drill to total depth.
10										
15										
20										
25										
30										

ORION_1WC: TESLMOR.GPJ:IP-12; 5/18/13

Project: Tesoro - Livermore
 Project Location: 1554 1st Street, Livermore, CA
 Project Number: 01LV

Log of Boring / Well IP-12

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS	
		Type	Number								
30					<p>IP-12 was installed adjacent to DW-5. The borehole for well IP-12 was cleared to 5.3 feet with airknife and hand auger, then was blind-drilled to total depth of 61 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-5 for lithology at this location.</p>		0.3	0.2	0810	PID readings from soil cuttings 30-35 ft. Odor of Simple Green cleaning product.	
35											
40								0.7	0.3	0830	PID readings from soil cuttings 40-45 ft.
45								1.2	0.2	0837	PID readings from soil cuttings 45-50 ft. Soil cuttings still have odor of Simple Green cleaning product.
50								2.2	0.3	0845	PID readings from soil cuttings 50-55 ft.
55								4.8	0.3	0850	PID readings from soil cuttings 55-60 ft.
60					Bottom of boring at 61.0 feet				0900		
65											
70											

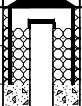
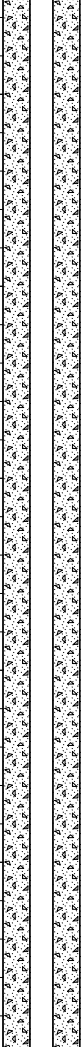
ORION_1WC: TESLMOR.GPJ-IP-12; 5/16/13

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-13

Sheet 1 of 2

Date(s) Drilled	4/9/11 and 4/15/13			Logged By	E. Chow	Checked By	M. Purchase
Drilling Method	Hollow-Stem Auger			Drill Bit Size/Type	10-inch-OD auger	Total Depth of Borehole	60.5 feet
Drill Rig Type	Marl M11			Drilling Contractor	Gregg Drilling & Testing	Surface Elevation	To be determined
Groundwater Level (feet bgs)	First 40-45	Completion --	Development --	Sampling Method	No sampling performed	Top of Casing Elevation	To be determined
Diameter of Hole (inches)	10	Diameter of Well (inches)	4	Type of Well Casing	4-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot (50-60 ft)
Type of Sand Pack	Monterey #2/16 (48-60.5 feet)			Type and Depth of Seal(s)	Hydrated bentonite chips 44-48 ft, portland cement 2-44 ft, concrete 0-2 ft		
Comments	Well completed at surface with EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete.						

Elevation, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	Type	Number							
0	[no sampling performed]			Asphalt 10 inches thick				1510	Start on 4/9/13. Break asphalt, then clear to 5 ft using airknife, hand auger, and water pressure.
5				IP-13 was installed adjacent to DW-2. The borehole for well IP-13 was cleared to 5 feet with airknife and hand auger, then was blind-drilled to total depth of 60.5 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-2 for lithology at this location.				1600	End for 4/9/13. Start hollow-stem auger drilling on 4/15/13. Blind drill to total depth.
10									
15									
20									
25									
30									

ORION_1WC: TESLMOR.GPJ:IP-13: 5/18/13

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-13

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
30					IP-13 was installed adjacent to DW-2. The borehole for well IP-13 was cleared to 5 feet with airknife and hand auger, then was blind-drilled to total depth of 60.5 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-2 for lithology at this location.					
35							0.4	0.3	0815	PID readings from soil cuttings 35-40 ft.
40							0.3	0.3	0825	PID readings from soil cuttings 40-45 ft.
45							2.1	0.3	0830	PID readings from soil cuttings 45-50 ft.
50							1.3	04	0835	PID readings from soil cuttings 50-55 ft.
55							4.9	0.4	0845	PID readings from soil cuttings 55-60 ft.
60					Bottom of boring at 60.5 feet					
65										
70										

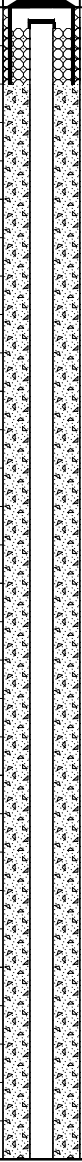
ORION_1WC: TESLMOR.GPJ:IP-13: 5/16/13

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-14

Sheet 1 of 2

Date(s) Drilled	4/16/11 - 4/17/13			Logged By	E. Chow	Checked By	M. Purchase
Drilling Method	Hollow-Stem Auger			Drill Bit Size/Type	8-inch-OD auger (sample), 10-inch-OD auger (ream for well)	Total Depth of Borehole	61.0 feet
Drill Rig Type	Marl M11			Drilling Contractor	Gregg Drilling & Testing	Surface Elevation	To be determined
Groundwater Level (feet bgs)	First --	Completion --	Development --	Sampling Method	5-ft-long, 2.5-inch-dia. core barrel	Top of Casing Elevation	To be determined
Diameter of Hole (inches)	10		Diameter of Well (inches)	4		Type of Well Casing	4-inch-dia. Schedule 40 PVC
Type of Sand Pack	Monterey #2/16 (48-61 feet)			Type and Depth of Seal(s)	Hydrated bentonite chips 44-48 ft, portland cement 2-44 ft, concrete 0-2 ft		
Comments	Well completed at surface with EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete.						

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
0		[no sampling performed]			Asphalt 5 inches thick				1400	Start on 4/16/13. Break asphalt, then clear to 5 ft using airknife, hand auger, and water pressure.
5					IP-14 was installed adjacent to DW-2. The borehole for well IP-14 was cleared to 5 feet with airknife and hand auger, then was blind-drilled to total depth of 61 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-2 for lithology at this location.				1510 0710	End for 4/16/13. Start hollow-stem auger drilling on 4/17/13. Blind drill to total depth.
10										
15										
20										
25										
30										

ORION_1WC: TESLMOR.GPJ:IP-14: 5/16/13

Project: Tesoro - Livermore
 Project Location: 1554 1st Street, Livermore, CA
 Project Number: 01LV

Log of Boring / Well IP-14

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
30					<p>IP-14 was installed adjacent to DW-2. The borehole for well IP-14 was cleared to 5 feet with airknife and hand auger, then was blind-drilled to total depth of 61 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-2 for lithology at this location.</p>					
35										
40							2.3	0.1	0830	PID readings from soil cuttings 40-45 ft.
45							2.7	0.1	0835	PID readings from soil cuttings 45-50 ft.
50							5.6	0.1	0840	PID readings from soil cuttings 50-55 ft.
55							1.9	0.2	0850	PID readings from soil cuttings 55-60 ft.
60								0900		
					Bottom of boring at 61.0 feet					
65										
70										

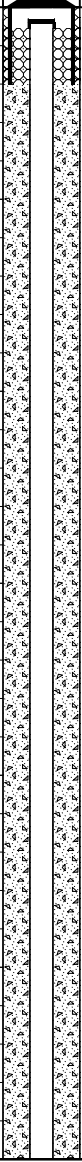
ORION_1WC: TESLMOR.GPJ:IP-14: 5/16/13

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-15

Sheet 1 of 2

Date(s) Drilled	4/8/11 - 4/9/13			Logged By	S. Stromberg / E. Chow		Checked By	M. Purchase		
Drilling Method	Hollow-Stem Auger			Drill Bit Size/Type	8-inch-OD auger (sample), 10-inch-OD auger (ream for well)		Total Depth of Borehole	65.0 feet		
Drill Rig Type	Marl M11			Drilling Contractor	Gregg Drilling & Testing		Surface Elevation	To be determined		
Groundwater Level (feet bgs)	First	Completion	Development	Sampling Method	5-ft-long, 2.5-inch-dia. core barrel		Top of Casing Elevation	To be determined		
	35	--	--							
Diameter of Hole (inches)	10		Diameter of Well (inches)	4		Type of Well Casing	4-inch-dia. Schedule 40 PVC		Screen Perforation	0.010-inch slot (50-60 ft)
Type of Sand Pack	#60 sand (63-65 feet), Monterey #2/16 (48-63 feet)			Type and Depth of Seal(s)	Hydrated bentonite chips 44-48 ft, portland cement 2-44 ft, concrete 0-2 ft					
Comments	Well completed at surface with EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete.									

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
0					Asphalt 6 inches thick				0938	Start on 4/8/13. Airknife to 1.2 ft.
					IP-15 was installed adjacent to DW-2. The borehole for well IP-15 was cleared to 5.3 feet with airknife and hand auger, then was blind-drilled to depth of 45 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-2 for lithology to 45 feet at this location.		0.6	0.8	1000	Begin hand augering at 1.2 ft. Encounter gravel and cobbles. Finish clearing hole to 5.3 ft using airknife, hand auger, and water pressure. End for 4/8/13.
						1015				
5										
									1125	
								0745	Start hollow-stem auger drilling on 4/9/13. Blind drill to 45 ft using 8-in.-OD augers.	
10										
15										
20										
25										
30										

ORION_1WC: TESLMOR.GPJ:IP-15: 5/18/13

Project: Tesoro - Livermore
 Project Location: 1554 1st Street, Livermore, CA
 Project Number: 01LV

Log of Boring / Well IP-15

Sheet 2 of 2

Elevation, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	Type	Number							
30				IP-15 was installed adjacent to DW-2. The borehole for well IP-15 was cleared to 5.3 feet with airknife and hand auger, then was blind-drilled to depth of 45 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-2 for lithology to 45 feet at this location.		0.0	0.0	0800	PID in operator breathing zone (OBZ) = 0.0 ppm.
35									
40									
45				CLAYEY GRAVEL WITH SAND (GC), medium brown, wet, ~45% well-graded, subangular to subrounded gravel to 2.5 inches, ~40% well-graded sand, ~15% fines, odor ↓ Becomes moist, increase in clay		0.0 458	0.0 0.0	0830	Start soil sampling with 5-ft core barrel.
50				↓ Becomes wet, with zones of orange iron oxidation ← Lens of mostly medium-grained sand 2 inches thick ↓ Trace gray staining ↓ Becomes moist		73	0.0	0845	
55				↓ Becomes wet		427	0.0	0900	
60				↓ No gray staining, no odor		147	0.0	0910	
65						37	0.0	0920	
65.0				Bottom of boring at 65.0 feet		38	0.0		
70									End drilling and sampling with 8-in.-OD auger. Ream boring with 10-in.-OD auger for well installation.

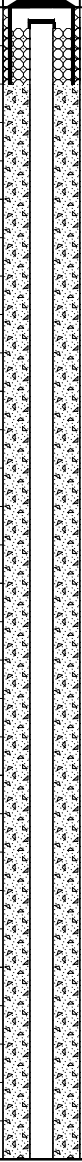
ORION_1WC: TESLMOR.GPJ:IP-15: 5/16/13

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-16

Sheet 1 of 2

Date(s) Drilled	4/9/11 and 4/12/13			Logged By	E. Chow	Checked By	M. Purchase
Drilling Method	Hollow-Stem Auger			Drill Bit Size/Type	8-inch-OD auger (sample), 10-inch-OD auger (ream for well)	Total Depth of Borehole	65.0 feet
Drill Rig Type	Marl M11			Drilling Contractor	Gregg Drilling & Testing	Surface Elevation	To be determined
Groundwater Level (feet bgs)	First --	Completion --	Development --	Sampling Method	5-ft-long, 2.5-inch-dia. core barrel	Top of Casing Elevation	To be determined
Diameter of Hole (inches)	10	Diameter of Well (inches)	4	Type of Well Casing	4-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot (50-60 ft)
Type of Sand Pack	Monterey #2/16 (48-65 feet)			Type and Depth of Seal(s)	Hydrated bentonite chips 44-48 ft, portland cement 2-44 ft, concrete 0-2 ft		
Comments	Well completed at surface with EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete.						

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
0					Asphalt 8 inches thick				0715	Start on 4/9/13. Break asphalt, then clear to 5.2 ft using airknife, hand auger, and water pressure.
					IP-16 was installed adjacent to DW-7. The borehole for well IP-16 was cleared to 5.2 feet with airknife and hand auger, then was blind-drilled to depth of 45 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-7 for lithology to 45 feet at this location.	0.7	0.7	0720		
						0.0	0.0	0755		
5									0845	End for 4/9/13. Start hollow-stem auger drilling on 4/12/13. Blind drill to 45 ft using 8-in.-OD augers.
								0720		
10										
15										
20										
25										
30										

ORION_1WC: TESLMOR.GPJ:IP-16: 5/18/13

Elevation, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
	Type	Number							
30				IP-16 was installed adjacent to DW-7. The borehole for well IP-16 was cleared to 5.2 feet with airknife and hand auger, then was blind-drilled to depth of 45 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-7 for lithology to 45 feet at this location.					
35									
40									
45				CLAYEY GRAVEL WITH SAND (GC), medium brown, wet, ~45% well-graded, subangular to subrounded gravel to 2 inches, ~40% well-graded sand, ~15% fines, no odor ↓ Becomes moist, increase in clay, zones of rust coloring and greenish gray staining		4.1	0.2	0800	Start soil sampling with 5-ft core barrel.
						21	0.3		
50				↓ Becomes wet, gravel to 3 inches, odor		4.7	0.2	0805	
55						544	0.3	0815	
60				↳ Lens of WELL-GRADED GRAVEL (GW) to 1.5 inches ↓ Becomes orange-brown, moist, gravel to 1 inch, odor		44	0.6	0820	
65				Bottom of boring at 65.0 feet					End drilling and sampling with 8-in.-OD auger. Ream boring with 10-in.-OD auger for well installation.
70									

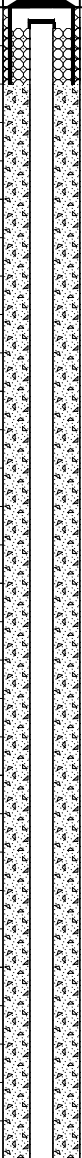
ORION_1WC: TESLMOR.GPJ-IP-16: 5/16/13

Project: Tesoro - Livermore
Project Location: 1554 1st Street, Livermore, CA
Project Number: 01LV

Log of Boring / Well IP-17

Sheet 1 of 2

Date(s) Drilled	4/9/11 and 4/16/13			Logged By	E. Chow	Checked By	M. Purchase
Drilling Method	Hollow-Stem Auger			Drill Bit Size/Type	10-inch-OD auger	Total Depth of Borehole	60.5 feet
Drill Rig Type	Marl M11			Drilling Contractor	Gregg Drilling & Testing	Surface Elevation	To be determined
Groundwater Level (feet bgs)	First --	Completion --	Development --	Sampling Method	No sampling performed	Top of Casing Elevation	To be determined
Diameter of Hole (inches)	10	Diameter of Well (inches)	4	Type of Well Casing	4-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot (50-60 ft)
Type of Sand Pack	Monterey #2/16 (48-60.5 feet)			Type and Depth of Seal(s)	Hydrated bentonite chips 44-48 ft, portland cement 2-44 ft, concrete 0-2 ft		
Comments	Well completed at surface with EMCO-Wheaton 12-inch-diameter flush-mount vault installed with concrete.						

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
0		[no sampling performed]			Asphalt 5 inches thick				0855	Start on 4/9/13. Break asphalt, then clear to 5.3 ft using airknife, hand auger, and water pressure.
5					IP-17 was installed adjacent to DW-6. The borehole for well IP-17 was cleared to 5.3 feet with airknife and hand auger, then was blind-drilled to total depth of 60.5 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-6 for lithology at this location.				0940	End for 4/9/13. Start hollow-stem auger drilling on 4/16/13. Blind drill to total depth.
10								1000		
15										
20										
25										
30										

ORION_1WC: TESLMOR.GPJ:IP-17: 5/16/13

Project: Tesoro - Livermore
 Project Location: 1554 1st Street, Livermore, CA
 Project Number: 01LV

Log of Boring / Well IP-17

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Diagram	Headspace PID, ppm	Background PID, ppm	Drilling Progress, 24-hour clock	REMARKS
		Type	Number							
30					<p>IP-17 was installed adjacent to DW-6. The borehole for well IP-17 was cleared to 5.3 feet with airknife and hand auger, then was blind-drilled to total depth of 60.5 feet without collecting samples or observing cuttings. Refer to Log of Boring DW-6 for lithology at this location.</p>					
35							0.1	0.1	1040	PID readings from soil cuttings 35-40 ft.
40							0.6	0.1	1055	PID readings from soil cuttings 40-45 ft.
45							0.3	0.1	1100	PID readings from soil cuttings 45-50 ft.
50							0.9	0.1	1105	PID readings from soil cuttings 50-55 ft.
55							3.5	0.1	1110	PID readings from soil cuttings 55-60 ft.
60					Bottom of boring at 60.5 feet					
65										
70										

ORION_1WC: TESLMOR.GPJ-IP-17: 5/16/13

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

Sample ID _____

 Well Number IP-11
 Date 4-13-13
 Time Start: 11:30 End: 2:00
 Client ARGO ENVIRONMENTAL
 Project TK5040 - LIVERMORE
 Job Number _____
 Installation Date _____
 Well Diameter 4"

 Borehole Diameter 10"
 Screen Length 10'
 Measured Depth (pre-development) 59.80
 Measured Depth (post-development) 59.30
 Static Water Level (ft.) 36.10
 Standing Water Column (ft.) 23.70
 One Well Volume (gal.) 15.64
 One Annulus Vol. (gal.) _____

 Qty. of Drilling Fluid Lost 0
 Minimum Gal. to be Purged 156 Colloids
 Development Method BAK, SURGE, BAIL AND PUMP
 Purging Equipment 4" SS BEAVER
 Water Level Equipment SOLINET
 pH/EC Meter HORIBA W-10
 Turbidity Meter _____
 Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.	
		pH	EC	Turbidity	D.O.	D.O. Temp.	SAL.	GPM W.L.			
11:30	-									HAZARD BOTTOM	
12:00	-										
12:15	-									DTW = 52.90	
12:25	-									DTW = 39.10	
12:50	20/30	7.62	0.688	7999	-	23.8	-	1 gpm		DTW = 40.20	
1:00	20/40	7.56	0.682	7999	-	24.0	-	2 gpm		DTW = 41.60	
1:10	20/60	7.36	0.675	7999	-	22.9	-	2 gpm		DTW = 41.52	
1:20	20/80	7.36	0.673	7999	-	22.7	-	2 gpm		DTW = 41.25	
1:40	10/90	7.34	0.693	7999	-	22.9	-	2 gpm		DTW = 41.10	
1:45	10/100	7.33	0.697	7499	-	22.5	-	2 gpm		DTW = 56.70	
1:50	10/110	7.32	0.689	470	-	20.7	-	2 gpm		DTW = 57.10	
FINAL FIELD PARAMETER MEASUREMENTS											
2:00	20/130	7.31	0.676	357	-	23.0	-	2 gpm		DTW = N/A	

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

Well Number IP 12

Date 4-18-13

Time Start: 2:25 End: 5:28

Client ARCTOS ENVIRONMENTAL

Project TESORO-LIVERMORE

Job Number _____

Installation Date _____

Well Diameter 4"

Borehole Diameter 10'

Screen Length 10'

Measured Depth (pre-development) 59.80

Measured Depth (post-development) 59.80

Static Water Level (ft.) 37.60

Standing Water Column (ft.) 22.20

One Casing Volume (gal.) 14.65

One Annulus Vol. (gal.) _____

Sample ID _____

Qty. of Drilling Fluid Lost 0

Minimum Gal. to be Purged 155 Gallons

Development Method BAIL, SURGE, BAIL AND PUMP

Purging Equipment 4" S.S. TRAILER

Water Level Equipment WILIN ST

pH/EC Meter HORIBA U-10

Turbidity Meter _____

Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							GPM	W.L.	Comments	Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.					
5:17	15/95	7.16	1675	245	-	21.3	-	1 gpm		HARD BOTTOM		
5:28	10/105	7.09	1675	51	-	21.2	-	1 gpm		DTW = 43.05		
	* 155 Gallons REMOVED *											
FINAL FIELD PARAMETER MEASUREMENTS												

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

 Well Number IP 14
 Date 4-19-13
 Time Start: 2:00 End: 4:00
 Client ARCTUS ENVIRONMENT
 Project TERRAZZO - LIVERMORE
 Job Number _____
 Installation Date _____
 Well Diameter 4"

 Borehole Diameter 10"
 Screen Length 10'
 Measured Depth (pre-development) 59.70
 Measured Depth (post-development) 59.70
 Static Water Level (ft.) 26.85
 Standing Water Column (ft.) 22.85
 One Casing Volume (gal.) 15.08
 One Annulus Vol. (gal.) _____

 Sample ID _____
 Qty. of Drilling Fluid Lost 0
 Minimum Gal. to be Purged 150 Gallons
 Development Method BAIL SURGE PUMP
 Purging Equipment 4" 25 GALLON
 Water Level Equipment SOLINST
 pH/EC Meter HORIBA U-10
 Turbidity Meter _____
 Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							GPM	W.L.	Comments	Field Tech.	
		pH	EC	Turbidity	D.O.	Temperature	SAL.						
2:00	-												
2:00	-												
2:00	-												
2:45	-												
2:55	-												
3:05	20/20	7.47	0.934	7999	-	23.1	-	2 gpm		DTW = 39.10			
3:15	20/40	7.33	0.790	7999	-	22.5	-	2 gpm		DTW = 39.10			
3:25	20/60	7.27	0.94	7999	-	22.3	-						
3:35	20/80	7.26	0.96	867	-	22.6	-						
3:45	20/100	7.25	0.96	508	-	22.4	-						
3:55	20/120	7.23	0.95	240	-	22.4	-						
		* 160 GALLONS REMOVED *											
FINAL FIELD PARAMETER MEASUREMENTS													

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

Well Number TD 15
 Date 4-18-13
 Time Start: 7:40 End: 11:06
 Client ARCTOS ENVIRONMENTAL
 Project TESORO-LIVERMORE
 Job Number -
 Installation Date -
 Well Diameter 4"

Borehole Diameter 10"
 Screen Length 10'
 Measured Depth (pre-development) 59.00
 Measured Depth (post-development) 60.20
 Static Water Level (ft.) 36.75
 Standing Water Column (ft.) 22.25
 One Casing Volume (gal.) 14.68
 One Annulus Vol. (gal.) -

Sample ID -
 Qty. of Drilling Fluid Lost 0
 Minimum Gal. to be Purged 14.68 Gallons
 Development Method BAIL, SURGE BAIL AND PUMP.
 Purging Equipment 4" SS. BAILER
 Water Level Equipment SOLINST
 pH/EC Meter HORIBA U-10
 Turbidity Meter -
 Other -

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.	
		pH	EC	Turbidity	D.O.	Temperature	SAL.	GPM W.L.			
7:40	-										
8:20	-										
8:40	-										
9:00	-										
9:20	20/20	8.06	1.04	7999	-	24.6	-	2gpm	NTW: 39.00		
9:35	15/35	7.51	0.99	7999	-	27.1	-	1gpm	NTW: 51.40		
9:50	15/50	7.12	0.98	7999	-	26.0	-	1gpm	NTW: 54.30		
10:05	15/65	7.11	0.99	594	-	26.1	-	"	NTW: 57.40		
10:20	15/80	7.09	0.98	381	-	25.8	-				
10:35	15/95	7.08	1.01	311	-	25.9	-				
10:50	15/110	7.07	0.99	241	-	25.9	-				

FINAL FIELD PARAMETER MEASUREMENTS

11:06 - TOTAL GALLONS REMOVED 148 GALLONS NTW: 49.10

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

Well Number 1P 16
 Date 4-19-15
 Time Start: 7:35 End: 10:11
 Client ARCTOS ENVIRONMENTAL
 Project TEORO-LIVERMORE
 Job Number -
 Installation Date -
 Well Diameter 4"

Borehole Diameter 10"
 Screen Length 10'
 Measured Depth (pre-development) 59.70
 Measured Depth (post-development) 59.70
 Static Water Level (ft.) 37.30
 Standing Water Column (ft.) 22.40
 One Casing Volume (gal.) 14.78
 One Annulus Vol. (gal.) -

Sample ID _____
 Qty. of Drilling Fluid Lost 0
 Minimum Gal. to be Purged 148 Gallons
 Development Method BAILEY SURGE, BAILEY
AND PUMP
 Purging Equipment 4" S.S. BAILEY
 Water Level Equipment SOLINST
 pH/EC Meter HORIBA U-10
 Turbidity Meter -
 Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.	GPM W.L.		
7:35	-									
8:05	-									HALD POTENTIAL
8:40	-									SURGED WELL FOR 20 MIN
9:10	-									2410 50 GALLONS - 2 NTW = 38.80
9:20	20/20	6.98	0.93	7999	-	22.5	-	2 gpm		2 gpm / NTW = 37.60
9:30	20/40	6.96	0.94	7999	-	22.6	-	2 gpm		NTW = 39.25
9:41	20/60	6.98	0.93	888	-	22.8	-			NTW = 39.40
9:51	20/80	7.11	0.94	711	-	22.7	-			NTW = 39.50
10:01	20/100	7.13	0.94	537	-	22.6	-			NTW = 39.50
10:11	20/120	7.18	0.94	475	-	22.6	-			NTW = 39.60
										NTW = 39.60

FINAL FIELD PARAMETER MEASUREMENTS



MONITORING WELL DEVELOPMENT LOG

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

Well Number IP 17
 Date 4-19-13
 Time Start: 10:50 End: 12:45
 Client ARCTOS ENVIRONMENTAL
 Project TFSORO- LIVERMORE
 Job Number -
 Installation Date -
 Well Diameter 4"

Borehole Diameter 10'
 Screen Length 10'
 Measured Depth (pre-development) 59.50
 Measured Depth (post-development) 59.50
 Static Water Level (ft.) 37.00
 Standing Water Column (ft.) 22.50
 One Casing Volume (gal.) 14.85
 One Annulus Vol. (gal.) _____

Sample ID _____
 Qty. of Drilling Fluid Lost 6
 Minimum Gal. to be Purged 148 Gallons
 Development Method DAILY SURGE
BAIL & PUMP
 Purging Equipment 4" S.S. BAILER
 Water Level Equipment SOLINST
 pH/EC Meter HORIBA MW
 Turbidity Meter ''
 Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.	GPM W.L.		
10:50	-								HARD BOTTOM	
11:20	-								SURGED WELL FOR 20 MIN	
11:35	-								STOP BAILING - BAIL 40 GALLONS - DTW: 37.55	
11:50	-								START PUMPING AT 2 gpm - DTW: 37.25	
12:00	20/20	7.58	.835	7999	-	22.3	-	2 gpm	DTW: 38.75	
12:10	20/40	7.28	.834	7999	-	22.3	-		38.95	
12:20	20/60	6.88	.091	7999	-	23.1	-		38.95	
12:30	20/80	6.81	0.92	876	-	22.9	-		38.95	
12:40	20/100	6.81	0.91	734	-	23.1	-		38.95	
12:45	10/110	6.79	0.92	610	-	23.2	-		38.95	

FINAL FIELD PARAMETER MEASUREMENTS

ATTACHMENT I
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. <i>N/A</i>	Manifest Document No. <i>20614</i>	2. Page 1 <i>1 of 1</i>
3. Generator's Name and Mailing Address <i>Tesoro Environmental Resource Co. 3450 344th Way Auburn, WA 98001</i>		Tesoro #67076 <i>1619 First St. Livermore, CA</i>		
4. Generator's Phone ()				
5. Transporter 1 Company Name <i>EXCEL Environmental Services</i>		6. US EPA ID Number <i>CAL000209350</i>	A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number	B. Transporter 1 Phone <i>800-376-6008</i>	
9. Designated Facility Name and Site Address <i>(RST) Riverbank Oil Transfer 5300 CLAWS RD. Riverbank, CA 95367</i>		10. US EPA ID Number <i>CAL000190816</i>	C. State Transporter's ID	
			D. Transporter 2 Phone	
			E. State Facility's ID	
			F. Facility's Phone <i>209-863-8181</i>	
11. WASTE DESCRIPTION		12. Containers	13. Total Quantity	14. Unit Wt./Vol.
a. <i>NON HAZARDOUS WATER</i>		No. <i>001</i> Type <i>TT</i>	<i>880</i>	<i>G</i>
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above <i>Non Haz Water</i>		H. Handling Codes for Wastes Listed Above		
15. Special Handling Instructions and Additional Information <i>Gloves ERG 171</i>				
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	
17. Transporter 1 Acknowledgement of Receipt of Materials				
Printed/Typed Name <i>Peter Arpaio</i>		Signature <i>[Signature]</i>	Date Month Day Year <i>4 24 03</i>	
18. Transporter 2 Acknowledgement of Receipt of Materials				
Printed/Typed Name <i>Tim Lippert</i>		Signature <i>[Signature]</i>	Date Month Day Year <i>4 24 03</i>	
19. Discrepancy Indication/Space				
20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name		Signature	Date Month Day Year	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



Manifest

SOIL SAFE OF CA - TPST Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment: 1 / 1	Responsible for Payment:	Transport Truck #: 394-732	Facility #: A07	Approval Number: 40888	Load #: 002
----------------------------	--------------------------	-------------------------------	--------------------	---------------------------	----------------

Generator's Name and Billing Address: TESORO P.O. BOX 80730 RANCHO SANTA MARGARITA, CA 92688	Generator's Phone #: 949-460-6200	CAR000142289
	Person to Contact:	
	FAX#:	Customer Account Number

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

Generation Site (Transport from): (name & address) TESORO 87078 (FORMER) 1819 FIRST ST. LIVERMORE, CA 94550	Site Phone #:	
	Person to Contact:	
	FAX#:	

Designated Facility (Transport to): (name & address) SOIL SAFE 12328 Hibiscus Avenue ADELANTO, CA 92301	Facility Phone #: (800) 862-8001	
	Person to Contact: DELLENA JEFFREY	
	FAX#: (760) 246-8004	

Transporter Name and Mailing Address: BELSHIRE 25871 Towne Centre Drive FOOTHILL RANCH, CA 92610 BESI: 218442	Transporter's Phone #: 949-460-6200	CAR000193913
	Person to Contact: LARRY MOOTHART	450847
	FAX#: 949-460-6210	Customer Account Number

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand <input type="checkbox"/> Organic <input type="checkbox"/> Clay <input type="checkbox"/> Other <input type="checkbox"/>	0 - 10% <input type="checkbox"/> 10 - 20% <input type="checkbox"/> 20% - over <input type="checkbox"/>	Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Other <input type="checkbox"/>	44 drums		6000	3760	26400
Sand <input type="checkbox"/> Organic <input type="checkbox"/> Clay <input type="checkbox"/> Other <input type="checkbox"/>	0 - 10% <input type="checkbox"/> 10 - 20% <input type="checkbox"/> 20% - over <input type="checkbox"/>	Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Other <input type="checkbox"/>					13.20

List any exception to items listed above: _____ Scale Ticket # 108130

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

Print or Type Name: Generator <input type="checkbox"/> Consultant <input type="checkbox"/> Larry Moothart of BESI on behalf of generator	Signature and date: 	Month Day Year 4/23/13
---	-------------------------	---------------------------

Transporter	Transporter's certification: I/We acknowledge receipt of the soil referenced above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that the soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.		
	Print or Type Name: Kevin Dunlop	Signature and date: 	Month Day Year 4/23/13

Recycling Facility	Discrepancies:		
	Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:		
	Print or Type Name: D. JEFFREY/J. PROVANSAL	Signature and date: 	Month Day Year 5/16/13

Please print or type.

GENERATOR/CONSULTANTS COPY

Manifest

SOIL SAFE OF CA - TPST Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment: 1 / 1	Responsible for Payment:	Transport Truck #: 394-732	Facility #: A07	Approval Number: 40848	Load #: 1001
----------------------------	--------------------------	-------------------------------	--------------------	---------------------------	-----------------

Generator's Name and Billing Address: TESORO P.O. BOX 80730 RANCHO SANTA MARGARITA, CA 92688	Generator's Phone #: 949-480-5200	CAR000142298
	Person to Contact:	
	FAX#:	Customer Account Number

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

Generation Site (Transport from): (name & address) TESORO 87078 (FORMER) 1819 FIRST ST. LIVERMORE, CA 94550	Site Phone #:	
	Person to Contact:	
	FAX#:	

Designated Facility (Transport to): (name & address) SOIL SAFE 12328 HIBISCUS AVENUE ADELANTO, CA 92301	Facility Phone #: (800) 862-8001	
	Person to Contact: DELLENA JEFFREY	
	FAX#: (760) 248-8004	

Transporter Name and Mailing Address: BELSHIRE 25971 TOWNE CENTRE DRIVE FOOTHILL RANCH, CA 92810 BESI: 218442	Transporter's Phone #: 949-480-5200	CAR000183913
	Person to Contact: LARRY MOOTHART	450847
	FAX#: 949-480-5210	Customer Account Number

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand <input type="checkbox"/> Organic <input type="checkbox"/> Clay <input type="checkbox"/> Other <input type="checkbox"/>	0 - 10% <input type="checkbox"/> 10 - 20% <input type="checkbox"/> 20% - over <input type="checkbox"/>	Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Other <input type="checkbox"/>	26 drums		54400	37600	16800
Sand <input type="checkbox"/> Organic <input type="checkbox"/> Clay <input type="checkbox"/> Other <input type="checkbox"/>	0 - 10% <input type="checkbox"/> 10 - 20% <input type="checkbox"/> 20% - over <input type="checkbox"/>	Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Other <input type="checkbox"/>					8.40

List any exception to items listed above: _____ Scale Ticket # 107994

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

Print or Type Name: Generator <input type="checkbox"/> Consultant <input type="checkbox"/> Larry Moothart of BESI on behalf of generator	Signature and date:	Month Day Year 11/25/13
---	---------------------	----------------------------

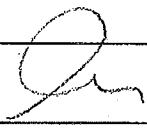
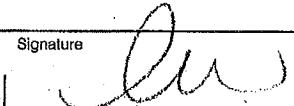
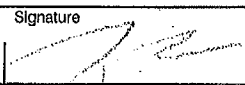
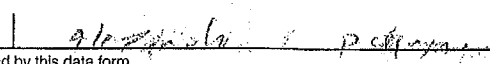
Transporter	Transporter's certification: I/We acknowledge receipt of the soil referenced above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that the soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.
	Print or Type Name: Kevin Dunlop Signature and date: Month Day Year: 11/25/13

Recycling Facility	Discrepancies:
	Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above: Print or Type Name: D. JEFFREY/J. PROVANSAL Signature and date: 5.6.13

Please print or type.

NON-HAZARDOUS WASTE DATA FORM

BESI # 218442

GENERATOR	Generator's Name and Mailing Address TESORO P.O. BOX 80790 RANCHO SANTA MARGARITA, CA 92888		Generator's Site Address (if different than mailing address) TESORO 87076 (FORMER) 1010 FIRST ST. LIVERMORE, CA 94560	
	Generator's Phone: <u>949-480-5200</u>			
	Container type removed from site: <input checked="" type="checkbox"/> Drums <input type="checkbox"/> Vacuum Truck <input type="checkbox"/> Roll-off Truck <input type="checkbox"/> Dump Truck <input type="checkbox"/> Other _____		Container type transported to receiving facility: <input type="checkbox"/> Drums <input checked="" type="checkbox"/> Vacuum Truck <input type="checkbox"/> Roll-off Truck <input type="checkbox"/> Dump Truck <input type="checkbox"/> Other _____	
	Quantity <u>10</u>		Quantity <u>1</u> Volume <u>55 gallons</u>	
	WASTE DESCRIPTION <u>NON-HAZARDOUS WATER</u>		GENERATING PROCESS <u>WELL PURGING / DECON WATER</u>	
	COMPONENTS OF WASTE PPM % 1. <u>WATER</u> _____ <u>99-100%</u>		COMPONENTS OF WASTE PPM % 3. _____ _____ _____	
	2. <u>TPH</u> _____ <u><1%</u>		4. _____ _____ _____	
	Waste Profile _____ PROPERTIES: pH <u>7-10</u> <input type="checkbox"/> SOLID <input checked="" type="checkbox"/> LIQUID <input type="checkbox"/> SLUDGE <input type="checkbox"/> SLURRY <input type="checkbox"/> OTHER _____			
	HANDLING INSTRUCTIONS: <u>WEAR ALL APPROPRIATE PROTECTIVE CLOTHING.</u>			
	Generator Printed/Typed Name Larry Mothart of BESI on behalf of generator		Signature  Month Day Year 11/23/13	
	The Generator certifies that the waste as described is 100% non-hazardous			
TRANSPORTER	Transporter 1 Company Name BELSHIRE		Phone# 949-480-5200	
	Transporter 1 Printed/Typed Name Larry Mothart		Signature  Month Day Year 11/23/13	
	Transporter Acknowledgment of Receipt of Materials			
	Transporter 2 Company Name NIETO & SONS TRUCKING, INC.		Phone# 714-990-8885	
	Transporter 2 Printed/Typed Name Miguel Nieto		Signature  Month Day Year 11/20/13	
	Transporter Acknowledgment of Receipt of Materials			
RECEIVING FACILITY	Designated Facility Name and Site Address DEMENNO KERDOON 2000 N. ALAMEDA ST. COMPTON, CA 90222		Phone# 310-537-7100	
	Printed/Typed Name Miguel Nieto		Signature  Month Day Year 11/20/13	
	Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.			

NON-HAZARDOUS WASTE DATA FORM

BESI # 218442

Generator's Name and Mailing Address: TESORO, P.O. BOX 80730, RANCHO SANTA MARGARITA, CA 92088
 Generator's Site Address (if different than mailing address): TESORO 87078 (FORMER), 1010 FIRST ST., LIVERMORE, CA 94550
 Generator's Phone: 949-480-5200

Container type removed from site: Drums Vacuum Truck Roll-off Truck Dump Truck
 Container type transported to receiving facility: Drums Vacuum Truck Roll-off Truck Dump Truck
 Quantity: 13 Volume: 715 gallons

WASTE DESCRIPTION: NON-HAZARDOUS WATER
 GENERATING PROCESS: WELL PURGING / DECON WATER
 COMPONENTS OF WASTE: WATER (99-100%), TPH (<1%)
 Waste Profile: PROPERTIES: pH 7-10 SOLID LIQUID SLUDGE SLURRY OTHER
 HANDLING INSTRUCTIONS: WEAR ALL APPROPRIATE PROTECTIVE CLOTHING.

Generator Printed/Typed Name: Larry Moothart of BESI on behalf of generator
 Signature: [Signature]
 Date: 4/25/13

The Generator certifies that the waste as described is 100% non-hazardous
 Transporter 1 Company Name: BELSHIRE
 Phone#: 949-480-5200
 Transporter 1 Printed/Typed Name: Larry Moothart
 Signature: [Signature]
 Date: 4/25/13

Transporter Acknowledgment of Receipt of Materials
 Transporter 2 Company Name: NIETO & SONS TRUCKING, INC.
 Phone#: 714-890-8855
 Transporter 2 Printed/Typed Name: Jeff Murrin
 Signature: [Signature]
 Date: 5/3/13

Transporter Acknowledgment of Receipt of Materials
 Designated Facility Name and Site Address: DEMENNO KERDOON, 2000 N. ALAMEDA ST., COMPTON, CA 90222
 Phone#: 310-837-7100
 Printed/Typed Name: Alex Kerdoon
 Signature: [Signature]
 Date: 05/13/13

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