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**ENVIRONMENTAL ENGINEERING, INC**

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November 30, 2006

Mr. Don Hwang  
Alameda County  
Department of Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

Subject: Fuel Leak Case No. RO0000317-5725 Thornhill Drive, Oakland, CA

Dear Don:

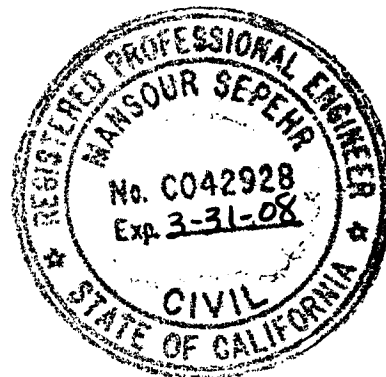
SOMA's "Fourth Quarter 2006 Groundwater Monitoring Report" for the subject property has been uploaded to the State's GeoTracker database and Alameda County's FTP site for your review.

Thank you for your time in reviewing our report. If you have any questions or comments, please call me at (925) 734-6400.

Sincerely,

Mansour Sepehr, Ph.D., PE  
Principal Hydrogeologist

cc: Mr. Mo Mashhoon w/report enclosure





ENVIRONMENTAL ENGINEERING, INC  
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**Fourth Quarter 2006**  
**Groundwater Monitoring Report**

**Mash Petroleum Inc.**

**5725 Thornhill Drive**  
**Oakland, California**

November 30, 2006

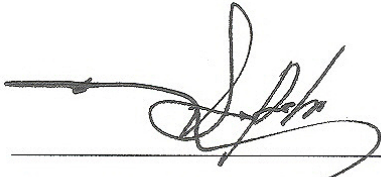
Project 2831

Prepared for  
**Mr. Mo Mashhoon**  
**1721 Jefferson Street**  
**Oakland, California 94612**

Prepared by  
**SOMA Environmental Engineering, Inc.**  
**6620 Owens Drive, Suite A**  
**Pleasanton, California 94588**

## Certification

This report has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Mo Mashhoon, the property owner of 5725 Thornhill Drive, Oakland, California, to comply with the Alameda County Health Care Services and California Regional Water Quality Control Board's requirements for the Fourth Quarter 2006 groundwater monitoring event.



Mansour Sepehr, Ph.D., P.E.  
Principal Hydrogeologist



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## 1.0 INTRODUCTION

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Mo Mashhoon, the property owner of 5725 Thornhill Drive, Oakland, California (“the Site”) as shown in Figure 1. The Site is currently an active ARCO station that is located in an area consisting primarily of commercial and residential land uses.

This report summarizes the results of the Fourth Quarter 2006 groundwater monitoring event conducted at the Site on October 30, 2006, and includes the field measurement results of the physical and chemical properties of the groundwater at the time of sampling and the laboratory analytical results on the groundwater samples.

The groundwater monitoring activities for this quarter were performed in accordance with the general guidelines of the California Regional Water Quality Control Board (CRWQCB) and the Alameda County Health Care Services (ACHCS). Appendix A details the groundwater monitoring procedures used during this monitoring event.

### 1.1 Previous Activities

In November 1998, Penn Environmental (Penn) removed a 550-gallon steel underground waste oil tank (WOT) from the Site. Soil samples collected from the WOT excavation contained up to 1,100,000 µg/Kg of total petroleum hydrocarbons as gasoline (TPH-g), 2,700,000 µg/Kg of total petroleum hydrocarbons as diesel (TPH-d), and 4,200,000 µg/Kg of total petroleum hydrocarbons as motor oil (TPH-mo). On February 4, 1999, Penn Environmental over-excavated the contaminated soil surrounding the former WOT. Aqua Science Engineers, Inc. (ASE) collected confirmation soil samples from two sidewalls of the excavation. The only compound detected in one of these two soil samples was Methyl tertiary Butyl Ether (MtBE) at 40 µg/Kg.

In July 1999, ASE drilled borehole BH-A in the vicinity of the former WOT. On September 6, 2000, ASE drilled soil boreholes BH-B and BH-C. On October 23, 2000, ASE drilled soil boreholes BH-D and BH-E. ASE also collected water samples from Temescal Creek. No hydrocarbons were detected in the water sample collected from Temescal Creek. Figure 2 shows the locations of the borings.

On March 1 and 2, 2004, SOMA oversaw Gregg Drilling & Testing (Gregg) advance nine temporary well boreholes, HP-1 through HP-7, HP-9 and HP-10. Proposed hydropunch HP-8, which was to be installed in the street, was not drilled due to traffic hazards. Three on-site wells were decommissioned in March 2004, and three additional wells (SOMA-1 to SOMA-3) were installed. The locations of the boreholes and wells are shown in Figure 2.

The results of the March 2004 investigation and details of the well installations are presented in SOMA's report entitled "Soil and Groundwater Investigation and Monitoring Well Installation Report at 5725 Thornhill Drive, Oakland, California," dated April 16, 2004.

On April 25, 2005, SOMA conducted a sensitive receptor survey to identify any water bodies or domestic, irrigation or water supply wells within a quarter mile radius of the Site. Based on the State Department of Water Resources and Alameda County Public Works Agency's records, no drinking water, domestic or irrigation wells were within a quarter-mile radius of the Site.

In May 2005, CPT/MIP boreholes (CPT-1 through CPT-5 and CPT-7 through CPT-11) were advanced under the supervision of SOMA. CPT-6 could not be drilled due to physical constraints and obstruction of local traffic. Ten boreholes, designated as GS-1 through GS-5 and GS-7 through GS-11 were advanced at their corresponding CPT borehole locations. Monitoring well SOMA-4 was also installed. Figure 2 shows the locations of the CPT boreholes and SOMA-4.

The results of the May 2005 site investigation and well installation are presented in SOMA's report entitled "Additional Soil and Groundwater Investigation and Monitoring Well Installation Report at 5725 Thornhill Drive, Oakland, California," dated June 13, 2005.

## **2.0 RESULTS**

The following sections provide the results of the field measurements and laboratory analyses for the October 30, 2006 groundwater monitoring event.

### **2.1 Field Measurements**

As shown in Table 1, the depth to groundwater ranged from 6.22 feet in SOMA-1 to 8.11 feet in SOMA-4. The corresponding groundwater elevations ranged from 564.54 feet in SOMA-4 to 570.25 feet in SOMA-1. The contour map of the groundwater elevations is presented in Figure 3. The groundwater flows southwesterly across the Site, with an average gradient of 0.028 feet/foot.

The field notes in Appendix B show the detailed measurements of the physical and chemical parameters of the groundwater for each well during this monitoring event.

### **2.2 Laboratory Analyses**

Table 1 presents the results of the laboratory analyses for total petroleum hydrocarbons as gasoline (TPH-g), total petroleum hydrocarbons as diesel (TPH-d), total petroleum hydrocarbons as motor oil (TPH-mo), benzene, toluene,

ethylbenzene, total xylenes (BTEX), and Methyl tertiary Butyl Ether (MtBE). Table 2 presents the results of the gasoline oxygenates and lead scavengers analysis.

TPH-g was below the laboratory reporting limit in wells SOMA-1 and SOMA-3. Detectable TPH-g concentrations ranged from 1,680 ug/L in SOMA-2 to 4,320 ug/L in SOMA-4. Figure 4 displays the contour map of TPH-g concentrations in the groundwater. The most impacted TPH-g region appears to be in the vicinity of off-site well SOMA-4. The high TPH-g concentration in SOMA-4 can be attributed to the southwesterly groundwater flow direction across the Site. TPH-g has impacted the region around the pump islands, as observed by the high TPH-g concentration in well SOMA-2.

TPH-d was below the laboratory reporting limit in well SOMA-1. Detectable TPH-d concentrations ranged from 199 ug/L in SOMA-3 to 1,070 ug/L in SOMA-4. During analytical testing for TPH-d results, several variations were observed. These variations included, but were not limited to, the presence of unidentified hydrocarbons and irregular chromatographic patterns in reference to the standard diesel patterns. Refer to the laboratory report in Appendix C for further clarification on the diesel testing and results.

Figure 5 displays a contour map of TPH-d concentrations in the groundwater. Due to the southwesterly groundwater flow direction from the pump islands, TPH-d has migrated off-site to well SOMA-4. TPH-d appears to have increased in the monitoring wells throughout the site with the exception of well SOMA-1.

TPH-mo was below the laboratory reporting limit throughout the Site, with the exception of well SOMA-2. TPH-mo was detected in well SOMA-2 at 448 ug/L. This was the first time TPH-mo has been detected in SOMA-2 since January 2005.

The following BTEX analytes were observed during this monitoring event:

- All BTEX analytes were below the laboratory reporting limit in wells SOMA-1 and SOMA-3.
- In well SOMA-2, all BTEX analytes were below the laboratory reporting limit, with the exception of ethylbenzene (3.78 ug/L).
- In well SOMA-4, both benzene and toluene were below the laboratory reporting limit and both ethylbenzene and total xylenes were at trace concentrations (3.34 ug/L and 0.54 ug/L, respectively).

MtBE was detected at trace concentrations in all of the groundwater samples collected during this monitoring event. Detectable MtBE concentrations ranged from 3.38 ug/L in well SOMA-1 to 51.4 ug/L in well SOMA-2. Due to the minimal MtBE concentrations detected, no iso-concentration figure was drawn for MtBE.



As shown in Table 2, all gasoline oxygenates and lead scavengers, which include Isopropyl Ether (DIPE), Ethyl tertiary Butyl Ether (EtBE), Methyl tert-Amyl Ether (TAME), 1,2-Dichloroethane (1,2-DCA), 1,2-Dibromoethane (EDB), and ethanol were below the laboratory reporting limit throughout the Site. Tert-Butyl-Alcohol (TBA) was detected in wells SOMA-2 and SOMA-4 at 20.7 ug/L and 269 ug/L, respectively. Due to the minimal TBA concentrations detected, no iso-concentration figure was drawn for TBA.

Appendix C contains the laboratory report and chain-of-custody (COC) form from this monitoring event.

### **3.0 CONCLUSIONS & RECOMMENDATIONS**

The findings of the Fourth Quarter 2006 groundwater monitoring event can be summarized as follows:

- The groundwater flow direction has remained southwesterly across the Site.
- Based on previous site investigations and the results of the quarterly monitoring events, both the hydrocarbon and MtBE plumes have migrated off-site, southwesterly, with the flow of groundwater.
- Based on the recent workplan submitted to the ACHCS, SOMA is planning to conduct an additional investigation around the utility lines in order to investigate the extent of the MtBE plume in the Shallow water-bearing zone.

### **4.0 REPORT LIMITATIONS**

This report is the summary of work done by SOMA, including observations and descriptions of the Site's conditions. It includes the analytical results produced by Pacific Analytical Laboratory in Alameda, for the current groundwater monitoring event. The number and locations of the wells were selected to provide the required information, but may not be completely representative of the entire site's conditions. All conclusions and recommendations are based on the results of the laboratory analysis. Conclusions beyond those specifically stated in this document should not be inferred from this report.

SOMA warrants that the services provided were done in accordance with the generally accepted practices in the environmental engineering and consulting field at the time of this sampling.

# Tables

**Table 1**  
**SOMA Historical Groundwater Elevation Data**  
**& Analytical Results (Hydrocarbons, BTEX, & MtBE)**  
**5725 Thornhill Drive, Oakland California**

Monitoring Well	Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	TPH-d (µg/L)	TPH-mo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE* 8260B (µg/L)
SOMA-1	4/22/2004	576.47	5.75	570.72	63	<50	<300	<0.5	<0.5	<0.5	<0.5	7.7
	7/27/2004	576.47	6.21	570.26	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	9.1
	10/28/2004	576.47	5.76	570.71	<50	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	6.4
	1/11/2005	576.47	3.73	572.74	<50	200 HY	900	<0.5	<0.5	<0.5	<0.5	4.7
	4/12/2005	576.47	4.72	571.75	<200	<50	<300	<0.5	<0.5	<0.5	<1.0	7.49
	7/19/2005	576.47	5.87	570.60	<200	<50	<300	<0.5	<2.0	<0.5	<1.0	4.94
	10/18/2005	576.47	6.12	570.35	<50	<50	<300	<0.5	<2.0	<0.5	<1.0	5.33
	2/6/2006	576.47	5.10	571.37	<50	920LY	<300	<0.5	<2.0	<0.5	<1.0	2.74
	4/26/2006	576.47	4.71	571.76	<50	<50 <sup>1</sup>	<250 <sup>1</sup>	<0.5	<2.0	<0.5	<1.0	5.28
	8/3/2006	576.47	5.96	570.51	<50	<50	<250	<0.5	<2.0	<0.5	<1.0	4.52
	<b>10/30/2006</b>	<b>576.47</b>	<b>6.22</b>	<b>570.25</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;250</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;1.0</b>	<b>3.38</b>
SOMA-2	4/22/2004	575.50	7.40	568.10	1,900	690 LY	<300	<0.5	<0.5	5.2	9.9	1,900
	7/27/2004	575.50	7.92	567.58	1,500	710 LY	<300	8.9 C	<0.5	1.5 C	2.9 C	740
	10/28/2004	575.50	7.62	567.88	955	790 LY	<1.0	<2.5	<2.5	<2.5	< 5	785
	1/11/2005	575.50	5.70	569.80	3,700	2100 LY	380	3.7	<2.0	3.5	102	310
	4/12/2005	575.50	6.28	569.22	5,960	1200 LY	<300	1.19	<0.5	20.6	25	241
	7/19/2005	575.50	7.42	568.08	2,480	800 LY	<300	1.09	<2.0	2.65	0.73	162
	10/18/2005	575.50	7.70	567.80	2,710	1,100 LY	<300	1.41	<2.0	2.24	0.64	130
	2/6/2006	575.50	6.71	568.79	2,730	66Y	<300	0.68	<2.0	0.71	6.33	49
	4/26/2006	575.50	6.32	569.18	6,490	1,580 <sup>1,2,3</sup>	<250 <sup>1</sup>	<0.5	<2.0	15.3	8.49	38.5
	8/3/2006	575.50	7.39	568.11	3,580	286 <sup>1,3</sup>	<250	0.8	0.7	2.65	0.7	44.8
	<b>10/30/2006</b>	<b>575.50</b>	<b>7.60</b>	<b>567.90</b>	<b>1,680</b>	<b>608<sup>2,3</sup></b>	<b>448</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>3.78</b>	<b>&lt;1.0</b>	<b>51.4</b>

**Table 1**  
**SOMA Historical Groundwater Elevation Data**  
**& Analytical Results (Hydrocarbons, BTEX, & MtBE)**  
**5725 Thornhill Drive, Oakland California**

Monitoring Well	Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	TPH-d (µg/L)	TPH-mo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE* 8260B (µg/L)
<b>SOMA-3</b>	4/22/2004	575.92	7.14	568.78	190	120 Y	<300	<0.5	<0.5	<0.5	<0.5	5.1
	7/27/2004	575.92	7.95	567.97	130	120 LY	<300	<0.5	<0.5	<0.5	<0.5	9.1
	10/28/2004	575.92	7.60	568.32	57	280 LY	<1.0	<0.5	<0.5	<0.5	<2	11.3
	1/11/2005	572.92	5.45	567.47	140	210 Y	<300	<0.5	<0.5	<0.5	<0.5	5.8
	4/12/2005	572.92	6.02	566.90	<200	<50	<300	<0.5	<0.5	<0.5	<1.0	4.53
	7/19/2005	572.92	7.49	565.43	<200	120 Y	<300	<0.5	<2.0	<0.5	<1.0	4.69
	10/18/2005	572.92	7.63	565.29	50.1	120 Y	<300	<0.5	<2.0	<0.5	<1.0	8.63
	2/6/2006	572.92	7.20	565.72	1,010	220Y	<300	<0.5	<2.0	<0.5	2.06	32
	4/26/2006	572.92	6.13	566.79	121	123 <sup>1,2,3</sup>	<250 <sup>1</sup>	<0.5	<2.0	<0.5	<1.0	5.49
	8/3/2006	572.92	7.35	565.57	<50	60 <sup>1,2</sup>	<250	<0.5	<0.5	<0.5	<1.0	8.05
	<b>10/30/2006</b>	<b>572.92</b>	<b>7.64</b>	<b>565.28</b>	<b>&lt;50</b>	<b>199<sup>2,3</sup></b>	<b>&lt;250</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;1.0</b>	<b>7.37</b>
<b>SOMA-4</b>	7/19/2005	572.65	8.10	564.55	3,350	1,200 LY	<300	<1.0	<4.0	<1.0	<2.0	455
	10/18/2005	572.65	8.15	564.50	1,580	1,200 LY	<300	<2.15	<8.6	<2.15	<4.3	425
	2/6/2006	572.65	7.68	564.97	1,940	830LY	<300	<2.15	<8.60	<2.15	<4.3	409
	4/26/2006	572.65	7.61	565.04	3,930	1,080 <sup>1,2,3</sup>	<250 <sup>1</sup>	<0.5	<2.0	<0.5	<1.0	231
	8/3/2006	572.65	8.08	564.57	4,340	357 <sup>1,3</sup>	<250	<0.5	0.52	<0.5	0.52	34.2
		<b>10/30/2006</b>	<b>572.65</b>	<b>8.11</b>	<b>564.54</b>	<b>4,320</b>	<b>1070<sup>2,3</sup></b>	<b>&lt;250</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>3.34</b>	<b>0.54</b>

Notes:

- <: not detected at or above laboratory reporting limits.
- C: Presence confirmed, but RPD between columns exceeds 40%.
- H: Heavier hydrocarbons contributed to the quantitation.
- L: Lighter hydrocarbons contributed to the quantitation.
- Y: Sample exhibits chromatographic pattern which did not resemble standard.

- 1 To reduce matrix interference, the sample extract has undergone silica-gel clean-up, method 3630, which is specific to polar compound contamination, diesel 2Q06.
- 2 The sample chromatographic pattern does not resemble fuel standard used for quantitation, diesel 2Q06 to 4Q06.
- 3 Unidentified hydrocarbons C9-C16, diesel 2Q06 to 4Q06.

The Second Quarter 2004 was the first time SOMA monitored the site. Wells SOMA-1 to SOMA-3 were monitored at that time. Well SOMA-4 was installed on May 27, 2005. The Third Quarter 2005 was the first time SOMA monitored this well.

**Table 2**  
**Groundwater Analytical Results**  
**Gasoline Oxygenates & Lead Scavengers**  
**5725 Thornhill Drive, Oakland California**

Monitoring Well	Date	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Ethanol (µg/L)	
SOMA-1	4/22/2004	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<1000	
	7/27/2004	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<1000	
	10/28/2004	<2.5	<0.5	<0.5	<2	<0.5	<0.5	<1.0	
	1/11/2005	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<1,000	
	4/12/2005	<2.5	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
	7/19/2005	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
	10/18/2005	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
	2/1/2006	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
	4/26/2006	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
	8/3/2006	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
	<b>10/30/2006</b>	<b>&lt;10</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1000</b>
	SOMA-2	4/22/2004	<100	<5.0	<5.0	19.0	<5.0	<5.0	<10000
		7/27/2004	<33	<1.7	<1.7	9.8	<1.7	<1.7	<3300
10/28/2004		36.3	<2.5	<2.5	12.85	<0.5	<0.5	<1.0	
1/11/2005		67	<2.0	<2.0	6.7	<2.0	<2.0	<4,000	
4/12/2005		71	<0.5	<0.5	3.29	<0.5	<0.5	<1000	
7/19/2005		74.2	<0.5	<0.5	2.82	<0.5	<0.5	<1000	
10/18/2005		81.7	<0.5	<0.5	2.61	<0.5	<0.5	<1000	
2/1/2006		37.8	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
4/26/2006		36.1	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
8/3/2006		32.4	<0.5	<0.5	<2.0	<0.5	<0.5	<1000	
<b>10/30/2006</b>		<b>20.7</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1000</b>	

**Table 2**  
**Groundwater Analytical Results**  
**Gasoline Oxygenates & Lead Scavengers**  
**5725 Thornhill Drive, Oakland California**

Monitoring Well	Date	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Ethanol (µg/L)
SOMA-3	4/22/2004	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<1000
	7/27/2004	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<1000
	10/28/2004	<2.5	<0.5	<0.5	<2	<0.5	<0.5	<1.0
	1/11/2005	<10	<0.5	<0.5	<0.5	<0.5	<0.5	<1,000
	4/12/2005	<2.5	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
	7/19/2005	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
	10/18/2005	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
	2/1/2006	40.9	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
	4/26/2006	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
	8/3/2006	<10	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
	<b>10/30/2006</b>	<b>&lt;10</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1000</b>
SOMA-4	7/19/2005	84.1	<1.0	<1.0	4.4	<1.0	<1.0	<1000
	10/18/2005	314	<2.15	<2.15	<8.6	<2.15	<2.15	<4300
	2/1/2006	417	<2.15	<2.15	<8.6	<2.15	<2.15	<4300
	4/26/2006	357	0.59	<0.5	2.1	<0.5	<0.5	<1000
	8/3/2006	216	<0.5	<0.5	<2.0	<0.5	<0.5	<1000
		<b>10/30/2006</b>	<b>269</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;2.0</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>

Notes:

<: Not detected above the laboratory reporting limit.  
The Second Quarter 2004 was the first time SOMA monitored the site.  
Wells SOMA-1 to SOMA-3 were monitored at that time.  
Well SOMA-4 was installed on May 27, 2005. The Third Quarter 2005 was the first time SOMA monitored this well.

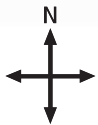
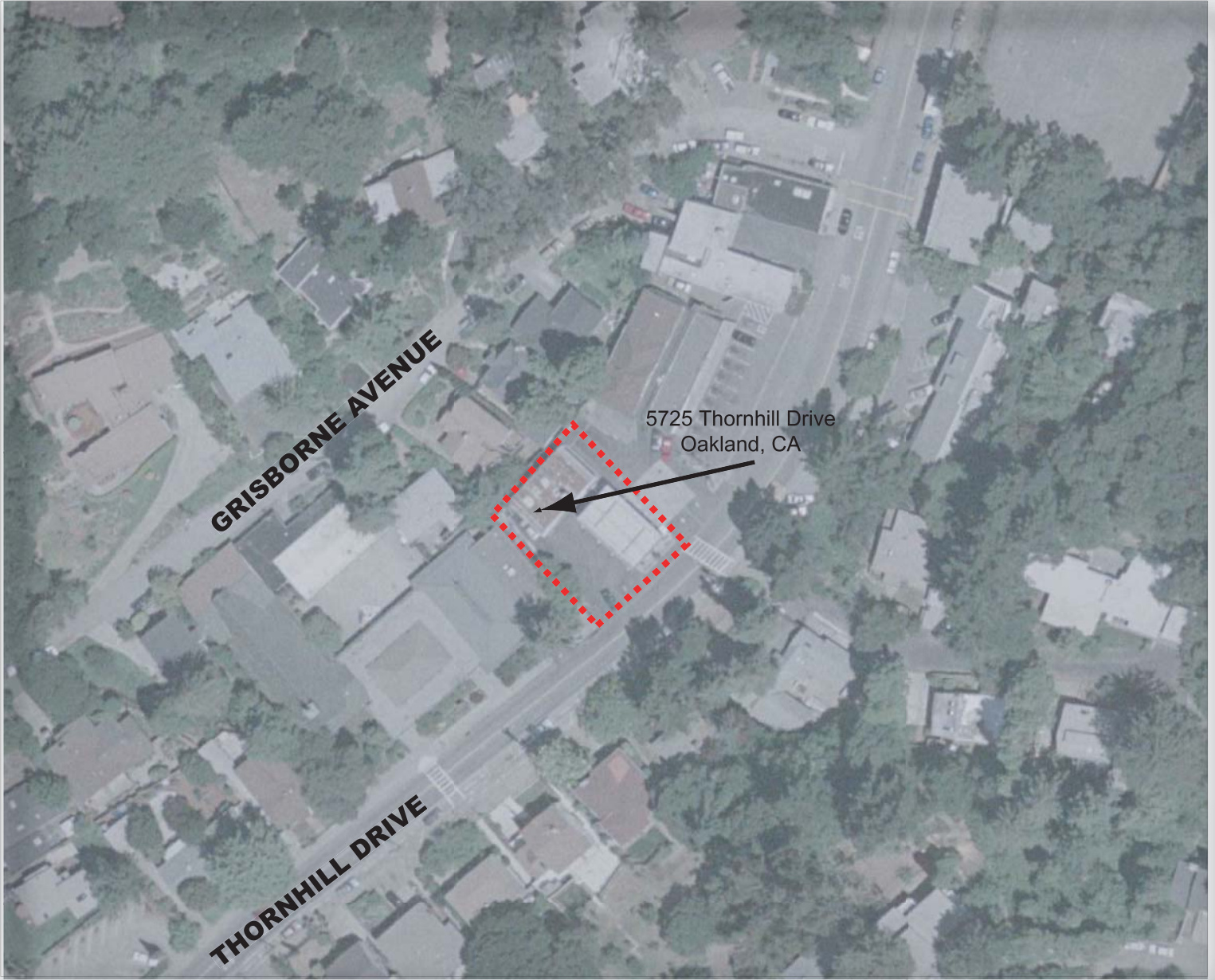
**Gasoline Oxygenates:**

TBA: tertiary butyl alcohol  
DIPE: Di-Isopropyl ether  
ETBE: Ethyl tertiary butyl ether  
TAME: Methyl tertiary amyl ether  
Ethanol

**Lead Scavengers:**

1,2-Dichloroethane  
EDB: 1,2-Dibromoethane

# Figures



approximate scale in feet  
0 100 200

Figure 1: Site vicinity map.





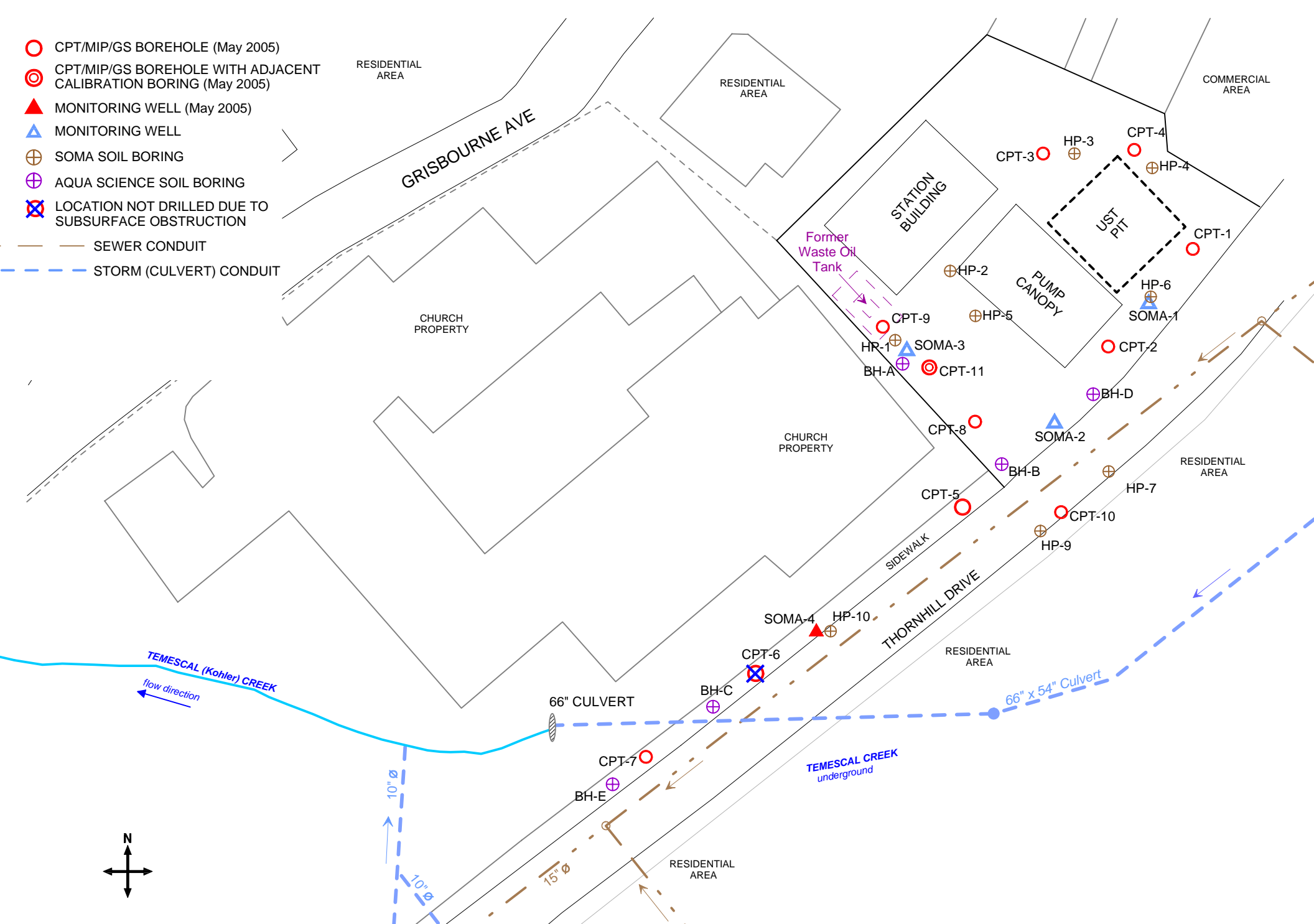
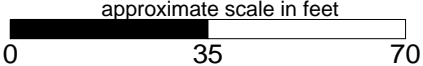
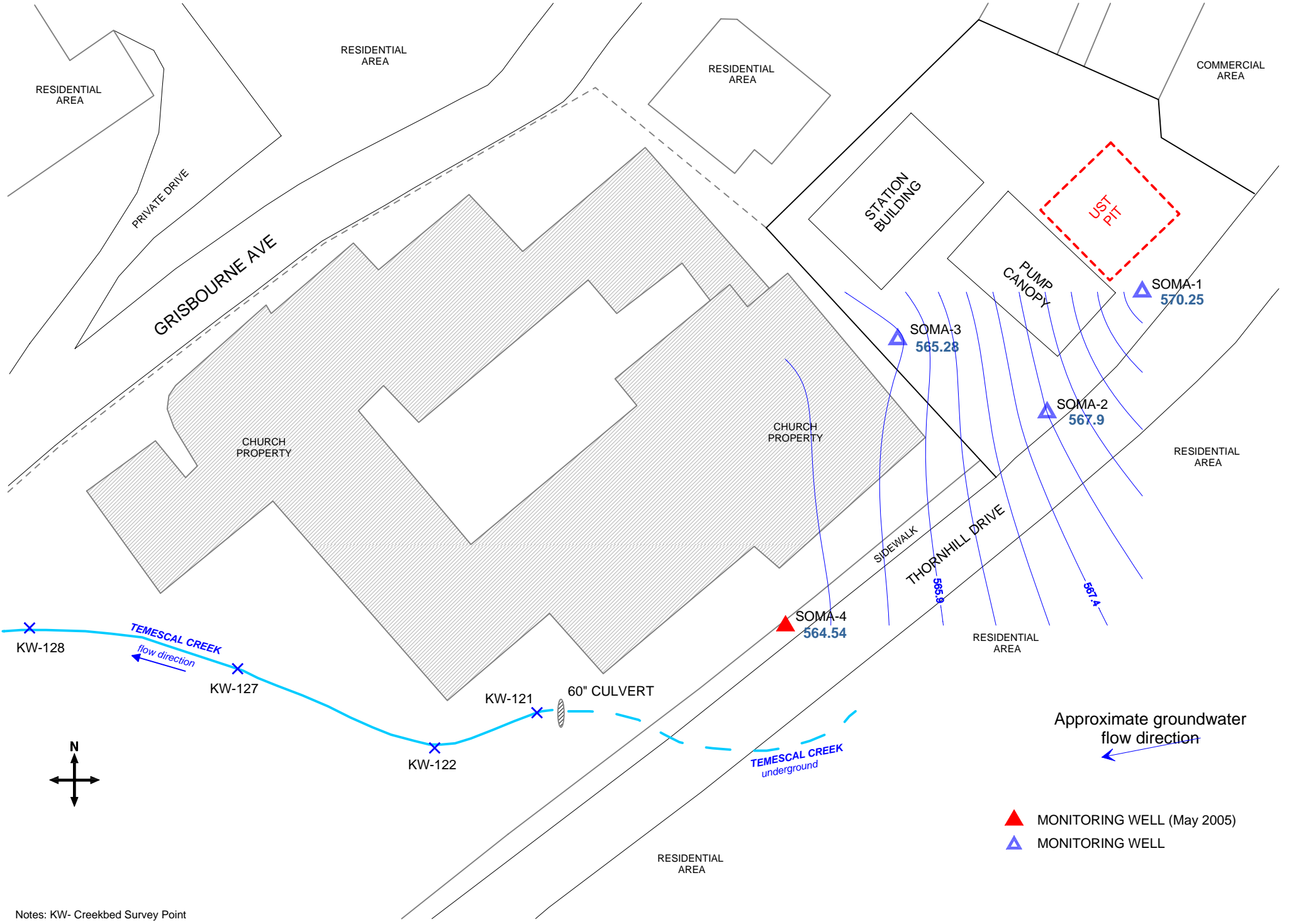


Figure 2: Site map showing locations of monitoring wells, soil borings, decommissioned wells, and CPT/MIP/GS boreholes.





Notes: KW- Creekbed Survey Point

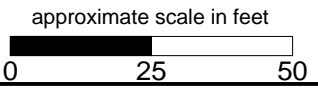


Figure 3: Groundwater elevation contour map in feet. October 30, 2006.



Figure 4: Contour map of TPH-g concentrations in groundwater. October 30, 2006.

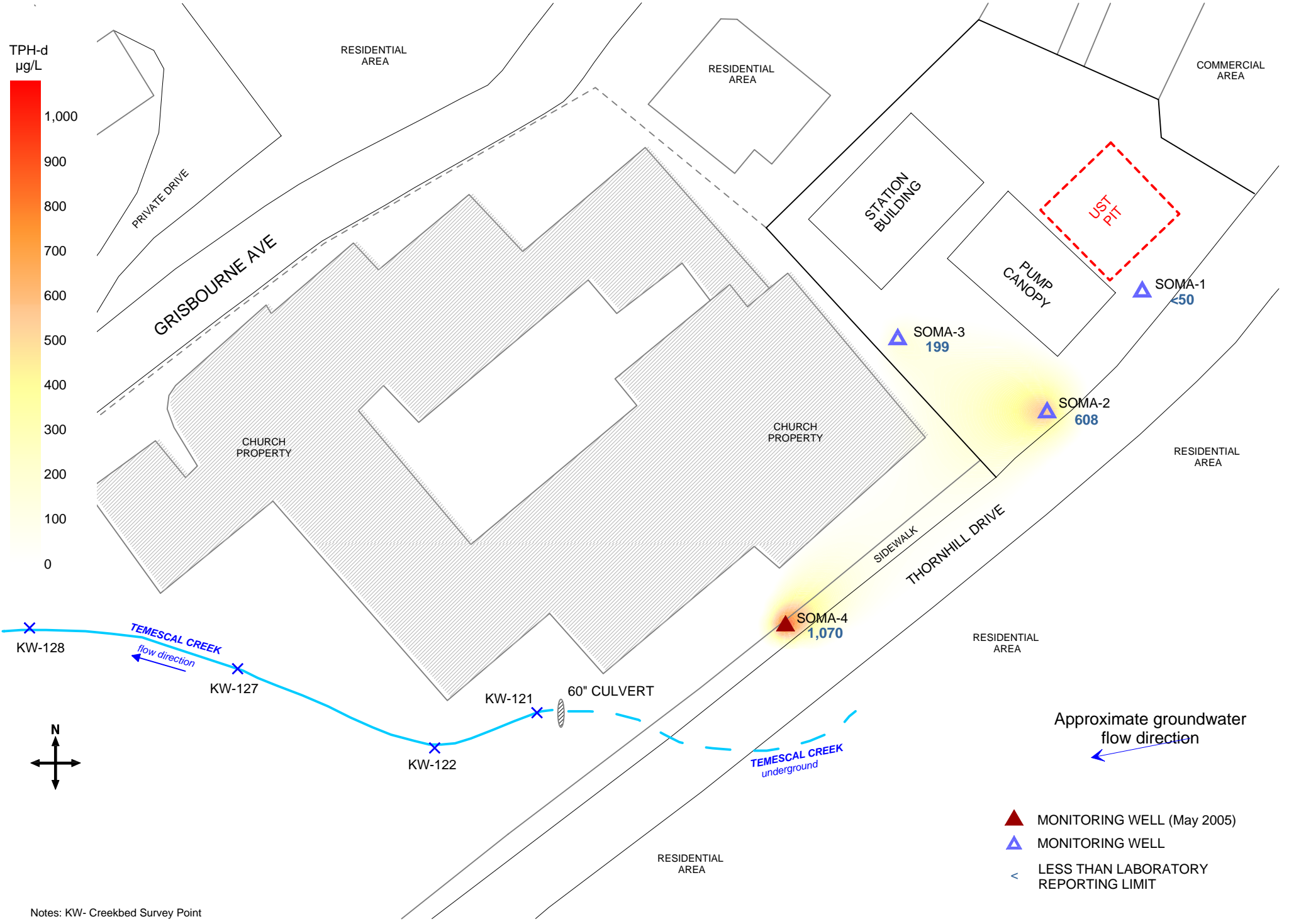


Figure 5: Contour map of TPH-d concentrations in groundwater.  
October 30, 2006.

# APPENDIX A

## SOMA's Groundwater Monitoring Procedures

## **Field Activities**

On October 30, 2006, a total of three on-site monitoring wells (SOMA-1 to SOMA-3), and one off-site well SOMA-4 were measured for depth to groundwater. On October 30, 2006, additional field measurements and grab groundwater samples were collected from all of the monitoring wells. This monitoring event was conducted in accordance with the procedures and guidelines of the California Regional Water Quality Control Board and the Alameda County Health Care Services.

Prior to measuring the groundwater depth at each well, equalization with the surrounding aquifer was achieved. The well cap was removed each well, and the pressure in each well was then allowed to dissipate. This allowed for a more stable water table level within the well. After a few minutes, and once the water level in the well stabilized, the depth to groundwater in each monitoring well was measured from the top of the casing to the nearest 0.01 foot using an electric sounder.

The top of the casing elevation data and the depth to groundwater in each monitoring well were used to calculate the groundwater elevation. The top of casing elevation was based on an elevation datum of 37 feet NAVD88. Appendix B shows the survey datum.

Prior to the collection of samples, each well was purged using a battery operated 2-inch diameter pump (Model ES-60 DC). In order to ensure that the final samples were in equilibrium with (and representative of) the surrounding groundwater, during purging, several samples were taken for field measurements of pH, temperature and EC. The field parameters were measured using a Hanna pH, conductivity, and temperature meter. The equipment was calibrated at the Site using standard solutions and procedures provided by the manufacturer.

Appendix B details the field measurements taken during the monitoring event.

The purging of the wells continued until the parameters for pH, temperature and EC stabilized or three casing volumes were purged. A disposable polyethylene bailer was used to collect sufficient samples from each well for laboratory analyses. The groundwater sample was transferred to three 40-mL VOA vials and preserved with hydrochloric acid. The vials were then sealed to prevent the development of air bubbles within the headspace. The groundwater sample collected from each well was also transferred into one 1-liter amber non-preserved glass container.

After the groundwater samples were collected they were placed on ice in an ice chest and maintained at 4°C. A chain of custody (COC) form was written for all

the samples. After the sampling was complete, on October 30, 2006, SOMA's field crew delivered the groundwater samples along with the COC form to Pacific Analytical Laboratory in Alameda, California.

### **Laboratory Analysis**

Pacific Analytical Laboratory, a state certified laboratory, analyzed the groundwater samples for TPH-g, TPH-d, TPH-mo, BTEX, MtBE, gasoline oxygenates, and lead scavengers.

TPH-g, BTEX, MtBE, gasoline oxygenates, and lead scavengers measurements were prepared using EPA Method 5030B and analyzed using EPA Method 8260B. Samples for TPH-d and TPH-mo measurements were analyzed using EPA Method 8015B modified.

# Appendix B

Table of Elevations & Coordinates on Monitoring Wells  
&  
Field Measurements of the Physical and Chemical  
Properties of the Groundwater Samples  
Collected During the Fourth Quarter 2006



DATE: 4/28/04  
JOB# A04549

**TABLE OF ELEVATIONS & COORDINATES  
ON MONITORING WELLS**  
SOMA ENVIRONMENTAL, PROJECT # 2830  
5725 THORNHILL DRIVE, OAKLAND

WELL ID #	NORTHING (FT.) / LATITUDE (D.M.S.)	EASTING (FT.) / LONGITUDE (D.M.S.)	ELEVATION (FT.)	DESCRIPTION
SOMA-1	2130799.64	6067141.82	576.47	TOP PIPE , BLACK MARK N. SIDE (FELT TIP) (LOCKED AND TIGHT)
	N 37°50'03.73174"	W 122°12'44.98565"	576.72	RIM
			576.70	CONC.
SOMA-2	2130764.55	6067114.08	575.50	TOP PIPE , BLACK MARK N. SIDE (FELT TIP) (LOCKED AND TIGHT)
	N 37°50'03.37985"	W 122°12'45.32339"	575.74	RIM
			575.75	CONC.
SOMA-3	2130785.85	6067071.01	575.92	TOP PIPE , BLACK MARK N. SIDE (FELT TIP) (LOCKED AND TIGHT)
	N 37°50'03.58261"	W 122°12'45.86506"	576.31	RIM
			576.30	CONC.

**ADDITIONAL POINTS**

PT#	NORTHING (FT.)	EASTING (FT.)	ELEVATION (FT.)	DESCRIPTION
108	2130820.55	6067045.27	N/A	BL<
109	2130800.14	6067066.40	N/A	BL<
110	2130830.97	6067096.14	N/A	BL<
104	2130818.02	6067033.92	N/A	BLOCK WALL 8" <PT
105	2130808.04	6067041.66	N/A	BLOCK WALL 8" END
106	2130821.74	6067037.78	N/A	BLOCK WALL 8" END
107	2130821.83	6067037.75	N/A	FNC-WD B-C CL
111	2130872.58	6067087.64	N/A	FNC-WD END CL
112	2130837.52	6067194.12	N/A	FOGL
113	2130793.20	6067156.45	N/A	FOGL
114	2130759.63	6067123.75	N/A	FOGL
115	2130740.79	6067101.26	N/A	FOGL END
117	2130628.30	6066947.69	N/A	TC
116	2130738.69	6067095.34	N/A	TC END
128	2130693.29	6066817.93	558.29	C/L CREEK +0.4' TO TOP OF WATER
127	2130685.30	6066880.75	559.78	C/L CREEK +0.4' TO TOP OF WATER
122	2130664.83	6066937.67	562.81	C/L CREEK +0.4' TO TOP OF WATER
121	2130676.03	6066966.79	563.15	C/L 60" CULVERT +0.5' TO TOP OF WATER

**Kier & Wright Engineers Surveyors, Inc.**  
1233 Quarry Lane, Suite 145, Pleasanton, CA 94566  
Phone (925) 249-6555,  
Fax (925) 249-6563

PRINTED: 6/9/2005  
11:27 AM

DATE: 4/28/04  
JOB# A04549

**TABLE OF ELEVATIONS & COORDINATES  
ON MONITORING WELLS**

SOMA ENVIRONMENTAL, PROJECT # 2830  
5725 THORNHILL DRIVE, OAKLAND

**BENCH MARK:** NGS Bench mark No.PID# HT2487

DESCRIPTION FROM NGS DATA SHEET:

DESCRIBED BY EAST BAY MUNICIPAL UTILITIES DISTRICT 1947 (SPH) THE AZIMUTH MARK IS AN EBMUD TRIANGULATION STATION DISC SET 1 FOOT BELOW THE SURFACE AND COVERED BY AN 8 INCH IRON CASTING WITH A REMOVABLE LID MARKED CITY MONUMENT. IT IS IN THE SIDEWALK IN FRONT OF A SAFEWAY STORE AT THE INTERSECTION OF GRAND AND WILDWOOD AVENUES. IT IS 1.5 FEET SOUTHEAST OF THE SOUTHEAST CURB OF WILDWOOD AVE., 6.2 FEET OF EAST CURB OF GRAND AVE. AND 10.4 FEET NORTHEAST OF POWERPOLE. THE MARK IS STAMPED LINDA AZIMUTH MARK 1947.

Elevation =37. FEET NAVD88 Datum  
BY VERTCON

**HORIZONTAL CONTROL:**

**PID - AA5496**

NORTHING =1,988,577.07 , EASTING = 6,077,862.13 FEET; EPOCH DATE = 1991.35

**PID - HT2541**

NORTHING = 2,130,331.28 , EASTING = 6,062,624.49 FEET; EPOCH DATE = 1991.35

Coordinate values are based on the California Coordinate System, Zone III NAD 83 Datum.

PRINTED: 6/9/2005  
11:27 AM

**Kier & Wright Engineers Surveyors, Inc.**  
1233 Quarry Lane, Suite 145, Pleasanton, CA 94566  
Phone (925) 249-6555,  
Fax (925) 249-6563

2 OF 2

DATE: 8/17/05  
 Job No. 205048

DATE OF SURVEY 8/12/05  
 INSTRUMENT LEICA TCA 1100L

**TABLE OF ELEVATIONS & COORDINATES  
 ON MONITORING WELLS**  
 SOMA ENVIRONMENTAL, PROJECT # 2830  
 5725 THORNHILL DRIVE, OAKLAND

WELL ID #	NORTHING (FT.) / LATITUDE (D.M.S.)	EASTING (FT.) / LONGITUDE (D.M.S.)	ELEVATION (FT.)	DESCRIPTION
SOMA-4	2130703.437 N 37°50'02.76318'	6067044.632 W 122°12'46.17502'	572.65	TOP PIPE, BLACK MARK N. SIDE (FELT TIP)
			573.03	RIM
			573.03	CONC.
DECIMAL DEGREES	N 37° 83410088	W 121° 21282639'		
<b>LOCAL CONTROL</b>				
SOMA-2	2130764.55 N 37°50'03.37985'	6067114.08 W 122°12'45.32339'	575.50	TOP PIPE
SOMA-3	2130785.85 N 37°50'03.58261'	6067071.01 W 122°12'45.86506'	575.92	TOP PIPE

BENCH MARK: NGS Bench mark No.PID# HT2487

DESCRIPTION FROM NGS DATA SHEET:

DESCRIBED BY EAST BAY MUNICIPAL UTILITIES DISTRICT 1947 (SPH) THE AZIMUTH MARK IS AN EBMUD TRIANGULATION STATION DISC SET 1 FOOT BELOW THE SURFACE AND COVERED BY AN 8 INCH IRON CASTING WITH A REMOVABLE LID MARKED CITY MONUMENT. IT IS IN THE SIDEWALK IN FRONT OF A SAFEWAY STORE AT THE INTERSECTION OF GRAND AND WILDWOOD AVENUES. IT IS 1.5 FEET SOUTHEAST OF THE SOUTHEAST CURB OF WILDWOOD AVE., 6.2 FEET OF EAST CURB OF GRAND AVE. AND 10.4 FEET NORTHEAST OF POWERPOLE. THE MARK IS STAMPED LINDA AZIMUTH MARK 1947.

Elevation -37. FEET NAVD88 Datum  
 BY VERTCON

DATE: 8/17/05  
Job No. 205048

DATE OF SURVEY 8/12/05  
INSTRUMENT LEICA TCA 1100L

**TABLE OF ELEVATIONS & COORDINATES  
ON MONITORING WELLS**  
SOMA ENVIRONMENTAL, PROJECT # 2830  
5725 THORNHILL DRIVE, OAKLAND

**HORIZONTAL CONTROL:**

PID - AA5496  
NORTHING -1,988,577.07 , EASTING - 6,077,862.13 FEET; EPOCH DATE - 1991.35

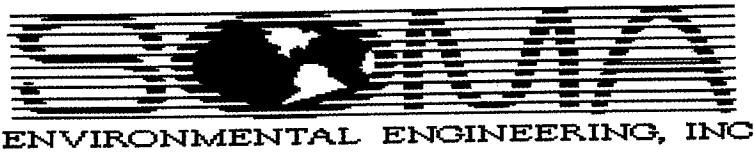
PID - HT2541  
NORTHING - 2,130,331.28 , EASTING - 6,062,624.49 FEET; EPOCH DATE - 1991.35

Coordinate values are based on the California Coordinate System, Zone III NAD 83 Datum.

**NOTE**

THE VALUES FOR SOMA-4 ARE DERIVED FROM LOCAL CONTROL BASED UPON CONTROL VALUE USED FROM THE PREVIOUS SITE SURVEY AS PROVIDED BY KIER AND WRIGHT





Well No.: SOMA 1  
 Casing Diameter: 2 inches  
 Depth of Well: 27.85 feet  
 Top of Casing Elevation: 576.47 feet  
 Depth to Groundwater: 6.22 feet  
 Groundwater Elevation: 570.25 feet  
 Water Column Height: 21.63 feet  
 Purged Volume: 12 gallons

Project No.: 2831  
 Address: 5725 Thornhill Drive  
 Oakland CA  
 Date: October 30, 2006  
 Sampler: Tony Perini

Purging Method: Bailer  Pump

Sampling Method: Bailer  Pump

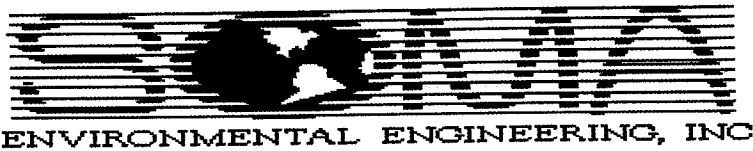
Color: No  Yes  Describe: \_\_\_\_\_

Sheen: No  Yes  Describe: \_\_\_\_\_

Odor: No  Yes  Describe: \_\_\_\_\_

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
1208 PM	Started purging well			
1210 PM	2	5.79	17.60	539
1212 PM	5	6.44	18.50	525
1214 PM	9	6.44	18.20	542
1216 PM	12	6.47	18.40	547
1220 PM	sampled			



Well No.: 50 MA-2  
 Casing Diameter: 2 inches  
 Depth of Well: 28 feet  
 Top of Casing Elevation: 575.50 feet  
 Depth to Groundwater: 7.60 feet  
 Groundwater Elevation: 567.90 feet  
 Water Column Height: 20.40 feet  
 Purged Volume: 11 gallons

Project No.: 2831  
 Address: 5725 Thornhill Drive  
 Oakland CA  
 Date: October 30, 2006  
 Sampler: Tony Perini

Purging Method: Bailer  Pump

Sampling Method: Bailer  Pump

Color: No  Yes  Describe: \_\_\_\_\_  
 Sheen: No  Yes  Describe: \_\_\_\_\_  
 Odor: No  Yes  Describe: \_\_\_\_\_

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
1135 AM	started purging well			
1137 AM	2	6.62	16.70	662
1139 AM	5	6.74	18.60	653
1143 AM	9	6.70	19.10	665
1146 AM	11	6.71	18.90	665
1150 AM	sampled			



ENVIRONMENTAL ENGINEERING, INC

Well No.: SOMA-3  
 Casing Diameter: 2 inches  
 Depth of Well: 27.80 feet  
 Top of Casing Elevation: 572.92 feet  
 Depth to Groundwater: 7.64 feet  
 Groundwater Elevation: 565.28 feet  
 Water Column Height: 20.16 feet  
 Purged Volume: 13 gallons

Project No.: 2831  
 Address: 5725 Thornhill Drive  
 Oakland CA  
 Date: October 30, 2006  
 Sampler: Tony Perini

Purging Method: Bailer  Pump

Sampling Method: Bailer  Pump

Color: No  Yes  Describe: cloudy

Sheen: No  Yes  Describe: \_\_\_\_\_

Odor: No  Yes  Describe: slight petro odor

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
1240 PM	starts purging well			
1242 PM	2	6.88	17.40	743
1244 PM	5	6.85	17.40	713
1246 PM	8	6.99	17.80	730
1250 PM	13	7.01	17.70	722
1253 PM	sampled			



ENVIRONMENTAL ENGINEERING, INC

Well No.: SOMA 4  
 Casing Diameter: 2 inches  
 Depth of Well: 19.70 feet  
 Top of Casing Elevation: 572.65 feet  
 Depth to Groundwater: 8.11 feet  
 Groundwater Elevation: 564.54 feet  
 Water Column Height: 11.59 feet  
 Purged Volume: 9 gallons

Project No.: 2831  
 Address: 5725 Thornhill Drive  
 Oakland CA  
 Date: October 30, 2006  
 Sampler: Tony Perini

Purging Method: Bailer  Pump

Sampling Method: Bailer  Pump

Color: No  Yes  Describe: \_\_\_\_\_

Sheen: No  Yes  Describe: \_\_\_\_\_

Odor: No  Yes  Describe: slight petro odor

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
11 AM	started purging well			
11:02 AM	2	7.09	19.60	685
11:04 AM	5	7.13	18.60	668
11:06 AM	9	7.14	18.20	660
11:10 AM	sampled			



# Appendix C

Chain of Custody Form and Laboratory Report  
for the  
Fourth Quarter 2006 Monitoring Event

# CHAIN OF CUSTODY FORM

**PAL** Pacific Analytical Laboratory  
 851 West Midway Ave., Suite 201B  
 Alameda, CA 94501  
 510-864-0364 Telephone  
 510-864-0365 Fax

PAL  
 Login# 6100012

Project No: 2831		Sampler: <u>Tony Perini</u>		Analyses/Method																
Project Name: 5725 Thornhill Drive Oakland, CA		Report To: Tony Perini		TPHg, BTEX, MBE 8260B	Gas Ox - Lead Scavenger	Ethanol	TPH-d, TPH-mo													
Turnaround Time: Standard		Company: SOMA Environmental Engineering, Inc.																		
		Tel: 925-734-6400																		
		Fax: 925-734-6401																		
		Sampling Date/Time		Matrix			# of Containers	Preservatives				Field Notes								
Lab No.	Sample ID	Date	Time	Soil	Water	Waste		HCL	H <sub>2</sub> SO <sub>4</sub>	NONE	ICE									
	SOMA-1	<u>10/30/06</u>	<u>1220 PM</u>		X		<u>1 L Amber</u> <u>3 VOAs</u>	X		X	X	Grab Sample	X	X	X	X				
	SOMA-2		<u>1150 AM</u>		X		<u>1 L Amber</u> <u>3 VOAs</u>	X		X	X	Grab Sample	X	X	X	X				
	SOMA-3		<u>1253 PM</u>		X		<u>1 L Amber</u> <u>3 VOAs</u>	X		X	X	Grab Sample	X	X	X	X				
	SOMA-4		<u>1110 AM</u>		X		<u>1 L Amber</u> <u>3 VOAs</u>	X		X	X	Grab Sample	X	X	X	X				
Sampler Remarks: <u>EDF output requires</u>				Relinquished by: <u>Tony Perini</u>				Date/Time: <u>2 PM</u> <u>10/30/06</u>				Received by: <u>Jana Guinjo</u>				Date/Time: <u>2:00 PM</u> <u>10/30/06</u>				



**Pacific Analytical Laboratory**

851 West Midway Ave. Suite 201  
Alameda, CA 94501

Phone (510) 864-0364

---

09 November 2006

Mansour Sepehr  
SOMA Environmental Engineering Inc.  
6620 Owens Drive, Suite A  
Pleasanton, CA 94588

RE: 5725 Thornhill Dr., Oakland

Work Order Number: 6100012

This Laboratory report has been reviewed for technical correctness and completeness. This entire report was reviewed and approved by the Laboratory Director or the Director's designee, as verified by the following signature.

Sincerely,

A handwritten signature in black ink, appearing to read 'Maiid Akhavan', written over a horizontal line.

---

Maiid Akhavan  
Laboratory Director



SOMA Environmental Engineering Inc. 6620 Owens Drive, Suite A Pleasanton CA, 94588	Project: 5725 Thornhill Dr., Oakland Project Number: 2831 Project Manager: Mansour Sepehr	Reported: 09-Nov-06 15:20
--	---	------------------------------

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SOMA-1	6100012-01	Water	30-Oct-06 12:20	30-Oct-06 16:08
SOMA-2	6100012-02	Water	30-Oct-06 11:50	30-Oct-06 16:08
SOMA-3	6100012-03	Water	30-Oct-06 12:53	30-Oct-06 16:08
SOMA-4	6100012-04	Water	30-Oct-06 11:10	30-Oct-06 16:08



SOMA Environmental Engineering Inc.  
 6620 Owens Drive, Suite A  
 Pleasanton CA, 94588

Project: 5725 Thornhill Dr., Oakland  
 Project Number: 2831  
 Project Manager: Mansour Sepehr

Reported:  
 09-Nov-06 15:20

**Extractable Petroleum Hydrocarbons by 8015 DRO**  
**Pacific Analytical Laboratory**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SOMA-1 (6100012-01) Water</b> <b>Sampled: 30-Oct-06 12:20</b> <b>Received: 30-Oct-06 16:08</b>									
Diesel (C10-C24)	ND	50.0	ug/l	1	BJ63102	30-Oct-06	31-Oct-06	EPA 8015M	
Motor Oil (C24-C36)	ND	250	"	"	"	"	"	"	
<i>Surrogate: Pentacosane</i>		123 %	70-130		"	"	"	"	
<b>SOMA-2 (6100012-02) Water</b> <b>Sampled: 30-Oct-06 11:50</b> <b>Received: 30-Oct-06 16:08</b>									
Diesel (C10-C24)	608	50.0	ug/l	1	BJ63102	30-Oct-06	31-Oct-06	EPA 8015M	D-06, D-30
Motor Oil (C24-C36)	448	250	"	"	"	"	"	"	
<i>Surrogate: Pentacosane</i>		129 %	70-130		"	"	"	"	
<b>SOMA-3 (6100012-03) Water</b> <b>Sampled: 30-Oct-06 12:53</b> <b>Received: 30-Oct-06 16:08</b>									
Diesel (C10-C24)	199	50.0	ug/l	1	BJ63102	30-Oct-06	31-Oct-06	EPA 8015M	D-06, D-30
Motor Oil (C24-C36)	ND	250	"	"	"	"	"	"	
<i>Surrogate: Pentacosane</i>		118 %	70-130		"	"	"	"	
<b>SOMA-4 (6100012-04) Water</b> <b>Sampled: 30-Oct-06 11:10</b> <b>Received: 30-Oct-06 16:08</b>									
Diesel (C10-C24)	1070	50.0	ug/l	1	BJ63102	30-Oct-06	31-Oct-06	EPA 8015M	D-06, D-30
Motor Oil (C24-C36)	ND	250	"	"	"	"	"	"	
<i>Surrogate: Pentacosane</i>		72.4 %	70-130		"	"	"	"	



SOMA Environmental Engineering Inc.  
6620 Owens Drive, Suite A  
Pleasanton CA, 94588

Project: 5725 Thornhill Dr., Oakland  
Project Number: 2831  
Project Manager: Mansour Sepehr

Reported:  
09-Nov-06 15:20

**Volatile Organic Compounds by EPA Method 8260B**  
**Pacific Analytical Laboratory**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SOMA-1 (6100012-01) Water    Sampled: 30-Oct-06 12:20    Received: 30-Oct-06 16:08</b>									
Gasoline (C6-C12)	ND	50.0	ug/l	1	BJ63101	30-Oct-06	30-Oct-06	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	1.00	"	"	"	"	"	"	
o-xylene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	2.00	"	"	"	"	"	"	
<b>MTBE</b>	<b>3.38</b>	0.500	"	"	"	"	"	"	
DIPE	ND	0.500	"	"	"	"	"	"	
ETBE	ND	0.500	"	"	"	"	"	"	
TAME	ND	2.00	"	"	"	"	"	"	
TBA	ND	10.0	"	"	"	"	"	"	
1,2-dichloroethane	ND	0.500	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.500	"	"	"	"	"	"	
Ethanol	ND	1000	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		84.2 %		70-130	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		104 %		70-130	"	"	"	"	
<i>Surrogate: Perdeuterotoluene</i>		85.2 %		70-130	"	"	"	"	
<b>SOMA-2 (6100012-02) Water    Sampled: 30-Oct-06 11:50    Received: 30-Oct-06 16:08</b>									
Gasoline (C6-C12)	<b>1680</b>	50.0	ug/l	1	BJ63101	30-Oct-06	30-Oct-06	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>3.78</b>	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	1.00	"	"	"	"	"	"	
o-xylene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	2.00	"	"	"	"	"	"	
<b>MTBE</b>	<b>51.4</b>	0.500	"	"	"	"	"	"	
DIPE	ND	0.500	"	"	"	"	"	"	
ETBE	ND	0.500	"	"	"	"	"	"	
TAME	ND	2.00	"	"	"	"	"	"	
<b>TBA</b>	<b>20.7</b>	10.0	"	"	"	"	"	"	
1,2-dichloroethane	ND	0.500	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.500	"	"	"	"	"	"	
Ethanol	ND	1000	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %		70-130	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		98.8 %		70-130	"	"	"	"	
<i>Surrogate: Perdeuterotoluene</i>		91.8 %		70-130	"	"	"	"	



SOMA Environmental Engineering Inc. 6620 Owens Drive, Suite A Pleasanton CA, 94588	Project: 5725 Thornhill Dr., Oakland Project Number: 2831 Project Manager: Mansour Sepehr	Reported: 09-Nov-06 15:20
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**Volatile Organic Compounds by EPA Method 8260B**

**Pacific Analytical Laboratory**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SOMA-3 (6100012-03) Water    Sampled: 30-Oct-06 12:53    Received: 30-Oct-06 16:08</b>									
Gasoline (C6-C12)	ND	50.0	ug/l	1	BJ63101	30-Oct-06	30-Oct-06	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	1.00	"	"	"	"	"	"	
o-xylene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	2.00	"	"	"	"	"	"	
<b>MTBE</b>	<b>7.37</b>	0.500	"	"	"	"	"	"	
DIPE	ND	0.500	"	"	"	"	"	"	
ETBE	ND	0.500	"	"	"	"	"	"	
TAME	ND	2.00	"	"	"	"	"	"	
TBA	ND	10.0	"	"	"	"	"	"	
1,2-dichloroethane	ND	0.500	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.500	"	"	"	"	"	"	
Ethanol	ND	1000	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		86.8 %		70-130	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		100 %		70-130	"	"	"	"	
<i>Surrogate: Perdeuterotoluene</i>		86.4 %		70-130	"	"	"	"	
<b>SOMA-4 (6100012-04) Water    Sampled: 30-Oct-06 11:10    Received: 30-Oct-06 16:08</b>									
Gasoline (C6-C12)	<b>4320</b>	50.0	ug/l	1	BJ63101	30-Oct-06	30-Oct-06	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>3.34</b>	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	1.00	"	"	"	"	"	"	
<b>o-xylene</b>	<b>0.540</b>	0.500	"	"	"	"	"	"	
Toluene	ND	2.00	"	"	"	"	"	"	
<b>MTBE</b>	<b>37.4</b>	0.500	"	"	"	"	"	"	
DIPE	ND	0.500	"	"	"	"	"	"	
ETBE	ND	0.500	"	"	"	"	"	"	
TAME	ND	2.00	"	"	"	"	"	"	
<b>TBA</b>	<b>269</b>	10.0	"	"	"	"	"	"	
1,2-dichloroethane	ND	0.500	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.500	"	"	"	"	"	"	
Ethanol	ND	1000	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		105 %		70-130	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		96.6 %		70-130	"	"	"	"	
<i>Surrogate: Perdeuterotoluene</i>		91.4 %		70-130	"	"	"	"	



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6620 Owens Drive, Suite A  
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Project: 5725 Thornhill Dr., Oakland  
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Project Manager: Mansour Sepchr

Reported:  
09-Nov-06 15:20

**Extractable Petroleum Hydrocarbons by 8015 DRO - Quality Control**  
**Pacific Analytical Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch BJ63102 - EPA 3510B</b>										
<b>Blank (BJ63102-BLK1)</b>										
Prepared & Analyzed: 31-Oct-06										
Surrogate: Pentacosane	44.2		ug/l	50.0		88.4	70-130			
Diesel (C10-C24)	ND	50.0	"							
Motor Oil (C24-C36)	ND	250	"							
<b>LCS (BJ63102-BS1)</b>										
Prepared & Analyzed: 31-Oct-06										
Surrogate: Pentacosane	50.7		ug/l	50.0		101	70-130			
Diesel (C10-C24)	928	50.0	"	1000		92.8	50-130			
<b>LCS Dup (BJ63102-BSD1)</b>										
Prepared & Analyzed: 31-Oct-06										
Surrogate: Pentacosane	45.2		ug/l	50.0		90.4	70-130			
Diesel (C10-C24)	834	50.0	"	1000		83.4	50-130	10.7	40	





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Reported:  
09-Nov-06 15:20

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Pacific Analytical Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch BJ63101 - EPA 5030 Water MS**

**Blank (BJ63101-BLK1)**

Prepared & Analyzed: 31-Oct-06

Surrogate: 4-Bromofluorobenzene	41.3		ug/l	50.0		82.6	70-130			
Surrogate: Dibromofluoromethane	53.3		"	50.0		107	70-130			
Surrogate: Perdeuterotoluene	48.3		"	50.0		96.6	70-130			
MTBE	ND	0.500	"							
DIPE	ND	0.500	"							
ETBE	ND	0.500	"							
TAME	ND	2.00	"							
TBA	ND	10.0	"							
Gasoline (C6-C12)	ND	50.0	"							
1,2-dichloroethane	ND	0.500	"							
1,2-Dibromoethane (EDB)	ND	0.500	"							
Ethanol	ND	1000	"							
Benzene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
m&p-Xylene	ND	1.00	"							
o-xylene	ND	0.500	"							
Toluene	ND	2.00	"							

**LCS (BJ63101-BS1)**

Prepared & Analyzed: 31-Oct-06

Surrogate: 4-Bromofluorobenzene	33.8		ug/l	50.0		67.6	70-130			S-GC
Surrogate: Dibromofluoromethane	46.8		"	50.0		93.6	70-130			
Surrogate: Perdeuterotoluene	41.5		"	50.0		83.0	70-130			
MTBE	112	0.500	"	100		112	70-130			
ETBE	110	0.500	"	100		110	70-130			
TAME	96.0	2.00	"	100		96.0	70-130			
TBA	625	10.0	"	500		125	70-130			
Gasoline (C6-C12)	1850	50.0	"	2000		92.5	70-130			
Benzene	97.2	0.500	"	100		97.2	70-130			
Toluene	83.4	2.00	"	100		83.4	70-130			



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Reported:  
 09-Nov-06 15:20

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Pacific Analytical Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch BJ63101 - EPA 5030 Water MS**

**LCS Dup (BJ63101-BSD1)**

Prepared & Analyzed: 31-Oct-06

Surrogate: 4-Bromofluorobenzene	36.6		ug/l	50.0		73.2	70-130			
Surrogate: Dibromofluoromethane	47.9		"	50.0		95.8	70-130			
Surrogate: Perdeuterotoluene	42.6		"	50.0		85.2	70-130			
MTBE	104	0.500	"	100		104	70-130	7.41	20	
ETBE	94.9	0.500	"	100		94.9	70-130	14.7	20	
TAME	87.8	2.00	"	100		87.8	70-130	8.92	20	
Gasoline (C6-C12)	1640	50.0	"	2000		82.0	70-130	12.0	20	
TBA	618	10.0	"	500		124	70-130	1.13	20	
Benzene	86.3	0.500	"	100		86.3	70-130	11.9	20	
Toluene	75.6	2.00	"	100		75.6	70-130	9.81	20	



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Reported:  
09-Nov-06 15:20

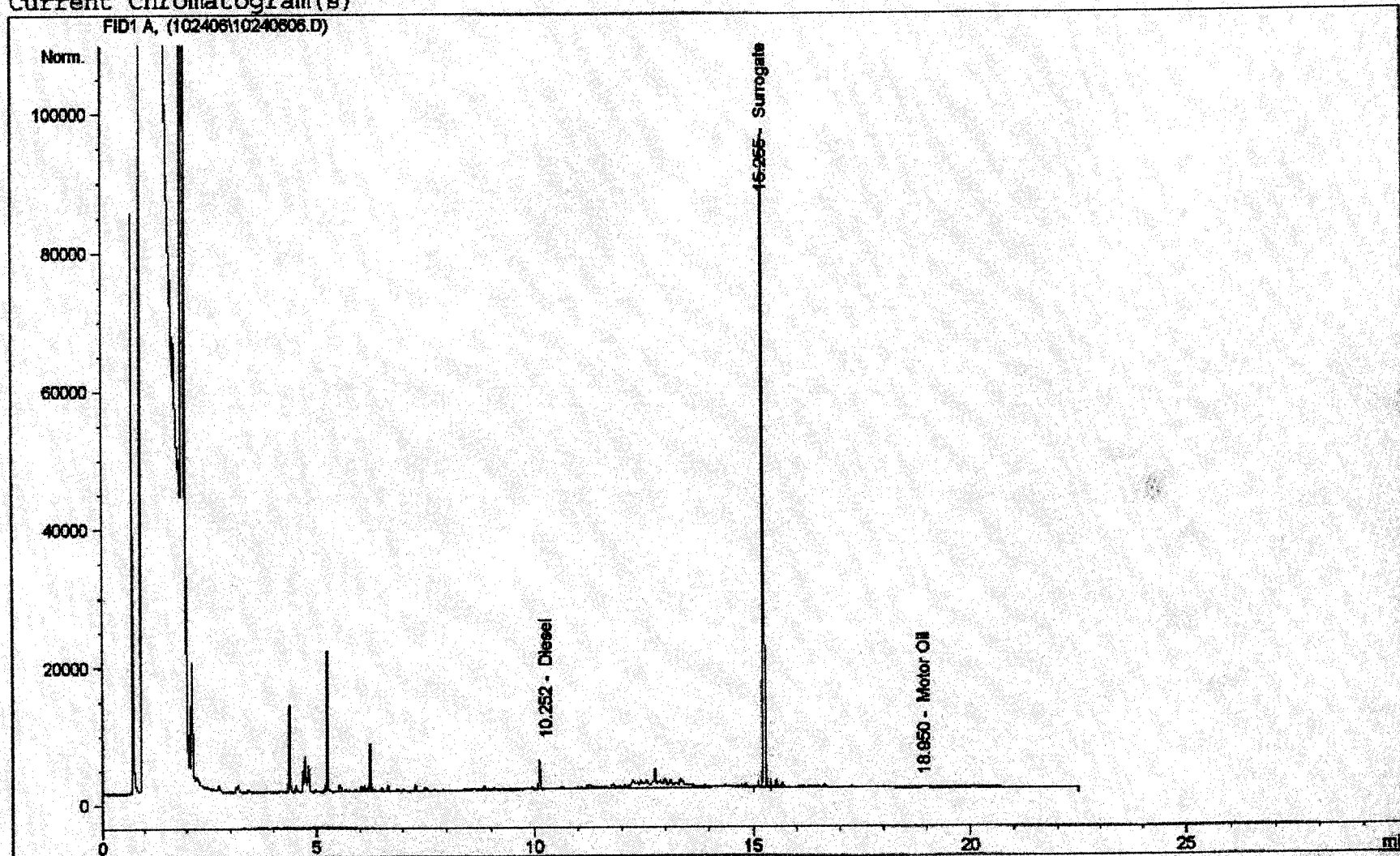
### Notes and Definitions

- S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
- D-30 Unidentified hydrocarbons C9-C16.
- D-06 The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Print of window 38: Current Chromatogram(s)

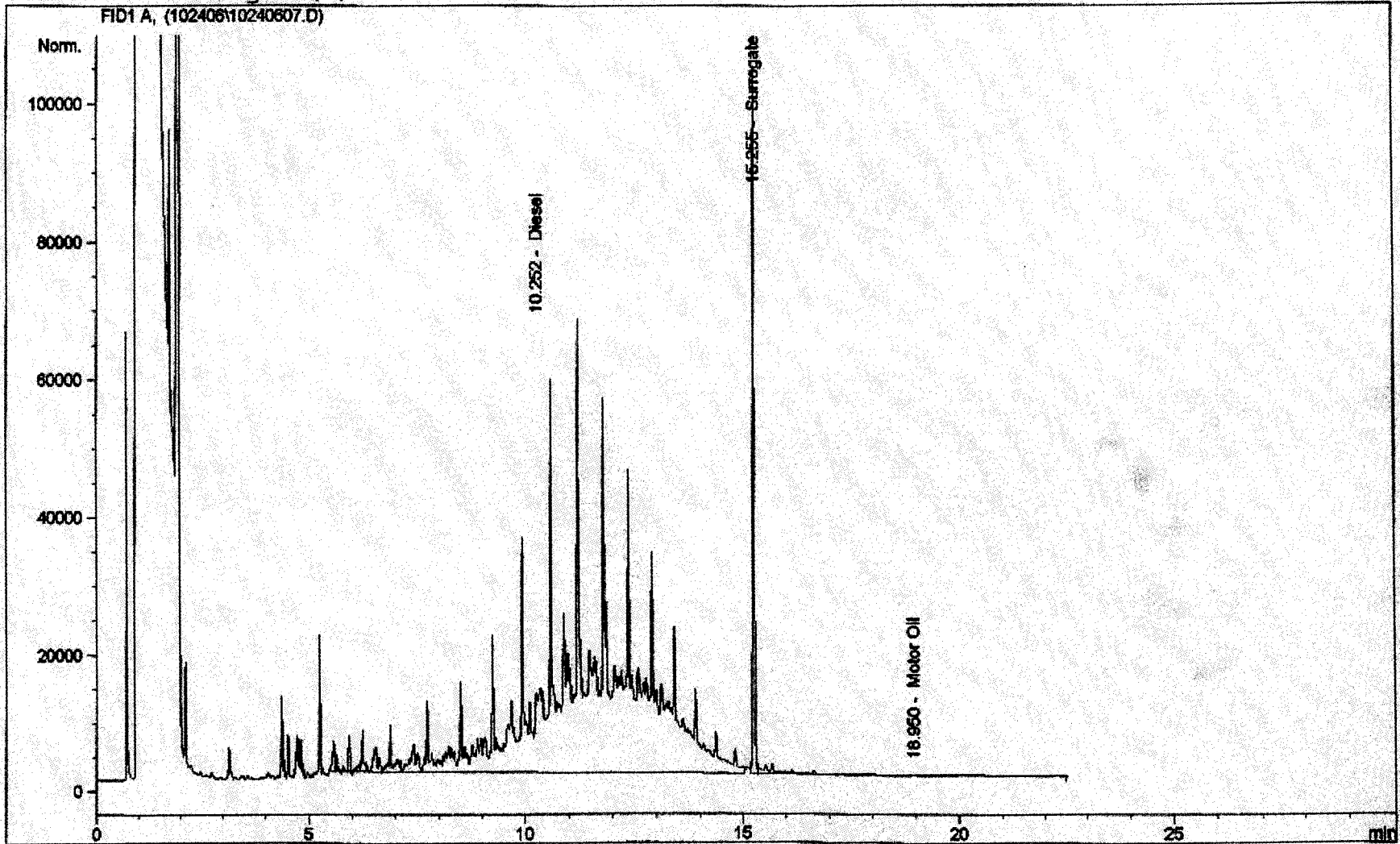
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Injection Date : 10/24/06 6:07:26 PM                   Seq. Line : 4  
Sample Name : BJ62402-BLK1                            Vial : 4  
Acq. Operator : jz                                     Inj : 1  
  Inj Volume : 2 ul  
  
Acq. Method : C:\HPCHEM\1\METHODS\GC100206.M  
Last changed : 10/3/06 10:38:56 AM by jz  
Analysis Method : C:\HPCHEM\1\METHODS\GC100206.M  
Last changed : 10/30/06 10:07:13 AM by jz  
  (modified after loading)

Current Chromatogram(s)

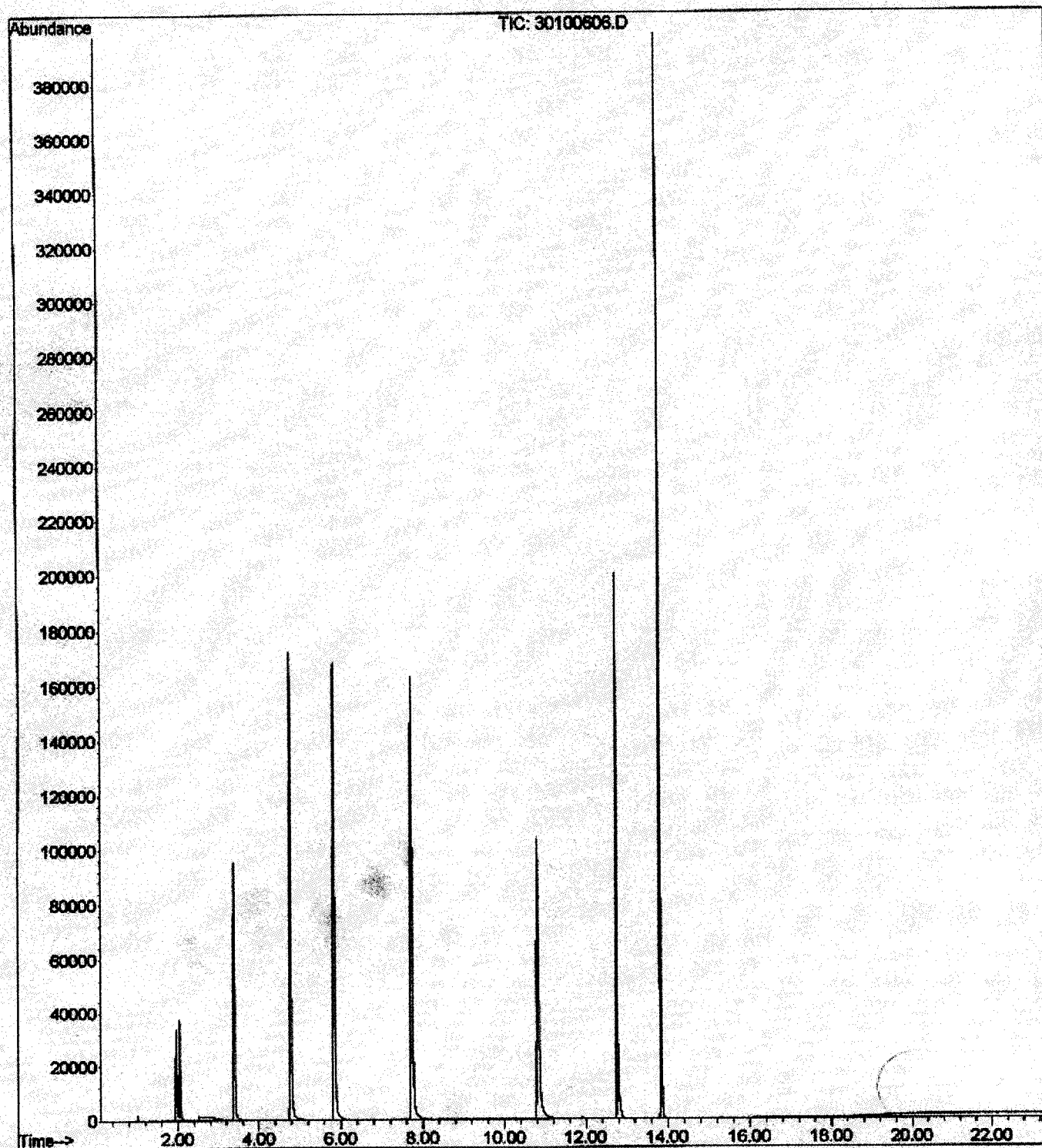


=====  
Injection Date : 10/24/06 6:39:12 PM                   Seq. Line :    5  
Sample Name    : BJ62402-BS1                            Vial         :    5  
Acq. Operator  : jz                                     Inj         :    1  
  Inj Volume :  2 ul  
  
Acq. Method    : C:\HPCHEM\1\METHODS\GC100206.M  
Last changed   : 10/3/06 10:38:56 AM by jz  
Analysis Method: C:\HPCHEM\1\METHODS\GC100206.M  
Last changed   : 10/30/06 10:07:13 AM by jz  
  (modified after loading)

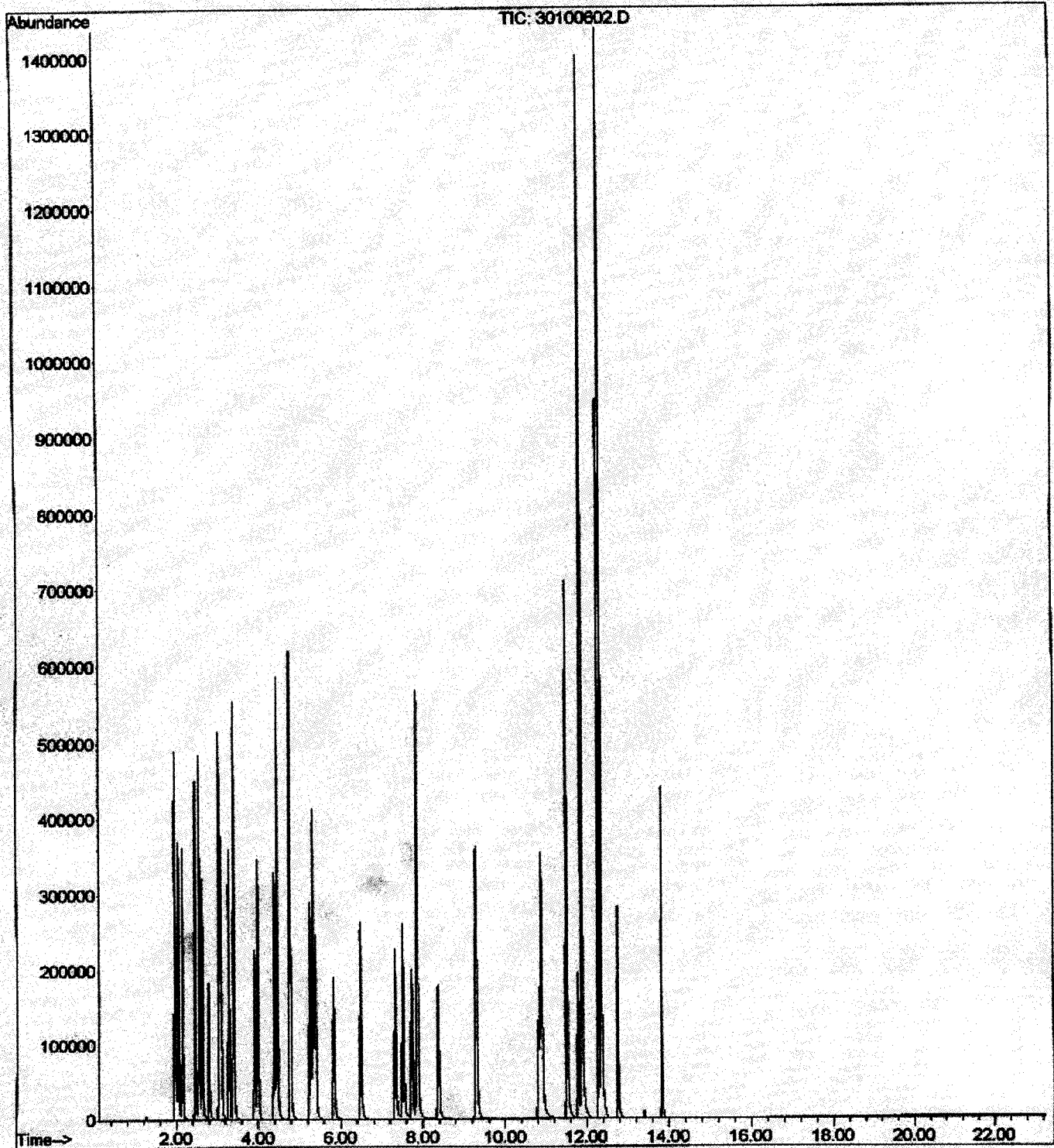
Current Chromatogram(s)



File :C:\MSDCHEM\1\DATA\2006-Oct-30-0921.b\30100606.D  
Operator :  
Acquired : 30 Oct 2006 12:16 pm using AcqMethod OXY21506.M  
Instrument : PAL GCMS  
Sample Name: BJ63101-BLK1  
Misc Info :  
Vial Number: 6



File :C:\MSDCHEM\1\DATA\2006-Oct-30-0921.b\30100602.D  
Operator :  
Acquired : 30 Oct 2006 10:07 am using AcqMethod OXY21506.M  
Instrument : PAL GCMS  
Sample Name: BJ63101-BS1@voc  
Misc Info :  
Vial Number: 2



File : C:\MSDCHEM\1\DATA\2006-Oct-30-0921.b\30100603.D  
Operator :  
Acquired : 30 Oct 2006 10:39 am using AcqMethod OXY21506.M  
Instrument : PAL GCMS  
Sample Name: BJ63101-BS1@gas  
Misc Info :  
Vial Number: 3

