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Alameda County

APR 06 2005

Environmental Health

✓ RO 265

April 7, 2005

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

Subject: **StID#3337**

Site Address: 3609 International Blvd., Oakland, California

Dear Mr. Gholami:

Enclosed for your review is a copy of SOMA's "First Quarter 2005 Groundwater Monitoring and Remediation System Operation Report" for the subject property.

Thank you for your time in reviewing our report. If you have any questions or comments, please call me at (925) 244-6600.

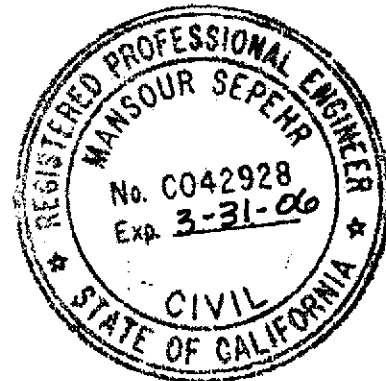
Sincerely,

Mansour Sepehr, Ph.D., PE  
Principal Hydrogeologist

Enclosure

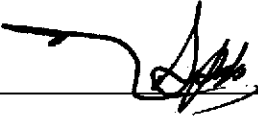
cc: Mr. Abolghassem Razi w/enclosure  
Tony's Express Auto Service

Mr. Vince Tong w/enclosure  
Traction International

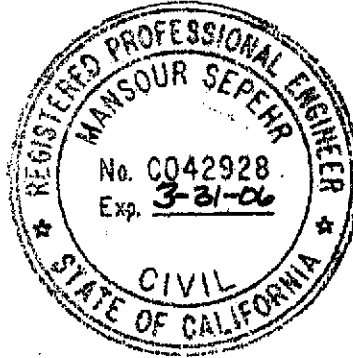


**Certification**

This report has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Abolghassem Razi, the property owner of 3609 International Boulevard, Oakland, California, to comply with the Alameda County Environmental Health Service's requirements for the First Quarter 2005 groundwater monitoring event.



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



Alameda County

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Environmental Health Service

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- Appendix D: Chain of Custody Forms and Laboratory Reports for the Groundwater Extraction Treatment System

## 1.0 Introduction

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Abolghassem Razi, the owner of Tony's Express Auto Service, which is located at 3609 International Boulevard at the intersection of 36<sup>th</sup> Avenue in Oakland, California ("the Site"), as shown in Figure 1.

The Site is located in an area where the surrounding properties are primarily commercial businesses and residential housing. The Site currently houses a gasoline service station and convenience store. During the Third Quarter 2002 the station was remodeled and several hydraulic hoists were removed. The station no longer has an auto repair facility. Figure 2 illustrates the locations of the main service station, dispenser islands, underground storage tanks (USTs), the on-site and off-site groundwater monitoring wells, and neighboring properties.

This report summarizes the results of the First Quarter 2005 groundwater monitoring event conducted at the Site on March 15 and 16, 2005. Included in this report are the results of the laboratory analysis on the groundwater samples that were analyzed for:

- Total petroleum hydrocarbons as gasoline (TPH-g),
- Benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX), and
- Methyl tertiary Butyl Ether (MtBE).

In addition to the above laboratory analyses, a natural attenuation study was conducted during this monitoring event. This study consisted of measuring groundwater bioattenuation parameters, which included dissolved oxygen (DO), ferrous iron ( $\text{Fe}^{+2}$ ), nitrate ( $\text{NO}_3^-$ ) and sulfate ( $\text{SO}_4^{-2}$ ). The objective of the natural attenuation study was to evaluate whether the petroleum hydrocarbons found in the groundwater were biodegrading. Therefore, groundwater samples collected during this monitoring event were analyzed for common electron acceptors and other geochemical indicators. The results of these analyses are also described in this report.

These activities were performed in accordance with the general guidelines of the Regional Water Quality Control Board (RWQCB) and the Alameda County Environmental Health Services (ACEHS).

Appendix A details the groundwater monitoring procedures used during the First Quarter 2005 monitoring event.

This report also describes the operation of the groundwater extraction system installed by SOMA in December 1999. The vapor extraction system was installed by SOMA in July 2000. Due to rainy weather conditions encountered at the Site,

## 2.0 Results

The following sections provide the results of the field measurements and laboratory analyses for the March 15 and 16, 2005 groundwater monitoring event.

### 2.1 Field Measurements

Table 1 presents the calculated groundwater elevations, as well as the depths to groundwater for each monitoring well and riser. The calculated groundwater elevation data was used to evaluate the impact of the French drain and determine the extent of the groundwater extraction capture zone.

As shown in Table 1, the depths to groundwater for the monitoring wells ranged from 7.44 feet in monitoring well MW-7 to 8.94 feet in monitoring well MW-6. The corresponding groundwater elevations ranged from 28.35 in well MW-12 to 32.98 feet in well MW-5. The groundwater elevations for the center, east and west risers were 25.80 feet, 27.56 feet and 26.06 feet, respectively.

Groundwater elevations in all of the monitoring wells increased since the Fourth Quarter 2004. Local recharge rates in each well, as well as seasonal fluctuations, determine the variations in the groundwater elevations. Due to the amount of rain encountered this quarter, the water table has ascended.

Figure 3 displays the groundwater elevation contour map as measured during the First Quarter 2005 monitoring event. Throughout the Site, the groundwater flows towards the French drain at an approximate gradient of 0.081 feet/feet. The lowest site-wide groundwater elevation was measured in the center French drain riser. The calculated groundwater elevation data was also used to evaluate the impact of the French drain's operation. Based on the groundwater elevation data, it appears that the French drain is providing excellent hydraulic control in preventing the contaminants from migrating further off-site.

The field notes for the physical, chemical and biodegradation parameters measured during this monitoring event are included in Appendix B.

Naturally occurring biological processes can enhance the removal rate of contaminants in the subsurface. During the degradation processes, indigenous bacteria that exist in the subsurface utilize the energy released from the transfer of electrons to drive the redox reactions that remove organic mass from contaminated groundwater. The more positive the redox potential of an electron acceptor, the more energetically favorable is the reaction utilizing that electron acceptor. Based on thermodynamic considerations, the most energetically preferred electron acceptor for redox reactions is DO, followed by nitrate,

manganese, ferric iron, sulfate, and carbon dioxide, in descending order of preference. Evaluating the distribution of these electron acceptors can provide evidence of where and to what extent hydrocarbon biodegradation is occurring.

In general, all of the DO concentrations were below the solubility standard of O<sub>2</sub> in the groundwater. The groundwater temperature during this monitoring event ranged from 18.96 °C in well MW-10 to 20.71 °C in well MW-5. The solubility standard for DO in groundwater at 19 °C, at an atmospheric pressure of 760 mm/Hg, is approximately 9.3 mg/L. Detectable DO concentrations ranged from 3.40 mg/L in well MW-5 to 7.93 mg/L in well MW-3. ORP showed negative redox potentials in wells MW-1, MW-3, MW-6, MW-8, and MW-12. Oxidation of petroleum hydrocarbons could have occurred in these monitoring wells at these low DO readings. Negative redox potentials indicate that contaminants in the groundwater are conducive to anaerobic biodegradation.

The presence of Fe<sup>2+</sup> indicates that the available DO in the subsurface has been consumed and anaerobic bacteria began to utilize other electrons acceptors, such as Fe<sup>3+</sup>, NO<sub>3</sub><sup>-</sup> and SO<sub>4</sub><sup>2-</sup>, to metabolize dissolved hydrocarbons. Ferrous iron concentrations can thus be used as an indicator of anaerobic biodegradation. Ferrous iron is a product of the reduction reaction of ferric iron and hydrocarbons. Ferrous iron was detected in wells MW-1, MW-3, MW-6, MW-8, and MW-12. In general, ferrous iron concentrations were detected at low values in these referenced wells, with the exception of wells MW-1 and MW-3. Ferrous iron was detected at the equipment's maximum allowable range of 3.30 mg/L in wells MW-1 and MW-3.

Nitrate concentrations were below the equipment's minimum allowable level in all of the groundwater samples collected throughout the Site. The presence of high ferrous iron concentrations in combination with non-detectable nitrate levels is indicative of anaerobic biodegradation beneath the Site.

The absence of sulfate in the groundwater samples may be indicative of an anaerobic methanogenesis process. Sulfate was below the equipment's tolerance level in all of the groundwater samples collected throughout the Site, with the exception of well MW-5. Sulfate was detected in well MW-5 at 10 mg/L.

## 2.2 Laboratory Analysis

Table 1 presents the results of the laboratory analyses on the groundwater samples collected during the First Quarter 2005 monitoring event. In general, the most impacted monitoring wells this quarter were MW-1 and MW-3, which are in the vicinity of the USTs, and MW-6, which is near the soil vapor extraction (SVE) system.

As shown in Table 1, TPH-g was detected throughout the Site during the First Quarter 2005 monitoring event. Detectable TPH-g concentrations ranged from 209 ug/L in well MW-7 to 44,400 ug/L in well MW-1. High TPH-g concentrations were also detected in wells MW-3, MW-6, and MW-8 at 22,300 ug/L, 18,300 ug/L, and 11,400 ug/L, respectively. Figure 4 displays the contour map of TPH-g concentrations in the groundwater during the First Quarter 2005 monitoring event. As shown in Figure 4, high TPH-g concentrations were detected in the vicinity of the USTs, near the SVE system, and in the vicinity of the French drain.

As shown in Table 1, all BTEX concentrations were below the laboratory reporting limit in wells MW-5 and MW-7. In well MW-12, both toluene and total xylenes were below the laboratory reporting limit. The highest BTEX concentrations were detected in well MW-1 at 3,150 ug/L, 811 ug/L, 1,090 ug/L, and 2,856 ug/L, respectively. Figure 5 displays the contour map of benzene concentrations in the groundwater during the First Quarter 2005 monitoring event. As shown in Figure 5, the highest benzene concentrations were found in MW-1 and MW-3, which are in the vicinity of the USTs, and in well MW-6, which is in the vicinity of the vapor extraction system.

MtBE was below the laboratory reporting limit in monitoring wells MW-2, MW-4, and MW-6. The highest MtBE concentration was detected in well MW-1 at 7,180 ug/L. Figure 6 displays the contour map of MtBE concentrations (analyzed using EPA Method 8260B) in the groundwater during the First Quarter 2005 monitoring event. In general, with the exception of wells MW-1 and MW-3, which are in the vicinity of the USTs, and well MW-8, which is near the French drain, MtBE was either at low concentrations or below the laboratory reporting limit in the remaining wells.

The laboratory report and COC form for the First Quarter 2005 monitoring event are included in Appendix C.

### **2.3 Historical Analytical Results**

Table 1 shows the historical groundwater analytical data. The following concentration trends have been observed in the more impacted wells MW-1, MW-3, and MW-6, since the previous monitoring event (Fourth Quarter 2004).

- In well MW-1, TPH-g and benzene nearly doubled in concentrations, and toluene, ethylbenzene, total xylenes, and MtBE concentrations also increased.
- In well MW-3, TPH-g increased by nearly a factor of 3.5; all BTEX analytes and MtBE concentrations also increased.
- In well MW-6, TPH-g increased, all BTEX analytes decreased, and MtBE remained below the laboratory reporting limit.

To review further detailed groundwater concentration trends refer to Table 1.



### **3.0 Groundwater Treatment System Operation**

The treatment system began operating on December 9, 1999. Since that time, 2,874,170 gallons of groundwater has been treated and discharged under the existing discharge permit (as of March 21, 2005), into the East Bay Municipal Utility District's (EBMUD's) sewer system.

On January 9, 2004, the pneumatic downhole pumps in the western and center French drain risers were removed and replaced with electrical downhole pumps. On July 25, 2004, a downhole pneumatic pump was installed in the western riser of the French drain. A schematic diagram of the remediation system is displayed in Figure 7.

As required by the discharge permit and the ACEHS, sampling of the groundwater treatment system has been performed on a routine basis. Table 2 presents the total volume of treated groundwater and the groundwater analytical results. Table 2 shows that all of the effluent samples have been below the discharge limits set forth by EBMUD.

The laboratory reports for the groundwater treatment system during this quarter are included in Appendix D of this report.

The cumulative masses of TPH-g and MtBE extracted from the groundwater, since the installation of the treatment system, are displayed in Figure 8. As Figure 8 shows, an approximate total of 189.50 pounds of TPH-g and 84.50 pounds of MtBE have been removed since the system's initial start-up until March 21, 2005.

### **4.0 Soil Vapor Extraction System Operation**

The soil vapor extraction (SVE) system consists of 6 vapor extraction wells, a de-moisturizing unit, a blower, and four drums of granulated active carbon (GAC) filters. The vapor extraction system began operating on July 24, 2000. The SVE system has remained in compliance with the Bay Area Air Quality Management District's (BAAQMD's) operating permit. As of October 28, 2004, the SVE system has removed approximately 424.20 pounds of petroleum hydrocarbons from the vadose zone beneath the Site.

The operating permit for the SVE system was extended by BAAQMD until August 2005. The system has been inoperable since October 28, 2004. During the rainy season, the thickness of the unsaturated zone layer is reduced when the water table rises. The SVE system is therefore only operational during the drier seasons when a greater petroleum mass can be removed from the unsaturated zone.

Further detailed SVE information will be outlined in the Second Quarter 2005 monitoring report, when the system is restarted.

## **5.0 Conclusions and Recommendations**

The findings of the First Quarter 2005 groundwater monitoring event can be summarized as follows:

1. The groundwater remediation system is providing excellent hydraulic control in preventing further migration of the contaminants.
2. The bio-attenuation study confirmed the occurrence of biodegradation beneath the Site. Based on this study, the affected areas appear in the vicinity of the USTs, in wells MW-1 and MW-3, as well as the eastern section of the Site, in well MW-6.
3. The source area remains in the vicinity of the USTs, in wells MW-1 and MW-3. High TPH-g concentrations were also detected in wells MW-6 and MW-8. Since the previous monitoring event (Fourth Quarter 2004), TPH-g nearly doubled in well MW-1, and increased in well MW-3 by a factor of nearly 3.5.
4. In general, the GAC and SVE systems have effectively reduced contaminants throughout the Site. The higher concentrations detected in wells MW-1 and MW-3 are still considerably lower than the historical peak values.
5. Approximately 2,874,170 gallons of groundwater has been treated and discharged into the EBMUD's sewer system, under the existing discharge permit (as of March 21, 2005). All effluent samples from the groundwater treatment system have remained below the allowable discharge requirements. From initial start-up to March 21, 2005, approximately 189.50 pounds of TPH-g and 84.50 pounds of MtBE have been removed during the operation of the treatment system.
6. As of October 28, 2004, the SVE system has removed approximately 424.20 pounds of petroleum hydrocarbons from the vadose zone beneath the Site. The SVE system has been inoperable since October 28, 2004.

Based on the results of this monitoring event, SOMA recommends:

- Continual monitoring of the treatment system to maintain the removal rate of the contaminant mass in the groundwater.
- Continual site monitoring of the biodegradation parameters to determine if the injection of concentrated solutions of terminal electron

receptors into the groundwater, in the vicinity of the more contaminated wells, may enhance the biodegradation process.

- Continued quarterly monitoring programs to better understand the seasonal variation in the groundwater quality conditions.
- Currently, based on the ACEHS's approval, SOMA is conducting a feasibility study to implement ozone sparging using wells MW-1, MW-3, and MW-6.

## **6.0 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 as well as the summaries of data produced by previous environmental consultants. The number and location 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**  
**Historical Groundwater Elevation Data & Analytical Results**  
 3609 International Boulevard, Oakland, California

Monitoring Well	Date	Top Of Casing Elevation <sup>1</sup> (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MIBE <sup>2</sup> EPA 8260B (µg/L)
MW-1	Oct-94	97.99	15.39	82.60	320,000	24,000	21,000	2,600	15,000	NA
	Dec-94	97.99	9.32	88.67	80,000	3,800	6,600	2,300	11,000	NA
	Mar-95	97.99	8.07	89.92	32,000	190	160	150	490	NA
	Jun-95	97.99	9.53	88.46	21,000	850	650	570	150	NA
	Oct-95	97.99	13.29	84.70	59,000	140	130	140	390	NA
	Jan-96	97.99	10.07	87.92	30,000	71	73	50	120	NA
	Apr-96	97.99	8.29	89.70	31,000	98	120	63	170	NA
	Dec-96	97.99	11.67	86.32	NA	NA	NA	NA	NA	NA
	Apr-97	97.99	11.14	86.85	NA	NA	NA	NA	NA	NA
	Dec-97	97.99	9.30	88.69	27,000	2,300	2,100	1,400	5,100	NA
	Sep-98	97.99	13.58	84.41	NA	NA	NA	NA	NA	NA
	Dec-98	97.99	11.10	86.89	65,000	2,500	2,400	2,300	9,500	160
	Mar-99	97.99	9.91	88.08	17,000	480	860	850	3,000	190
	Jun-99	97.99	11.10	86.89	25,000	1,110	1,460	1,330	5,265	77
	Aug-99	97.99	13.35	84.64	19,750	678	463	893	2,938	38
	Nov-99	97.99	14.45	83.54	10,000	693	15	<5	3,471	50
	Feb-00	97.99	11.20	86.79	40,000	2,280	1,380	8	6,130	47
	May-00	97.99	11.49	86.50	15,610	610	350	310	1,400	<5
	Aug-00	97.99	13.36	84.63	11,000	638	<5	<5	<5	17.1
	Nov-00	97.99	13.20	84.79	7,050	435	52	ND	689	10
	Mar-01	97.99	8.96	89.03	14,570	1,005	440	108	2,030	16
	May-01	97.99	11.50	86.49	4,900	310	81	82	388	150
	Aug-01	97.99	13.51	84.48	14,820	852	342	568	1,606	2,000
	Nov-01	97.99	14.01	83.98	41,000	2,700	5,100	1,000	4,570	74,000
	Feb-02	97.99	10.11	87.88	260,000	3,700	12,000	3,700	19,200	23,000
	May-02	97.99	10.86	87.13	53,000	4,400	5,100	1300	7,000	32,000
	Jul-02	40.11	12.80	27.31	29,000	2,400	2,500	920	4,400	13,000
	Oct-02	40.11	15.50	24.61	27,000	2,200	2,400	950	4,500	34,000
	Jan-03	40.11	9.73	30.38	62,000	3,500	6,000	1600	9,700	48,000
	May-03	40.11	9.71	30.40	59,000	3,100	2,700	1500	7,000	14,000
	Jul-03	40.11	12.44	27.67	36,000	4,800	1,800	1300	5,600	25,000
	Oct-03	40.11	13.89	26.22	630,000 H	3,300	1900 C	3600	27,700	15,000
Jan-04	40.11	10.45	29.66	89,000	3,100	1,600	950	4,300	8,500	
Apr-04	40.11	11.49	28.62	41,000	1,200	350C	830	2,740	4,300	
Aug-04	40.11	13.81	26.30	22,000	2,000	220	560	3,090	6,900	
Dec-04	40.11	11.10	29.01	22,790	1,634	319	895	2,851	5,504	
Mar-05	40.11	8.40	31.71	44,400	3,150	811	1,090	2,856	7,180	

**Table 1**  
**Historical Groundwater Elevation Data & Analytical Results**  
 3609 International Boulevard, Oakland, California

Monitoring Well	Date	Top Of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE <sup>2</sup> EPA 8260B (µg/L)
MW-2	Oct-94	98.58	15.36	83.22	NA	NA	NA	NA	NA	NA
	Dec-94	98.58	6.60	89.98	NA	NA	NA	NA	NA	NA
	Mar-95	98.58	7.68	90.90	490	3	3	3	1	NA
	Jun-95	98.58	9.59	88.99	8,000	220	930	350	660	NA
	Oct-95	98.58	19.42	85.16	46,000	160	130	93	240	NA
	Jan-96	98.58	9.93	88.65	46,000	160	130	93	240	NA
	Apr-96	98.58	8.13	90.45	27,000	0.1	92	44	13	NA
	Dec-96	98.58	11.67	86.91	6,200	11	7	2	14	ND
	Apr-97	98.58	11.40	87.18	53,000	150	110	37	0.12	ND
	Dec-97	98.58	9.04	89.54	35,000	4,900	4,900	1,600	7,000	NA
	Jun-98	98.58	NM	NM	25,000	2,000	2,000	1,300	4,300	NA
	Sep-98	98.58	13.58	85.00	29,000	290	180	160	360	<0.5
	Dec-98	98.58	10.94	87.64	28,000	1,400	1,600	860	9,500	<5
	Mar-99	98.58	7.60	90.98	7,600	730	630	610	1,900	55
	Jun-99	98.58	11.24	87.34	3,500	290	426	211	744	ND
	Aug-99	98.58	13.50	85.08	60	6	9	4	11	ND
	Nov-99	98.58	14.10	84.48	<50	<5	<5	<5	<5	<5
	Feb-00	98.58	9.65	88.73	6,400	372	639	46	134	8
	May-00	98.58	10.98	87.70	2,930	130	330	130	570	<5
	Aug-00	98.58	13.03	85.55	<50	<5	<5	<5	<5	<5
	Nov-00	98.58	12.60	85.98	ND	ND	ND	ND	ND	ND
	Mar-01	98.58	8.55	90.03	982	18	34	1.3	225	ND
	May-01	98.58	11.00	87.58	870	37	75	55	179	2.7
	Aug-01	98.58	13.53	85.05	125	4	4	3	11	ND
	Nov-01	98.58	13.48	85.15	470	13	64	22	83	14
	Feb-02	98.58	8.99	89.59	1,700	26	180	95	360	<2
	May-02	98.58	10.59	87.99	1,800	31	140	110	348	<2
	Jul-02	40.71	12.70	28.01	180	11	6.3	9.4	27	<2.0
	Oct-02	40.71	14.23	26.48	<50	<0.5	<0.5	<0.5	0.64	<2.0
	Jan-03	40.71	8.66	32.05	510	5	30.0	24.0	92	<2.0
	May-03	40.71	9.17	31.54	1,300	14	88.0	78.0	271	<2.0
	Jul-03	40.71	12.23	26.46	220	3.9	4.3	7	14.5	<2.0
	Oct-03	40.71	13.65	27.06	170 H	1.9	<0.5	2.2	2.2	<2.0
Jan-04	40.71	9.54	31.17	860	7.2	37	50	151	<2.0	
Apr-04	40.71	10.80	29.91	730	6.6	19	38	87	<2.0	
Aug-04	40.71	13.54	27.17	220	2.2	1.9	7	11.7	<0.5	
Dec-04	40.71	10.52	30.19	99	1.7	3.3	8.3	25.1	<0.5	
Mar-05	40.71	6.06	32.65	6,690	16.7	120	315	876	<1.0	

**Table 1**  
**Historical Groundwater Elevation Data & Analytical Results**  
 3609 International Boulevard, Oakland, California

Monitoring Well	Date	Top Of Casing Elevation <sup>1</sup> (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE <sup>2</sup> EPA 8260B (µg/L)
MW-3	Oct-94	97.78	15.78	81.99	3,000,000	190,000	740,000	310,000	190,000	NA
	Dec-94	97.78	9.79	87.99	250,000	19,000	22,000	4,400	28,000	NA
	Mar-95	97.78	8.69	89.09	350,000	20,000	42,000	5,800	36,000	NA
	Jun-95	97.78	10.25	87.53	350,000	20,000	42,000	5,800	36,000	NA
	Oct-95	97.78	12.91	84.87	150,000	510	410	210	65	NA
	Jan-96	97.78	10.55	87.23	150,000	510	410	210	650	NA
	Apr-96	97.78	8.76	89.02	NA	NA	NA	NA	NA	NA
	Dec-96	97.78	12.02	85.76	NA	NA	NA	NA	NA	NA
	Apr-97	97.78	11.73	86.05	NA	NA	NA	NA	NA	NA
	Dec-97	97.78	NM	NM	NA	NA	NA	NA	NA	NA
	Sep-98	97.78	14.68	83.10	NA	NA	NA	NA	NA	NA
	Dec-98	97.78	11.55	86.23	51,000	5,700	3,800	1,200	6,300	410
	Mar-99	97.78	8.44	89.34	45,000	4,100	6,400	1,000	8,100	470
	Jun-99	97.78	11.6	85.98	46,000	8,245	6,425	1,015	7,173	274
	Aug-99	97.78	13.85	83.93	64,000	7,484	8,052	1,744	9,749	141
	Nov-99	97.78	14.7	83.08	26,000	3,218	1,319	<5	6,697	126
	Feb-00	97.78	10.85	86.83	44,000	6,080	3,380	<5	6,960	276
	May-00	97.78	11.88	86.10	69,000	15,000	8,900	1,500	7,400	<5
	Aug-00	97.78	13.73	84.05	76,000	8,900	5,636	883	7,356	176
	Nov-00	97.78	13.4	84.38	48,000	6,789	4,816	676	7,258	83
	Mar-01	97.78	9.43	88.35	14,754	2,250	140	ND	1,284	110
	May-01	97.78	11.81	85.97	44,000	5,400	3,100	1,400	6,400	200
	Aug-01	97.78	14.1	83.68	41,750	3,485	2,670	1,255	5,420	52
	Nov-01	97.78	14.32	83.46	NA	NA	NA	NA	NA	NA
	Feb-02	97.78	10.01	87.77	62,000	6,000	7,600	1,900	9,200	12,000
	May-02	97.78	11.28	86.50	54,000	6,700	3,200	1,800	7,100	9,100
	Jul-02	40.91	13.25	27.66	45,000	8,900	1,700	1,600	5,600	2,600
	Oct-02	40.91	14.88	25.93	70,000	4,800	5,100	2,100	11,900	21,000
	Jan-03	40.91	9.79	31.12	35,000	2,900	1,300	860	5,200	13,000
	May-03	40.91	10.01	30.90	48,000	5,800	1,400	1,600	7,400	5,800
Jul-03	40.91	12.94	27.97	31,000	4,700	990	1,400	5,200	16,000	
Oct-03	40.91	14.29	26.62	30,000	4,400	930	1,600	5,400	7,400	
Jan-04	40.91	10.57	30.34	45,000	2,100	850	1,500	5,700	2,900	
Apr-04	40.91	11.84	29.07	31,000	4,200	590	1,600	4,370	900	
Aug-04	40.91	14.24	26.67	21,000	3,400	370	1,000	2,350	1,100	
Dec-04	40.91	11.32	29.59	6,441	978	109	490	941	201	
Mar-05	40.91	8.87	32.04	22,300	1,280	456	726	1,870	2,480	
MW-4	Jan-96	97.85	10.11	87.74	9,300	230	110	10	29	NA
	Apr-96	97.85	8.35	89.50	1,900	12	8	5	14	NA
	Dec-96	97.85	11.58	86.27	4,000	14	6	4	12	ND
	Apr-97	97.85	11.23	86.62	ND	ND	ND	ND	ND	ND
	Dec-97	97.85	9.43	88.42	2,300	410	270	100	1,500	NA
	Jun-98	97.85	NM	NM	1,700	780	160	54	200	NA
	Sep-98	97.85	13.64	84.21	6,200	910	77	68	200	18
	Dec-98	97.85	11.13	86.72	1,400	590	33	28	94	24
	Mar-99	97.85	8.46	89.39	600	200	35	19	56	11
	Jun-99	97.85	11.30	86.55	1,000	298	44	19	64	13
	Aug-99	97.85	13.20	84.65	680	497	41	54	145	6
	Nov-99	97.85	14.10	83.75	<50	<5	<5	<5	<5	<5
	Feb-00	97.85	11.25	86.60	7,800	1,200	61	<5	781	<5
	May-00	97.85	11.46	86.39	552	42	19	16	67	<5
	Aug-00	97.85	13.35	84.50	370	5.08	<5	<5	<5	<5
	Nov-00	97.85	13.05	84.80	ND	5.80	ND	ND	8	ND
	Mar-01	97.85	9.24	88.61	62	ND	ND	3.2	6.7	ND
	May-01	97.85	11.50	86.35	80	12	1.9	4.1	9.8	ND
	Aug-01	97.85	13.80	84.05	133	12	2.2	3.9	9	ND
	Nov-01	97.85	13.68	84.17	670	180	5	17	53	ND
	Feb-02	97.85	9.97	87.88	450	63	4.1	22	28.7	<2
	May-02	97.85	10.81	87.04	570	72	29	27	74	<2
	Jul-02	40.01	12.62	27.39	450	20	24	19	74	<2.0
	Oct-02	40.01	14.34	25.67	320	69	0.99	9	5.49	<2.0
	Jan-03	40.01	9.79	30.22	310	49	2.5	13	26.7	<2.0
	May-03	40.01	9.78	30.23	120	27	1.8	9	14.6	<2.0
	Jul-03	40.01	12.44	27.57	<50	1	<0.5	<0.5	<0.5	<0.5
	Oct-03	40.01	13.72	26.29	70	12	<0.5	4.7	3.0	<2.0
	Jan-04	40.01	10.55	29.46	230	18	2.1	5.1	17.1	<2.0
	Apr-04	40.01	11.39	28.62	<50	3.8	<0.5	1.6	1.9	<2.0
Aug-04	40.01	13.68	26.33	<50	1.6	<0.5	0.66	0.53	<2.0	
Dec-04	40.01	10.95	29.06	<50	1.3	<0.5	2.80	<1.0	<0.5	
Mar-05	40.01	8.61	31.40	661	72	4.13	39.7	46.42	<0.5	

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MW-5	Oct-85	99.04	13.57	85.47	1,500	1	1	4	5	NA
	Jan-86	99.04	10.03	89.01	1,500	1	1	4	5	NA
	Apr-86	99.04	8.24	90.80	780	1	1	5	4	NA
	Dec-86	99.04	11.48	87.56	NA	NA	NA	NA	NA	NA
	Apr-87	99.04	11.35	87.69	NA	NA	NA	NA	NA	NA
	Dec-87	99.04	9.15	89.89	790	82	66	59	160	NA
	Jun-88	99.04	NM	NM	400	<5	<5	15	<10	NA
	Sep-88	99.04	13.82	85.22	270	2	1	3	3	<5
	Dec-88	99.04	11.20	87.84	1,400	1	1	ND	2	ND
	Mar-89	99.04	7.73	91.31	650	3	1	18	2	10
	Jun-89	99.04	11.50	87.54	270	4	3	6	4	ND
	Aug-89	99.04	13.55	85.49	120	ND	4	ND	4	ND
	Nov-89	99.04	14.30	84.74	<50	<5	<5	<5	<5	<5
	Feb-00	99.04	9.85	89.19	70	<5	<5	<5	7	<5
	May-00	99.04	11.03	88.01	627.4	7.4	24	12	32.4	<5
	Aug-00	99.04	13.22	85.82	<50	<5	<5	<5	<5	<5
	Nov-00	99.04	13.55	85.49	ND	ND	ND	ND	ND	ND
	Mar-01	99.04	8.67	90.37	382	6.1	1.9	6.6	5.9	ND
	May-01	99.04	11.12	87.92	180	ND	ND	2.1	0.57	4.4
	Aug-01	99.04	13.78	85.25	258	1	1.1	3.4	7.3	1.4
	Nov-01	99.04	13.72	85.32	920	17	160	26	135	40
	Feb-02	99.04	9.04	90.00	290	3.5	2	6.2	6.2	<0.5
	May-02	99.04	10.69	88.35	160	<0.5	0.78 C	2	2.15	2.3
	Jul-02	41.16	12.94	28.22	110	<0.5	<0.5	0.77	<0.5	<0.5
	Oct-02	41.16	14.51	26.65	77	<0.5	<0.5	<0.5	<0.5	<2.0
	Jan-03	41.16	8.73	32.43	450 Y	<0.5	<0.5	4	0.54	2.1
	May-03	41.16	9.24	31.92	130	<0.5	<0.5	1	<0.5	3.1
	Jul-03	41.16	12.45	28.71	300	<0.5	1.9 C	0.76	<0.5	<2.0
	Oct-03	41.16	13.89	27.27	460 H	<0.5	<0.5	<0.5	<0.5	1.9
	Jan-04	41.16	9.60	31.56	160	<0.5	<0.5	0.55 C	<0.5	<5.0
	Apr-04	41.16	11.06	30.10	280	<0.5	0.74 C	0.62	<0.5	2.1
	Aug-04	41.16	13.75	27.41	250	<0.5	<0.5	<0.5	<0.5	2
	Dec-04	41.16	10.73	30.43	150	<0.5	<0.5	<0.5	<1.0	2.6
Mar-05	41.16	8.18	32.98	496	<0.5	<0.5	<0.5	<1.0	1.91	



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MW-6	Oct-95	98.77	13.94	84.83	NA	NA	NA	NA	NA	NA
	Jan-96	98.77	10.55	88.22	120,000	350	310	200	610	NA
	Apr-96	98.77	8.76	90.01	NA	NA	NA	NA	NA	NA
	Dec-96	98.77	12.04	86.73	NA	NA	NA	NA	NA	NA
	Apr-97	98.77	11.76	87.01	NA	NA	NA	NA	NA	NA
	Dec-97	98.77	9.30	89.47	NA	NA	NA	NA	NA	NA
	Sep-98	98.77	14.10	84.67	NA	NA	NA	NA	NA	NA
	Dec-98	98.77	11.60	87.17	NA	NA	NA	NA	NA	NA
	Mar-99	98.77	8.40	90.37	37,000	3,900	4,300	1,600	7,000	180
	Jun-99	98.77	11.90	86.87	18,500	2,080	1,650	735	3,170	ND
	Aug-99	98.77	13.90	84.87	42,000	3,806	3,649	1,554	7,996	10
	Nov-99	98.77	14.75	84.02	40,000	1,084	180	<5	10,940	<5
	Feb-00	98.77	10.95	87.82	17,000	1,360	521	<5	4,150	6
	May-00	98.77	11.70	87.07	21,700	1,700	1,200	17	3,600	<5
	Aug-00	98.77	13.78	84.99	24,000	1,306	870	<5	5,162	<5
	Nov-00	98.77	13.40	85.37	19,000	1,387	618	ND	5,250	ND
	Mar-01	98.77	9.49	89.28	15,637	713	459	238	2,363	ND
	May-01	98.77	11.82	86.96	27,000	760	450	1,600	4,270	ND
	Aug-01	98.77	NM	NM	NA	NA	NA	NA	NA	NA
	Nov-01	98.77	NM	NM	NA	NA	NA	NA	NA	NA
	Feb-02	98.77	9.92	88.85	14,000	440	180	750	1,020	<10
	May-02	98.77	11.33	87.44	10,000	400	160	470	970	<2
	Jul-02	40.92	13.28	27.64	24,000	1,000	410	1,400	3,770	<20
	Oct-02	40.92	14.93	25.99	22,000	1,200	620	1,300	2,800	<20
	Jan-03	40.92	9.78	31.14	12,000	730	280	740	1,680	<20
	May-03	40.92	9.92	31.00	150,000 H	1,400	780	2,500	8,700	<40
	Jul-03	40.92	12.98	27.94	29,000	1,600	520	1,500	4,400	<200
	Oct-03	40.92	14.35	26.57	36,000	1,300	430	1,600	4,570	<40
	Jan-04	40.92	10.60	30.32	30,000	1,300	320	1,500	3,040	<50
	Apr-04	40.92	11.80	29.12	99,000	1,700	580 C	2,200	5,200	<50
	Aug-04	40.92	14.36	26.56	12,000	580	190	520	1,020	<10
	Dec-04	40.92	11.22	29.70	12,631	649	134	1,009	2,037	<2.15
	Mar-05	40.92	8.94	31.98	18,300	546	126	705	1,069	<2.15
MW-7	Oct-95	97.83	12.95	84.88	NA	10	12	17	NA	3,300
	Jan-96	97.83	9.57	88.26	3,300	9	12	17	45	NA
	Apr-96	97.83	7.75	90.08	1,900	2	3	5	7	NA
	Dec-96	97.83	10.97	86.86	NA	NA	NA	NA	NA	NA
	Apr-97	97.83	12.95	84.88	NA	NA	NA	NA	NA	NA
	Dec-97	97.83	8.65	89.18	1,400	130	86	75	200	NA
	Jun-98	97.83	NM	NM	620	4	<5	9	<10	NA
	Sep-98	97.83	13.09	84.74	1,800	1	1	1	2	68
	Dec-98	97.83	10.52	87.31	990	5	10	5	20	160
	Mar-99	97.83	7.00	90.83	300	3	1	1	1	62
	Jun-99	97.83	10.70	87.13	320	3	7	4	3	26
	Aug-99	97.83	12.80	85.03	570	5	10	ND	ND	ND
	Nov-99	97.83	13.25	84.58	290	<5	9	<5	<5	12
	Feb-00	97.83	9.80	88.33	80	<5	<5	<5	<5	23
	May-00	97.83	10.52	87.31	494.9	4.9	22	4.2	21.9	29
	Aug-00	97.83	12.63	85.20	80	<5	<5	<5	<5	11.7
	Nov-00	97.83	11.95	85.88	50	ND	ND	ND	ND	9.1
	Mar-01	97.83	8.04	89.79	82	0.97	ND	0.76	ND	76
	May-01	97.83	10.60	87.23	370	ND	9.1	1.3	2.3	28
	Aug-01	97.83	13.02	84.81	610	3.7	3	6.2	18.9	10
	Nov-01	97.83	12.83	85.00	1,700	24	220	41	205	69
	Feb-02	97.83	8.91	88.92	380	<0.5	2.5	2	3.8	78
	May-02	97.83	10.13	87.70	560	15	28.0	9.2	44.0	37
	Jul-02	39.94	12.15	27.79	270	5.3	1.3 C	2.3	8.1	46
	Oct-02	39.94	13.74	26.20	350	<0.5	<0.5	<0.5	3.1 C	43
	Jan-03	39.94	8.45	31.49	220 Y	<0.5	<0.5	0.78	0.55	19
	May-03	39.94	7.69	32.25	280	<0.5	<0.5	<0.5	<0.5	11
	Jul-03	39.94	11.72	29.22	230	<0.5	1.3 C	<0.5	0.63	5.9
	Oct-03	39.94	13.10	26.84	460	<0.5	<0.5	<0.5	<0.5	5.0
	Jan-04	39.94	9.23	30.71	380	<0.5	1.4 C	<0.5	<0.5	<5.0
	Apr-04	39.94	10.40	29.54	480	<0.5	2.5 C	<0.5	0.90	0.62
	Aug-04	39.94	12.92	27.02	410	<0.5	.81 C	<0.5	<0.5	1.70
	Dec-04	39.94	10.28	29.66	96	<0.5	<0.5	<0.5	<1.0	<0.5
Mar-05	39.94	7.44	32.50	209	<0.5	<0.5	<0.5	<1.0	1.74	

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MW-8	Oct-95	97.25	12.86	84.39	NA	NA	NA	NA	NA	NA
	Jan-96	97.25	9.79	87.46	94,000	310	250	180	480	NA
	Apr-96	97.25	7.98	89.27	58,000	250	170	140	330	NA
	Dec-96	97.25	11.13	86.12	27,000	88	43	44	60	ND
	Apr-97	97.25	12.95	84.30	24,000	86	55	50	100	ND
	Dec-97	97.25	8.95	88.30	28,000	6,000	1,600	2,100	4,700	NA
	Jun-98	97.25	NM	NM	54,000	4,600	2,800	3,500	7,300	NA
	Sep-98	97.25	13.02	84.23	NA	NA	NA	NA	NA	NA
	Dec-98	97.25	10.75	86.50	61,000	6,300	1,700	2,200	4,400	1,300
	Mar-99	97.25	7.58	89.67	22,000	1,800	470	2,000	2,000	820
	Jun-99	97.25	10.80	86.45	39,500	3,610	1,635	2,175	5,913	988
	Aug-99	97.25	12.75	84.50	58,000	5,379	2,438	3,001	6,960	639
	Nov-99	97.25	13.65	83.60	10,500	92	<5	<5	3,414	769
	Feb-00	97.25	10.85	86.40	44,200	1,080	617	<5	4,160	240
	May-00	97.25	11.15	86.10	25,940	940	130	1,600	3,960	75
	Aug-00	97.25	12.87	84.38	22,000	632	5.38	<5	2,686	37.3
	Nov-00	97.25	12.55	84.70	3,000	278	350	209	980	21
	Mar-01	97.25	8.75	88.50	2,360	81	18	71	270	221
	May-01	97.25	11.15	86.10	3,100	110	28	140	194	410
	Aug-01	97.25	12.97	84.28	5,620	153	46	373	345	174
	Nov-01	97.25	13.19	84.06	13,000	600	270	750	1,200	400
	Feb-02	97.25	9.88	87.37	240,000	1,400	<25	4,200	6,580	<100
	May-02	97.25	10.32	86.93	9,000	360	56	560	622	2,100
	Jul-02	39.38	11.79	27.59	8,400	340	78	530	517	1,200
	Oct-02	39.38	13.80	25.58	18,000	950	75	1,400	1,259	700
	Jan-03	39.38	9.48	29.90	6,100	300	29	370	302	1,100
	May-03	39.38	9.48	29.90	18,000	380	33 C	1,000	516	540
	Jul-03	39.38	11.92	27.46	12,000	480	54 C	910	435	890
	Oct-03	39.38	13.09	26.29	16,000	830	87	2,000	675	280
	Jan-04	39.38	10.32	29.06	18,000	330	37 C	660	239	500
	Apr-04	39.38	11.23	28.15	12,000	240	26 C	650	128.8 C	<4
	Aug-04	39.38	13.02	26.36	6,000	310	27	660	56.8 C	<4
	Dec-04	39.38	10.79	28.59	6,650	171	15	360	35	166
	Mar-05	39.38	7.62	31.76	11,400	125	21	418	55.3	865

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MW-10	Dec-96	94.54	10.44	84.10	NA	NA	NA	NA	NA	NA
	Apr-97	94.54	10.07	84.47	1,000	21	9	3	3	ND
	Dec-97	94.54	8.78	85.76	10,000	5,300	76	1,100	780	NA
	Sep-98	94.54	11.93	82.61	9,900	5,400	66	970	620	2,600
	Dec-98	94.54	10.18	84.35	8,700	3,800	51	790	420	1,800
	Mar-99	94.54	7.30	87.24	4,100	15	28	420	250	2,800
	Jun-99	94.54	9.95	84.59	4,200	1,168	34	264	154	1,195
	Aug-99	94.54	11.60	82.94	3,250	2,135	97	600	248	1,800
	Nov-99	94.54	12.50	82.04	2,950	1,134	20	<5	70	652
	Feb-00	94.54	9.25	85.29	<50	<5	<5	<5	<5	448
	May-00	94.54	9.45	85.09	4,400	1,500	25	390	107.1	580
	Aug-00	94.54	11.52	83.02	6,800	1,055	26	54	53.8	1,283
	Nov-00	94.54	11.35	83.19	ND	ND	ND	ND	ND	145
	Mar-01	94.54	8.07	86.47	4,935	969	18	41	72	680
	May-01	94.54	9.60	84.74	2,900	650	11	200	31	270
	Aug-01	94.54	11.64	82.90	242	35	1	11	2	64
	Nov-01	94.54	12.06	82.48	3,500	900	260	310	258	410
	Feb-02	94.54	8.28	86.26	4,700	1,100	20	370	68.7	500
	May-02	94.54	9.49	85.05	3,400	860	13	260	48.0	270
	Jul-02	36.71	10.93	25.78	160	26	0.55	8.1	1.0	72
	Oct-02	36.71	12.54	24.17	550	130	3.00	31.0	2.7	70
	Jan-03	36.71	8.23	28.48	17,000	870	11	290	27	270
	May-03	36.71	8.30	28.41	2,500	650	10	190	15.81 C	180
	Jul-03	36.71	10.76	25.95	750	160	4	58	6.86 C	79
	Oct-03	36.71	11.91	24.80	2,000	410	11	170	9.14 C	110
	Jan-04	36.71	8.91	27.80	4,000	600	15	280	15.3 C	110
	Apr-04	36.71	9.62	27.09	5,100	580	<1	330	26.4	180
	Aug-04	36.71	11.50	25.21	3,400	550	13	240	17.0	100
Dec-04	36.71	9.29	27.42	2,524	556	10	184	16.0	144	
Mar-05	36.71	7.48	29.23	4,340	354	6.07	166	17.1	258	
MW-11	Dec-96	95.94	11.99	83.95	NA	NA	NA	NA	NA	NA
	Apr-97	95.94	11.47	84.47	NA	NA	NA	NA	NA	NA
	Dec-97	95.94	10.40	85.54	710	66	97	59	180	NA
	Jun-98	95.94	NM	NM	1,100	45	24	71	100	NA
	Sep-98	95.94	13.24	82.70	170	7	1	4	9	22
	Dec-98	95.94	11.58	84.36	650	27	4	25	33	>0.5
	Mar-99	95.94	8.81	87.13	710	30	6	53	84	8
	Jun-99	95.94	11.50	84.44	4,600	1,240	35	290	159	1,291
	Aug-99	95.94	12.75	83.19	170	4	4	ND	6	ND
	Nov-99	95.94	13.85	82.09	<50	<5	<5	<5	<5	<5
	Feb-00	95.94	13.60	82.34	700	20	15	<5	35	<5
	May-00	95.94	13.80	82.14	477	27	13	9.5	29.0	<5
	Aug-00	95.94	14.87	81.07	590	10.5	5.94	<5	7.75	<5
	Nov-00	95.94	12.55	83.39	60	ND	ND	ND	ND	ND
	Mar-01	95.94	9.61	86.33	273	8.6	2.1	70	14	ND
	May-01	95.94	11.15	84.79	280	12	8.3	3.3	9.8	12
	Aug-01	95.94	13.04	82.90	NA	NA	NA	NA	NA	NA
	Nov-01	95.94	13.48	82.46	300	7.9	26	5.1	28.9	ND
	Feb-02	95.94	9.69	86.25	560	34	20	32	37.3	<0.5
	May-02	95.94	10.99	84.95	280	16	3	7.6	7.6	<2
	Jul-02	NS	13.24	NC	120	5.6	<0.5	0.61	0.53	<2.0
	Oct-02	NS	NM	NC	NA	NA	NA	NA	NA	NA
	Jan-03	NS	9.76	NC	700	32	5.7	25	14.10	<2.0
	May-03	NS	9.66	NC	280	17	1.5 C	8	4.10	<2.0
	Jul-03	NS	12.30	NC	340	19 C	3.2	0.58	0.89	<2.0
	Oct-03	NS	13.38	NC	210	5.0 C	<0.5	<0.5	<0.5	<0.5
	Jan-04	NS	NM	NC	NA	NA	NA	NA	NA	NA
	Apr-04	NS	NM	NC	NA	NA	NA	NA	NA	NA
Aug-04	NS	NM	NC	NA	NA	NA	NA	NA	NA	
Dec-04	NS	10.54	NC	486	24	3.0	18	4.00	<0.5	
Mar-05	NS	NM	NC	NA	NA	NA	NA	NA	NA	

**Table 1**  
**Historical Groundwater Elevation Data & Analytical Results**  
 3609 International Boulevard, Oakland, California

Monitoring Well	Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE <sup>2</sup> EPA 8260B (µg/L)
MW-12	Nov-99	94.84	13.20	81.64	80	<5	<5	<5	<5	229
	Feb-00	94.84	10.20	84.64	4,000	351	37	<5	24	513
	May-00	94.84	10.48	84.36	3,930	230	10	34	12	200
	Aug-00	94.84	12.07	82.77	1,730	15.4	12.4	<5	<5	185
	Nov-00	94.84	12.05	82.79	1,010	9.3	19.0	ND	7.40	215
	Mar-01	94.84	9.04	85.80	1,517	13	5.6	5.5	11	214
	May-01	94.84	10.52	84.32	31,000	1,200	ND	95	165	1,900
	Aug-01	94.84	12.24	82.60	2,080	71	1.8	3	4	142
	Nov-01	94.84	12.76	82.08	3,000	81	69	13	73	120
	Feb-02	94.84	8.78	86.06	2,500	77	<0.5	5.7	7.4	95
	May-02	94.84	10.26	84.58	2,700	74	<0.5	20	5.1	94
	Jul-02	36.84	10.93	25.91	2,200	57	<0.5	11	2.6	100
	Oct-02	36.84	13.13	23.71	2,600	71	<0.5	<0.5	10.3	84
	Jan-03	36.84	9.23	27.61	2,300	65	<0.5	1	4.00	86
	May-03	36.84	9.24	27.60	2,200	58	<0.5	4.2 C	4.1 C	96
	Jul-03	36.84	11.44	25.40	2,200	32 C	16 C	<0.5	9.20	66
	Oct-03	36.84	12.50	24.34	2200 H	31 C	<0.5	<0.5	3.5 C	49
	Jan-04	36.84	9.56	27.28	1,700	24 C	14 C	3	5.00	72
	Apr-04	36.84	10.21	26.63	2,000	11 C	<0.5	<0.5	5 C	36
	Aug-04	36.84	12.00	24.84	1,900	8.9 C	<0.5	<0.5	1.1 C	26
	Dec-04	36.84	10.03	26.81	1,018	2	<0.5	<0.5	<1.0	26
Mar-05	36.84	8.48	28.35	1,890	4.25	<0.5	6.38	<1.0	30.6	
FDC	Feb-00	97.10	15.40	81.70	NA	NA	NA	NA	NA	NA
	May-00	97.10	12.41	84.69	NA	NA	NA	NA	NA	NA
	Aug-00	97.10	15.70	81.40	NA	NA	NA	NA	NA	NA
	Nov-00	97.10	16.85	80.25	NA	NA	NA	NA	NA	NA
	Mar-01	97.10	9.39	87.71	NA	NA	NA	NA	NA	NA
	May-01	97.10	15.85	81.25	NA	NA	NA	NA	NA	NA
	Aug-01	97.10	13.30	83.80	NA	NA	NA	NA	NA	NA
	Nov-01	97.10	17.82	79.28	NA	NA	NA	NA	NA	NA
	Feb-02	97.10	16.74	80.36	NA	NA	NA	NA	NA	NA
	May-02	97.10	10.36	86.74	NA	NA	NA	NA	NA	NA
	Jul-02	39.35	11.93	27.42	NA	NA	NA	NA	NA	NA
	Oct-02	39.35	13.74	25.61	NA	NA	NA	NA	NA	NA
	Jan-03	39.35	15.18	24.17	NA	NA	NA	NA	NA	NA
	May-03	39.35	16.20	23.15	NA	NA	NA	NA	NA	NA
	Jul-03	39.35	16.45	22.90	NA	NA	NA	NA	NA	NA
	Oct-03	39.35	16.53	22.82	NA	NA	NA	NA	NA	NA
	Jan-04	39.35	13.74	25.61	NA	NA	NA	NA	NA	NA
Apr-04	39.35	16.30	23.05	NA	NA	NA	NA	NA	NA	
Aug-04	39.35	16.05	23.90	NA	NA	NA	NA	NA	NA	
Dec-04	39.35	14.56	24.79	NA	NA	NA	NA	NA	NA	
Mar-05	39.35	13.55	25.80	NA	NA	NA	NA	NA	NA	
FDE	May-00	97.90	13.22	84.68	NA	NA	NA	NA	NA	NA
	Aug-00	97.90	NM	NM	NA	NA	NA	NA	NA	NA
	Nov-00	97.90	12.75	85.15	NA	NA	NA	NA	NA	NA
	Mar-01	97.90	9.14	88.76	NA	NA	NA	NA	NA	NA
	May-01	97.90	13.05	84.85	NA	NA	NA	NA	NA	NA
	Aug-01	97.90	13.69	84.21	NA	NA	NA	NA	NA	NA
	Nov-01	97.90	13.92	83.98	NA	NA	NA	NA	NA	NA
	Feb-02	97.90	13.18	84.72	NA	NA	NA	NA	NA	NA
	May-02	97.90	11.18	86.72	NA	NA	NA	NA	NA	NA
	Jul-02	40.06	12.81	27.25	NA	NA	NA	NA	NA	NA
	Oct-02	40.06	14.53	25.53	NA	NA	NA	NA	NA	NA
	Jan-03	40.06	13.13	26.93	NA	NA	NA	NA	NA	NA
	May-03	40.06	11.79	28.27	NA	NA	NA	NA	NA	NA
	Jul-03	40.06	13.10	26.98	NA	NA	NA	NA	NA	NA
	Oct-03	40.06	13.85	26.21	NA	NA	NA	NA	NA	NA
	Jan-04	40.06	13.27	26.79	NA	NA	NA	NA	NA	NA
	Apr-04	40.06	13.20	26.86	NA	NA	NA	NA	NA	NA
	Aug-04	40.06	14.97	25.09	NA	NA	NA	NA	NA	NA
	Dec-04	40.06	14.25	25.81	NA	NA	NA	NA	NA	NA
Mar-05	40.06	12.50	27.56	NA	NA	NA	NA	NA	NA	

**Table 1**  
**Historical Groundwater Elevation Data & Analytical Results**  
 3609 International Boulevard, Oakland, California

Monitoring Well	Date	Top Of Casing Elevation <sup>1</sup> (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	MtBE <sup>2</sup> EPA 8260B (µg/L)
FDW	May-00	96.90	12.20	84.70	NA	NA	NA	NA	NA	NA
	Aug-00	96.90	NM	NM	NA	NA	NA	NA	NA	NA
	Nov-00	96.90	15.50	81.40	NA	NA	NA	NA	NA	NA
	Mar-01	96.90	10.12	86.78	NA	NA	NA	NA	NA	NA
	May-01	96.90	13.50	83.40	NA	NA	NA	NA	NA	NA
	Aug-01	96.90	13.08	83.82	NA	NA	NA	NA	NA	NA
	Nov-01	96.90	14.31	82.59	NA	NA	NA	NA	NA	NA
	Feb-02	96.90	12.78	84.12	NA	NA	NA	NA	NA	NA
	May-02	96.90	10.14	86.76	NA	NA	NA	NA	NA	NA
	Jul-02	39.16	11.79	27.37	NA	NA	NA	NA	NA	NA
	Oct-02	39.16	13.50	25.66	NA	NA	NA	NA	NA	NA
	Jan-03	39.16	12.13	27.03	NA	NA	NA	NA	NA	NA
	May-03	39.16	10.84	26.32	NA	NA	NA	NA	NA	NA
	Jul-03	39.16	12.12	27.04	NA	NA	NA	NA	NA	NA
	Oct-03	39.16	13.48	25.68	NA	NA	NA	NA	NA	NA
	Jan-04	39.16	13.58	25.58	NA	NA	NA	NA	NA	NA
	Apr-04	39.16	13.90	25.26	NA	NA	NA	NA	NA	NA
	Aug-04	39.16	15.69	23.47	NA	NA	NA	NA	NA	NA
	Dec-04	39.16	14.85	24.31	NA	NA	NA	NA	NA	NA
	Mar-05	39.16	13.10	26.06	NA	NA	NA	NA	NA	NA

Notes:

<sup>1</sup> Top of casing elevations were re-surveyed to comply with the EDF requirements for electronic reporting of data to the State Water Resources Control Board Database on August 9, 2002.

<sup>2</sup> MtBE was analyzed using the EPA Method 8021B and confirmed using 8260B.

- C: Presence confirmed, but confirmation concentration differed by more than a factor of two.
- H: Heavier hydrocarbons may have contributed to the quantitation.
- NA: Not Analyzed
- NA: Not Applicable, Well/Drain did not exist at time of sampling
- NC: Not calculated. No top of casing elevation was available for MW-11.
- ND, <: Not Detected above laboratory reporting limits.
- NM: Not Measured
- NS: Not Surveyed.
- Y: Sample exhibits fuel pattern which does not resemble standard.

- FDC: French drain center riser.
- FDE: French drain east riser.
- FDW: French drain west riser.

**Table 2**  
**Total Volume of Water Treated, Historical Operational Data, and Effluent and GAC-1 Analytical Results**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter	Lab Results For Effluent and GAC-1					
		Reading (gallons)	(concentrations in ug/L)					
			MIBE <sup>2</sup>	TPH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes
<b>2005</b>								
March	3/21/2005	2,874,170	<0.5 <0.5	<200 <200	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<1.0 <1.0
February	2/14/2005	2,828,000	55 Gallon Drum Changed Out					
	2/7/2005	2,819,000	<5.0 <5.0	<50 <50	<5.0 <5.0	<5.0 <5.0	<5.0 <5.0	<5.0 <5.0
January	1/19/2005	2,775,000	Carbon Change-out of 2000 lb vessel and 55 gallon polishing vessel					
	1/3/2005	2,730,480	3.6 3.8	<50 <50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
<b>2004</b>								
December	12/6/2004	2,667,620	<0.5 <0.5	<50 <50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<1.0 <1.0
November	11/8/2004	2,631,600	<0.5 <0.5	<50 <50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
October	10/13/2004	2,606,420	< 2.0 <2.0	< 50 <50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
September	9/13/2004	2,594,390	< 2.0 < 2.0	< 50 < 50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
August	8/25/2004	2,586,010	55 Gallon Drum Changed Out					
	8/9/2004	2,581,250	< 2.0 < 2.0	< 50 < 50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
July	7/13/2004	2,568,830	< 2.0 < 2.0	< 50 < 50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
	7/21/2004	2,564,710	55 Gallon Drum Changed Out					
June	6/14/2004	2,549,470	< 2.0 < 2.0	< 50 < 50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
May	5/26/2004	2,530,000	Carbon Change-out of 2000 lb vessel and 55 gallon polishing vessel					
	5/10/2004	2,488,760	Semi Annual Treatment System Meeting With Ebmud					
	5/17/2004	2,518,910	Replaced 55-gallon polishing vessel and restarted the system					
	5/5/2004	2,500,650	Carbon Changed Out and 55 Gallon Drum Changed Out					
	5/3/2004	2,497,350	< 2.0 < 2.0	< 50 < 50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
April	4/15/2004	2,436,190	< 5.0 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0

**Table 2**  
**Total Volume of Water Treated, Historical Operational Data, and Effluent and GAC-1 Analytical Results**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter	Lab Results For Effluent and GAC-1					
		Reading (gallons)	(concentrations in ug/L)					
			MtBE <sup>2</sup>	TPH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes
March	3/17/2004	2,376,200	Carbon Change-out of 2000 lb vessel and 55 gallon polishing vessel					
February	2/24/2004	2,276,770	< 5.0 <5.0	< 5.0 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
January	1/27/2004	2,165,220	< 5.0 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
	1/13/2004	2,116,720	< 5.0 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
<b>2003</b>								
December	12/8/2003	2,092,330	< 5.0 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
November	11/17/2003	2,087,670	< 5.0 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
	11/3/2003	2,079,460	< 5.0 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
October	10/13/2003	2,073,060	5.3 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
	10/1/2003	2,072,610	Carbon Change-out of 2000 lb vessel and 55 gallon polishing vessel					
September	9/15/2003	2,056,910	<5.0 6	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
	9/2/2003	2,040,040	<5.0 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
August	8/19/2003	2,021,040	<5.0 <5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
July	7/21/2003	1,995,240	< 5.0 40	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
	7/9/2003	1,990,260	< 5.0 36	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0

**Table 2**  
**Total Volume of Water Treated, Historical Operational Data, and Effluent and GAC-1 Analytical Results**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter	Lab Results For Effluent and GAC-1					Total Xylenes
		Reading (gallons)	(concentrations in ug/L)		Benzene	Toluene	Ethylbenzene	
			MtBE <sup>2</sup>	TPH-g				
June	6/18/2003	1,978,560	Carbon Change-out of 2000 lb vessel and 55 gallon polishing vessel					
	6/10/2003	1,972,780	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
May	5/21/2003	1,951,830	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
	5/1/2003	1,918,270	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
April	4/11/2003	1,882,440	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
March	3/19/2003	1,846,490	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
February	2/25/2003	1,804,960	replaced 55-gallon polishing vessel with new 55 gallon carbon drum					
	2/19/2003	1,791,720	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
January	1/27/2003	1,733,500	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
	1/2/2003	1,675,600	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0



**Table 2**  
**Total Volume of Water Treated, Historical Operational Data, and Effluent and GAC-1 Analytical Results**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter	Lab Results For Effluent and GAC-1					
		Reading (gallons)	(concentrations in ug/L)					
			MIBE <sup>2</sup>	TPH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes
<b>2002</b>								
December	12/10/2002	1,672,870	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
November	11/22/2002	1,668,650	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
	11/13/2002	1,664,780	replaced gasket on top of 2000 lb GAC vessel, slight leak was detected					
	11/7/2002	1,663,880	Carbon Change-out of 2000 lb vessel and 55 gallon polishing vessel					
October	10/16/02 <sup>3</sup>	1,661,590	< 310 < 0.5	2,000 Y Z < 50	< 310 < 0.5	< 310 < 0.5	< 310 < 0.5	< 310 < 0.5
September	9/19/2002	1,653,600	< 5 < 5	< 50 < 50	< 5 < 5	< 5 < 5	< 5 < 5	< 5 < 5
August	8/23/2002	1,641,650	1 < 0.5	< 50 < 50	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5
July	7/23/2002	1,632,834	< 5.0 < 5.0	< 50 < 50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
June	6/24/2002	1,610,050	1.7 < 0.5	< 50 < 50	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5
May	5/30/2002	1,571,630	< 0.5 < 0.5	< 50 < 50	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5
	5/20/2002	1,548,000	removed newly installed compressor, installed another compressor					
	5/8/2002	1,538,850	installed new compressor					
	5/1/2002	1,529,650	installed new 55 gallon GAC Vessel					
April	4/24/2002	1,528,740	< 0.5 < 0.5	< 50 < 50	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5
	4/1/2002	1,478,500	repaired valve plate assembly on compressor					
March	3/25/2002	1,478,420	performed carbon change-out on treatment system					
	3/18/2002	NR	replaced piston on compressor					
	3/14/2002	1,478,330	compressor not building up pressure					
February	2/27/2002	1,448,830	< 0.5 1.1	< 50 < 50	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5
January	1/22/2002	1,381,370	< 2.0 < 2.0	< 50 < 50	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5

**Table 2**  
**Total Volume of Water Treated, Historical Operational Data, and Effluent and GAC-1 Analytical Results**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter	Lab Results For Effluent and GAC-1					
		Reading (gallons)	(concentrations in ug/L)					
			MIBE <sup>2</sup>	TPH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes
<b>2001</b>								
December	12/12/2001	1,311,340	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
November	11/2/2001	1,272,660	ND	ND	ND	ND	ND	ND
			0.6	ND	ND	ND	ND	ND
September	9/28/2001	NA	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
August	8/22/2001	1,243,100	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
July	7/26/2001	1,227,270	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
	7/11/2001	1,226,730	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
June	6/29/2001	1,224,600	NA	NA	NA	NA	NA	NA
			ND	ND	ND	ND	ND	ND
	6/26/2001	NR	installed new compressor					
	6/16/2001	1,216,580	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
	6/7/2001	1,216,580	compressor not working, repaired compressor					
			NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
May	5/30/2001	1,205,198	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
	5/23/2001	1,194,390	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
	5/17/2001	1,182,360	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
	5/10/2001	1,166,850	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
	5/5/2001	1,151,600	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
April	4/28/2001	1,135,690	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
	4/21/2001	1,113,570	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
	4/11/2001	1,082,700	NA	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
	4/6/2001	1,065,540	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA

**Table 2**  
**Total Volume of Water Treated, Historical Operational Data, and Effluent and GAC-1 Analytical Results**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter	Lab Results For Effluent and GAC-1					Total Xylenes
		Reading (gallons)	(concentrations in ug/L)		Benzene	Toluene	Ethylbenzene	
			MIBE <sup>2</sup>	TPH-g				
March	3/29/2001	1,036,330	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
			system was re-started					
	3/21/2001	1,036,070	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
			belt replaced on compressor					
	3/17/2001	1,035,100	NA	NA	NA	NA	NA	NA
	3/13/2001	1,032,500	ND	ND	ND	ND	ND	ND
			NA	NA	NA	NA	NA	NA
	3/2/2001	996,520	NA	NA	NA	NA	NA	NA
			NA	NA	NA	NA	NA	NA
	3/1/2002	NR	system re-started after carbon change-out					
February	2/28/2002	NR	Carbon Change-out was performed on GAC-1, washed algae from holding tank cleaned 2000 lb GAC, re-started system					
	2/10/2001	975,490	System shut down for maintenance and cleaning.					
January	1/29/2001	957,880	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
<b>2000</b>								
December	12/5/2000	883,000	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
November	11/24/2000	NR	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
	11/1/2000	842,000	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
October	10/1/2000	809,000	ND	ND	ND	ND	ND	ND
			ND	ND	ND	ND	ND	ND
August	8/27/2000	781,000	ND	ND	ND	ND	ND	ND
	8/24/2000	778,000	Totalizer meter replaced at 775,000 gallons					
July	7/26/2000	726,000	ND	ND	ND	ND	ND	ND
	7/19/2000	718,000	ND	ND	ND	ND	ND	ND
	7/13/2000	712,000	ND	ND	ND	ND	ND	ND
	7/7/2000	706,000	ND	ND	ND	ND	ND	ND

**Table 2**  
**Total Volume of Water Treated, Historical Operational Data, and Effluent and GAC-1 Analytical Results**  
**3609 International Boulevard, Oakland, California**

Month	Date	Meter	Lab Results For Effluent and GAC-1					
		Reading (gallons)	(concentrations in ug/L)					
			MtBE <sup>2</sup>	TPH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes
June	6/29/2000	700,000	ND	ND	ND	ND	ND	ND
	6/21/2000	682,220	ND	ND	ND	ND	ND	ND
	6/16/2000	689,720	ND	ND	ND	ND	ND	ND
	6/10/2000	651,200	ND	ND	ND	ND	ND	ND
May	5/31/2000	629,000	ND	ND	ND	ND	ND	ND
	5/23/2000	603,700	ND	ND	ND	ND	ND	ND
	5/18/2000	570,000	ND	ND	ND	ND	ND	ND
	5/10/2000	530,400	ND	ND	ND	ND	ND	ND
April	4/30/2000	488,300	ND	ND	ND	ND	ND	ND
	4/18/2000	485,300	ND	ND	ND	ND	ND	0.51
			compressor stopped, system shut down until April 29, 2000					
	4/10/2000	440,200	ND	ND	ND	ND	ND	ND
	4/4/2000	390,100	ND	ND	ND	ND	ND	ND
	4/2/2000	NR	performed a carbon change-out on GAC-1					
March	3/31/2000	NR	replaced GAC-2 with a special GAC designed for removal of MtBE					
	3/24/2000	388,000	ND	ND	ND	ND	ND	ND
	3/17/2000	357,100	ND	ND	ND	ND	ND	ND
	3/10/2000	329,000	ND	ND	ND	ND	ND	ND
	3/3/2000	300,000	transfer overheated, repaired pump, restarted system 3/6/00					
February	2/25/2000	274,000	ND	ND	ND	ND	ND	ND
	2/18/2000	233,000	ND	ND	ND	ND	ND	ND
	2/11/2000	190,000	ND	ND	ND	ND	ND	ND
	2/4/2000	160,800	ND	ND	ND	ND	ND	ND
January	1/28/2000	130,600	ND	ND	ND	ND	ND	ND
	1/21/2000	103,435	ND	ND	ND	ND	ND	ND
	1/17/2000	NR	GAC-1 was replaced with 2,000 lb GAC unit second polishing GAC was replaced with 55 gallon GAC unit					
	1/14/2000	83,500	185	ND	ND	ND	ND	ND
<b>1999</b>								
December	12/23/1999	51,680	1486	NA	ND	ND	ND	ND
			ND	NA	ND	ND	ND	ND
	12/16/1999	30,450	963	NA	ND	ND	ND	ND
			ND	NA	ND	ND	ND	ND
	12/9/1999	9,000	230	ND	ND	ND	ND	ND
Pumping began on December 6, 1999								

Notes:

- Effluent is equivalent to PSP#1
- MTBE was analyzed using EPA Method 8260B, prior to the September 2003. After September 2003, MtBE was only analyzed by EPA Method 8021B.
- Lab data as shown for Oct. 2002 is erroneous data. During lab analysis a high detection of 2-Butanone was detected in only the effluent sample. The influent sample for 2-Butanone was at only 20 ppb. This caused a high dilution factor causing a high non-detectable value. The high TPH-g value was misrepresentative due to the Y and Z flags.

ND, < : Not Detected above laboratory reporting limits  
 NA: Not Analyzed  
 NR: Not recorded. Totalizer reading not recorded.  
 Y: Sample exhibits fuel pattern which does not resemble standard  
 Z: Sample exhibits unknown single peak or peaks

# FIGURES

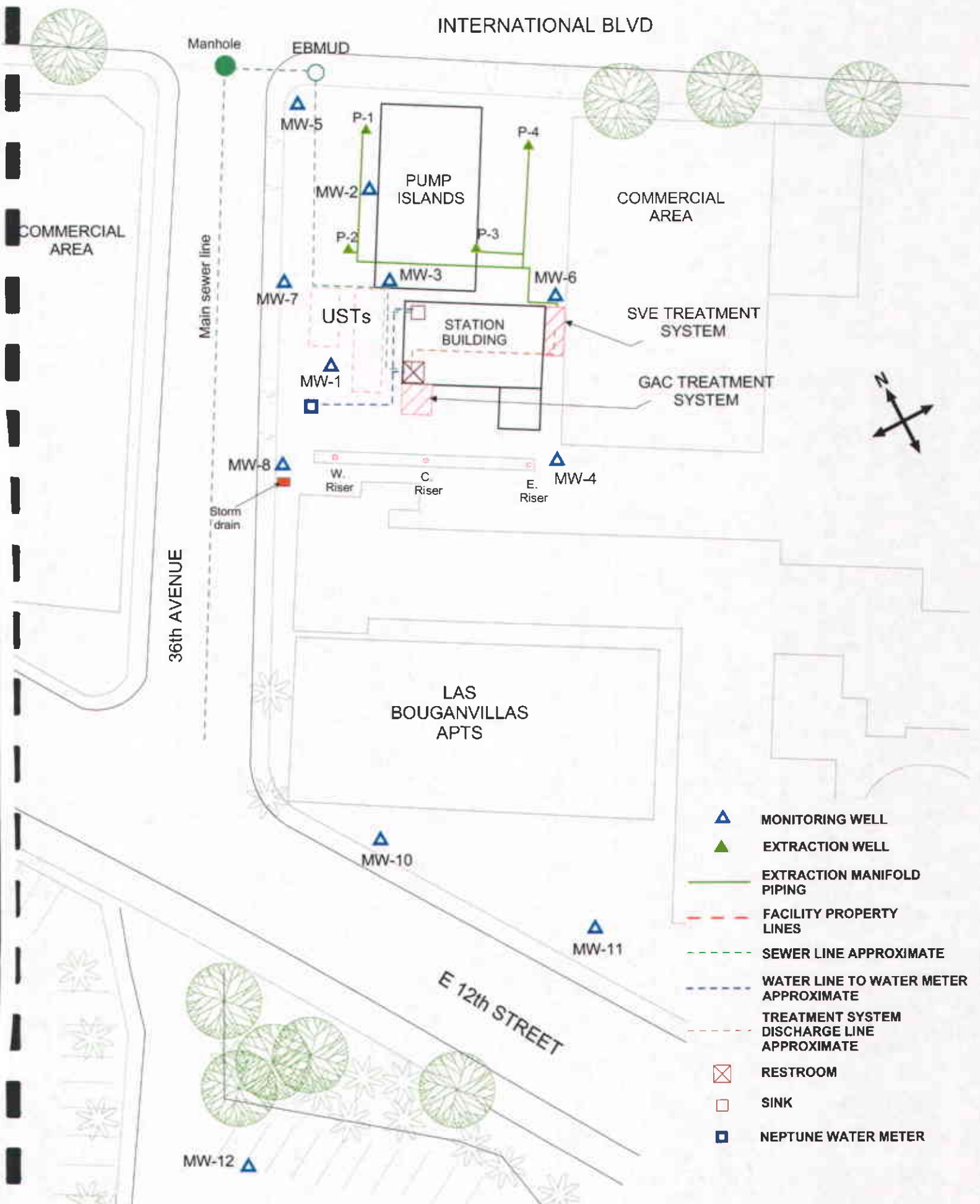


approximate scale in feet

0 150 300

Figure 1: Site vicinity map.





Approximate scale in feet



Figure 2: Site map showing location of groundwater monitoring wells, French drain, SVE system, and GAC system.

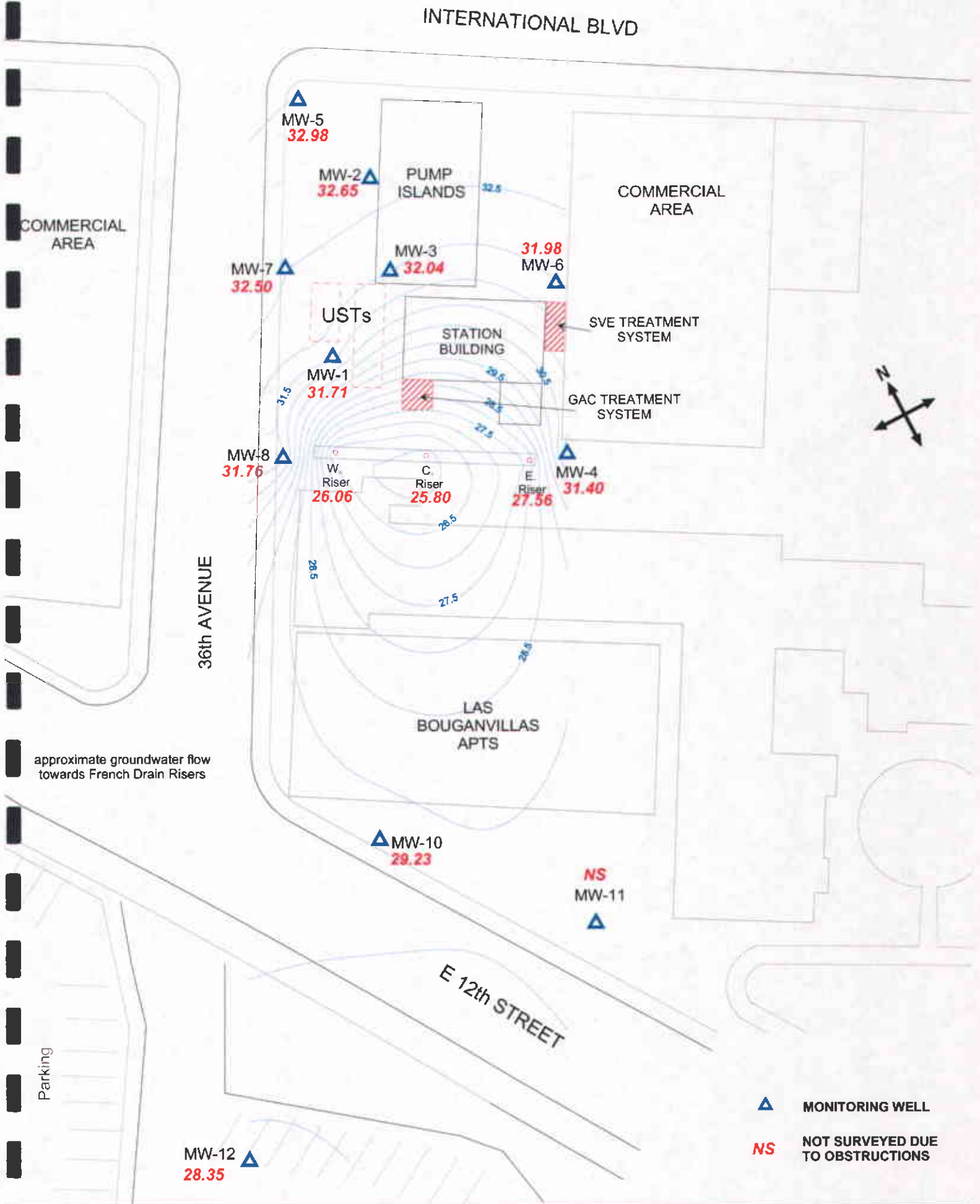


Figure 3: Groundwater elevation contour map in feet. March 2005.



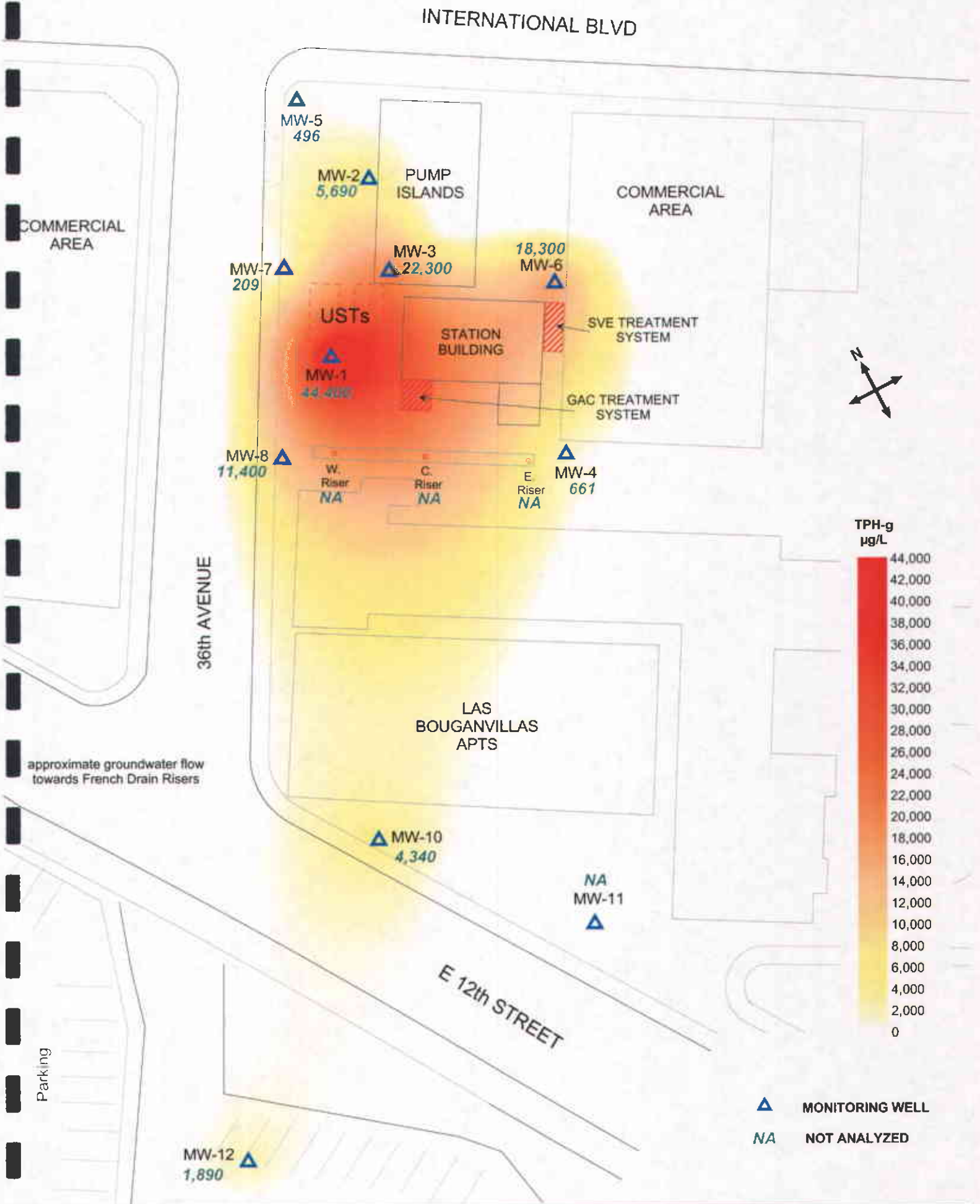


Figure 4: Contour map of TPH-g concentrations in the groundwater. March 2005.

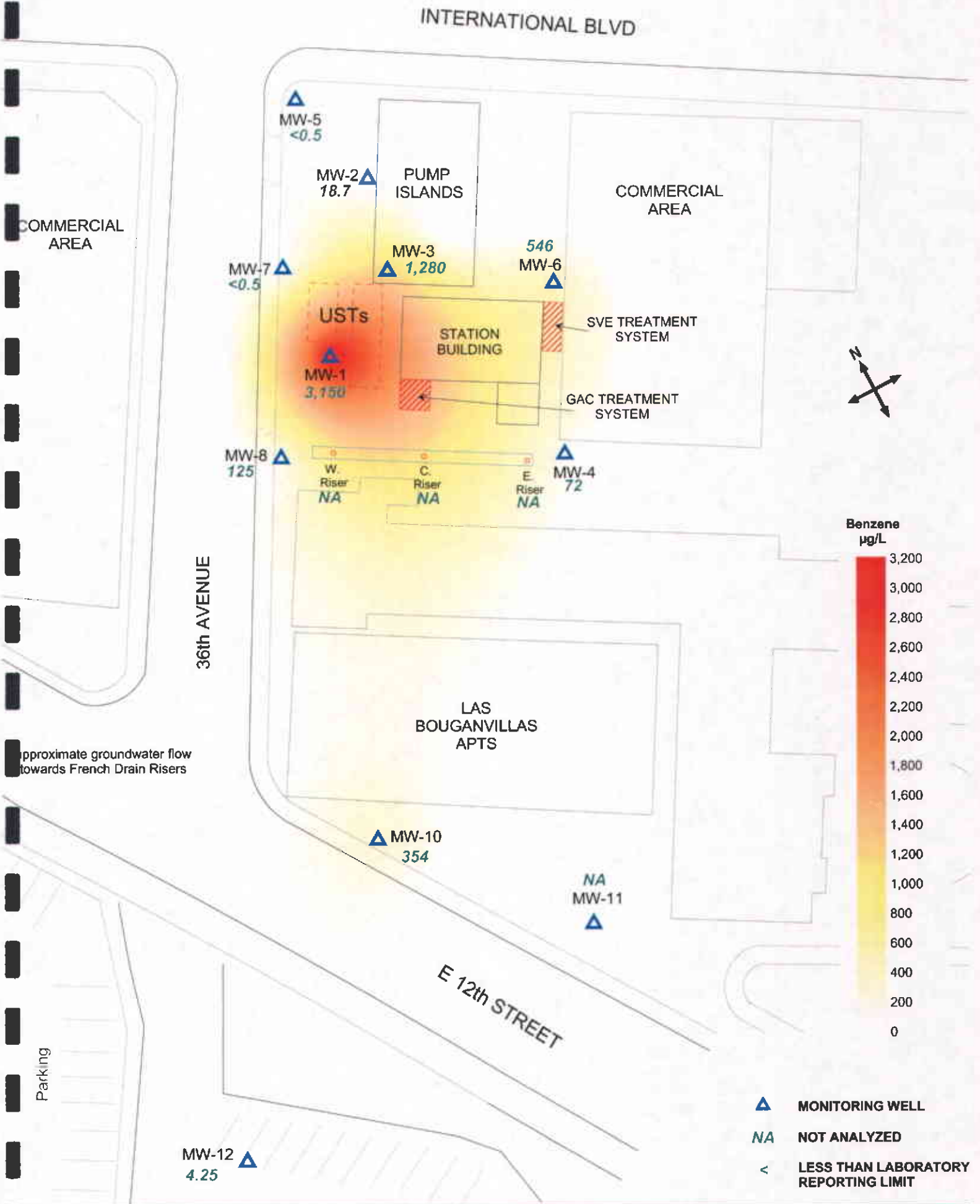


Figure 5: Contour map of Benzene concentrations in the groundwater. March 2005.

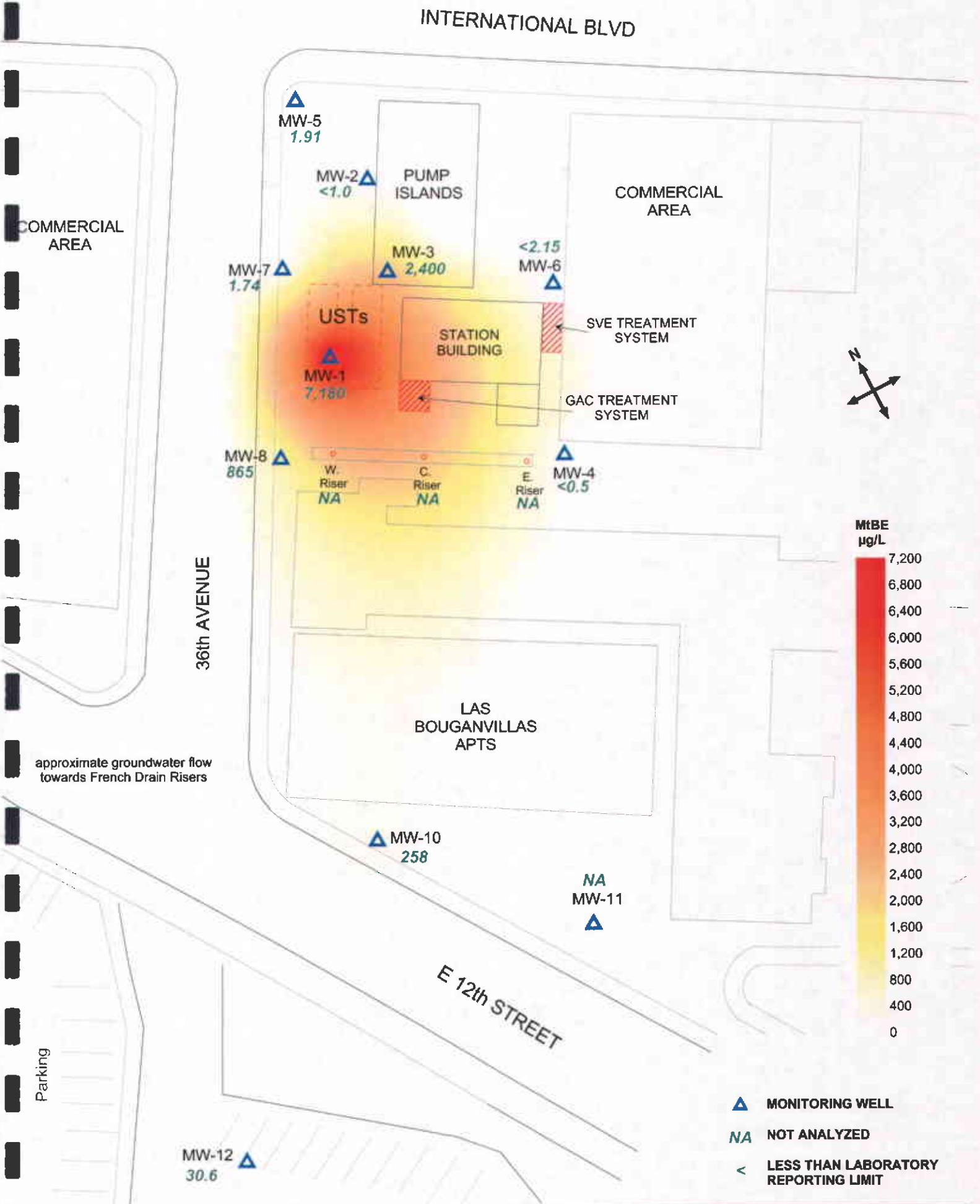
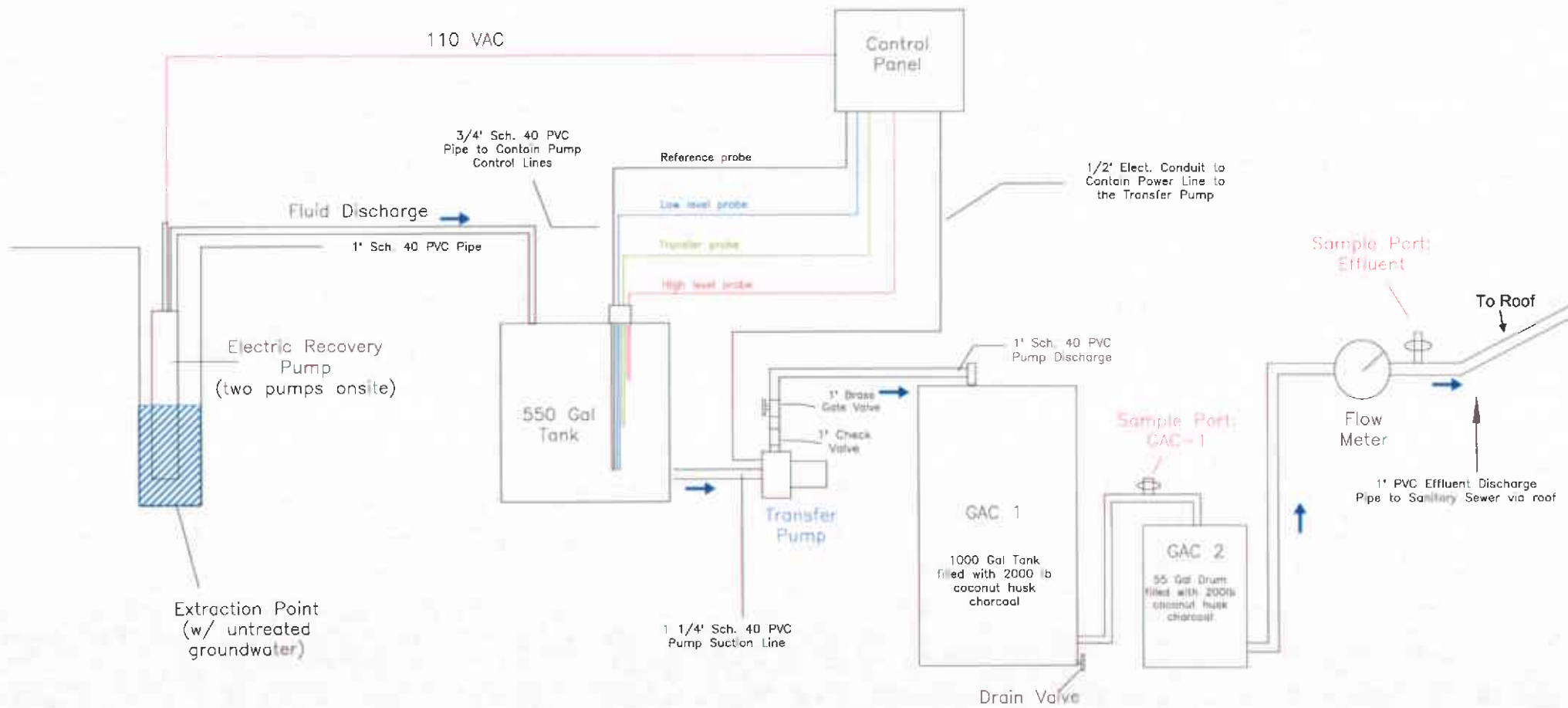


Figure 6: Contour map of MtBE concentrations in the groundwater (EPA Method 8260 B). March 2005.



(Discharge permit No: 504-27421)  
 Tony's Express Auto Service. November 14, 2006 permit expires

Figure 7: Schematic of the Groundwater Remediation System.  
 3609 International Blvd., Oakland, CA

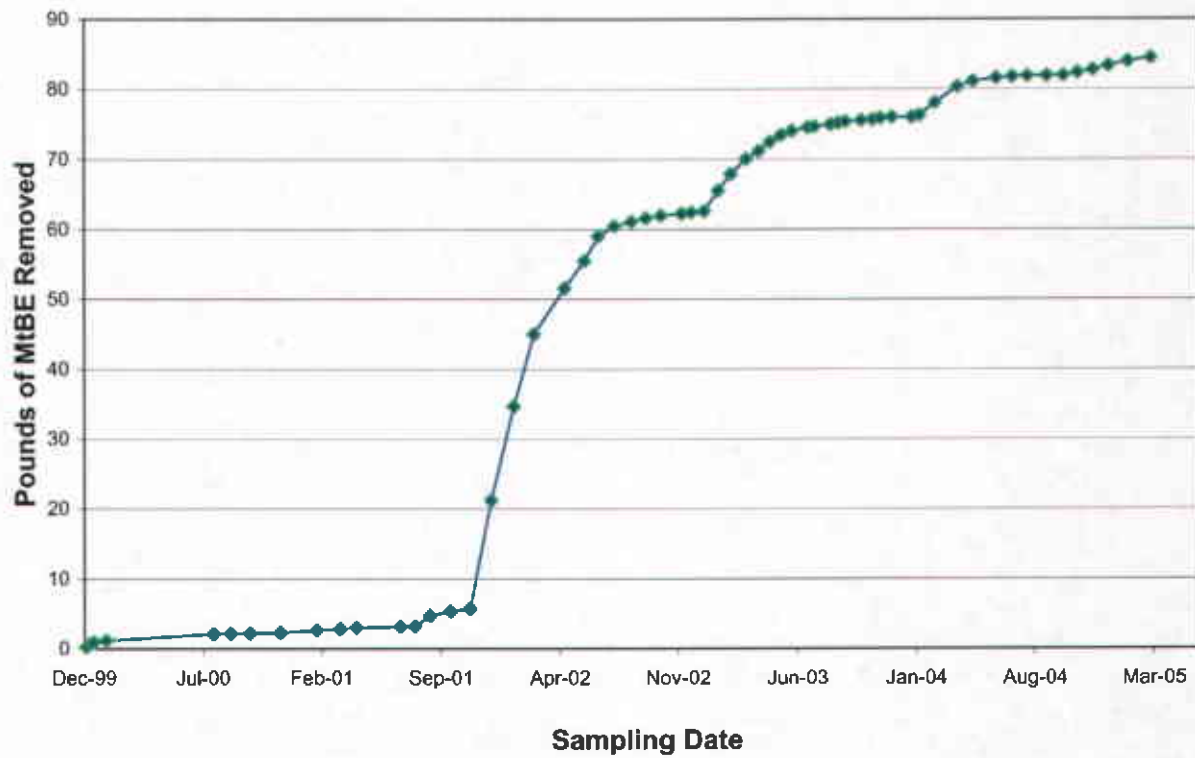
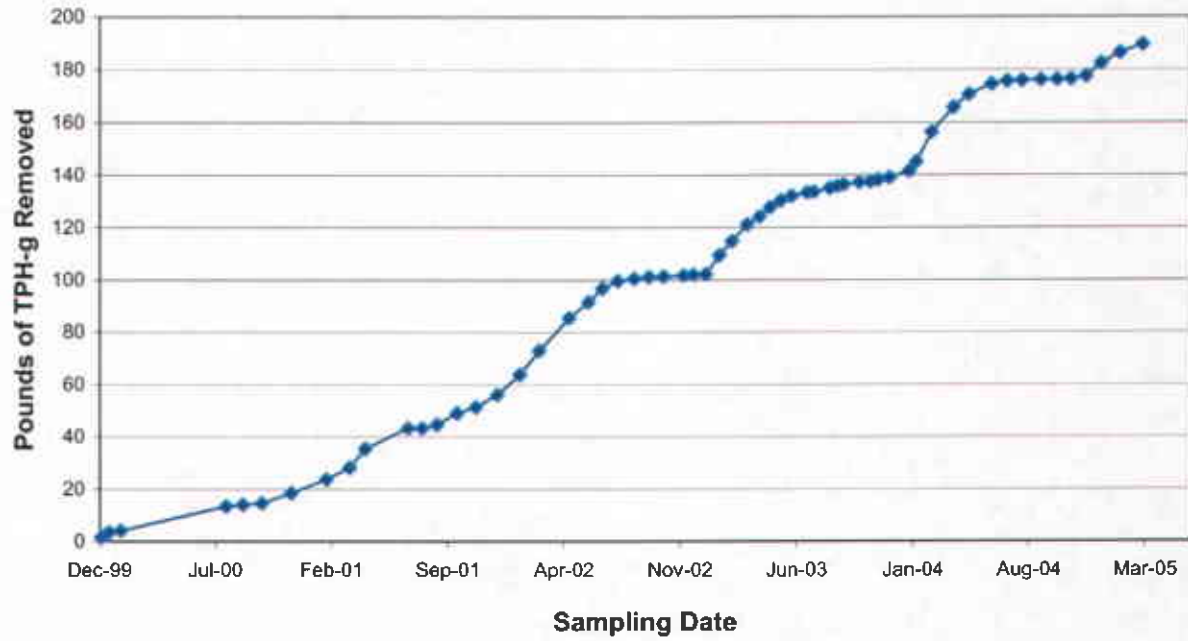


Figure 8. Cumulative mass of TPH-g and MtBE removed from groundwater since the installation of the treatment system.



# APPENDIX A

## SOMA's Groundwater Monitoring Procedures



## Field Activities

On March 15 and 16, 2005, SOMA's field crew conducted a groundwater monitoring event in accordance with the procedures and guidelines of the RWQCB, San Francisco Bay Region. During this groundwater monitoring event a total of eight on-site monitoring wells (MW-1 to MW-8), two off-site monitoring wells (MW-10 and MW-12), and three on-site French drain risers were measured for depth to groundwater. Field measurements and grab groundwater samples were collected from all on and off-site monitoring wells.

The depth to groundwater in each monitoring well and riser 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 and riser were used to calculate the groundwater elevation.

Kier and Wright Civil Engineers Surveyors, Inc. surveyed the wells and risers on August 9, 2002. At the time of the survey, monitoring well MW-11 could not be accessed due to obstacles preventing the proper use of surveying equipment; therefore, this well was not surveyed. The top of casing elevations were based on the survey data measured at this time. The elevation data was based on a datum of 14.20 NAVD88. The new survey was conducted to comply with an Electronically Deliverable Format (EDF) request made by the State Water Resources Control Board (SWRCB) Database.

The survey data measured by Kier and Wright is presented in Appendix B.

Prior to the collection of samples, each well was purged using a battery operated 2-inch diameter pump (Model ES-60 DC). During the purging activities, in order to obtain accurate measurements of groundwater parameters and especially to avoid the intrusion of oxygen from ambient air into the groundwater samples, field measurements were conducted in-situ (i.e., down-hole inside each monitoring well). The pH, temperature, electric conductivity (EC), dissolved oxygen (DO), turbidity, and Oxygen Reduction Potential (ORP) were measured in-situ using a Horiba, Model U-22 multi-parameter instrument. The Horiba, Model U-22 was calibrated at the Site using standard solutions and procedures provided by the manufacturer.

Detailed field measurements are shown in Appendix B.

The purging continued until the parameters for pH, temperature, EC, DO, turbidity, and redox stabilized, or three casing volumes were purged. The groundwater samples were also tested on-site for ferrous iron ( $\text{Fe}^{+2}$ ), and nitrate ( $\text{NO}_3^-$ ), and sulfate ( $\text{SO}_4^{2-}$ ) concentrations once stabilization occurred. Ferrous iron, nitrate, and sulfate were measured colorimetrically using the Hach Colorimeter Model 890.

For sampling purposes, after purging, a disposable polyethylene bailer was used to collect sufficient samples from each monitoring well for laboratory analyses. The groundwater sample was transferred into four 40-mL VOA vials and preserved with hydrochloric acid. The vials were then sealed to prevent development of air bubbles within the headspace. After the groundwater samples were collected, they were placed on ice and maintained at 4°C in a cooler. A chain of custody (COC) form was written and placed along with the samples in the cooler. On March 16, 2005, SOMA's field crew delivered the groundwater samples to Pacific Analytical Laboratory in Alameda, California.

### **Laboratory Analysis**

Pacific Analytical Laboratory, a state certified laboratory, analyzed the groundwater samples for TPH-g, BTEX and MtBE. TPH-g, BTEX, and MtBE was prepared using EPA Method 5030B and measured using EPA Method 8260B.



# Appendix B

Table of Elevations & Coordinates on Monitoring Wells  
Surveyed by Kier Wright Civil Engineers Surveyors, Inc.,  
and  
Field Measurements of Physical, Chemical, and  
Biodegradation Parameters of Groundwater

**TABLE OF ELEVATIONS & COORDINATES  
 ON MONITORING WELLS  
 SOMA ENVIRONMENTAL  
 Oakland-E. 14 the St. "International Blvd"**

WELL NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
FD-C	2109299.85	6064039.85	39.35 40.25	Notch on north side of PVC Punch north rim of box
FD-E	2109281.13	6064067.87	40.06 40.55	Notch on north side of PVC Punch north rim of box
FD-W	2109314.99	6064017.59	39.16 39.95	Notch on north side of PVC Punch north rim of box
MW-1	2109338.74	6064025.97	40.11 40.76	Notch on north side of PVC Punch north rim of box
MW-2	2109383.20	6064073.06	40.71 41.61	Notch on north side of PVC Punch north rim of box
MW-3	2109351.11	6064064.63	40.91 41.68	Notch on north side of PVC Punch north rim of box
MW-4	2109278.18	6064076.40	40.01 40.67	Notch on north side of PVC Punch north rim of box
MW-5	2109410.84	6064058.46	41.16 41.60	Notch on south side of PVC Punch south rim of box
MW-6	2109320.46	6064105.06	40.92 41.52	Notch on north side of PVC Punch north rim of box
MW-7	2109368.19	6064025.54	39.94 40.54	Notch on north side of PVC Punch north rim of box
MW-8	2109321.68	6064000.46	39.38 39.72	Notch on north side of PVC Punch north rim of box

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

**TABLE OF ELEVATIONS & COORDINATES  
ON MONITORING WELLS**  
SOMA ENVIRONMENTAL  
Oakland-E. 14 the St. "International Blvd"

WELL NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
MW-10	2109193.97	6063957.39	36.71 37.70	Notch on north side of PVC Punch north rim of box
MW-11	2109125.26	6064007.52	XXXX	NO ELEVATION , BOAT ON TOP
MW-12	2109121.85	6063865.00	36.84 36.87	Notch on north side of PVC

Bench mark: NGS Bench mark No.M 554. To reach the station from the intersection of Interstate Highway 880 and Hegenberger Rd in South Oakland go northeast on Hegenberger Rd for 0.5 MI to a side road right Baldwin St. Turn right and go south on Baldwin St for 0.35 MI to a T-intersection, 85th Ave. for 0.1 MI to a side road right, Railroad Ave. Turn right and go south on Railroad Ave. for 0.1 MI to the station on the left, east, side of the road in a large concrete headwall for a culvert.

Elevation = 14.20 NAVD88 Datum

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























# Appendix C

Chain of Custody Form and Laboratory Report  
for the  
First Quarter 2005 Monitoring Event

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**PAL** Pacific Analytical Laboratory

851 West Midway Ave. Suite 201  
Alameda, CA 94501

Phone (510) 864-0364

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04 April 2005

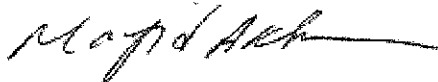
Joyce Bobek  
SOMA Environmental Engineering Inc.  
2680 Bishop Dr., Suite 203  
San Ramon, CA 94583

RE: 3609 International Blvd, Oakland

Work Order Number: 5030014

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,



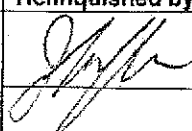
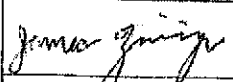
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Maïid Akhavan  
Laboratory Director

# 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# 5030014

Project No: 2331				Sampler: Tony Peria / John Lohman / Eric Jennings						Analyses/Method										
Project Name: 3609 International Blvd Oakland				Report To: Joyce Bobek																
Project P.O.: ---				Company: SOMA Environmental Engineering, Inc.																
Turnaround Time: Standard				Tel: 925-244-6600 Fax: 925-244-6601																
		Sampling Date/Time		Matrix			# of Containers		Preservatives			TPHg, BTEX, MIBE 8260B								
Lab No.	Sample ID	Date	Time	Soil	Water	Waste		HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE		Field Notes							
	MW-1	3/16/05	12:03		X		4 WAPS	X			X		Grab SAMPLE	X						
	MW-2	3/15/05	8:23																	
	MW-3	3/16/05	1:05																	
	MW-4	3/15/05	2:50																	
	MW-5	3/15/05	2:00																	
	MW-6	3/16/05	1:55																	
	MW-7	3/16/05	11:35																	
	MW-8	3/15/05	7:23																	
	MW-10	3/15/05	11:28																	
	<del>MW-9</del> JZ MW-12	3/15/05	11:00																	
Sampler Remarks: EDF Output Required				Relinquished by: 				Date/Time: 3/16/05 2:40 PM		Received by: 			Date/Time: 3/16/05 2:40 PM							





SOMA Environmental Engineering Inc. 2680 Bishop Dr., Suite 203 San Ramon CA, 94583	Project: 3609 International Blvd, Oakland Project Number: 2331 Project Manager: Joyce Bobek	Reported: 04-Apr-05 14:43
--	---	------------------------------

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	5030014-01	Water	16-Mar-05 12:03	16-Mar-05 15:12
MW-2	5030014-02	Water	15-Mar-05 03:23	16-Mar-05 15:12
MW-3	5030014-03	Water	16-Mar-05 01:08	16-Mar-05 15:12
MW-4	5030014-04	Water	15-Mar-05 02:50	16-Mar-05 15:12
MW-5	5030014-05	Water	15-Mar-05 02:00	16-Mar-05 15:12
MW-6	5030014-06	Water	16-Mar-05 01:35	16-Mar-05 15:12
MW-7	5030014-07	Water	16-Mar-05 11:35	16-Mar-05 15:12
MW-8	5030014-08	Water	15-Mar-05 02:23	16-Mar-05 15:12
MW-10	5030014-09	Water	15-Mar-05 11:28	16-Mar-05 15:12
MW-12	5030014-10	Water	15-Mar-05 11:00	16-Mar-05 15:12



SOMA Environmental Engineering Inc.  
 2680 Bishop Dr., Suite 203  
 San Ramon CA, 94583

Project: 3609 International Blvd, Oakland  
 Project Number: 2331  
 Project Manager: Joyce Bobek

Reported:  
 04-Apr-05 14:43

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>MW-1 (5030014-01RE1) Water</b> Sampled: 16-Mar-05 12:03 Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	44400	8600	ug/l	43	BC51001	16-Mar-05	17-Mar-05	EPA 8260B	
Benzene	3150	21.5	"	"	"	"	"	"	
Ethylbenzene	1090	21.5	"	"	"	"	"	"	
m&p-Xylene	2420	43.0	"	"	"	"	"	"	
o-xylene	436	21.5	"	"	"	"	"	"	
Toluene	811	21.5	"	"	"	"	"	"	
MTBE	7180	21.5	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		70-130	"	"	"	"	
Surrogate: Dibromofluoromethane		104 %		70-130	"	"	"	"	
Surrogate: Perdeuterotoluene		107 %		70-130	"	"	"	"	
<b>MW-2 (5030014-02RE1) Water</b> Sampled: 15-Mar-05 03:23 Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	5690	400	ug/l	2	BC51001	16-Mar-05	17-Mar-05	EPA 8260B	
Benzene	18.7	1.00	"	"	"	"	"	"	
Ethylbenzene	315	1.00	"	"	"	"	"	"	
m&p-Xylene	697	2.00	"	"	"	"	"	"	
o-xylene	179	1.00	"	"	"	"	"	"	
Toluene	120	1.00	"	"	"	"	"	"	
MTBE	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %		70-130	"	"	"	"	
Surrogate: Dibromofluoromethane		108 %		70-130	"	"	"	"	
Surrogate: Perdeuterotoluene		108 %		70-130	"	"	"	"	
<b>MW-3 (5030014-03) Water</b> Sampled: 16-Mar-05 01:08 Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	22300	2200	ug/l	11	BC51001	16-Mar-05	17-Mar-05	EPA 8260B	
Benzene	1280	5.50	"	"	"	"	"	"	
Ethylbenzene	729	5.50	"	"	"	"	"	"	
m&p-Xylene	1570	11.0	"	"	"	"	"	"	
o-xylene	300	5.50	"	"	"	"	"	"	
Toluene	456	5.50	"	"	"	"	"	"	
MTBE	2400	5.50	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		70-130	"	"	"	"	
Surrogate: Dibromofluoromethane		97.6 %		70-130	"	"	"	"	
Surrogate: Perdeuterotoluene		106 %		70-130	"	"	"	"	

Pacific Analytical Laboratory

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



SOMA Environmental Engineering Inc. 2680 Bishop Dr., Suite 203 San Ramon CA, 94583	Project: 3609 International Blvd, Oakland Project Number: 2331 Project Manager: Joyce Bobek	Reported: 04-Apr-05 14:43
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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>MW-4 (5030014-04) Water</b> Sampled: 15-Mar-05 02:50 Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	661	200	ug/l	1	BC51001	16-Mar-05	16-Mar-05	EPA 8260B	
Benzene	72.0	0.500	"	"	"	"	"	"	"
Ethylbenzene	39.7	0.500	"	"	"	"	"	"	"
m&p-Xylene	40.8	1.00	"	"	"	"	"	"	"
o-xylene	7.62	0.500	"	"	"	"	"	"	"
Toluene	4.13	0.500	"	"	"	"	"	"	"
MTBE	ND	0.500	"	"	"	"	"	"	"
Surrogate: 4-Bromofluorobenzene		104 %		70-130	"	"	"	"	"
Surrogate: Dibromofluoromethane		108 %		70-130	"	"	"	"	"
Surrogate: Perdeuterotoluene		103 %		70-130	"	"	"	"	"
<b>MW-5 (5030014-05) Water</b> Sampled: 15-Mar-05 02:00 Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	496	200	ug/l	1	BC51001	16-Mar-05	16-Mar-05	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	"
Ethylbenzene	ND	0.500	"	"	"	"	"	"	"
m&p-Xylene	ND	1.00	"	"	"	"	"	"	"
o-xylene	ND	0.500	"	"	"	"	"	"	"
Toluene	ND	0.500	"	"	"	"	"	"	"
MTBE	1.91	0.500	"	"	"	"	"	"	"
Surrogate: 4-Bromofluorobenzene		102 %		70-130	"	"	"	"	"
Surrogate: Dibromofluoromethane		110 %		70-130	"	"	"	"	"
Surrogate: Perdeuterotoluene		104 %		70-130	"	"	"	"	"
<b>MW-6 (5030014-06) Water</b> Sampled: 16-Mar-05 01:35 Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	18300	860	ug/l	4.3	BC51001	16-Mar-05	17-Mar-05	EPA 8260B	
Benzene	546	2.15	"	"	"	"	"	"	"
Ethylbenzene	705	2.15	"	"	"	"	"	"	"
m&p-Xylene	922	4.30	"	"	"	"	"	"	"
o-xylene	147	2.15	"	"	"	"	"	"	"
Toluene	126	2.15	"	"	"	"	"	"	"
MTBE	ND	2.15	"	"	"	"	"	"	"
Surrogate: 4-Bromofluorobenzene		105 %		70-130	"	"	"	"	"
Surrogate: Dibromofluoromethane		95.6 %		70-130	"	"	"	"	"
Surrogate: Perdeuterotoluene		106 %		70-130	"	"	"	"	"

Pacific Analytical Laboratory

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SOMA Environmental Engineering Inc. 2680 Bishop Dr., Suite 203 San Ramon CA, 94583	Project: 3609 International Blvd, Oakland Project Number: 2331 Project Manager: Joyce Bobek	Reported: 04-Apr-05 14:43
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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>MW-7 (5030014-07) Water</b> Sampled: 16-Mar-05 11:35    Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	209	200	ug/l	1	BC51001	16-Mar-05	16-Mar-05	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	1.00	"	"	"	"	"	"	
o-xylene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
MTBE	1.74	0.500	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.6 %		70-130	"	"	"	"	
Surrogate: Dibromofluoromethane		110 %		70-130	"	"	"	"	
Surrogate: Perdeuterotoluene		105 %		70-130	"	"	"	"	
<b>MW-8 (5030014-08RE1) Water</b> Sampled: 15-Mar-05 02:23    Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	11400	860	ug/l	4.3	BC51001	16-Mar-05	17-Mar-05	EPA 8260B	
Benzene	125	2.15	"	"	"	"	"	"	
Ethylbenzene	418	2.15	"	"	"	"	"	"	
m&p-Xylene	55.3	4.30	"	"	"	"	"	"	
o-xylene	ND	2.15	"	"	"	"	"	"	
Toluene	21.0	2.15	"	"	"	"	"	"	
MTBE	865	2.15	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %		70-130	"	"	"	"	
Surrogate: Dibromofluoromethane		103 %		70-130	"	"	"	"	
Surrogate: Perdeuterotoluene		109 %		70-130	"	"	"	"	
<b>MW-10 (5030014-09RE1) Water</b> Sampled: 15-Mar-05 11:28    Received: 16-Mar-05 15:12									
Gasoline (C6-C12)	4340	400	ug/l	2	BC51001	16-Mar-05	17-Mar-05	EPA 8260B	
Benzene	354	1.00	"	"	"	"	"	"	
Ethylbenzene	166	1.00	"	"	"	"	"	"	
m&p-Xylene	17.1	2.00	"	"	"	"	"	"	
o-xylene	ND	1.00	"	"	"	"	"	"	
Toluene	6.07	1.00	"	"	"	"	"	"	
MTBE	258	1.00	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		70-130	"	"	"	"	
Surrogate: Dibromofluoromethane		102 %		70-130	"	"	"	"	
Surrogate: Perdeuterotoluene		107 %		70-130	"	"	"	"	

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

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
MW-12 (5030014-10) Water    Sampled: 15-Mar-05 11:00    Received: 16-Mar-05 15:12										
Gasoline (C6-C12)	1890	200		ug/l	1	BC51001	16-Mar-05	17-Mar-05	EPA 8260B	
Benzene	4.25	0.500		"	"	"	"	"	"	
Ethylbenzene	6.38	0.500		"	"	"	"	"	"	
m&p-Xylene	ND	1.00		"	"	"	"	"	"	
o-xylene	ND	0.500		"	"	"	"	"	"	
Toluene	ND	0.500		"	"	"	"	"	"	
MTBE	30.6	0.500		"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		70-130		"	"	"	"	
Surrogate: Dibromofluoromethane		98.2 %		70-130		"	"	"	"	
Surrogate: Perdeuterotoluene		107 %		70-130		"	"	"	"	



SOMA Environmental Engineering Inc. 2680 Bishop Dr., Suite 203 San Ramon CA, 94583	Project: 3609 International Blvd, Oakland Project Number: 2331 Project Manager: Joyce Bobek	Reported: 04-Apr-05 14:43
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**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 BC51001 - EPA 5030 Water MS**

Blank (BC51001-BLK3)										
Prepared: 10-Mar-05 Analyzed: 16-Mar-05										
Surrogate: <i>p</i> -Bromofluorobenzene	50.7		ug/l	50.0		101	70-130			
Surrogate: Dibromofluoromethane	56.2		"	50.0		112	70-130			
Surrogate: Perdeuterotoluene	51.8		"	50.0		104	70-130			
Gasoline (C6-C12)	ND	200	"							
Benzene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
m&p-Xylene	ND	1.00	"							
o-xylene	ND	0.500	"							
Toluene	ND	0.500	"							
MTBE	ND	0.500	"							

LCS (BC51001-BS3)										
Prepared: 10-Mar-05 Analyzed: 16-Mar-05										
Surrogate: <i>p</i> -Bromofluorobenzene	54.5		ug/l	50.0		109	70-130			
Surrogate: Dibromofluoromethane	54.7		"	50.0		109	70-130			
Surrogate: Perdeuterotoluene	49.9		"	50.0		99.8	70-130			
Gasoline (C6-C12)	1890	200	"	2000		94.5	70-130			
Benzene	97.5	0.500	"	100		97.5	70-130			
Ethylbenzene	116	0.500	"	100		116	70-130			
m&p-Xylene	117	1.00	"	100		117	70-130			
o-xylene	113	0.500	"	100		113	70-130			
Toluene	100	0.500	"	100		100	70-130			
MTBE	101	0.500	"	100		101	70-130			

LCS Dup (BC51001-BSD3)										
Prepared: 10-Mar-05 Analyzed: 16-Mar-05										
Surrogate: <i>p</i> -Bromofluorobenzene	53.7		ug/l	50.0		107	70-130			
Surrogate: Dibromofluoromethane	55.1		"	50.0		110	70-130			
Surrogate: Perdeuterotoluene	49.6		"	50.0		99.2	70-130			
Gasoline (C6-C12)	2120	200	"	2000		106	70-130	11.5	20	
Benzene	95.8	0.500	"	100		95.8	70-130	1.76	20	
Ethylbenzene	111	0.500	"	100		111	70-130	4.41	20	
m&p-Xylene	112	1.00	"	100		112	70-130	4.37	20	
o-xylene	109	0.500	"	100		109	70-130	3.60	20	
Toluene	97.7	0.500	"	100		97.7	70-130	2.33	20	
MTBE	98.2	0.500	"	100		98.2	70-130	2.81	20	

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2680 Bishop Dr., Suite 203  
San Ramon CA, 94583

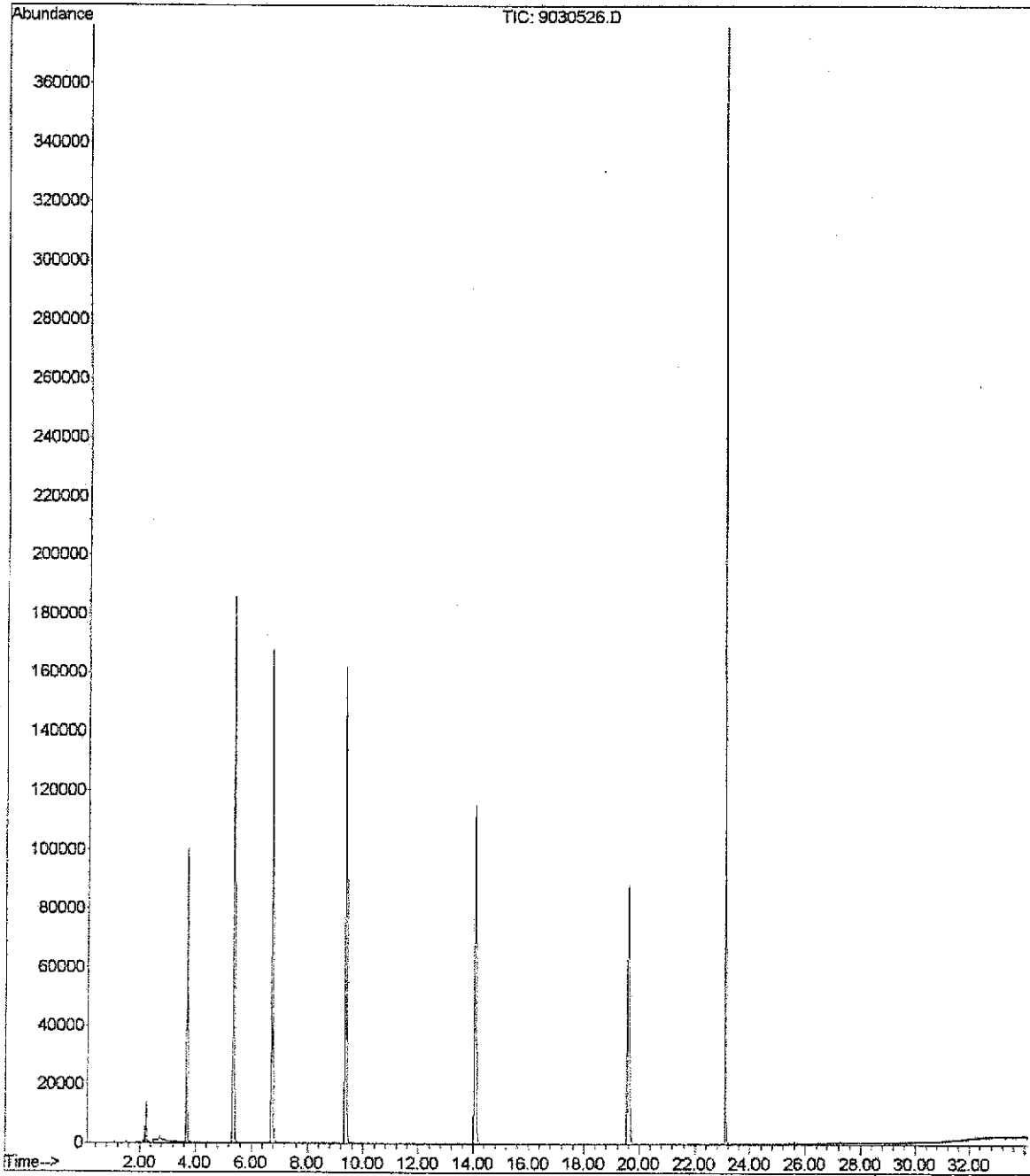
Project: 3609 International Blvd, Oakland  
Project Number: 2331  
Project Manager: Joyce Bobek

Reported:  
04-Apr-05 14:43

#### Notes and Definitions

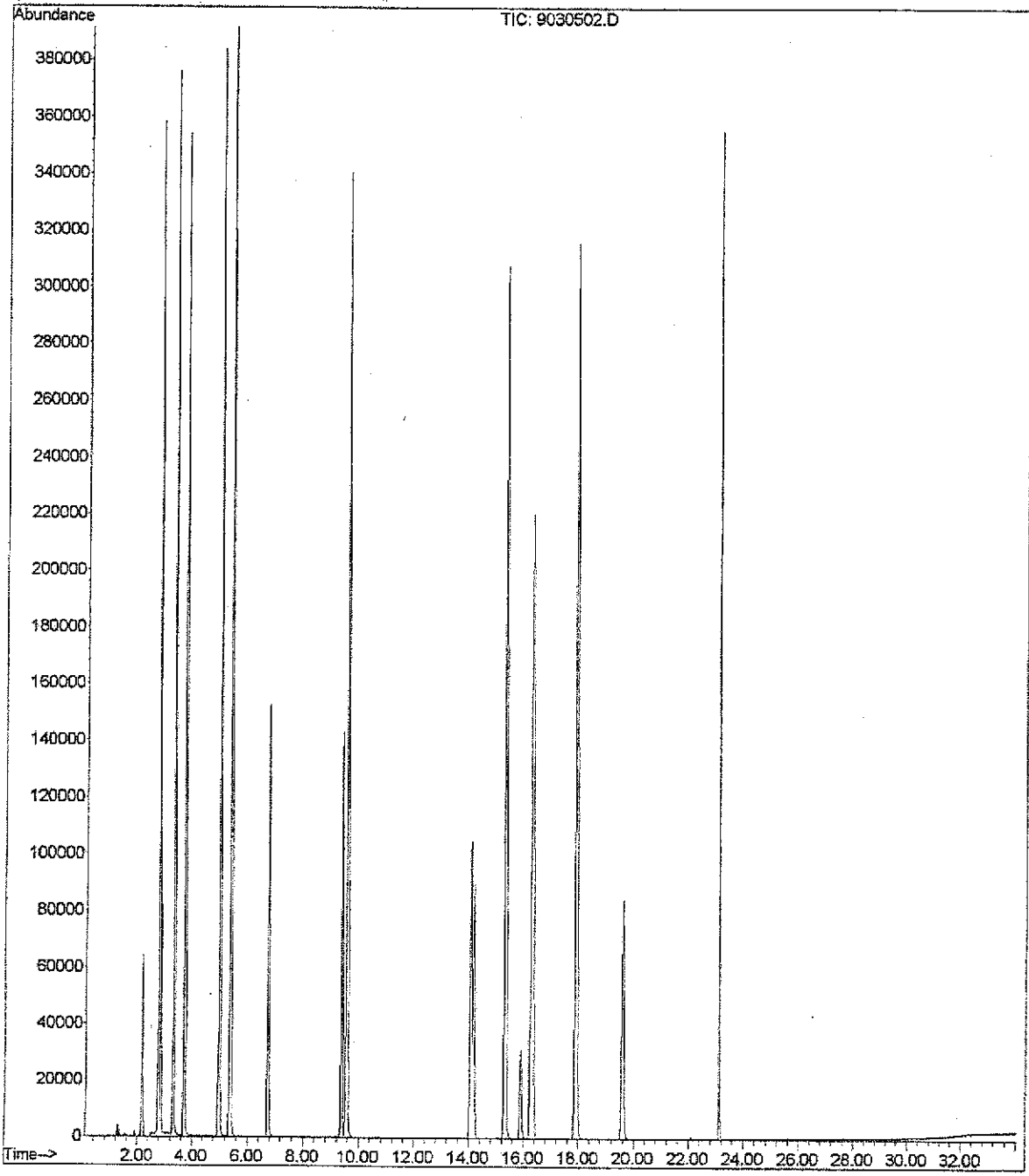
DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

File : C:\MSDCHEM\1\DATA\2005-Mar-09-1149.b\9030526.D  
Operator :  
Acquired : 10 Mar 2005 9:13 pm using AcqMethod VOXY  
Instrument : PAL GCMS  
Sample Name: BC51001-BLK2  
Misc Info :  
Vial Number: 26

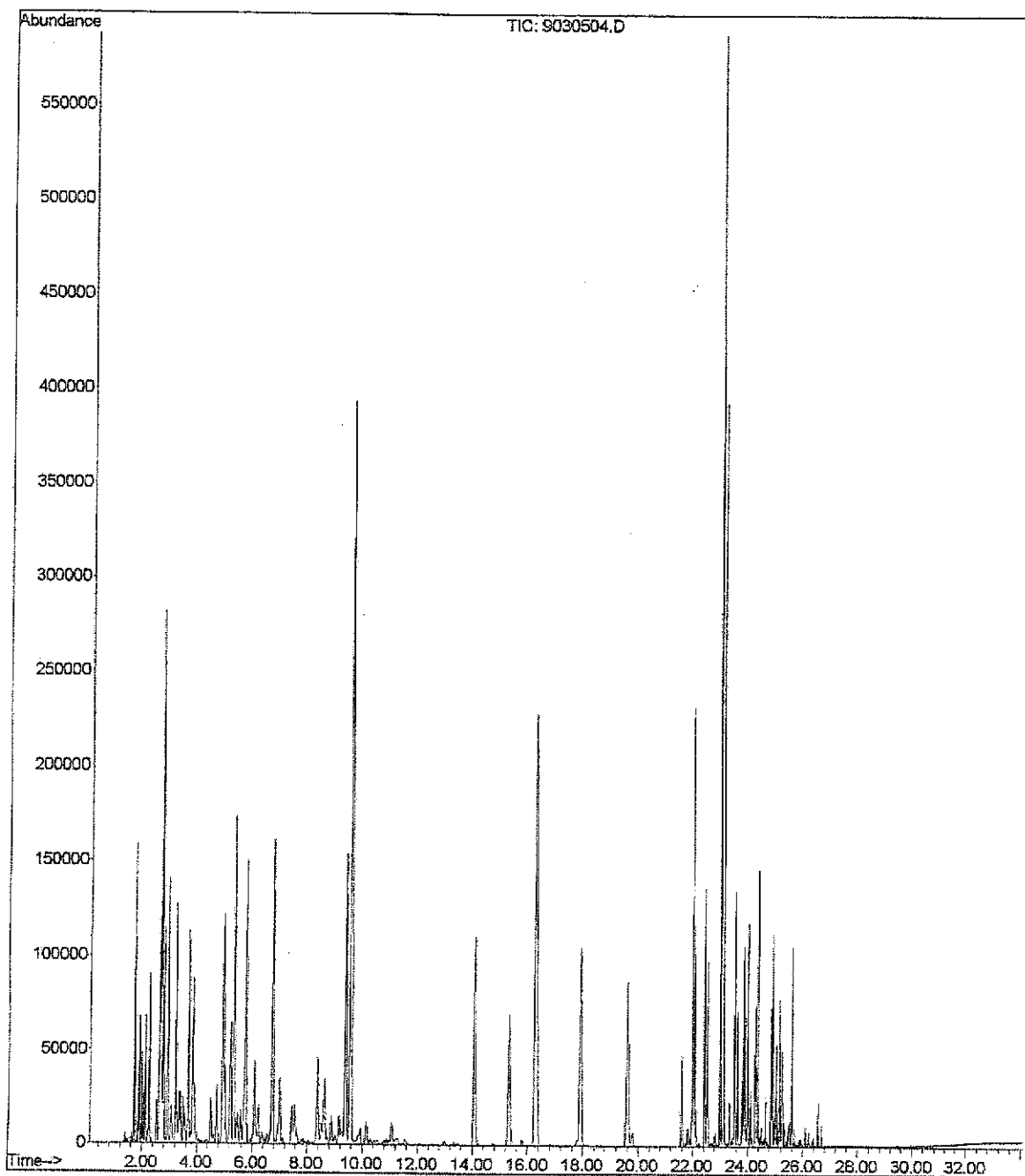




File : C:\MSDCHEM\1\DATA\2005-Mar-09-1149.b\9030502.D  
Operator :  
Acquired : 9 Mar 2005 12:58 pm using AcqMethod VOXY  
Instrument : PAL GCMS  
Sample Name: BC51001-BS1@voc  
Misc Info :  
Vial Number: 2



File :C:\MSDCHEM\1\DATA\2005-Mar-09-1149.b\9030504.D  
Operator :  
Acquired : 9 Mar 2005 2:33 pm using AcqMethod VOCCOXY  
Instrument : PAL GCMS  
Sample Name: BC51001-BS1@gas  
Misc Info :  
Vial Number: 4



# Appendix D

Chain of Custody Forms and Laboratory Reports  
for the  
Groundwater Extraction Treatment System



**Pacific Analytical Laboratory**

851 West Midway Ave. Suite 201  
Alameda, CA 94501

Phone (510) 864-0364

04 April 2005

Joyce Bobek

SOMA Environmental Engineering Inc.

2680 Bishop Dr., Suite 203

San Ramon, CA 94583

RE: 3609 International Blvd., Oakland

Work Order Number: 5030019

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 'Maid Akhavan', written over a horizontal line.

Maid Akhavan

Laboratory Director

# 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# 5030019

Project No: 2333				Sampler: <u>Mehran Nowrozi</u>				Analytes/Method																															
Project Name: 3809 International Blvd. Oakland				Report To: Joyce Bobek				TPHg, BTEX, MIBE 8260B																															
Project P.O.: ---				Company: SOMA Environmental Engineering, Inc.																																			
Turnaround Time: Standard				Tel: 925-244-6600 Fax: 925-244-6601																																			
Lab No.	Sample ID	Sampling Date/Time		Matrix			# of Containers				Preservatives				Field Notes																								
		Date	Time	Soil	Water	Waste					HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE																									
	Influent	3/21/05	11:10 AM		X																																		
	GAC-1		11:45 AM		X																																		
	PSP-1		12:00 AM		X																																		
Sampler Remarks: EDF Output Required				Relinquished by: <u>M. Nowrozi</u>				Date/Time: <u>3/21/05</u>				Received by: <u>M. J. Hill</u>				Date/Time: <u>3-21-05</u>																							



SOMA Environmental Engineering Inc. 2680 Bishop Dr., Suite 203 San Ramon CA, 94583	Project: 3609 International Blvd., Oakland Project Number: 2333 Project Manager: Joyce Bobek	Reported: 04-Apr-05 14:51
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**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Influent	5030019-01	Water	21-Mar-05 11:10	21-Mar-05 12:58
GAC-1	5030019-02	Water	21-Mar-05 11:05	21-Mar-05 12:58
PSP-1	5030019-03	Water	21-Mar-05 11:00	21-Mar-05 12:58



SOMA Environmental Engineering Inc.  
 2680 Bishop Dr., Suite 203  
 San Ramon CA, 94583

Project: 3609 International Blvd., Oakland  
 Project Number: 2333  
 Project Manager: Joyce Bobek

Reported:  
 04-Apr-05 14:51

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Influent (5030019-01) Water</b> Sampled: 21-Mar-05 11:10 Received: 21-Mar-05 12:58									
Gasoline (C6-C12)	6800	2200	ug/l	11	BC52101	21-Mar-05	22-Mar-05	EPA 8260B	
Benzene	747	5.50	"	"	"	"	"	"	
Ethylbenzene	92.0	5.50	"	"	"	"	"	"	
m&p-Xylene	559	11.0	"	"	"	"	"	"	
o-xylene	204	5.50	"	"	"	"	"	"	
Toluene	46.1	5.50	"	"	"	"	"	"	
MTBE	960	5.50	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	70-130		"	"	"	"	
Surrogate: Dibromofluoromethane		115 %	70-130		"	"	"	"	
Surrogate: Perdeuterotoluene		101 %	70-130		"	"	"	"	
<b>GAC-1 (5030019-02) Water</b> Sampled: 21-Mar-05 11:05 Received: 21-Mar-05 12:58									
Gasoline (C6-C12)	ND	200	ug/l	1	BC52101	21-Mar-05	22-Mar-05	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	1.00	"	"	"	"	"	"	
o-xylene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
MTBE	ND	0.500	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %	70-130		"	"	"	"	
Surrogate: Dibromofluoromethane		118 %	70-130		"	"	"	"	
Surrogate: Perdeuterotoluene		102 %	70-130		"	"	"	"	
<b>PSP-1 (5030019-03) Water</b> Sampled: 21-Mar-05 11:00 Received: 21-Mar-05 12:58									
Gasoline (C6-C12)	ND	200	ug/l	1	BC52101	21-Mar-05	22-Mar-05	EPA 8260B	
Benzene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
m&p-Xylene	ND	1.00	"	"	"	"	"	"	
o-xylene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
MTBE	ND	0.500	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.6 %	70-130		"	"	"	"	
Surrogate: Dibromofluoromethane		119 %	70-130		"	"	"	"	
Surrogate: Perdeuterotoluene		102 %	70-130		"	"	"	"	

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SOMA Environmental Engineering Inc.  
2680 Bishop Dr., Suite 203  
San Ramon CA, 94583

Project: 3609 International Blvd., Oakland  
Project Number: 2333  
Project Manager: Joyce Bobek

Reported:  
04-Apr-05 14:51

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

Analyte	Result	Reporting			Batch	Prepared	Analyzed	Method	Notes
		Limit	Units	Dilution					

Pacific Analytical Laboratory

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SOMA Environmental Engineering Inc.  
 2680 Bishop Dr., Suite 203  
 San Ramon CA, 94583

Project: 3609 International Blvd., Oakland  
 Project Number: 2333  
 Project Manager: Joyce Bobek

Reported:  
 04-Apr-05 14:51

**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 BC52101 - EPA 5030 Water MS**

**Blank (BC52101-BLK2)**

Prepared: 21-Mar-05 Analyzed: 25-Mar-05

Surrogate: 4-Bromofluorobenzene	49.4		ug/l	50.0		98.8	70-130			
Surrogate: Dibromofluoromethane	55.7		"	50.0		111	70-130			
Surrogate: Perdeuterotoluene	49.7		"	50.0		99.4	70-130			
Gasoline (C6-C12)	ND	200	"							
Benzene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
m&p-Xylene	ND	1.00	"							
o-xylene	ND	0.500	"							
Toluene	ND	0.500	"							

**LCS (BC52101-BS2)**

Prepared: 21-Mar-05 Analyzed: 23-Mar-05

Surrogate: 4-Bromofluorobenzene	52.5		ug/l	50.0		105	70-130			
Surrogate: Dibromofluoromethane	55.4		"	50.0		111	70-130			
Surrogate: Perdeuterotoluene	46.1		"	50.0		92.2	70-130			
Gasoline (C6-C12)	2110	200	"	2000		106	70-130			
Benzene	96.8	0.500	"	100		96.8	70-130			
Ethylbenzene	116	0.500	"	100		116	70-130			
m&p-Xylene	117	1.00	"	100		117	70-130			
o-xylene	116	0.500	"	100		116	70-130			
Toluene	97.3	0.500	"	100		97.3	70-130			

**LCS Dup (BC52101-BS2)**

Prepared: 21-Mar-05 Analyzed: 24-Mar-05

Surrogate: 4-Bromofluorobenzene	52.2		ug/l	50.0		104	70-130			
Surrogate: Dibromofluoromethane	55.8		"	50.0		112	70-130			
Surrogate: Perdeuterotoluene	46.6		"	50.0		93.2	70-130			
Gasoline (C6-C12)	1980	200	"	2000		99.0	70-130	6.36	20	
Benzene	99.0	0.500	"	100		99.0	70-130	2.25	20	
Ethylbenzene	117	0.500	"	100		117	70-130	0.858	20	
m&p-Xylene	119	1.00	"	100		119	70-130	1.69	20	
o-xylene	116	0.500	"	100		116	70-130	0.00	20	
Toluene	98.3	0.500	"	100		98.3	70-130	1.02	20	

Pacific Analytical Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

PAL  
PAL

SOMA Environmental Engineering Inc.  
2680 Bishop Dr., Suite 203  
San Ramon CA, 94583

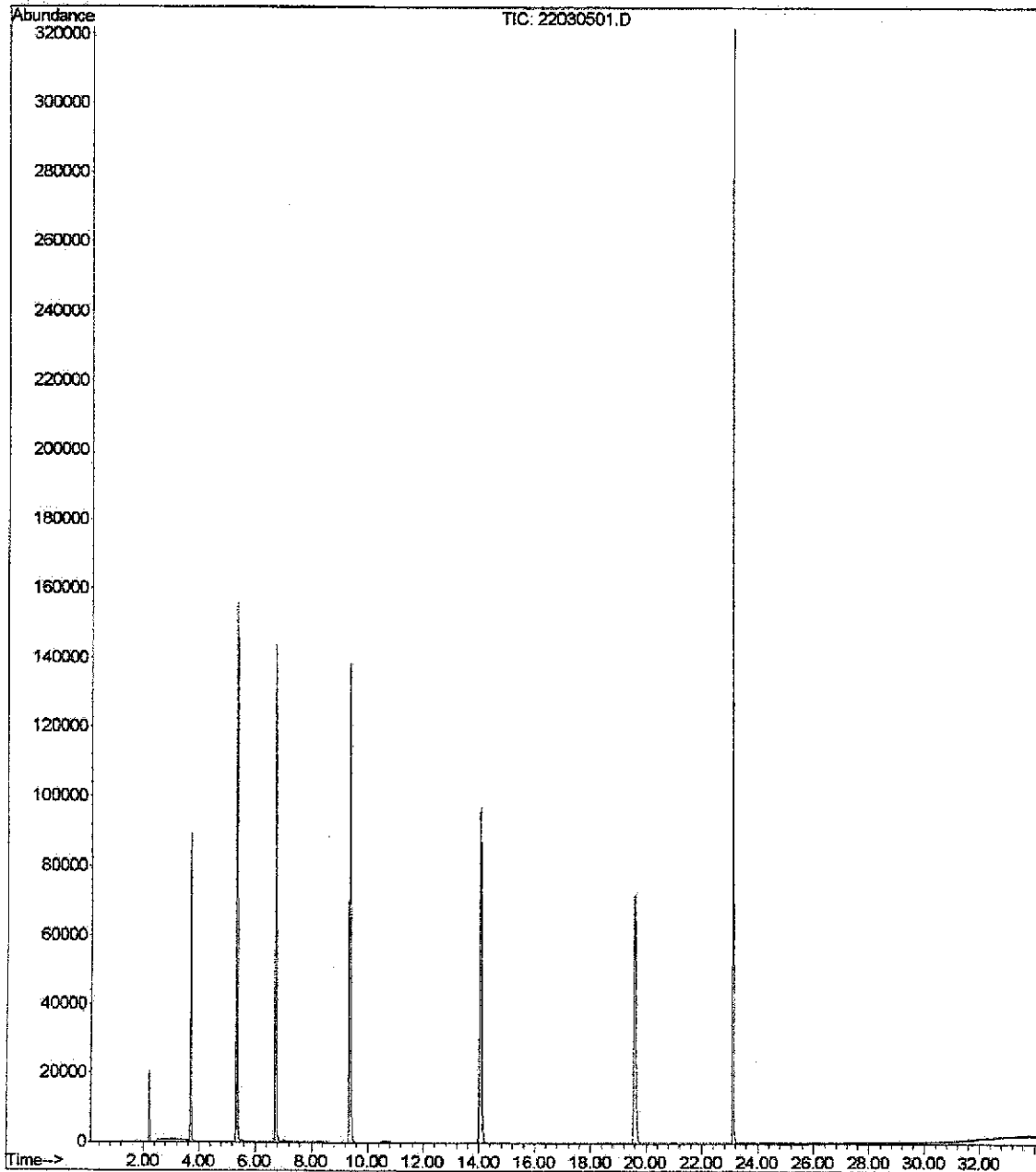
Project: 3609 International Blvd., Oakland  
Project Number: 2333  
Project Manager: Joyce Bobek

Reported:  
04-Apr-05 14:51

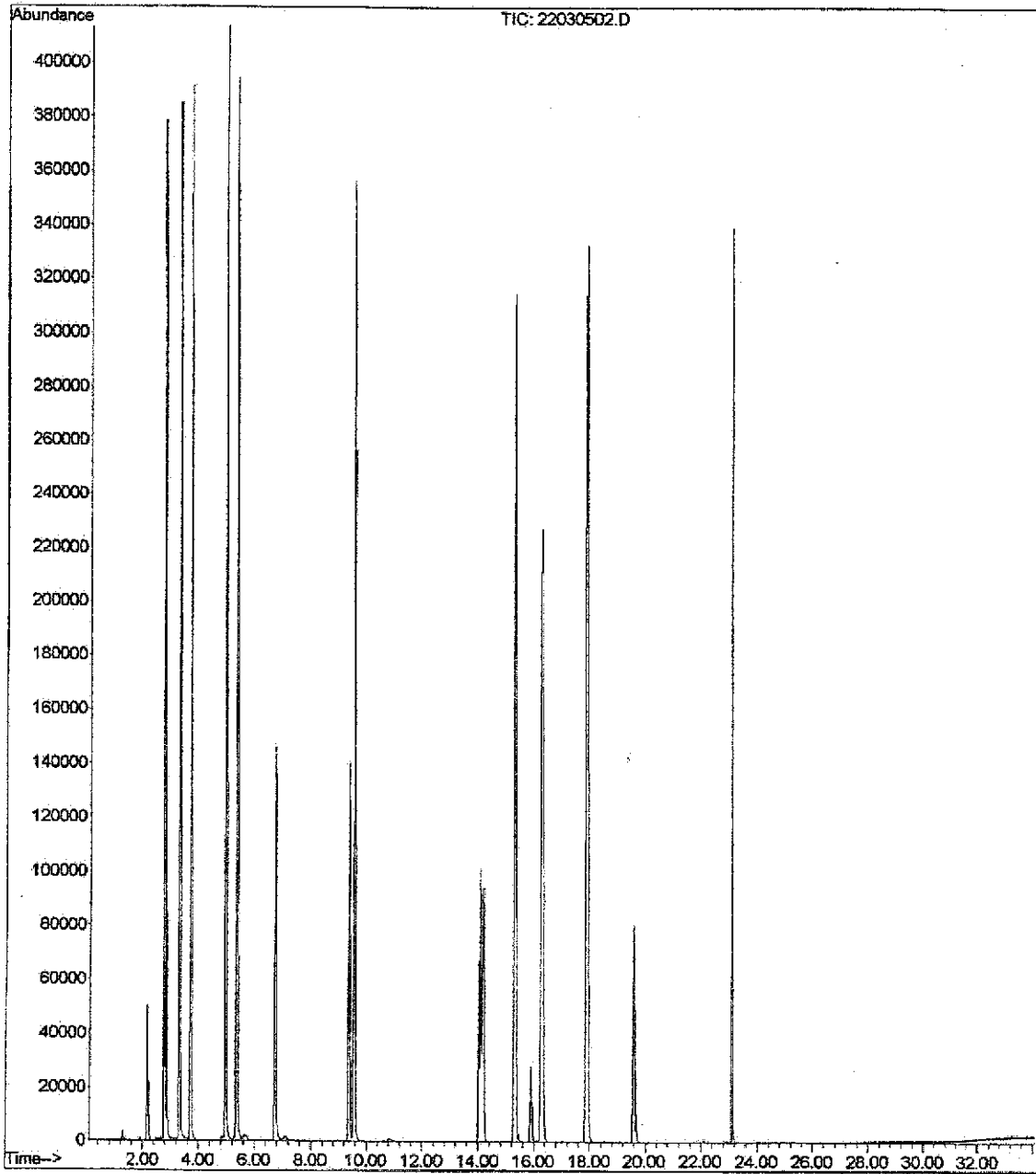
#### Notes and Definitions

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

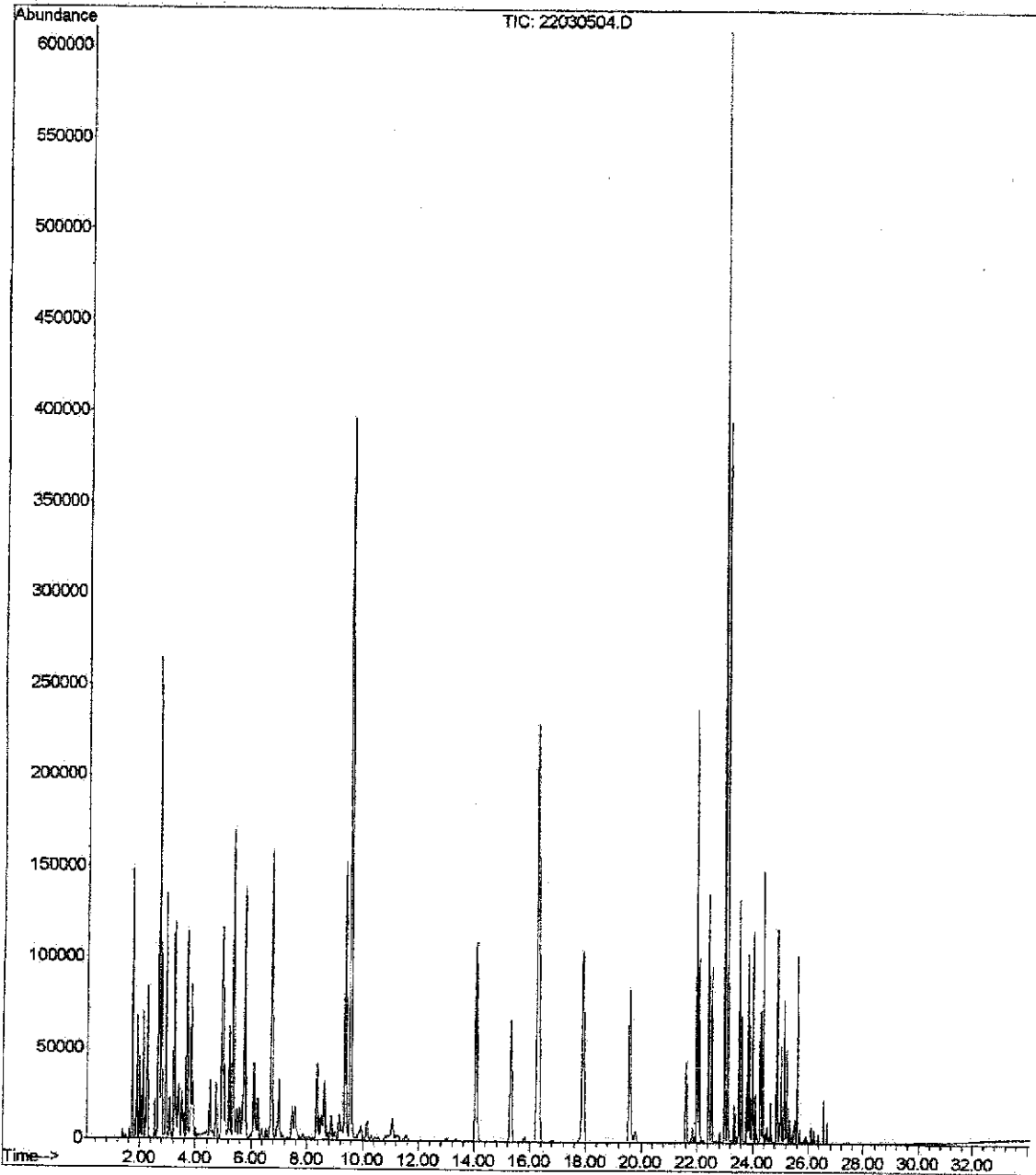
File : C:\MSDCHEM\1\DATA\2005-Mar-22-1217.b\22030501.D  
Operator :  
Acquired : 22 Mar 2005 12:35 pm using AcqMethod VOCOXY.M  
Instrument : PAL GCMS  
Sample Name: BC52101-BLK1  
Misc Info :  
Vial Number: 1



File :C:\MSDCHEM\1\DATA\2005-Mar-22-1217.b\22030502.D  
Operator :  
Acquired : 22 Mar 2005 1:18 pm using AcqMethod VOCOXY.M  
Instrument : PAL GCMS  
Sample Name: BC52101-BS1@btex  
Misc Info :  
Vial Number: 2



File : C:\MSDCHEM\1\DATA\2005-Mar-22-1217.b\22030504.D  
Operator :  
Acquired : 22 Mar 2005 2:45 pm using AcqMethod VOCOXY.M  
Instrument : PAL GCMS  
Sample Name: BC52101-BS1@gas  
Misc Info :  
Vial Number: 4





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

SOMA Environmental Engineering Inc.  
2680 Bishop Dr.  
Suite 203  
San Ramon, CA 94583

Date: 22-FEB-05  
Lab Job Number: 177535  
Project ID: 2333  
Location: 3609 International Blvd

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by:   
Project Manager

Reviewed by:   
Operations Manager

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Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number: 177535  
Client: SOMA Environmental Engineering Inc.  
Project: 2333  
Location: 3609 International Blvd  
Request Date: 02/07/05  
Samples Received: 02/07/05

This hardcopy data package contains sample and QC results for three water samples, requested for the above referenced project on 02/07/05. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):

No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):

High surrogate recovery was observed for bromofluorobenzene in the method blank for batch 98957; no target analytes were detected in the sample. No other analytical problems were encountered.







Total Volatile Hydrocarbons			
Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	02/07/05
Units:	ug/L	Received:	02/07/05
Batch#:	98925	Analyzed:	02/07/05

Field ID: PSP#1                      Lab ID: 177535-001  
 Type: SAMPLE                      Diln Fac: 1.000

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	70-141
Bromofluorobenzene (FID)	113	80-143

Field ID: GAC-1                      Lab ID: 177535-002  
 Type: SAMPLE                      Diln Fac: 1.000

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	70-141
Bromofluorobenzene (FID)	106	80-143

Field ID: INFLUENT                      Lab ID: 177535-003  
 Type: SAMPLE                      Diln Fac: 2.000

Analyte	Result	RL
Gasoline C7-C12	5,300	100

Surrogate	%REC	Limits
Trifluorotoluene (FID)	128	70-141
Bromofluorobenzene (FID)	116	80-143

Type: BLANK                      Diln Fac: 1.000  
 Lab ID: QC281750

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	92	70-141
Bromofluorobenzene (FID)	102	80-143

# GC19 TVH 'X' Data File (FID)

Sample Name : 177535-003,98925  
FileName : G:\GC19\DATA\038X007.raw  
Method : TVHBTXE  
Start Time : 0.00 min  
Scale Factor: 1.0

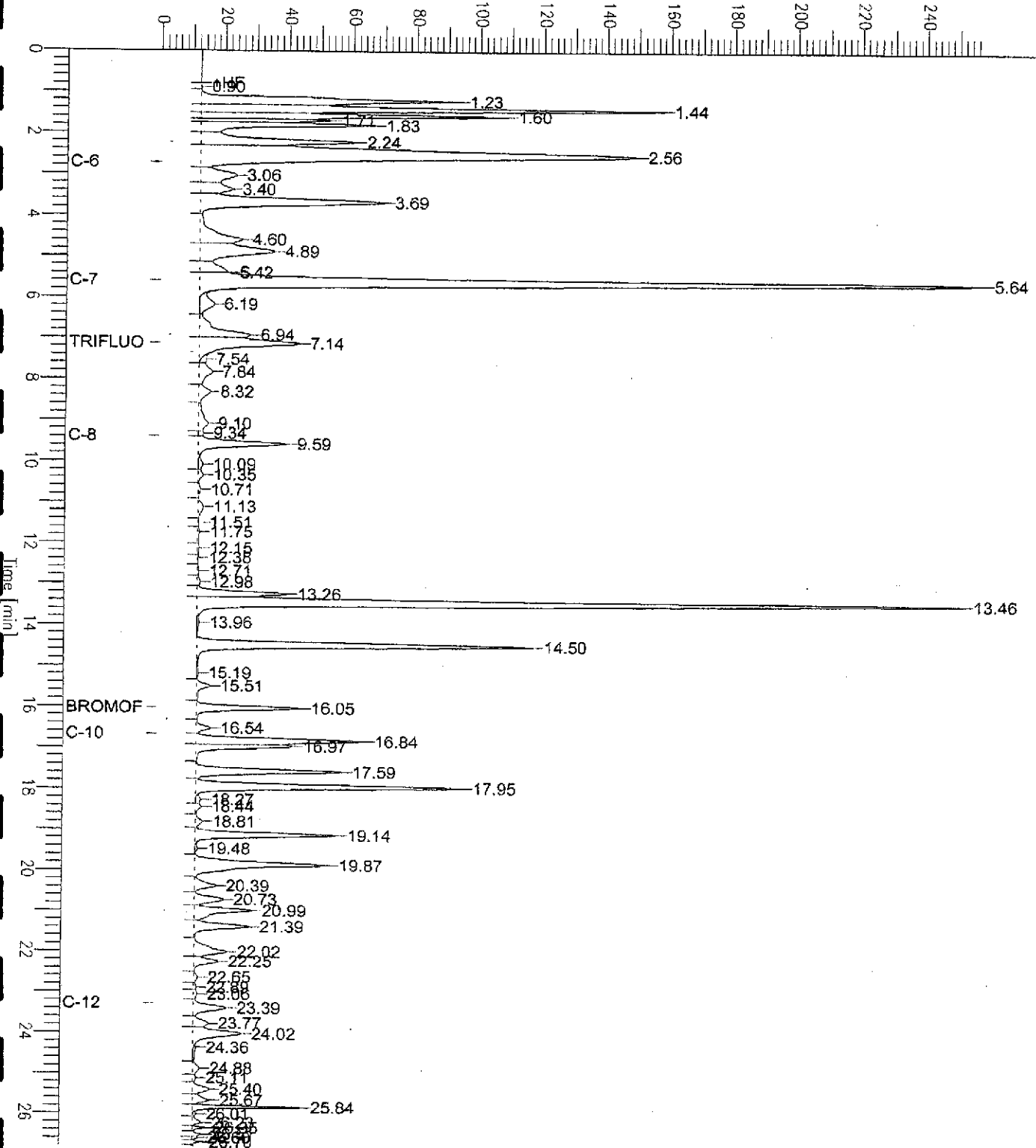
End Time : 26.80 min  
Plot Offset: -0 mV

Sample #: a1.0  
Date : 2/8/05 07:18 AM  
Time of Injection: 2/7/05 04:14 PM  
Low Point : -0.06 mV  
Plot Scale: 258.0 mV  
High Point : 257.93 mV

Page 1 of 1

Influent

Response [mV]

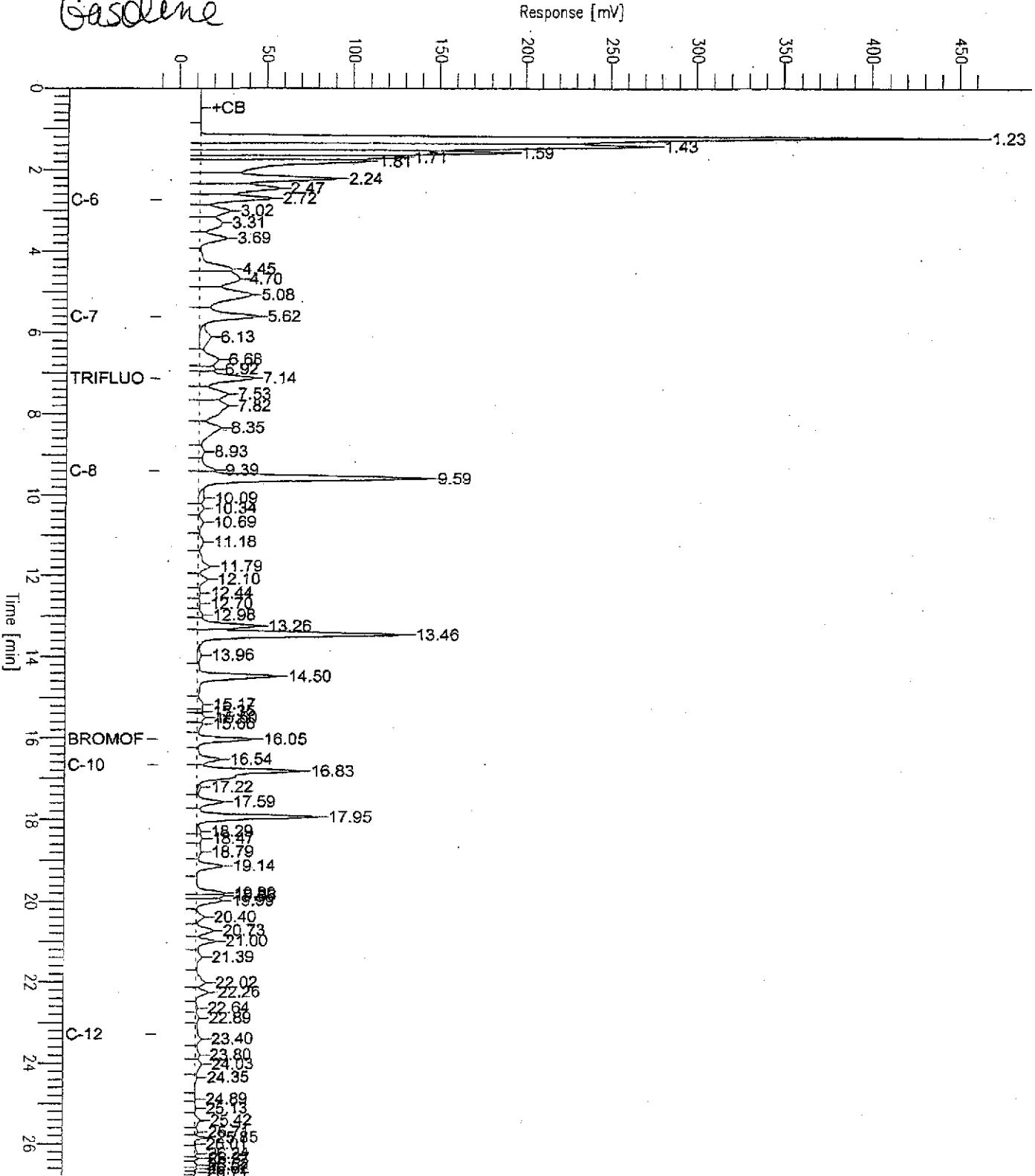


# GC19 TVH 'X' Data File (FID)

Sample Name : ccv/lcs,gc281752,98925,04ws2408,5/5000  
 FileName : G:\GC19\DATA\038x003.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min      End Time : 26.80 min  
 Scale Factor : 1.0      Plot Offset: -10 mV

Sample #:      Page 1 of 1  
 Date : 2/7/05 03:02 PM  
 Time of Injection: 2/7/05 01:25 PM  
 Low Point : -10.28 mV      High Point : 462.75 mV  
 Plot Scale: 473.0 mV

*Gasoline*





Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC281752	Batch#:	98925
Matrix:	Water	Analyzed:	02/07/05
Units:	ug/L		

Analyte	Spiked	Result	%REC Limits	
Gasoline C7-C12	10,000	10,840	108	80-120

Surrogate	%REC Limits	
Trifluorotoluene (FID)	119	70-141
Bromofluorobenzene (FID)	119	80-143



Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8015B
Field ID:	PSP#1	Batch#:	98925
MSS Lab ID:	177535-001	Sampled:	02/07/05
Matrix:	Water	Received:	02/07/05
Units:	ug/L	Analyzed:	02/07/05
Diln Fac:	1.000		

Type: MS Lab ID: QC281784

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<22.03	2,000	1,992	100	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	70-141
Bromofluorobenzene (FID)	109	80-143

Type: MSD Lab ID: QC281785

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,041	102	80-120	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	115	70-141
Bromofluorobenzene (FID)	112	80-143

RPD= Relative Percent Difference



Purgeable Aromatics by GC/MS

Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	PSP#1	Batch#:	98931
Lab ID:	177535-001	Sampled:	02/07/05
Matrix:	Water	Received:	02/07/05
Units:	ug/L	Analyzed:	02/07/05
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	5.0
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	REC	Limit
1,2-Dichloroethane-d4	99	80-120
Toluene-d8	97	80-120
Bromofluorobenzene	114	80-122



Purgeable Aromatics by GC/MS

Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	GAC-1	Batch#:	98931
Lab ID:	177535-002	Sampled:	02/07/05
Matrix:	Water	Received:	02/07/05
Units:	ug/L	Analyzed:	02/07/05
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	5.0
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	80-120
Toluene-d8	97	80-120
Bromofluorobenzene	121	80-122



Purgeable Aromatics by GC/MS

Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Field ID:	INFLUENT	Batch#:	98957
Lab ID:	177535-003	Sampled:	02/07/05
Matrix:	Water	Received:	02/07/05
Units:	ug/L	Analyzed:	02/08/05
Diln Fac:	10.00		

Analyte	Result	RL
MTBE	830	50
Benzene	560	50
Toluene	56	50
Ethylbenzene	56	50
m,p-Xylenes	460	50
o-Xylene	210	50

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	80-120
Toluene-d8	100	80-120
Bromofluorobenzene	109	80-122





Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC281769	Batch#:	98931
Matrix:	Water	Analyzed:	02/07/05
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	5.0
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	80-120
Toluene-d8	98	80-120
Bromofluorobenzene	113	80-122



Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC281876	Batch#:	98957
Matrix:	Water	Analyzed:	02/08/05
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	5.0
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%RBC	Limits
1,2-Dichloroethane-d4	99	80-120
Toluene-d8	97	80-120
Bromofluorobenzene	123 *	80-122

\*= Value outside of QC limits; see narrative

ND= Not Detected

RL= Reporting Limit

Page 1 of 1



Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	98931
Units:	ug/L	Analyzed:	02/07/05
Diln Fac:	1.000		

Type: BS Lab ID: QC281767

Analyte	Spiked	Result	%REC	Limits
Benzene	25.00	24.55	98	79-120
Toluene	25.00	24.64	99	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	80-120
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-122

Type: BSD Lab ID: QC281768

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	25.00	24.10	96	79-120	2	20
Toluene	25.00	24.47	98	80-120	1	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	80-120
Toluene-d8	101	80-120
Bromofluorobenzene	103	80-122

RPD= Relative Percent Difference



Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	177535	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	98957
Units:	ug/L	Analyzed:	02/08/05
Diln Fac:	1.000		

Type: BS Lab ID: QC281874

Analyte	Spiked	Result	%REC	Limits
Benzene	25.00	24.26	97	79-120
Toluene	25.00	25.21	101	80-120

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	80-120
Toluene-d8	102	80-120
Bromofluorobenzene	103	80-122

Type: BSD Lab ID: QC281875

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	25.00	23.97	96	79-120	1	20
Toluene	25.00	24.21	97	80-120	4	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	80-120
Toluene-d8	101	80-120
Bromofluorobenzene	104	80-122



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L   R E P O R T

Prepared for:

SOMA Environmental Engineering Inc.  
2680 Bishop Dr.  
Suite 203  
San Ramon, CA 94583

Date: 17-JAN-05  
Lab Job Number: 176933  
Project ID: 2333  
Location: 3609 International Blvd

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by:

  
Project Manager

Reviewed by:

  
Operations Manager

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CASE NARRATIVE

Laboratory number: 176933  
Client: SOMA Environmental Engineering Inc.  
Project: 2333  
Location: 3609 International Blvd  
Request Date: 01/03/05  
Samples Received: 01/03/05

This hardcopy data package contains sample and QC results for three water samples, requested for the above referenced project on 01/03/05. The samples were received on ice and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):  
No analytical problems were encountered.









**Total Volatile Hydrocarbons**

Lab #:	176933	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		
Matrix:	Water	Sampled:	01/03/05
Units:	ug/L	Received:	01/03/05

Field ID:	PSP#1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	97960
Lab ID:	176933-003	Analyzed:	01/03/05

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	3.6	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	*REC	Limits	Analysis
Trifluorotoluene (FID)	101	70-141	EPA 8015B
Bromofluorobenzene (FID)	98	80-143	EPA 8015B
Trifluorotoluene (PID)	90	59-133	EPA 8021B
Bromofluorobenzene (PID)	92	76-128	EPA 8021B

Type:	BLANK	Batch#:	97960
Lab ID:	QC278149	Analyzed:	01/03/05
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	*REC	Limits	Analysis
Trifluorotoluene (FID)	107	70-141	EPA 8015B
Bromofluorobenzene (FID)	104	80-143	EPA 8015B
Trifluorotoluene (PID)	96	59-133	EPA 8021B
Bromofluorobenzene (PID)	98	76-128	EPA 8021B

ND= Not Detected  
 RL= Reporting Limit

# GC19 TVH 'X' Data File (FID)

Sample Name : 176933-001,97960  
 FileName : G:\GC19\DATA\003X008.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor : 1.0

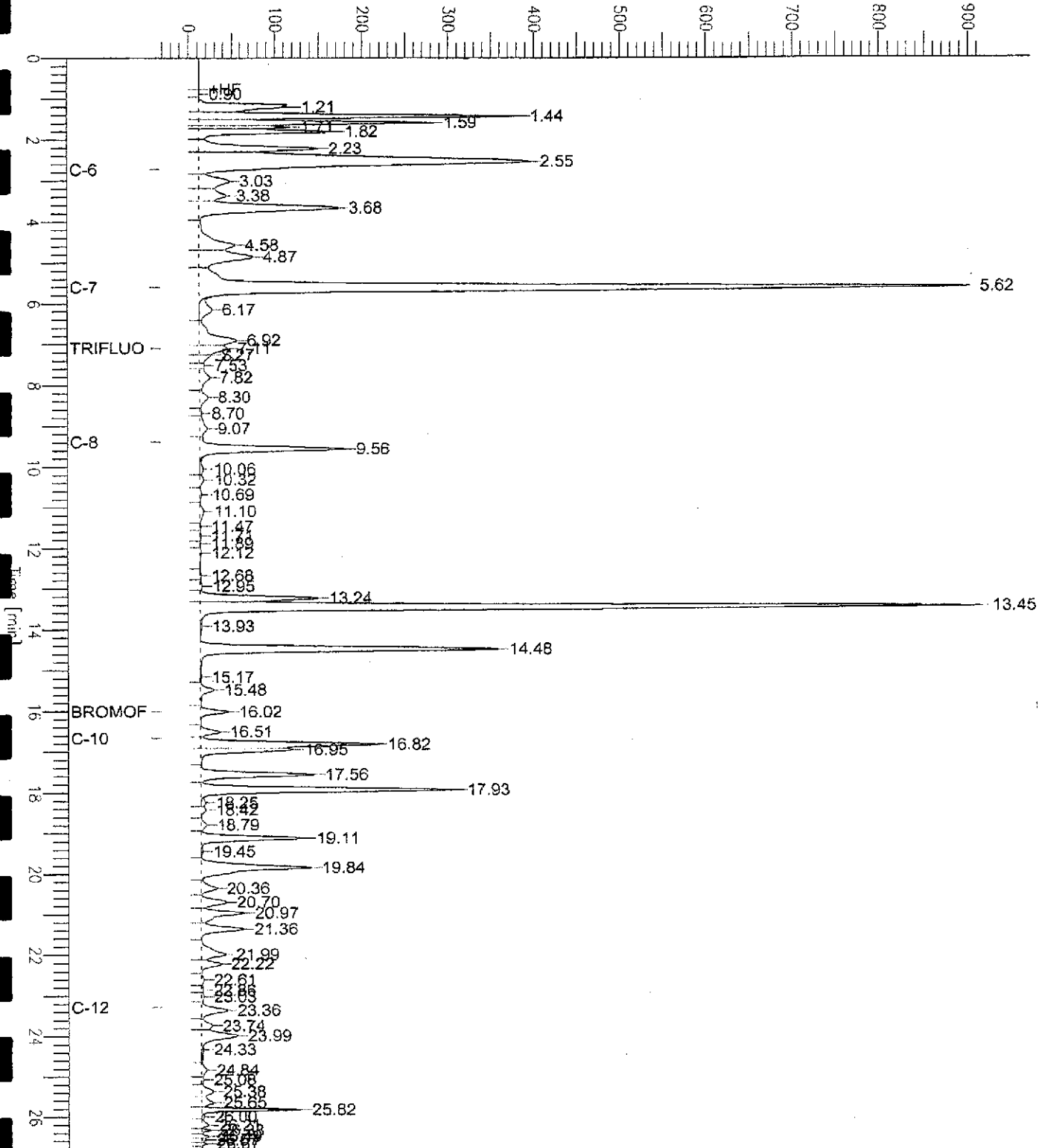
End Time : 26.80 min  
 Plot Offset : -33 mV

Sample #: a1.0  
 Date : 1/5/05 02:59 PM  
 Time of Injection: 1/3/05 04:12 PM  
 Low Point : -32.84 mV  
 High Point : 914.83 mV  
 Plot Scale: 947.7 mV

Page 1 of 1

*Influent*

Response [mV]



# GC19 TVH 'X' Data File (FID)

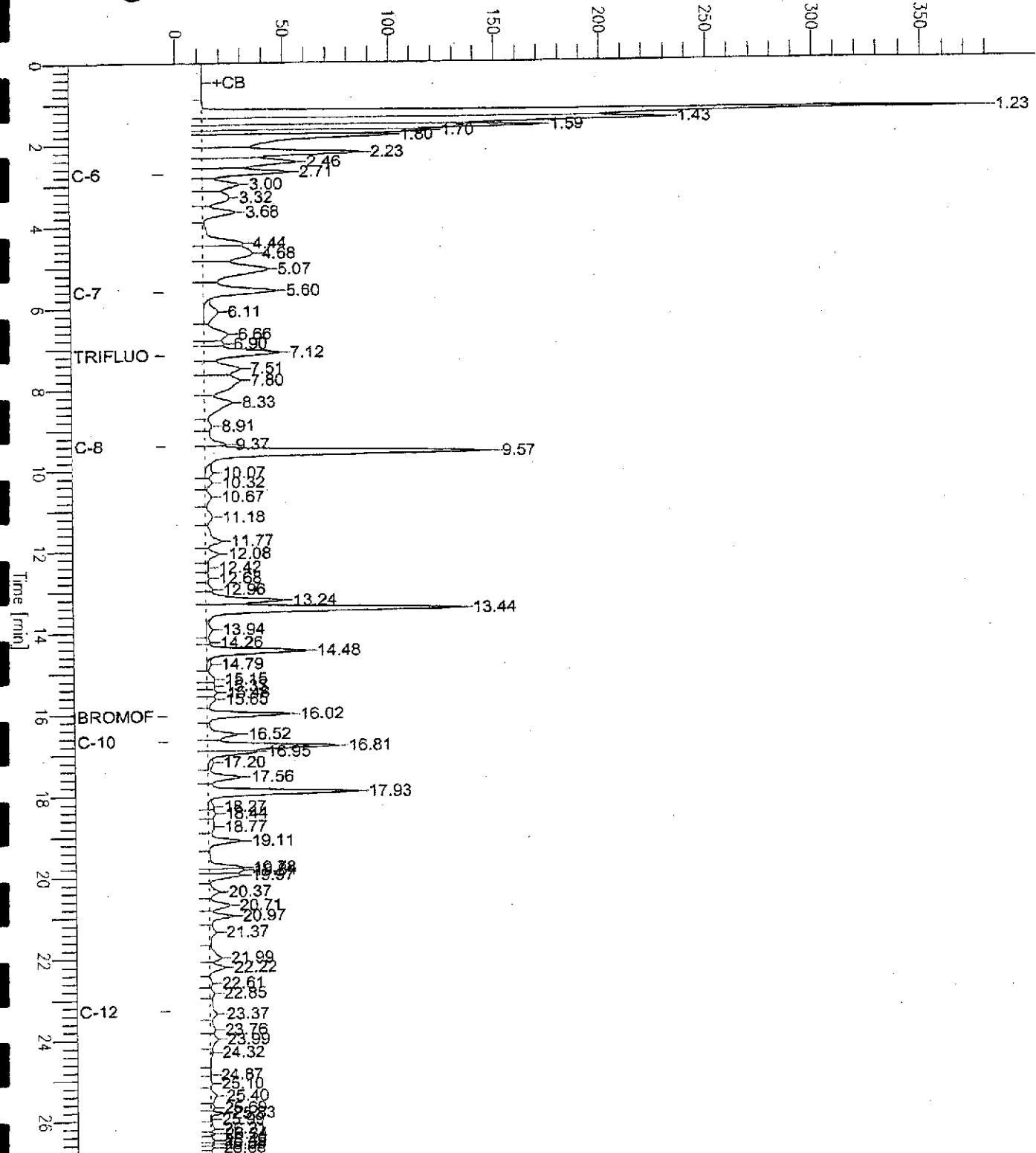
Sample Name : ccv/lcs,qc278151,97960,04ws2408,5/5000  
 FileName : g:\gc19\data\003x003.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor : 1.0

Sample # :  
 Date : 1/3/05 02:47 PM  
 Time of Injection: 1/3/05 12:51 PM  
 Low Point : -5.99 mV  
 High Point : 380.31 mV  
 Plot Scale: 386.3 mV

Page 1 of 1

Gasoline

Response [mV]





**Total Volatile Hydrocarbons**

Lab #:	176933	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333		
Matrix:	Water	Sampled:	01/03/05
Units:	ug/L	Received:	01/03/05

Type:	BLANK	Batch#:	97980
Lab ID:	QC278222	Analyzed:	01/04/05
Diln Fac:	1.000		

Analyte	Result	RI	Analysis
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	94	70-141	EPA 8015B
Bromofluorobenzene (FID)	90	80-143	EPA 8015B
Trifluorotoluene (PID)	84	59-133	EPA 8021B
Bromofluorobenzene (PID)	86	76-128	EPA 8021B



Batch QC Report

Total Volatile Hydrocarbons

Lab #:	176933	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC278150	Batch#:	97960
Matrix:	Water	Analyzed:	01/03/05
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	22.51	113	67-124
Benzene	20.00	19.48	97	80-120
Toluene	20.00	20.19	101	80-120
Ethylbenzene	20.00	20.09	100	80-120
m,p-Xylenes	20.00	19.84	99	80-120
o-Xylene	20.00	19.75	99	80-120

Surrogate	%REC	Limits
Trifluorotoluene (PID)	107	59-133
Bromofluorobenzene (PID)	114	76-128



Batch QC Report

Total Volatile Hydrocarbons

Lab #:	176933	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC278151	Batch#:	97960
Matrix:	Water	Analyzed:	01/03/05
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,271	114	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	135	70-141
Bromofluorobenzene (FID)	123	80-143



Batch QC Report

Total Volatile Hydrocarbons

Lab #:	176933	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC278223	Batch#:	97980
Matrix:	Water	Analyzed:	01/04/05
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	20.21	101	67-124
Benzene	20.00	18.92	95	80-120
Toluene	20.00	19.53	98	80-120
Ethylbenzene	20.00	19.34	97	80-120
m,p-Xylenes	20.00	18.51	93	80-120
o-Xylene	20.00	18.02	90	80-120

Surrogate	%REC	Limits
Trifluorotoluene (PID)	82	59-133
Bromofluorobenzene (PID)	84	76-128



Batch QC Report

Total Volatile Hydrocarbons

Lab #:	176933	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8015B
Field ID:	PSP#1	Batch#:	97960
MSS Lab ID:	176933-003	Sampled:	01/03/05
Matrix:	Water	Received:	01/03/05
Units:	ug/L	Analyzed:	01/03/05
Diln Fac:	1.000		

Type: MS Lab ID: QC278166

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<13.45	2,000	2,170	109	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	70-141
Bromofluorobenzene (FID)	114	80-143

Type: MSD Lab ID: QC278167

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,226	111	80-120	3	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	133	70-141
Bromofluorobenzene (FID)	118	80-143

RPD= Relative Percent Difference





Batch QC Report

**Total Volatile Hydrocarbons**

Lab #:	176933	Location:	3609 International Blvd
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2333	Analysis:	EPA 8021B
Field ID:	ZZZZZZZZZZ	Batch#:	97980
MSS Lab ID:	176951-001	Sampled:	01/04/05
Matrix:	Water	Received:	01/04/05
Units:	ug/L	Analyzed:	01/04/05
Diln Fac:	1.000		

Type: MS Lab ID: QC278301

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	5.125	20.00	23.22	90	52-142
Benzene	<0.07445	20.00	19.00	95	80-120
Toluene	<0.1070	20.00	20.26	101	80-120
Ethylbenzene	<0.05133	20.00	19.16	96	80-120
m,p-Xylenes	<0.05470	20.00	19.47	97	80-120
o-Xylene	<0.1042	20.00	18.69	93	80-120

Surrogate	%REC	Limits
Trifluorotoluene (PID)	95	59-133
Bromofluorobenzene (PID)	96	76-128

Type: MSD Lab ID: QC278302

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	21.64	83	52-142	7	23
Benzene	20.00	16.52	83	80-120	14	20
Toluene	20.00	17.39	87	80-120	15	20
Ethylbenzene	20.00	17.06	85	80-120	12	20
m,p-Xylenes	20.00	16.27	81	80-120	18	20
o-Xylene	20.00	16.23	81	80-120	14	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	85	59-133
Bromofluorobenzene (PID)	89	76-128