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**FIRST QUARTER, 1998  
GROUNDWATER MONITORING REPORT**

**USA STATION #57  
10700 MACARTHUR BOULEVARD  
OAKLAND, CALIFORNIA**

**MARCH, 1998**

**PREPARED FOR:**

**USA GASOLINE CORPORATION  
AND  
SAN JOAQUIN COUNTY  
PUBLIC HEALTH SERVICES / ENVIRONMENTAL HEALTH DIVISION**

**PREPARED BY:**

**GHH ENGINEERING, INC.  
8084 OLD AUBURN ROAD, SUITE E  
CITRUS HEIGHTS, CALIFORNIA 95610**

## TABLE OF CONTENTS

1.0	INTRODUCTION .....	1
2.0	BACKGROUND AND SITE HISTORY .....	1
2.1	Site Description .....	1
2.2	Regional Geology .....	2
2.3	Local Geology .....	2
2.4	Regional Hydrogeology .....	2
2.5	Local Hydrogeology .....	2
3.0	SCOPE OF WORK .....	3
4.0	GROUNDWATER MONITORING .....	3
4.1	Groundwater Elevations .....	3
4.2	Monitoring Well Purging .....	4
4.3	Groundwater Sampling .....	4
4.4	Groundwater Analyses .....	4
5.0	SUMMARY AND CONCLUSIONS .....	4
5.1	Groundwater Conditions .....	4
5.2	Results of Groundwater Laboratory Analyses .....	5
6.0	PREPARATION OF REPORT .....	6

### FIGURES

Figure 1	Site Location Map
Figure 2	Area Map
Figure 3	Site Plan
Figure 4	Groundwater Elevation Map, January 20,1988
Figure 5	Groundwater Hydrograph
Figure 6	TPH G, TPH D, BTEX, and MTBE Concentrations in Groundwater

### TABLES

Table 1	Groundwater Elevation Data
Table 2	Groundwater Analytical Data

### APPENDICES

Appendix A	Field Data Sheets
Appendix B	Laboratory Reports with Chain-of-Custody Documents

## **1.0 INTRODUCTION**

GHH Engineering, Inc. (GHH) is currently providing USA Gasoline Corporation (USA) professional environmental services to conduct groundwater monitoring and remediation at their former station #57 located at 10700 MacArthur Boulevard, Oakland, California, as shown on Figure 1. Mr. Srikanth Dasappa of USA has authorized GHH to prepare this "First Quarter, 1998, Groundwater Monitoring Report" (QMR) for the site. Investigations and ongoing monitoring and sampling activities conducted at the site are under the direction of the Alameda County Health Care Services Agency (County).

## **2.0 BACKGROUND AND SITE HISTORY**

### **2.1 Site Description**

The site was formerly a retail service station, which dispensed gasoline and diesel from four underground storage tanks (USTs) located on the southern portion of the site, as shown on Figures 2 and 3. The buildings have been demolished and the property restored to grade. The property is presently enclosed in a fenced compound within the Foothill Square Shopping Center parking lot.

The site is located at the southeast corner of the shopping center, which is bounded by 106th Avenue to the north, Foothill Boulevard to the east, 108th Avenue to the south, and MacArthur Boulevard to the west within the City of Oakland. The property immediately surrounding the site is part of the asphalt parking area for the shopping center. Residential properties are present across 108th Avenue to the south of the site. East of the site beyond Foothill Boulevard is Highway 580, a multi-lane freeway.

On July 19, 1994, three 12,000-gallon gasoline tanks and one 8,000-gallon diesel tank were excavated and removed from the site. Assessment and remediation activities have occurred at the site from July, 1994 to the present. Approximately 775 cubic yards of soil was excavated from the site during tank removal and over-excavation efforts in 1994. This soil was removed from the vicinities of the former UST tanks and the fuel distribution lines.

Sixteen soil borings were drilled and sampled at the site, and eight were completed as groundwater monitoring wells. The following reports describe the assessment and remediation efforts at the site.

- Preliminary Site Assessment Investigation, dated March 13, 1987, Pacific Environmental Group
- UST's Removal Soil Sampling and Over-Excavation, dated October 6, 1994, Western Geo-Engineers
- Supplementary Site Assessment Report, dated April 24, 1995, Alton Geoscience
- Supplementary Site Assessment Report, dated February 26, 1996, Alton Geoscience

**FIRST QUARTER, 1998  
GROUNDWATER MONITORING REPORT  
USA STATION #57, OAKLAND  
MARCH, 1998**

## **2.2 Regional Geology**

The site is located in the East Bay Plain in the eastern part of the San Francisco Bay area. Much of the East Bay Plain is underlain by the Temescal formation and the Alameda formation, which are of Pleistocene age (DWR, 1975). The Temescal formation consists of interfingering layers of clayey gravel, sandy silt clay, and various clay silt sand mixtures. The formation varies in thickness to a maximum of approximately 60-feet. Underlying the Temescal formation is the Alameda formation, which consists of unconsolidated continental and marine gravels, sands, silts, and clays, with some shells and organic material in places. The Alameda formation has a maximum known thickness of 1,050-feet (Radbruch, 1957). These formations thin to the east, where they pinch out against the Berkeley Hills.

## **2.3 Local Geology**

The site is located in Oakland, California, at an elevation of approximately 80-feet above mean sea level (National Geodetic Vertical Datum, 1929). The site is near the eastern edge of the East Bay Plain and the Berkeley Hills rise abruptly east of the site. The ground surface at the site slopes to the southwest. The underlying geologic formations thin to the east in the East Bay Plain and are very thin in the vicinity of the site. Bedrock, which makes up the Berkeley Hills is present at shallow depths beneath the site and outcrops can be seen to the east of the site. This bedrock was encountered during the prior site assessment and remediation activities.

## **2.4 Regional Hydrogeology**

The site is located in the East Bay Plain Groundwater Area, a subarea of the Santa Clara Valley Basin. Groundwater occurs in unconsolidated Quaternary alluvium, including the Alameda formation (DWR, 1975). Most water used in the area is imported from other areas of the state by the East Bay Municipal Utilities District. Scattered wells supply individual dwellings and a few commercial and industrial developments (DWR, 1975). No water wells have been identified within 250-feet of the site. Groundwater flows in a generally westerly direction toward San Francisco Bay.

## **2.5 Local Hydrogeology**

Groundwater is reportedly present in the bedrock beneath the site. The earlier assessment work documents that bedrock consisting of sandstone and silt stone was found as shallow as 13-feet beneath ground surface beneath the site. Groundwater was first encountered at 40-feet bgs while drilling MW-3, with the groundwater level stabilizing at about 13-feet bgs.

Soil was removed to a depth of approximately 20-feet bgs. During the over-excavation activities no groundwater was encountered. It is expected that the bedrock surface may control the presence and movement of the shallow groundwater in the alluvial deposits beneath the site.

**FIRST QUARTER, 1998  
GROUNDWATER MONITORING REPORT  
USA STATION #57, OAKLAND  
MARCH, 1998**

The earlier reports indicate that groundwater was present in both the alluvial deposits and bedrock. Groundwater monitoring wells have been perforated in only the bedrock and in both the alluvium and bedrock. There appear to be different water levels or piezometric surfaces in the two lithologies. Groundwater flow was reported in 1995 to be in a north-northeasterly direction at a gradient of 0.015-feet per foot. In 1996, there was a perceived piezometric low in the vicinity of S-1, S-2 and MW-7.

### **3.0 SCOPE OF WORK**

The following is a brief summary of the scope of work performed by GHH, which included groundwater monitoring on January 20, 1998.

- Locate and measure depths to groundwater in monitoring wells S-1, S-2 and MW-3 through MW-8.
- Purge a minimum of three equivalent well volumes of groundwater from each of the sampled wells, while monitoring pH.
- Collect groundwater samples from the purged monitoring wells.
- Analyze water samples for TPH in the gasoline and diesel ranges (TPH G and TPH D), benzene, toluene, ethylbenzene and xylene (BTEX) and methyl-tert-butyl-ether (MTBE) using EPA Methods 8015 Modified and 8020, respectively.
- Prepare this QMR for submittal to USA and the County.

### **4.0 GROUNDWATER MONITORING**

The following section discusses field protocol used during data collection for this QMR.

#### **4.1 Groundwater Elevations**

Prior to gauging depths to groundwater, the groundwater monitoring wells were checked for the presence of free phase floating hydrocarbon compounds using an interface probe. No free product was present. Depths to groundwater measurements were then taken from each well from surveyed marks on the casing using an electric water level sensor or interface probe. Calculated groundwater elevations are summarized in Table 1. The field data sheets are included in Appendix A.

**FIRST QUARTER, 1998  
GROUNDWATER MONITORING REPORT  
USA STATION #57, OAKLAND  
MARCH, 1998**

#### **4.2 Monitoring Well Purging**

The monitoring wells were purged using an above ground Honda pump, until a minimum of three equivalent well volumes of water were removed from each well. Three well volumes could not be recovered from wells MW-3 and MW-5 prior to sampling. These wells were purged dry and sampled after recharge. Groundwater purged from the wells was placed into Department of Transportation (DOT) approved 55-gallon drums and stored on-site prior to disposal by USA.

Prior to each use, all purging and sampling equipment was washed in a trisodium phosphate solution and rinsed in potable water to reduce the potential for cross-contamination between wells. During the groundwater purging operations pH was monitored and recorded on field data sheets, which are included in Appendix A. Groundwater purging was discontinued when the physical parameter stabilized in the purged groundwater.

#### **4.3 Groundwater Sampling**

Prior to sampling, the wells were allowed to recharge to a minimum of 80 percent of their initial static water levels. Groundwater samples were then collected from each well using a new disposable bailer. The samples were placed into the appropriate laboratory prepared containers, using proper sample handling and chain-of-custody (COC) protocol established by the USEPA. The samples were labeled with the date, time, identifying well number, stored in a cooler at 4° Centigrade or less, and transported to a state certified laboratory under completed COC documentation.

#### **4.4 Groundwater Analyses**

Groundwater samples were analyzed for TPH G, TPH D, BTEX, and MTBE using EPA Methods 8015 Modified and 8020, respectively. The analyses were conducted by Sierra Laboratories (Sierra), a California State certified laboratory in accordance with state guidelines and EPA protocol.

### **5.0 SUMMARY AND CONCLUSIONS**

The following sections discuss findings from the groundwater gauging and sampling activities conducted on January 20, 1998.

#### **5.1 Groundwater Conditions**

Groundwater data collected at the site on January 20, 1998 indicate that the depths to groundwater ranged from 7.05 to 19.07-feet bgs.

**FIRST QUARTER, 1998  
GROUNDWATER MONITORING REPORT  
USA STATION #57, OAKLAND  
MARCH, 1998**

The groundwater elevations ranged from 69.37 to 61.75-feet above mean sea level (MSL). The groundwater elevations across the site have increased between 1.92-feet in MW-7 and 7.09-feet in MW-4. MW-4 is located next to a utility duct, which in the past has been filled with water to approximately 6-feet bgs. The high groundwater measured in MW-4 may be due to recharge from the utility duct. Groundwater elevations are shown on Figure 4.

The most recent groundwater measurements do not indicate a consistent direction of groundwater flow. This inconsistency may be due in part to the large amount of precipitation at the site and/or the variations in well construction. Monitoring wells S-1, MW-6 and MW-7 are completed in the underlying bedrock, while wells MW-4 and MW-5 are in the overburden above the bedrock. Complicating the site hydrology further is the presence of a gravel zone in well MW-4, which is not present in the other shallower well. The variable water levels shown on the hydrograph (Figure 5) measured in the wells may be the result of different well responses to the changing water levels in the aquifer. Continued monitoring of these wells may provide some clarification of the site hydrology.

## **5.2 Results of Groundwater Laboratory Analyses**

The January 20, 1998 analytical results reported TPH G in three of the eight monitoring wells sampled (S-1, S-2 and MW-3). Concentrations of TPH G for this sampling event ranged from 1,800 micrograms per liter ( $\mu\text{g/l}$ ) in S-1 to 3,900  $\mu\text{g/l}$  in MW-3. TPH G was non-detect (ND) at the method detection limit in monitoring wells MW-4, MW-5, MW-6, MW-7, and MW-8. TPH D was ND at the method detection limit in monitoring wells MW-4 through MW-8. TPH D was present in S-1, S-2 and MW-3 at 200  $\mu\text{g/l}$ , 2,300  $\mu\text{g/l}$ , and 550  $\mu\text{g/l}$ , respectively. Benzene was ND in all wells, except S-2 and MW-3. Benzene was present at 4.6  $\mu\text{g/l}$  in S-2 and 7.9  $\mu\text{g/l}$  in MW-3. MTBE ranged from ND in wells MW-3 through MW-8 to 190  $\mu\text{g/l}$  in S-2. Analytical results are summarized in Table 2, and shown on Figure 6. Copies of laboratory reports and COC documentation are included in Appendix B.

At this time, it is GHH's opinion that monitoring should be continued at this site.

FIRST QUARTER, 1998  
GROUNDWATER MONITORING REPORT  
USA STATION #57, OAKLAND  
MARCH, 1998

6.0 PREPARATION OF REPORT

Firm Preparing Report

GHH Engineering, Inc.  
8084 Old Auburn Road, Suite E  
Citrus Heights, California 95610


Report Prepared by:

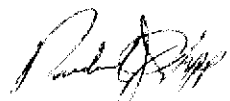
This report was prepared by GHH Engineering, Inc. Mr. Richard J. Zipp, Hydrogeologist, is the qualified person responsible for overseeing this project. This report was written by Ms. Kathleen A. Waldo, Staff Engineer, and reviewed for technical content by Mr. Vern A. Bennett, Project Manager, and Mr. Zipp.

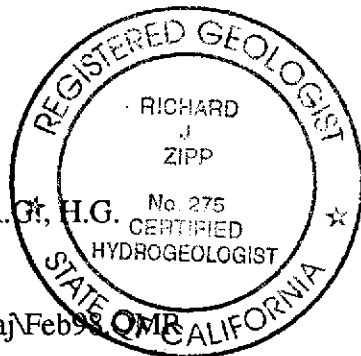
The analyses, conclusions and recommendations submitted in this report are based upon the best available information obtained from the field investigation, persons knowledgeable about the site, and local government agencies. However, the regulatory agencies may have additional recommendations after they have reviewed and evaluated the data. This report was prepared to assist USA in the evaluation of the site.

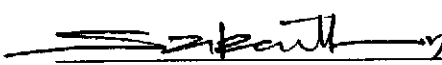
This report has been reviewed by the client and they are responsible for the findings herein. If you have any questions or need additional information please call the undersigned at (916) 723-1776.

Thank You,

  
Vern A. Bennett  
Project Manager

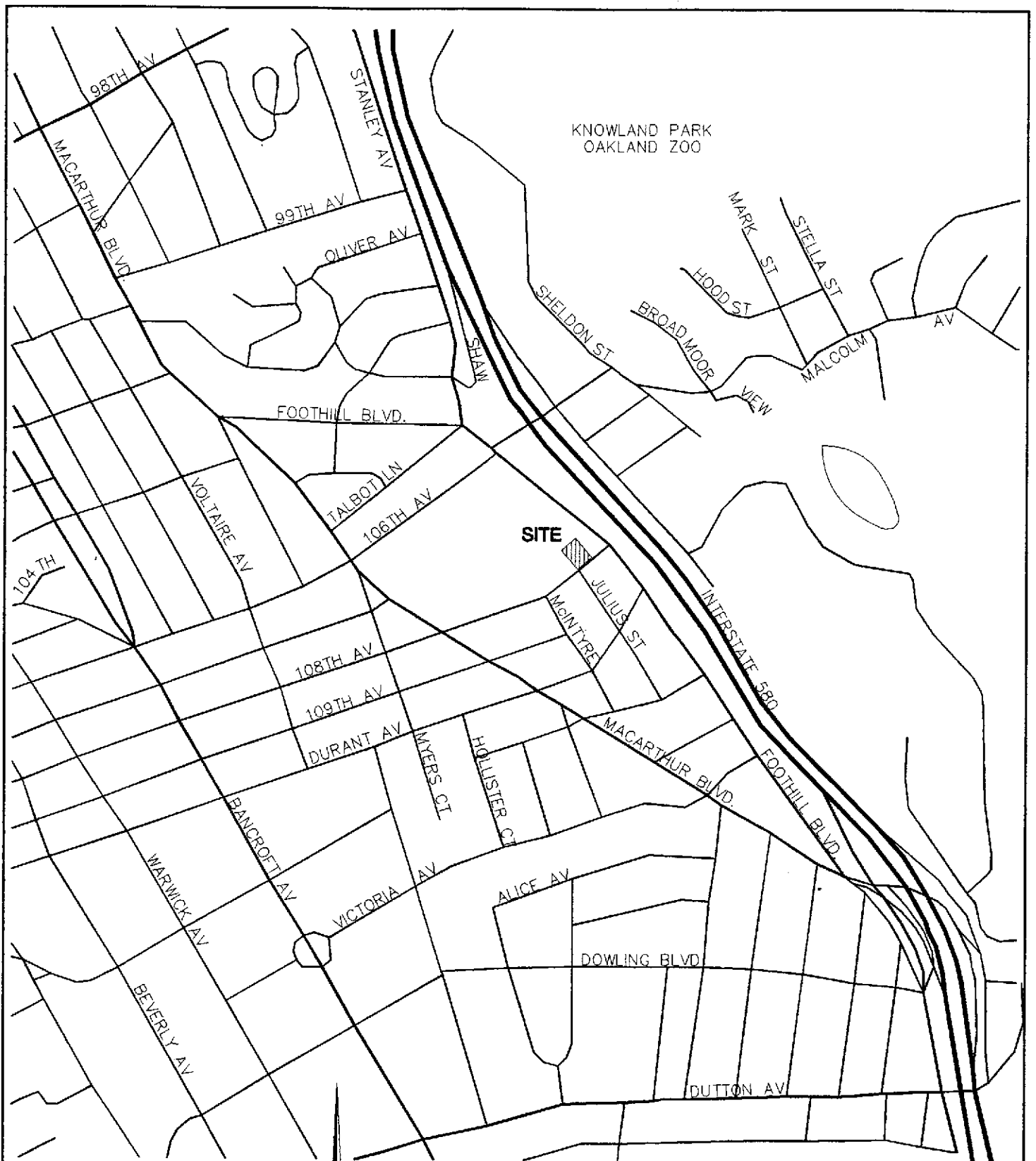
  
Richard J. Zipp, R. Geol. H.G.  
Hydrogeologist



 5/08/98  
Srikanth Dasappa Date  
USA Gasoline Corporation

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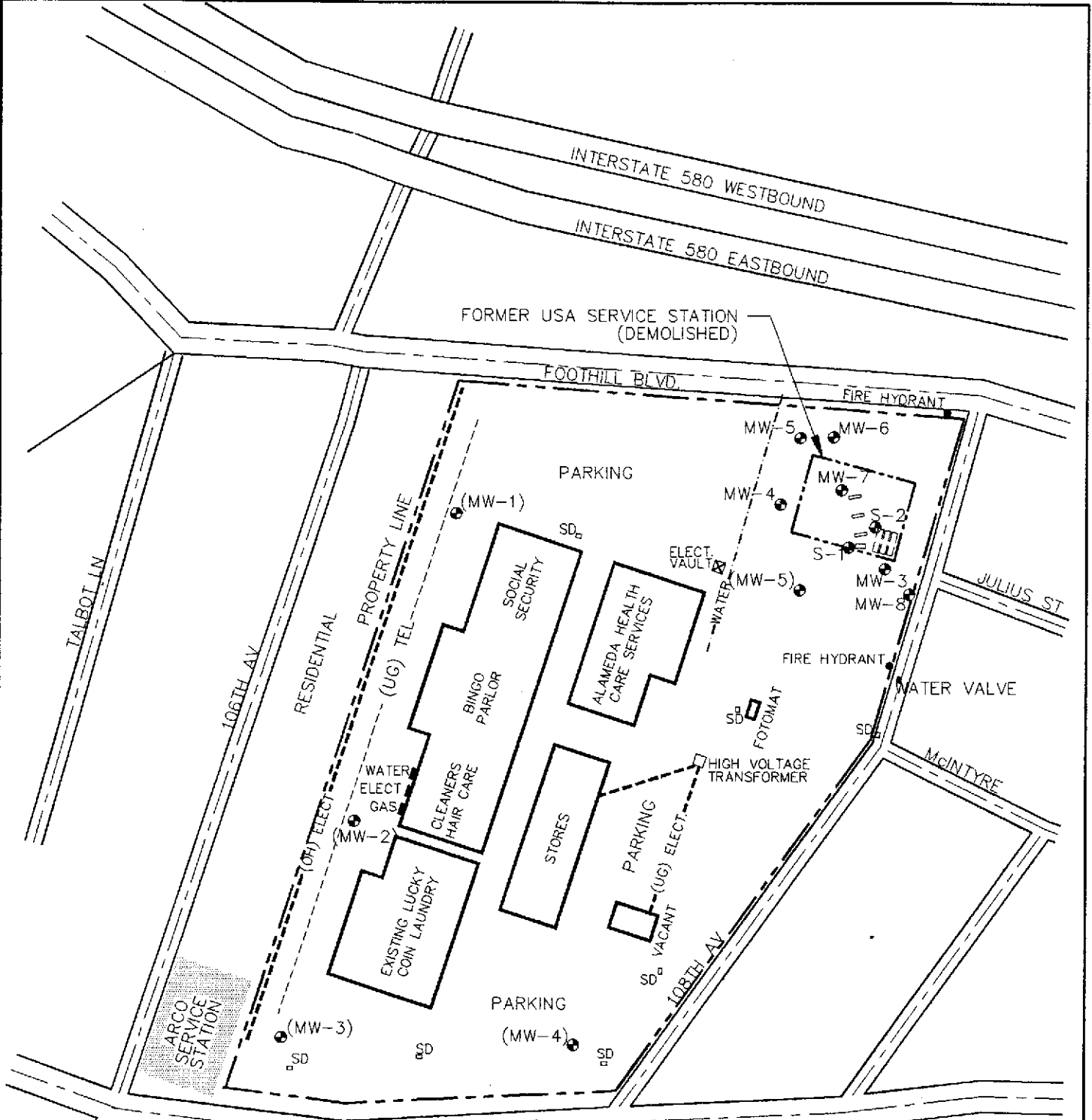
KNOWLAND PARK  
OAKLAND ZOO

SITE



APPROX. SCALE: 1" = 800'

USA GASOLINE STATION #57 10700 MACARTHUR BLVD. OAKLAND, CALIFORNIA SITE LOCATION MAP	
 <b>ENGINEERING, INC.</b> 8084 Old Auburn Rd. Citrus Heights, CA 95610 (916) 723-7645	INITIAL M.A.R.
	DATE 2/23/98
	JOB # 5090
	FIG. # 1



APPROXIMATE  
SCALE: 1" = 200'

- MONITORING WELL LOCATION
- ( ) PROBABLE ARCO INVESTIGATION, KALDVEER ASSOCIATES
- SD - STORM DRAIN INLET

USA GASOLINE STATION #57  
OAKLAND, CALIFORNIA  
AREA MAP

 <b>GHH</b> <b>ENGINEERING, INC.</b> 8084 Old Auburn Rd. Citrus Heights, CA 95610 (916) 723-7645	INITIAL	M. A. R.
	DATE	2/23/98
	JOB #	5090
	FIG. #	2

MW-4

MW-5

MW-6

MW-7

MW-3

MW-8

PROPERTY LINE

DISPENSER ISLAND (REMOVED)

ADDITIONAL EXCAVATION  
OCTOBER 1994  
(APPROX. 20 FT BGS)

*may descent remaining*

S-1

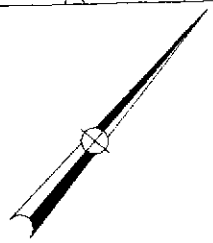
S-2

UST

UST

UST

108TH AVENUE



SCALE: 1" = 30'

● MONITORING WELL LOCATION

USA GASOLINE STATION #57  
OAKLAND, CALIFORNIA  
SITE PLAN



**ENGINEERING, INC.**  
8084 Old Auburn Rd.  
Citrus Heights, CA 95610  
(916) 723-7645

INITIAL	M.A.R.
DATE	3/5/98
JOB #	5090
FIG. #	3

MW-4  
69.37'

MW-5  
67.94'

PROPERTY LINE

MW-6  
65.90'

MW-7  
61.75'

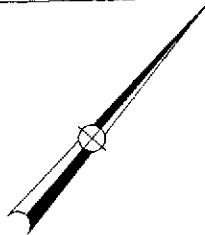
S-1  
61.89'

S-2  
61.86'

MW-3  
64.92'

MW-8  
63.64'

108TH AVENUE



SCALE: 1" = 30'

● MONITORING WELL LOCATION

USA GASOLINE STATION #57  
OAKLAND, CALIFORNIA  
GROUNDWATER ELEVATION MAP  
JANUARY 20, 1998

**GHH**

**ENGINEERING, INC.**  
8084 Old Auburn Rd.  
Citrus Heights, CA 95610  
(916) 723-7645

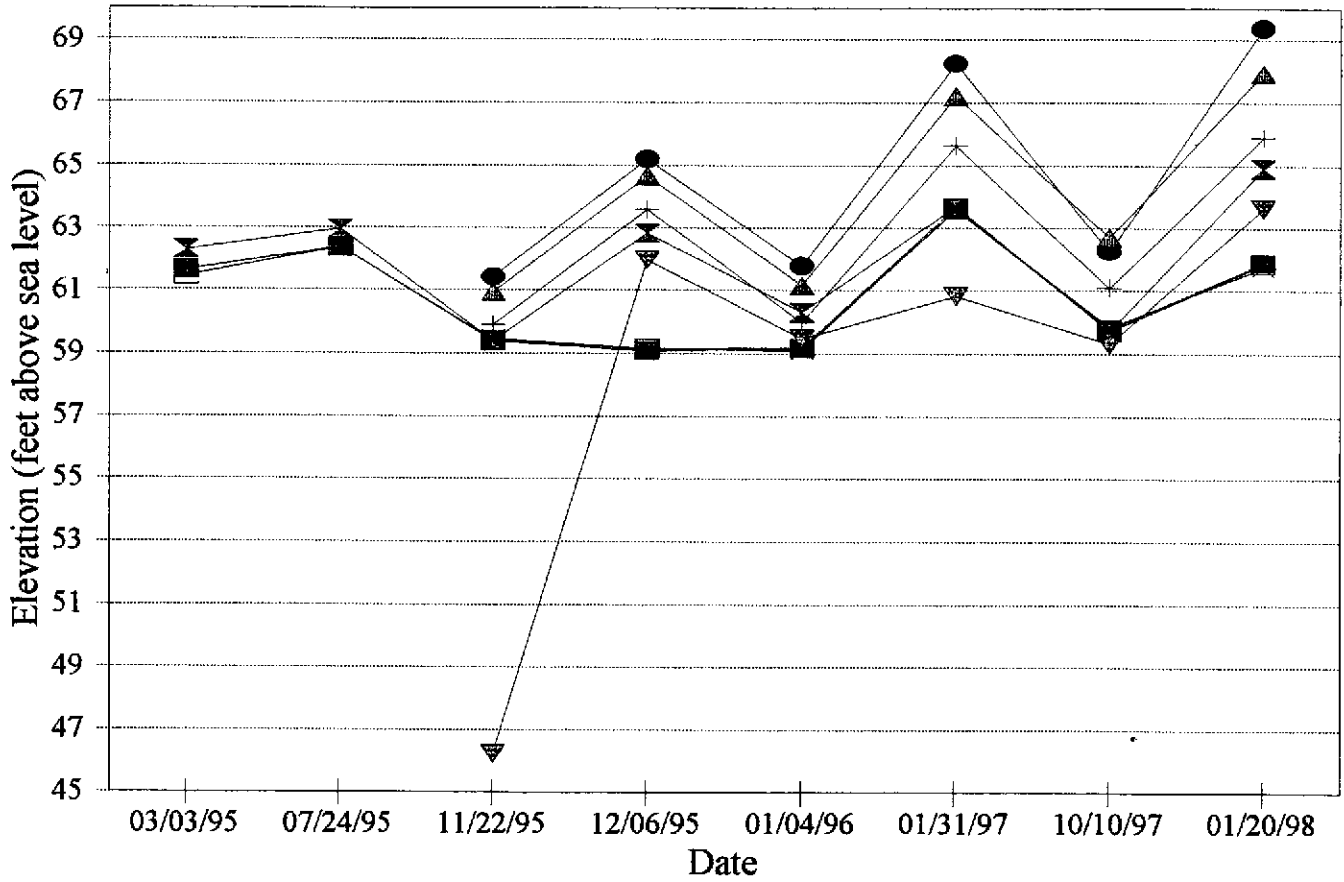
INITIAL  
M.A.R.

DATE  
2/23/98

JOB #  
5090

FIG. #  
4

## USA # 57 - OAKLAND Groundwater Hydrograph



S-1   
  S-2   
  MW-3   
  MW-4   
  MW-5   
  MW-6   
  MW-7   
  MW-8

USA GASOLINE STATION #57  
 OAKLAND, CALIFORNIA  
 GROUNDWATER HYDROGRAPH

GWH

**ENGINEERING, INC.**  
 8084 Old Auburn Rd.  
 Citrus Heights, CA 95610  
 (916) 723-7645

INITIAL	M. A. R.
DATE	2/23/98
JOB #	5090
FIG. #	5

TPHG	ND
TPHD	ND
BENZENE	ND
TOLUENE	ND
ETHYLBENZENE	ND
XYLENE	ND
MTBE	ND

TPHG	ND
TPHD	ND
BENZENE	ND
TOLUENE	ND
ETHYLBENZENE	ND
XYLENE	ND
MTBE	ND

PROPERTY LINE

TPHG	ND
TPHD	ND
BENZENE	ND
TOLUENE	ND
ETHYLBENZENE	ND
XYLENE	ND
MTBE	ND

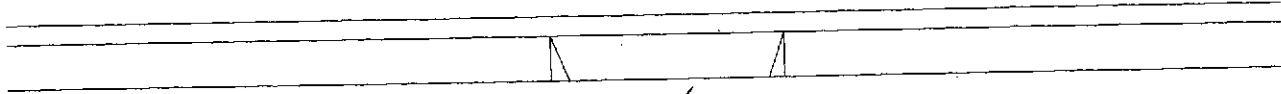
TPHG	ND
TPHD	ND
BENZENE	ND
TOLUENE	ND
ETHYLBENZENE	ND
XYLENE	ND
MTBE	ND

TPHG	1,800ug/l
TPHD	200ug/l
BENZENE	ND
TOLUENE	ND
ETHYLBENZENE	1.5ug/l
XYLENE	10ug/l
MTBE	87ug/l

TPHG	3,900ug/L
TPHD	550ug/L
BENZENE	7.9ug/l
TOLUENE	4.1ug/l
ETHYLBENZENE	ND
XYLENE	3.7ug/l
MTBE	ND

TPHG	1,900ug/l
TPHD	2,300ug/l
BENZENE	4.6ug/l
TOLUENE	6.3ug/l
ETHYLBENZENE	ND
XYLENE	4.6ug/l
MTBE	190ug/l

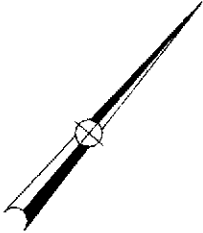
TPHG	ND
TPHD	ND
BENZENE	ND
TOLUENE	ND
ETHYLBENZENE	ND
XYLENE	ND
MTBE	ND



108TH AVENUE

**SAMPLING LEGEND**

SAMPLED: OCTOBER 10, 1997  
 ND - NOT DETECTED AT THE METHOD DETECTION LIMIT



SCALE: 1" = 30'

● MONITORING WELL LOCATION

USA GASOLINE STATION #57 OAKLAND, CALIFORNIA TPHG, TPHD, BTEX & MTBE CONCENTRATIONS IN GROUNDWATER	
 <b>ENGINEERING, INC.</b> 8084 Old Auburn Rd. Citrus Heights, CA 95610 (916) 723-7645	INITIAL M.A.R.
	DATE 2/23/98
	JOB # 5090
	FIG. # 6

TABLE 1

**GROUNDWATER ELEVATION DATA  
FORMER USA STATION #57  
10700 MacARTHUR BOULEVARD  
OAKLAND, CALIFORNIA**

Well ID	Date of Measurement	Elevation Top of Casing (feet)	Depth to Groundwater	Elevation of Groundwater (feet MSL)	Product Thickness (feet)
S-1	03/03/95	74.74	13.10	61.64	0.00
	07/24/95		12.35	62.39	0.00
	11/22/95	78.68	19.30	59.38	0.00
	12/06/95		19.59	59.09	0.00
	01/04/96		19.52	59.16	0.00
	01/31/97		15.07	63.61	0.00
	10/10/97		18.90	59.78	0.00
	01/20/98		16.79	61.89	0.00
S-2	03/03/95	76.86	15.39	61.47	0.00
	07/24/95		14.47	62.39	0.00
	11/22/95	80.93	21.52	59.41	trace
	12/06/95		21.78	59.15	0.00
	01/04/96		21.75	59.18	0.00
	01/31/97		17.25	63.68	trace
	10/10/97		21.21	59.72	trace
	01/20/98		19.07	61.86	0.00
MW-3	03/03/95	76.30	13.99	62.31	0.00
	07/24/95		13.33	62.97	0.00
	11/22/95	80.32	20.94	59.38	0.00
	12/06/95		17.48	62.84	0.00
	01/04/96		20.01	60.31	0.00
	01/31/97		16.63	63.69	0.00
	10/10/97		20.62	59.70	0.00
	01/20/98		15.40	64.92	0.00
MW-4	11/22/95	76.42	14.99	61.43	0.00
	12/06/95		11.21	65.21	0.00
	01/04/96		14.62	61.80	0.00
	01/31/97		8.18	68.24	0.00
	10/10/97		14.14	62.28	0.00
	01/20/98		7.05	69.37	0.00

MSL

Mean sea level

TABLE 1 (Continued)

GROUNDWATER ELEVATION DATA  
 FORMER USA STATION #57  
 10700 MacARTHUR BOULEVARD  
 OAKLAND, CALIFORNIA

Well ID	Date of Measurement	Elevation Top of Casing (feet)	Depth to Groundwater	Elevation of Groundwater (feet MSL)	Product Thickness (feet)
MW-5	11/22/95	80.52	19.56	60.96	0.00
	12/06/95		15.84	64.68	0.00
	01/04/96		19.36	61.16	0.00
	01/31/97		13.31	67.21	0.00
	10/10/97		17.80	62.72	0.00
	01/20/98		12.58	67.94	0.00
MW-6	11/22/95	81.64	21.73	59.91	0.00
	12/06/95		18.03	63.61	0.00
	01/04/96		21.67	59.97	0.00
	01/31/97		16.01	65.63	0.00
	10/10/97		20.55	61.09	0.00
	01/20/98		15.74	65.90	0.00
MW-7	11/22/95	78.86	19.38	59.48	0.00
	12/06/95		19.72	59.14	0.00
	01/04/96		19.76	59.10	0.00
	01/31/97		15.25	63.61	0.00
	10/10/97		19.03	59.83	0.00
	01/20/98		17.11	61.75	0.00
MW-8	11/22/95	79.55	33.33	46.22	0.00
	12/06/95		17.57	61.98	0.00
	01/04/96		20.08	59.47	0.00
	01/31/97		18.72	60.83	0.00
	10/10/97		20.26	59.29	0.00
	01/20/98		15.91	63.64	0.00

MSL Mean sea level



TABLE 2

**GROUNDWATER ANALYTICAL DATA  
FORMER USA STATION #57  
10700 MacARTHUR BOULEVARD  
OAKLAND, CALIFORNIA**

Well ID	Date Sampled	TPH C (ug/l)	TPH D (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl- benzene (ug/l)	Total Xylene (ug/l)	MTBE 8020 (ug/l)
S-1	12/17/87	-	-	630	4.4	3.5	37	-
	01/27/94	6,900	ND(50)	880	ND(15)	ND(15)	ND(15)	-
	03/03/95	910	5,900	260	7.6	16	14	-
	07/24/95	-	-	-	-	-	-	-
	11/22/95	460	6,100	13	0.69	0.99	1.1	460
	12/06/95	-	-	-	-	-	-	-
	01/04/96	-	-	-	-	-	-	-
	01/31/97	1,100	200*	11	6	3	6	200 ✓
	10/10/97	530	2,000	ND(0.5)	2.1	ND(0.5)	ND(2)	230
	01/20/98	1,800	200	ND(0.5)	ND(0.5)	1.5	10	87
S-2 <i>Trace</i> <i>Indetect</i>	12/17/87	-	-	3,400	3,800	1,300	11,000	-
	01/27/94	15,000	ND(50)	660	230	470	1,600	-
	03/03/95	24,000	6,000	1,900	440	600	2,500	-
	07/24/95	-	-	-	-	-	-	-
	11/22/95	-	-	-	-	-	-	-
	12/06/95	-	-	-	-	-	-	-
	01/04/96	-	-	-	-	-	-	-
	01/31/97	-	-	-	-	-	-	-
	10/10/97	13,000	ND(50)	260	38	190	280	600
	01/20/98	1,900	2,300	4.6	6.3	ND(0.5)	4.6	190
MW-3	03/03/95	2,500	1,600	540	92	36	200	-
	07/24/95	-	-	-	-	-	-	-
	11/22/95	14,000	5,400	5,700	230	430	650	820
	12/06/95	-	-	-	-	-	-	-
	01/04/96	-	-	-	-	-	-	-
	01/31/97	1,100	ND(50)	130	8	5	5	180
	10/10/97	3,400	1,100	830	4	100	ND(10)	160
	01/20/98	3,900	550	7.9	4.1	ND(0.5)	3.7	ND(5.0)
MW-4	11/22/95	ND(50)	200	ND(0.5)	1.5	ND(0.5)	1.7	6.4
	12/06/95	-	-	-	-	-	-	-
	01/04/96	-	-	-	-	-	-	-
	01/31/97	ND(50)	ND(50)	ND(0.5)	2	ND(0.5)	2	11
	10/10/97	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2)	ND(5.0)
	01/20/98	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(5.0)

TABLE 2 (Continued)

GROUNDWATER ANALYTICAL DATA  
 FORMER USA STATION #57  
 10700 MacARTHUR BOULEVARD  
 OAKLAND, CALIFORNIA

Well ID	Date Sampled	TPH G (ug/l)	TPH D (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl-benzene (ug/l)	Total Xylene (ug/l)	MTBE 8020 (ug/l)
MW-5	11/22/95	ND(50)	280	ND(0.5)	1.8	ND(0.5)	3	2.2
	12/06/95	-	-	-	-	-	-	-
	01/04/96	-	-	-	-	-	-	-
	01/31/97	80	ND(50)	ND(0.5)	0.6	ND(0.5)	2	6
	10/10/97	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2)	ND(5)
	01/20/98	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(5.0)
MW-6	11/22/95	ND(50)	140	ND(0.5)	1.2	ND(0.5)	1.5	5.3
	12/06/95	-	-	-	-	-	-	-
	01/04/96	-	-	-	-	-	-	-
	01/31/97	70	ND(50)	ND(0.5)	2	ND(0.5)	ND(1)	5
	10/10/97	80	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2)	ND(5)
	01/20/98	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(5.0)
MW-7	11/22/95	ND(50)	180	ND(0.5)	0.57	ND(0.5)	0.62	0.73
	12/06/95	-	-	-	-	-	-	-
	01/04/96	-	-	-	-	-	-	-
	01/31/97	70	ND(50)	0.7	1	ND(0.5)	ND(1)	8
	10/10/97	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2)	15
	01/20/98	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(5.0)
MW-8	11/22/95	ND(50)	360	ND(0.5)	1.3	ND(0.5)	2.1	2.1
	12/06/95	-	-	-	-	-	-	-
	01/04/96	-	-	-	-	-	-	-
	01/31/97	80	ND(50)	0.6	1	ND(0.5)	1	8
	10/10/97	50	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2)	ND(5)
	01/20/98	ND(50)	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(5.0)

TPH G Total petroleum hydrocarbons in the gasoline range  
 TPH D Total petroleum hydrocarbons in the diesel range  
 ug/l Micrograms per liter  
 MTBE Methyl-tert-butyl-ether  
 ND Not detected at the method detection limit  
 - Not measured/not analyzed  
 \* Laboratory indicates the chromatogram does not match the diesel hydrocarbon range pattern

Note: MTBE was confirmed on 01/31/97 with EPA Method 8260 in MW-3 at a concentration of 180 ug/l

**APPENDIX A**  
**FIELD DATA SHEETS**



HYDRODATA

DATE: 1-20-98

PROJECT: <u>USA OAKLAND</u> EVENT: <u>QUARTERLY</u> SAMPLER: <u>KIRK V.</u>									
NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT PROD./H2O	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	MW-4	1	20	98			7.05	SWL	
2	MW-5						12.58		
3	MW-6						15.74		
4	MW-7						17.11		
5	MW-8						15.91		
6	MW-3						15.40		
7	S-1						16.79		
8	S-2						19.07		
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

CODE

- \*SWL - Static water level (feet)
- \*IWL - Instant Water Level; Non Static (feet)
- \*OIL - Oil Level (feet)
- \*OWI - Oil/Water Interface (feet)
- \*MTD - Measured Total Depth (feet)
- FLO - Flow Rate (Gallons/Minutes)
- CUM - Cumulative (Gallons)

- HRS - Total (Hours)
- PSI - Pressure (psi)
- VAC - Vacuum
- pH - 1 to 14
- Ec - Conductivity
- TMP - Temperature
- TRB - Turbidity

\* All levels are depth from inner casing - describe any other reference points in comments column  
 Note in comments column if well is not: properly labeled, locked, or able to be locked. Describe corrective action.  
 Note flooding of vault box, odor, access problems.



# WELL DEVELOPMENT/SAMPLING DOCUMENTATION FORM

Project Name USA OAKLAND

Job # 5090

Well # S-1

Date 1-20-98

Sample ID \_\_\_\_\_

Sampling Team K.V.

Purpose of Sampling:  Initial  Quarterly  Verification  Other: \_\_\_\_\_

Weather Conditions FAIR

## GROUNDWATER LEVEL/CASING VOLUME

Description	Time	Depth (TOC to GW)	Total Depth	Feet of Water	Conversion Factor (ft to gals)	Casing Volume (gallons)
Initial		16.79	40.80	24.01	.36	8.64
After Development/Purging						23.65
At Time of Sampling						

Three Casing Volumes 26 Gals  
Ten Casing Volumes \_\_\_\_\_ Gals

## WELL DEVELOPMENT/PURGING

Equipment:  Submersible Pump  Bailer  Sandpiper  Other: HONDA

Method: HOSE

Decontamination Method: TSP / RINSE  
Description \_\_\_\_\_

Water Containment:  Drums  Baker Tank  Treatment System  Other: \_\_\_\_\_  
Description \_\_\_\_\_

Labelled: \_\_\_\_\_

Start Time	Volume Water Extracted	Temperature °F/C	EC (umhos)	pH	Observations (Color, Turbidity, Oils, Odor)
	0			7.22	
	8			7.02	
	16			7.09	
	26			7.08	

## SAMPLE INFORMATION

Lab: SIERRA

Sampling Containers/No. of Containers

1 Liter Amber TPH-D  
 40 ml VOA TPH-G + BTEX MTBE  
 Other \_\_\_\_\_

Preservation

Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_

Device:  Bailer, Disposable  Other \_\_\_\_\_

Pertinent Field Observations: \_\_\_\_\_

Deviations From Standard Sampling Protocol: \_\_\_\_\_



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# WELL DEVELOPMENT/SAMPLING DOCUMENTATION FORM

Project Name USA OAKLAND Job # 5090 Well # S-2  
 Date 1-20-98 Sample ID \_\_\_\_\_  
 Sampling Team K.V.  
 Purpose of Sampling:  Initial  Quarterly  Verification  Other: \_\_\_\_\_  
 Weather Conditions FAIR

## GROUNDWATER LEVEL/CASING VOLUME

Description	Time	Depth (TOC to GW)	Total Depth	Feet of Water	Conversion Factor (ft to gals)	Casing Volume (gallons)
Initial		19.07	42.85	24.78	.36	8.9
After Development/Purging						
At Time of Sampling						

Three Casing Volumes 26.7 Gals  
 Ten Casing Volumes \_\_\_\_\_ Gals

## WELL DEVELOPMENT/PURGING

Equipment:  Submersible Pump  Bailer  Sandpiper  Other: HONDA  
 Method: HOSE  
 Decontamination Method: TSP / RINSE  
 Water Containment:  Drums  Baker Tank  Treatment System  Other: \_\_\_\_\_  
 Labeled: \_\_\_\_\_

Start Time	Volume Water Extracted	Temperature °F/C	EC (umhos)	pH	Observations (Color, Turbidity, Oils, Odor)
	0			7.77	
	9			7.47	
	18			7.36	
	27			7.26	

## SAMPLE INFORMATION

Lab: SIERRA  
 Sampling Containers/No. of Containers  
 1 Liter Amber TPH-D  
 40 ml VOA TPH - 6 + BTEX MTBE  
 Other \_\_\_\_\_  
 Device:  Bailer, Disposable  Other \_\_\_\_\_  
 Preservation:  Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Pertinent Field Observations: \_\_\_\_\_  
 Deviations From Standard Sampling Protocol: \_\_\_\_\_



# WELL DEVELOPMENT/SAMPLING DOCUMENTATION FORM

Project Name USA OAKLAND

Job # \_\_\_\_\_ Well # 3

Date 1-20-98

Sample ID \_\_\_\_\_

Sampling Team K.V.

Purpose of Sampling:  Initial  Quarterly  Verification  Other: \_\_\_\_\_

Weather Conditions FAIR

## GROUNDWATER LEVEL/CASING VOLUME

Description	Time	Depth (TOC to GW)	Total Depth	Feet of Water	Conversion Factor (ft to gals)	Casing Volume (gallons)
Initial		<u>15.40</u>	<u>47.75</u>	<u>32.35</u>	<u>.65</u>	<u>21</u>
After Development/ Purging						
At Time of Sampling						

Three Casing Volumes 63 Gals  
Ten Casing Volumes \_\_\_\_\_ Gals

## WELL DEVELOPMENT/PURGING

Equipment:  Submersible Pump  Bailer  Sandpiper  Other: HONDA

Method: HOSE

Decontamination Method: TSP / RINSE Description \_\_\_\_\_

Water Containment:  Drums  Baker Tank  Treatment System  Other: \_\_\_\_\_ Description \_\_\_\_\_

Labeled: \_\_\_\_\_

Start Time	Volume Water Extracted	Temperature °F/C	EC (umhos)	pH	Observations (Color, Turbidity, Oils, Odor)
	<u>0</u>			<u>7.29</u>	
	<u>21</u>			<u>7.07</u>	
	<u>42</u>			<u>7.00</u>	
	<u>63</u>				<u>DRY</u>

## SAMPLE INFORMATION

Lab: SIERRA

Sampling Containers/No. of Containers  
 1 Liter Amber TPH-D  
 40 ml VOA TPH-6 + 3TEX 1ATBE  
 Other \_\_\_\_\_

Preservation  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_

Device:  Bailer, Disposable  Other \_\_\_\_\_

Pertinent Field Observations: \_\_\_\_\_

\_\_\_\_\_

Deviations From Standard Sampling Protocol: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



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# WELL DEVELOPMENT/SAMPLING DOCUMENTATION FORM

Project Name USA OAKLAND

Job # 5090

Well # 4

Date 1-20-98

Sample ID \_\_\_\_\_

Sampling Team KIRK J.

Purpose of Sampling:  Initial  Quarterly  Verification  Other: \_\_\_\_\_

Weather Conditions \_\_\_\_\_

## GROUNDWATER LEVEL/CASING VOLUME

Description	Time	Depth (TOC to GW)	Total Depth	Feet of Water	Conversion Factor (ft to gals)	Casing Volume (gallons)
Initial		7.05	42.45	35.4	.65	23
After Development/ Purging						
At Time of Sampling						

Three Casing Volumes 69 Gals  
Ten Casing Volumes \_\_\_\_\_ Gals

## WELL DEVELOPMENT/PURGING

Equipment:  Submersible Pump  Bailer  Sandpiper  Other: HONDA

Method: HOSE

Decontamination Method: TSP / BUCKET

Water Containment:  Drums  Baker Tank  Treatment System  Other: \_\_\_\_\_

Labeled: \_\_\_\_\_

Start Time	Volume Water Extracted	Temperature °F/C	EC (umhos)	pH	Observations (Color, Turbidity, Oils, Odor)
	0			7.32	
	23			7.21	
	46			7.19	
	69			7.17	

## SAMPLE INFORMATION

Lab: SIERRA

Sampling Containers/No. of Containers

1 Liter Amber TPH-D  
 40 ml VOA TPH-G + BTEX MTR E  
 Other \_\_\_\_\_

Preservation

Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_

Device:  Bailer, Disposable  Other \_\_\_\_\_

Pertinent Field Observations: \_\_\_\_\_

Deviations From Standard Sampling Protocol: \_\_\_\_\_





# WELL DEVELOPMENT/SAMPLING DOCUMENTATION FORM

Project Name USA OAKLAND

Job # 5090 Well # 5

Date 1-20-98

Sample ID \_\_\_\_\_

Sampling Team KIRK V.

Purpose of Sampling:  Initial  Quarterly  Verification  Other: \_\_\_\_\_

Weather Conditions \_\_\_\_\_

## GROUNDWATER LEVEL/CASING VOLUME

Description	Time	Depth (TOC to GW)	Total Depth	Feet of Water	Conversion Factor (ft to gals)	Casing Volume (gallons)
Initial		12.58	37.60	25.02	.65	16
After Development/ Purging						
At Time of Sampling						

Three Casing Volumes 48 Gals  
Ten Casing Volumes \_\_\_\_\_ Gals

## WELL DEVELOPMENT/PURGING

Equipment:  Submersible Pump  Bailer  Sandpiper  Other: HONDA

Method: HOSE

Decontamination Method: TSP/RINSE Description \_\_\_\_\_

Water Containment:  Drums  Baker Tank  Treatment System  Other: \_\_\_\_\_

Labelled: \_\_\_\_\_

Start Time	Volume Water Extracted	Temperature °F/C	EC (umhos)	pH	Observations (Color, Turbidity, Oils, Odor)
	0			9.50	
	16			10.11	
	32			10.01	
	48				Dry

## SAMPLE INFORMATION

Lab: SIERRA

Sampling Containers/No. of Containers  
 1 Liter Amber TPH-D  
 40 ml VOA TPH-G + BTEX MTBE  
 Other \_\_\_\_\_

Preservation  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_

Device:  Bailer, Disposable  Other \_\_\_\_\_

Pertinent Field Observations: \_\_\_\_\_

Deviations From Standard Sampling Protocol: \_\_\_\_\_



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## WELL DEVELOPMENT/SAMPLING DOCUMENTATION FORM

Project Name USA OAKLAND

Job # 5090 Well # 6

Date 1-20-98

Sample ID \_\_\_\_\_

Sampling Team K.V.

Purpose of Sampling:  Initial  Quarterly  Verification  Other: \_\_\_\_\_

Weather Conditions \_\_\_\_\_

### GROUNDWATER LEVEL/CASING VOLUME

Description	Time	Depth (TOC to GW)	Total Depth	Feet of Water	Conversion Factor (ft to gals)	Casing Volume (gallons)
Initial		15.74	42.00	26.26	.65	17.
After Development/Purging						
At Time of Sampling						

Three Casing Volumes 51 Gals

Ten Casing Volumes \_\_\_\_\_ Gals

### WELL DEVELOPMENT/PURGING

Equipment:  Submersible Pump  Bailer  Sandpiper  Other: HONDA

Method: HOSE

Decontamination Method: TSP / RINSE  
Description

Water Containment:  Drums  Baker Tank  Treatment System  Other: \_\_\_\_\_

Labeled: \_\_\_\_\_

Start Time	Volume Water Extracted	Temperature °F/C	EC (umhos)	pH	Observations (Color, Turbidity, Oils, Odor)
	0			8.50	
	17			8.19	
	34			8.07	
	51			8.00	

### SAMPLE INFORMATION

Lab: SIERRA

Sampling Containers/No. of Containers  
 1 Liter Amber TPH-D  
 40 ml VOA TPH-G + BTEX MTBE  
 Other \_\_\_\_\_

Preservation  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_

Device:  Bailer, Disposable  Other \_\_\_\_\_

Pertinent Field Observations: \_\_\_\_\_

Deviations From Standard Sampling Protocol: \_\_\_\_\_



# WELL DEVELOPMENT/SAMPLING DOCUMENTATION FORM

Project Name USA OAKLAND Job # 5090 Well # 7

Date 1-20-98 Sample ID \_\_\_\_\_

Sampling Team K.V.

Purpose of Sampling:  Initial  Quarterly  Verification  Other: \_\_\_\_\_

Weather Conditions \_\_\_\_\_

## GROUNDWATER LEVEL/CASING VOLUME

Description	Time	Depth (TOC to GW)	Total Depth	Feet of Water	Conversion Factor (ft to gals)	Casing Volume (gallons)
Initial		17.11	41.85	24.74	.65	16
After Development/ Purging						
At Time of Sampling						

Three Casing Volumes 48 Gals  
Ten Casing Volumes \_\_\_\_\_ Gals

## WELL DEVELOPMENT/PURGING

Equipment:  Submersible Pump  Bailer  Sandpiper  Other: HONDA

Method: HOSE

Decontamination Method: TSP / RINSE Description \_\_\_\_\_

Water Containment:  Drums  Baker Tank  Treatment System  Other: \_\_\_\_\_

Labeled: \_\_\_\_\_

Start Time	Volume Water Extracted	Temperature °F/C	EC (umhos)	pH	Observations (Color, Turbidity, Oils, Odor)
	0			7.42	
	16			7.12	
	32			7.23	
	48			7.27	

## SAMPLE INFORMATION

Lab: SIERRA

Sampling Containers/No. of Containers:  1 Liter Amber TPH-D  40 ml VOA TPH-6 + BTEX MTBE  Other \_\_\_\_\_

Device:  Bailer, Disposable  Other \_\_\_\_\_

Preservation:  Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_

Pertinent Field Observations: \_\_\_\_\_

Deviations From Standard Sampling Protocol: \_\_\_\_\_



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# WELL DEVELOPMENT/SAMPLING DOCUMENTATION FORM

Project Name USA OAKLAND

Job # 5090 Well # 8

Date 1-20-98

Sample ID \_\_\_\_\_

Sampling Team K.V.

Purpose of Sampling:  Initial  Quarterly  Verification  Other: \_\_\_\_\_

Weather Conditions FAIR

## GROUNDWATER LEVEL/CASING VOLUME

Description	Time	Depth (TOC to GW)	Total Depth	Feet of Water	Conversion Factor (ft to gals)	Casing Volume (gallons)
Initial		15.91	37.70	21.79	.65	14
After Development/Purging						
At Time of Sampling						

Three Casing Volumes 42 Gals  
Ten Casing Volumes \_\_\_\_\_ Gals

## WELL DEVELOPMENT/PURGING

Equipment:  Submersible Pump  Bailer  Sandpiper  Other: HONDA

Method: HOSE

Decontamination Method: TSP/RINSE Description \_\_\_\_\_

Water Containment:  Drums  Baker Tank  Treatment System  Other: \_\_\_\_\_ Description \_\_\_\_\_

Labeled: \_\_\_\_\_

Start Time	Volume Water Extracted	Temperature °F/C	EC (umhos)	pH	Observations (Color, Turbidity, Oils, Odor)
	0			7.56	
	14			7.06	
	28			6.89	
	42			6.81	

## SAMPLE INFORMATION

Lab: SIERRA

Sampling Containers/No. of Containers  
 1 Liter Amber TPH-D  
 40 ml VOA TPH-6+BTX MTBE  
 Other \_\_\_\_\_

Preservation  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_  
 Ice  Other \_\_\_\_\_

Device:  Bailer, Disposable  Other \_\_\_\_\_

Pertinent Field Observations: \_\_\_\_\_

Deviations From Standard Sampling Protocol: \_\_\_\_\_

**APPENDIX B**

**LABORATORY REPORTS WITH CHAIN-OF-CUSTODY DOCUMENTS**



FEB - 6 1998  
HH ENGINEERS INC

Date: 1/30/98

**GHH Engineers, Inc.**  
8084 Old Auburn Road, Suite E  
Citrus Heights, CA 95610  
Attention: Mr. Vern Bennett

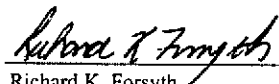
Client Project Number: 5090.10/USA Oakland #57  
Date Sampled: 1/20/98  
Date Samples Received: 1/22/98  
Sierra Project No.: 9801-171


Attached are the results of the chemo-physical analysis of the sample(s) from the project identified above.

The samples were received by Sierra Laboratories, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analysis were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report. If you require additional retaining time, please advise us.

  
Richard K. Forsyth  
Laboratory Director

  
Reviewed

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

<b>GHH Engineers, Inc.</b> 8084 Old Auburn Road, Suite E Citrus Heights, CA 95610		<b>Date Sampled:</b> 1/20/98
<b>Sierra Project No.:</b> 9801-171		<b>Date Received:</b> 1/22/98
<b>Client Project ID:</b> 5090.10/USA Oakland #57		<b>Date Prepared:</b> 1/26/98
<b>Sample Matrix:</b> Water		<b>Date Analyzed:</b> 1/26/98
		<b>Analyst:</b> LT
		<b>Report Date:</b> 1/30/98

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA 8015 MODIFIED - Diesel Range Hydrocarbons (C10-C23)**

SIERRA Sample No.	Client Sample No.	Concentration (mg/l)	Dilution Factor	% Surrogate Recovery	MDL (mg/l)
865	MW-4	ND	1	50	0.05
866	MW-5	ND	1	55	0.05
867	MW-6	ND	1	60	0.05
868	MW-7	ND	1	51	0.05
869	MW-8	ND	1	50	0.05
870	MW-3	0.55	1	53	0.05
871	S-1	0.2	1	50	0.05
872	S-2	2.3	1	52	0.05

**Quality Assurance/Quality Control Data**

**QC Sample ID:** 9801-171

Compound	LCS % Rec.	QC Limits	Spike % Rec.	Spike Dup % Rec.	QC Limits	RPD	QC Limits
TPH as Diesel	100	50-120	110	115	50-150	5.0	0-30

ND means Not Detected

Reporting Limit (RL) = Method Detection Limit (MDL) x Dilution Factor

GHH Engineers, Inc.	Date Sampled: 1/20/98
8084 Old Auburn Road, Suite E	Date Received: 1/22/98
Citrus Heights, CA 95610	Date Prepared: 1/26/98
Sierra Project No.: 9801-171	Date Analyzed: 1/26/98
Client Project ID: 5090.10/USA Oakland #57	Analyst: SM
Sample Matrix: Water	Report Date: 1/27/98

**EPA METHOD 8020-BTEX/EPA METHOD 8015-Gasoline Range Hydrocarbons (C4-C12)**  
(Purge & Trap)

Client Sample No.:	Concentration, µg/l									Method Detection Limit, µg/l
	MW-4	MW-5	MW-6	MW-7	MW-8	MW-3	S-1	S-2		
Sierra Sample No.:	865	866	867	868	869	870	871	872		
<b>COMPOUNDS:</b>										
Benzene	ND	ND	ND	ND	ND	7.9	ND	4.6		0.5
Toluene	ND	ND	ND	ND	ND	4.1	ND	6.3		0.5
Ethylbenzene	ND	ND	ND	ND	ND	ND	1.5	ND		0.5
Total Xylenes	ND	ND	ND	ND	ND	3.7	10	4.6		0.5
MTBE	ND	ND	ND	ND	ND	ND	87	190		5.0
Gasoline	ND	ND	ND	ND	ND	3900	1800	1900		50
Dilution Factor	1	1	1	1	1	1	1	1		<b>QC Limits</b>
% Surrogate Recovery:										
a,a,a-Trifluorotoluene	92	91	91	91	92	120	100	120		70-125

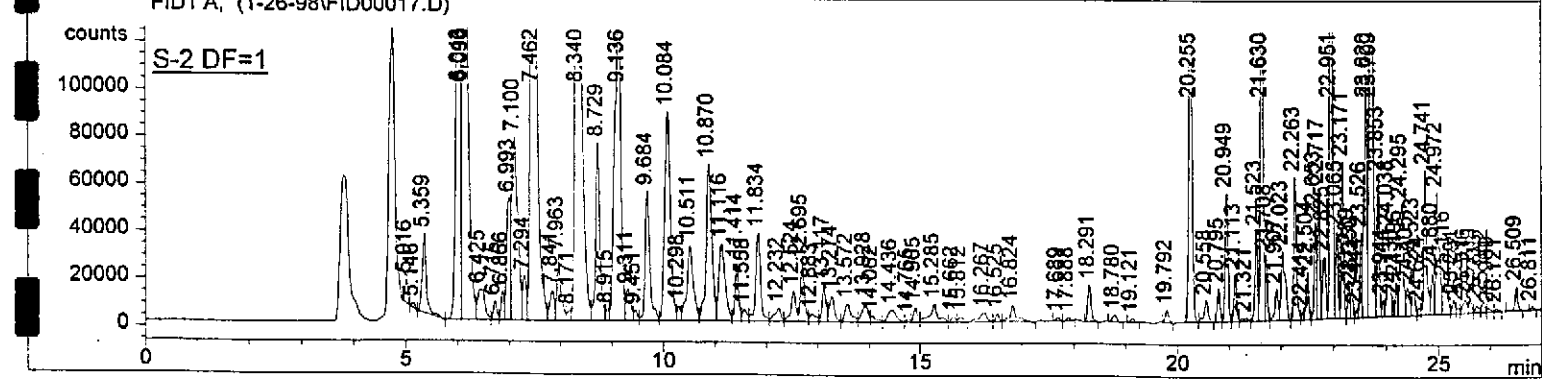
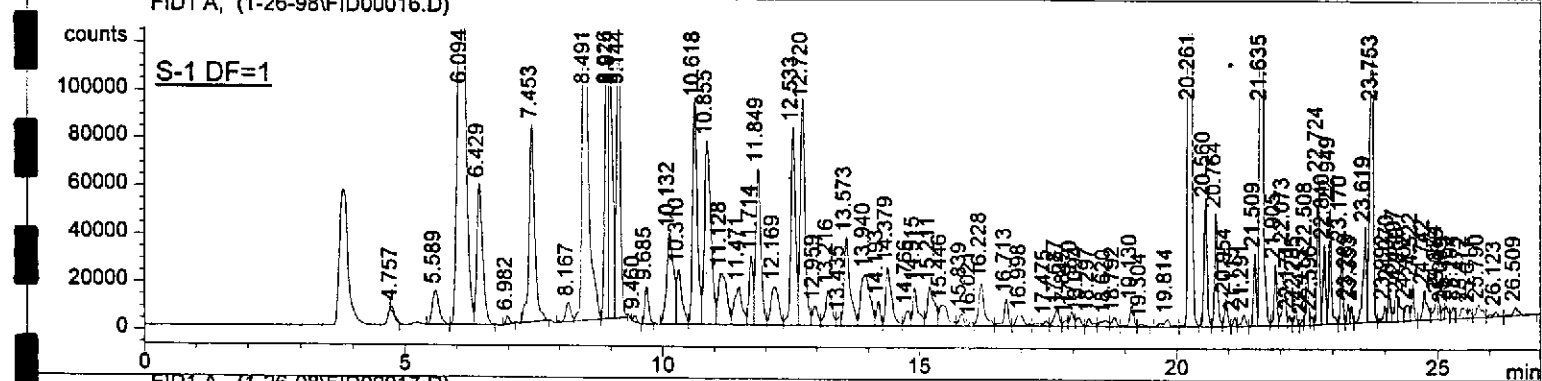
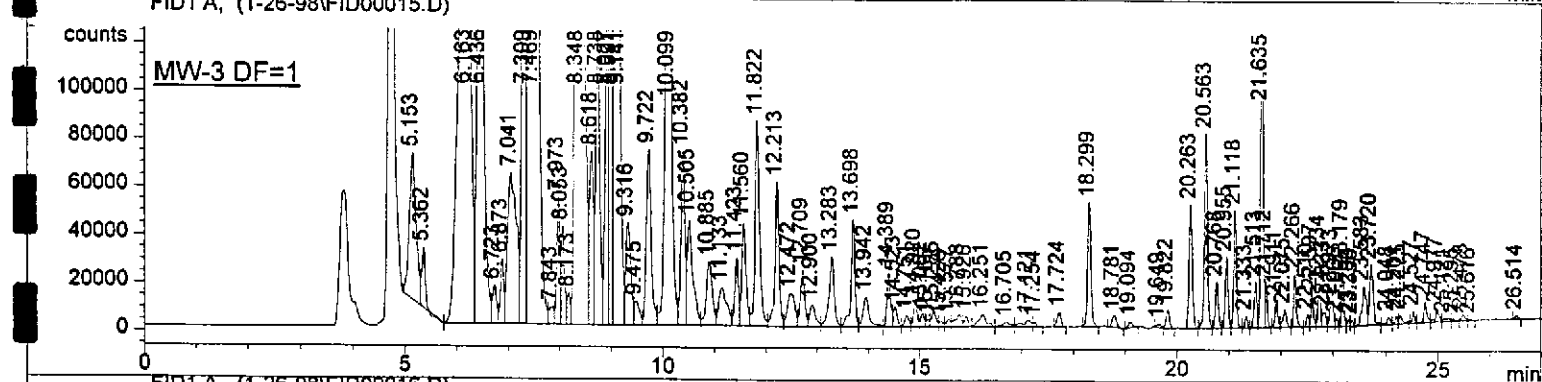
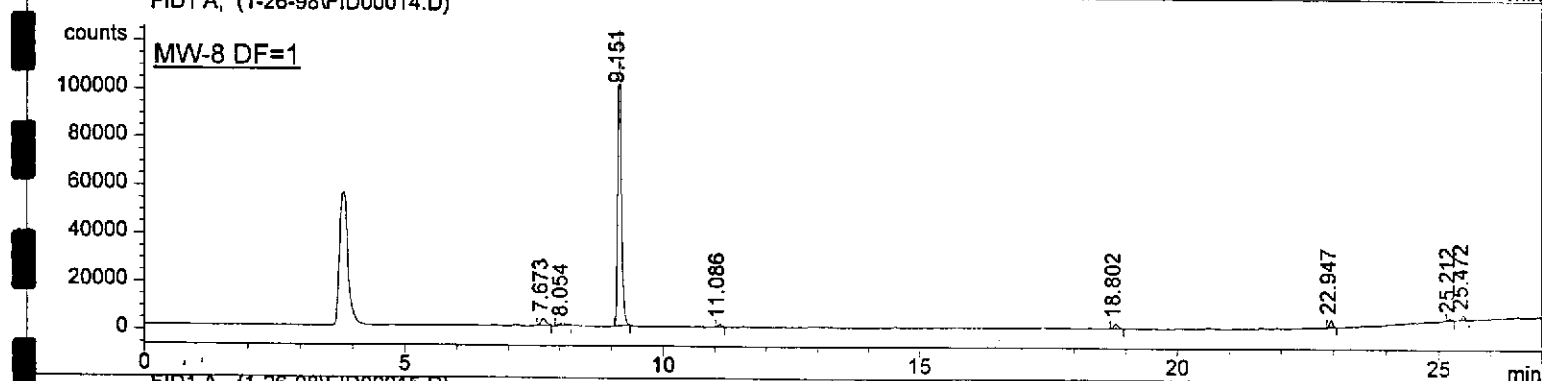
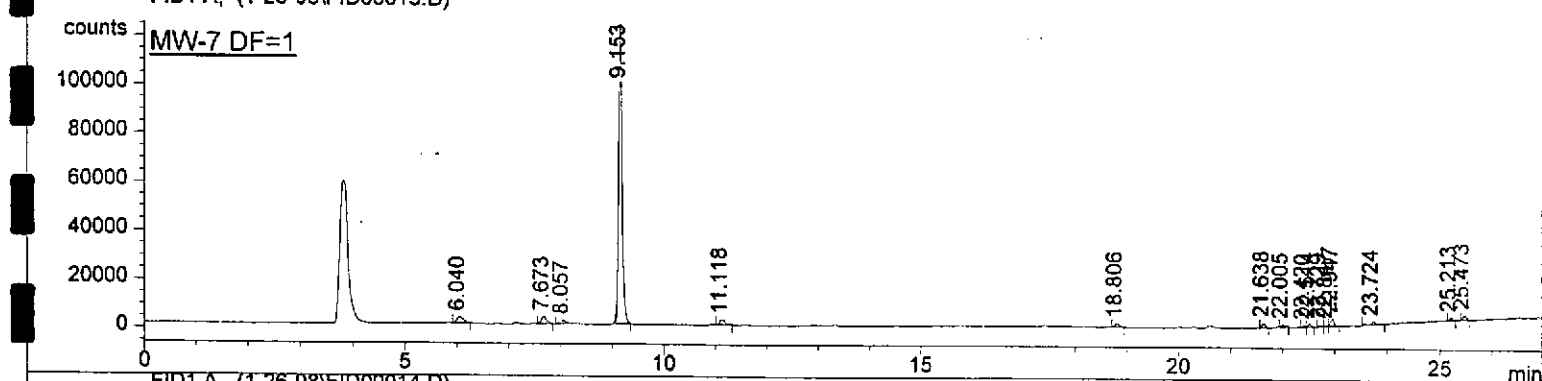
Quality Assurance/Quality Control Data						
QC Sample ID:	9801-171-866					
Compounds	LCS % Rec.	Spike % Rec.	Spike Dup % Rec.	QC Limits	RPD	QC Limits
Benzene	95	84	88	39-150	4.7	0-30
Toluene	90	83	87	46-148	4.7	0-30
Ethylbenzene	88	83	86	32-160	7.9	0-30
Gasoline	108	85	98	50-150	14	0-30

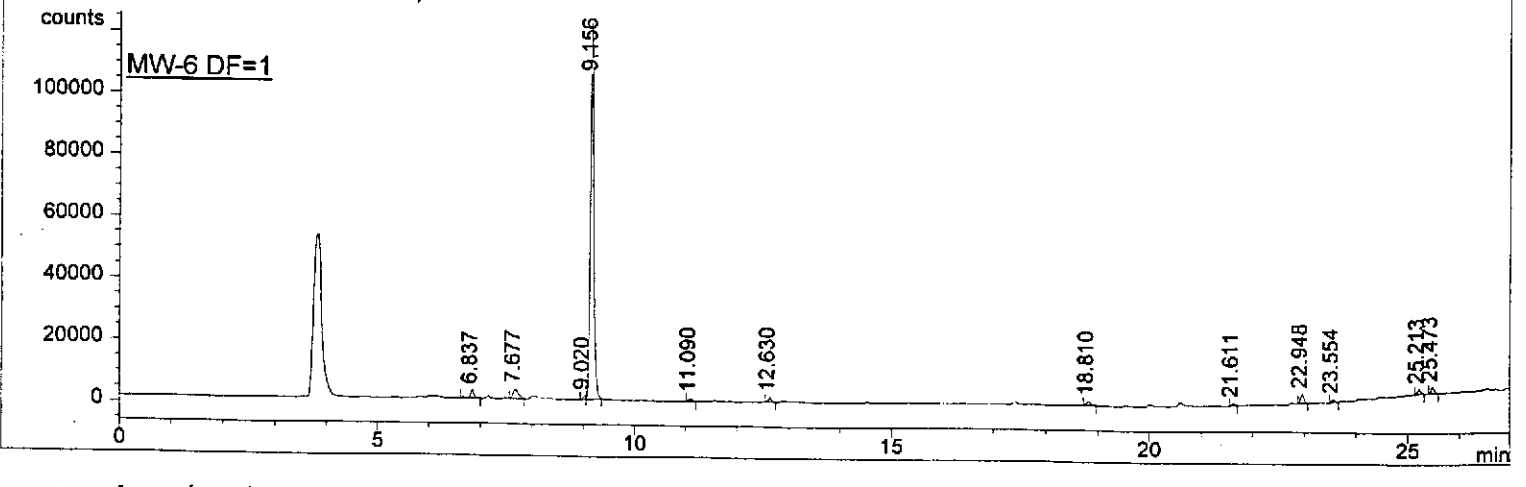
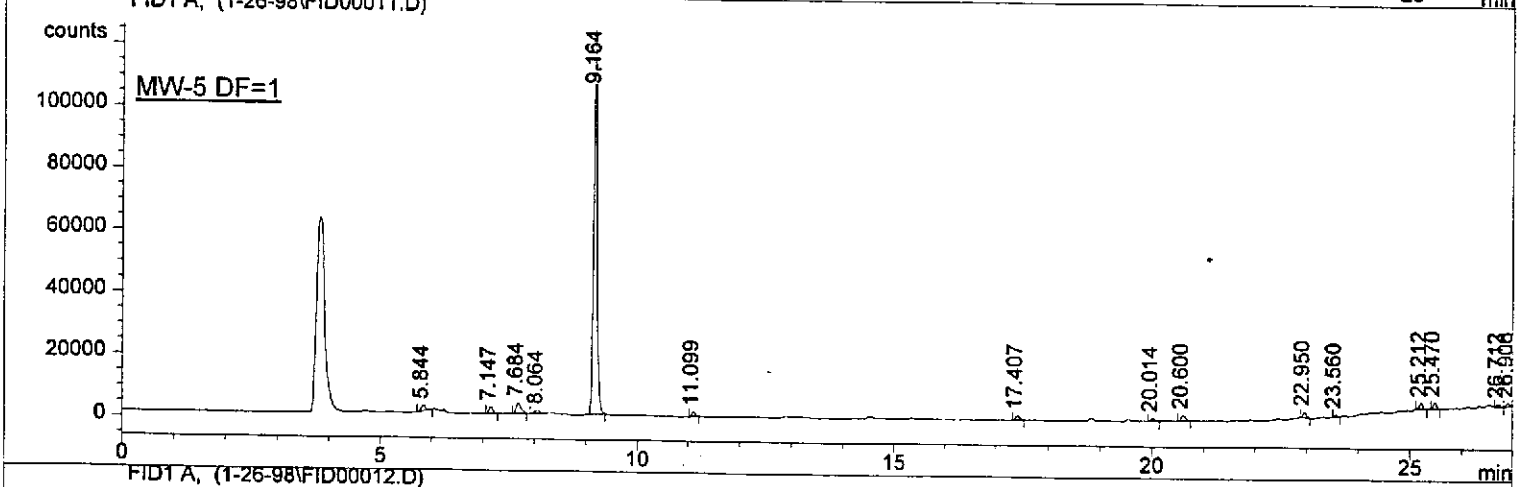
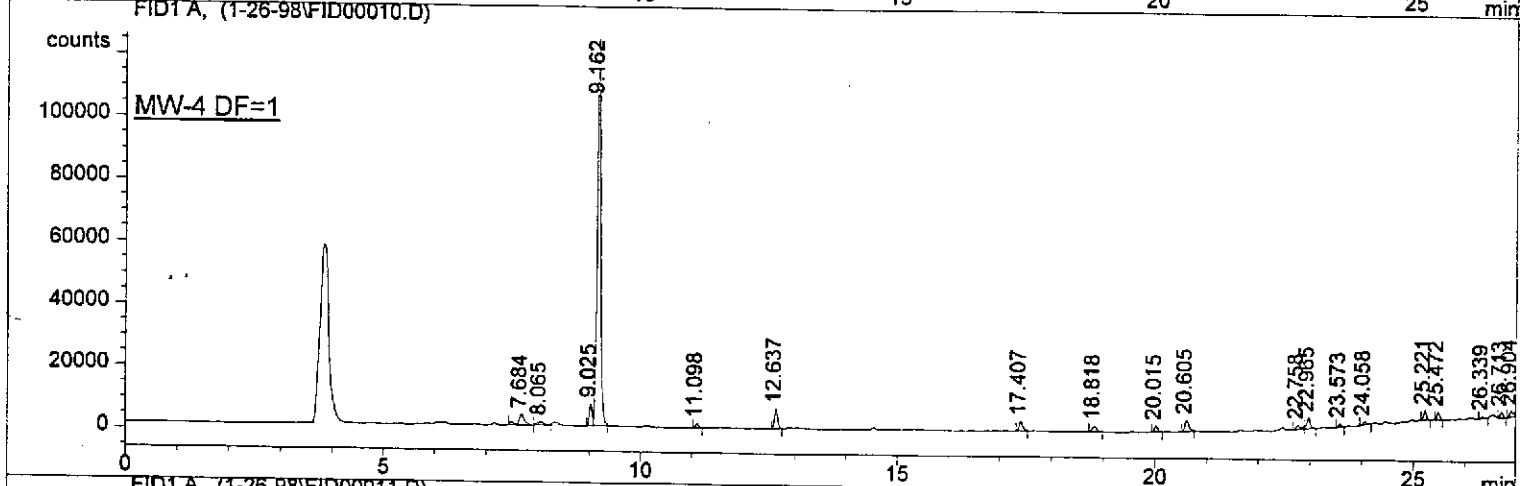
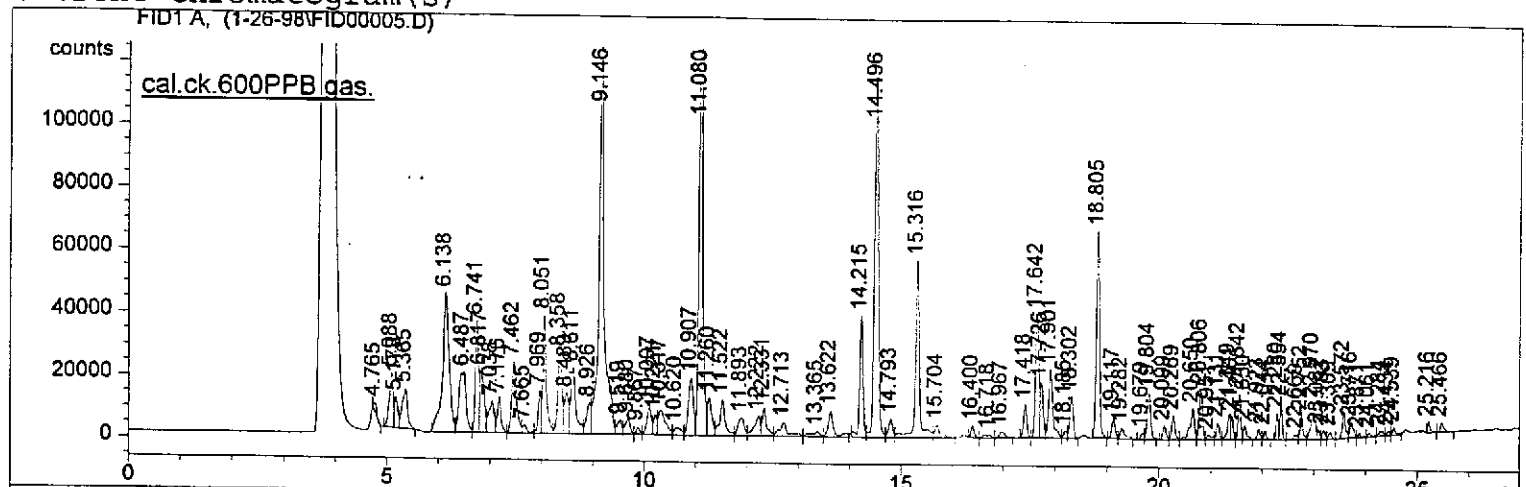
ND means Not Detected

Reporting Limit (RL) = Method Detection Limit (MDL) x Dilution Factor



Current Chromatogram(s)





die\_005s

1000  
900  
800  
700  
600  
500  
400  
300  
200  
100  
0

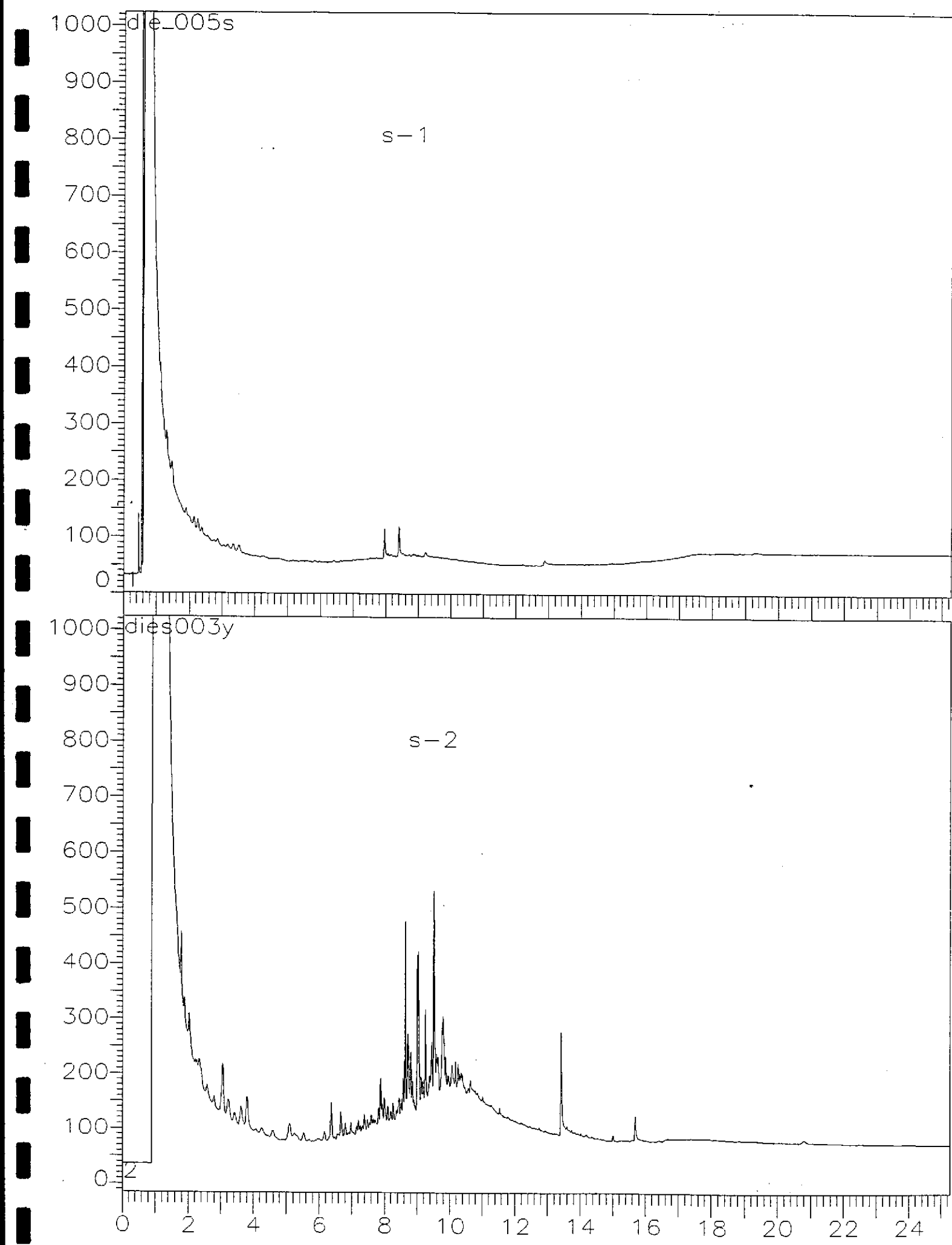
s-1

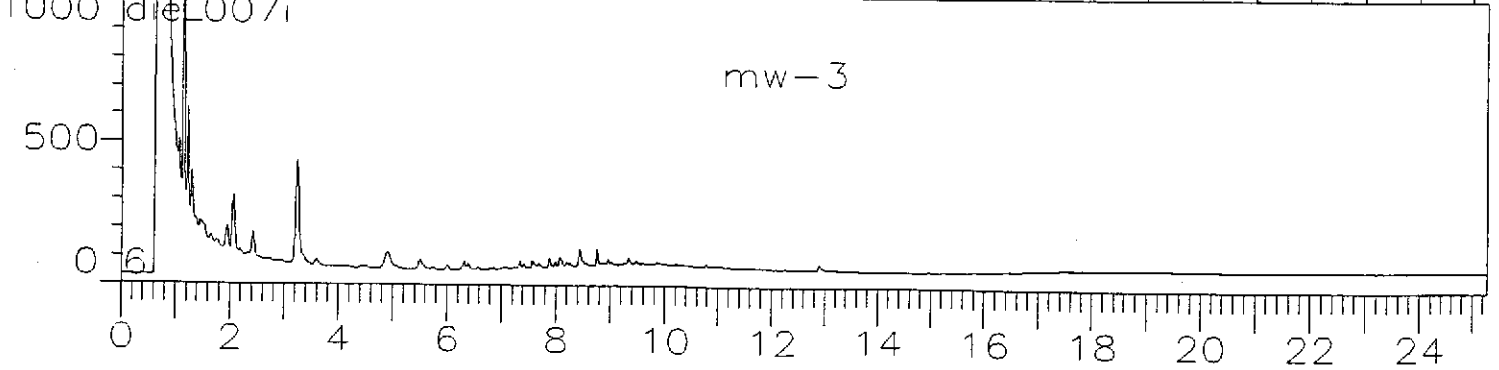
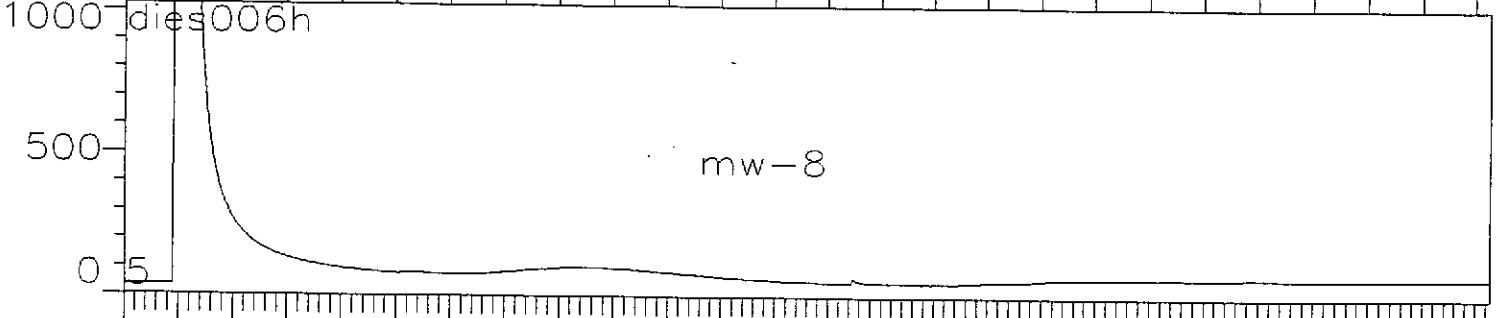
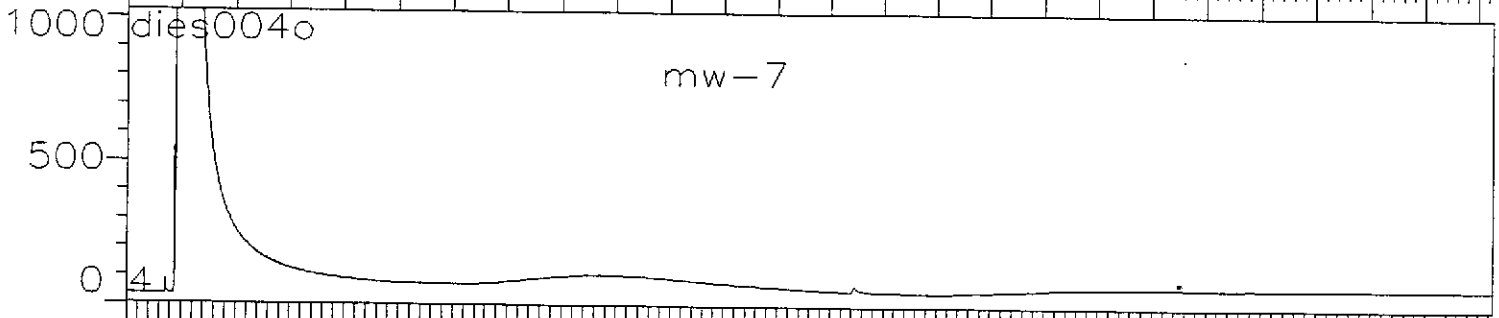
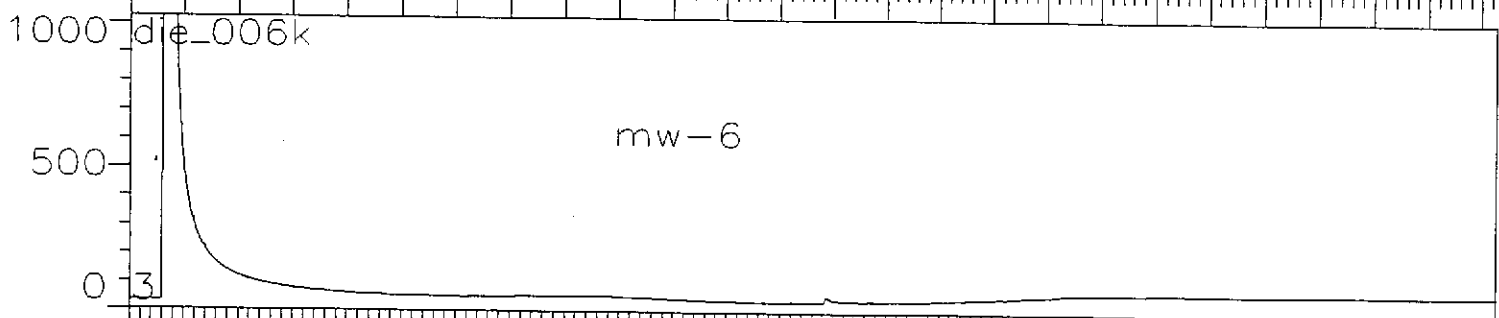
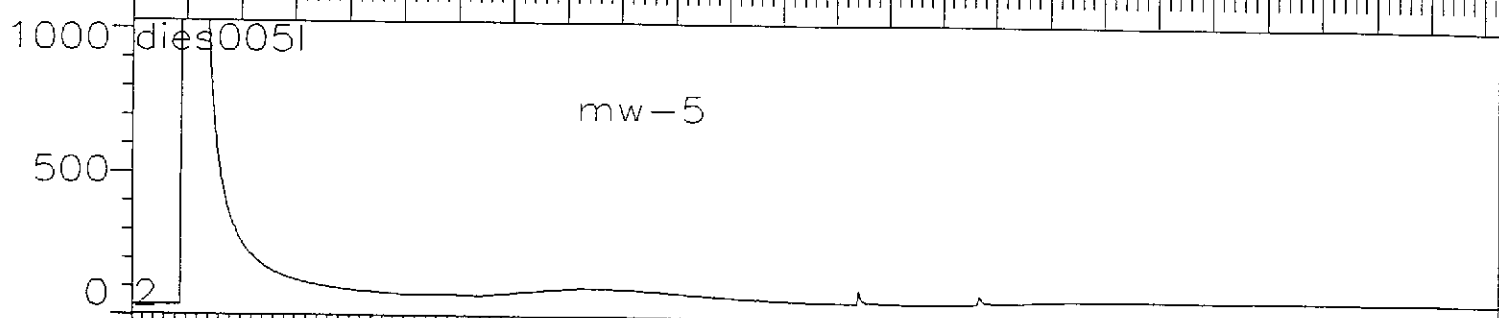
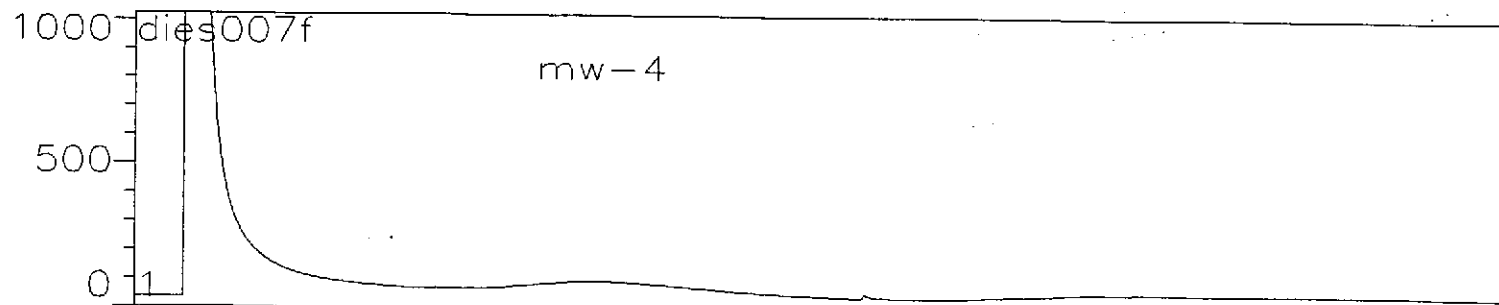
die003y

1000  
900  
800  
700  
600  
500  
400  
300  
200  
100  
0

s-2

0 2 4 6 8 10 12 14 16 18 20 22 24







\*PLEASE PROVIDE CHROMATOGRAMS!

ENGINEERING, INC.  
RCE #27011 Lic. #537901

8084 OLD AUBURN ROAD  
CITRUS HEIGHTS, CA 95610  
(916) 723-7645  
LIC. # 537901

I.D.#	15056
JOB #	5090
P.O.#	—

Bill USA DIRECT

R3B/R1B4

CHAIN OF CUSTODY 9801-171

JOB NAME: USA OAKLAND #57

LAB: SIERRA

PROJECT MANAGER: JERN BENNETT

SAMPLES COLLECTED BY: KIRK VANDEVORT

COMP.	GRAB	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE			SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
					SOIL	AIR	WATER			
X		MONITOR WELL	1/20/98	1444	865		X	MW-4	3 w/o VOA HCL	MTBE TPH-6+BTEX
X				↓			X	↓	1 AMBER	TPH-D
X				1459	866		X	MW-5	3 w/o VOA HCL	TPH-6+BTEX MTBE
X				↓			X	↓	1 AMBER	TPH-D
X				1512	867		X	MW-6	3 w/o VOA HCL	TPH-6+BTEX MTBE
X				↓			X	↓	1 AMBER	TPH-D
X				1520	868		X	MW-7	3 w/o VOA HCL	TPH-6+BTEX MTBE
X				↓			X	↓	1 AMBER	TPH-D
X				1528	869		X	MW-8	3 w/o VOA HCL	TPH-6+BTEX MTBE
X				↓			X	↓	1 AMBER	TPH-D

PRINT NAME AFTER SIGNATURE		DATE/TIME	
RELINQUISHED BY: <i>Kirk VanDevort</i> KIRK VANDEVORT	RECEIVED BY: <i>Chris Smith</i>	1/22	10:40
RELINQUISHED BY:	RECEIVED BY:	DATE/TIME	
RELINQUISHED BY:	RECEIVED BY:	DATE/TIME	
RECEIVED FOR LABORATORY BY:		DATE/TIME	

METHOD OF SHIPMENT: UPS

DISPOSITION:

STORAGE     REFRIGERATOR     FREEZER

TURN AROUND TIME

24 HOURS     3 DAYS     1 WEEK     2 WEEKS

SECURED

YES     NO

NOTE: PLEASE HAVE EACH DATA SHEET SIGNED BY CHEMIST.



\*PLEASE PROVIDE CHROMATOGRAMS!

ENGINEERING, INC.

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8084 OLD AUBURN ROAD  
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(916) 723-7645  
LIC. # 537901

I.D. # 15198

JOB # 5090.10

P.O. # \_\_\_\_\_

\*BILL USA DIRECT!

CHAIN OF CUSTODY

JOB NAME: USA OAKLAND #57

LAB: SIERRA

PROJECT MANAGER: VERN BENNETT

SAMPLES COLLECTED BY KIRK VANDEVOERT

COMP.	GRAB	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE			SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED	
					SOIL	AIR	WATER				
	X	MONITOR WELL	1/20/98	1536	870		X	MW-3	3 w/o VOA HCL	TPH-6+BTEX MTBE	
	X	[Large arrow pointing down]	[Large arrow pointing down]	↓			X	↓	1 AMBER	TPH-D	
	X			1542	871	X	S-1	3 w/o VOA HCL	TPH-6+BTEX MTBE		
	X			↓				X	↓	1 AMBER	TPH-D
	X			1550	872	X	S-2	3 w/o VOA HCL	TPH-6+BTEX MTBE		
	X			↓				X	↓	1 AMBER	TPH-D

PRINT NAME AFTER SIGNATURE

RELINQUISHED BY: Kirk VanDeVoort KIRK VANDEVORT

RECEIVED BY: [Signature]

DATE/TIME: 1-22 10:40

RELINQUISHED BY:

RECEIVED BY:

DATE/TIME

RELINQUISHED BY:

RECEIVED BY:

DATE/TIME

RECEIVED FOR LABORATORY BY:

DATE/TIME

METHOD OF SHIPMENT:

UPS

DISPOSITION:

- STORAGE
- REFRIGERATOR
- FREEZER

TURN AROUND TIME

- 24 HOURS
- 3 DAYS
- 1 WEEK
- 2 WEEKS

SECURED	
<input type="checkbox"/>	<input type="checkbox"/>
YES	NO

NOTE: PLEASE HAVE EACH DATA SHEET SIGNED BY CHEMIST.