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REMEDIATION SERVICE, INT'L.

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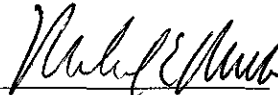
**SOIL & GROUNDWATER  
INVESTIGATION REPORT  
and  
FOURTH QUARTERLY REPORT OF 1995  
GROUNDWATER SAMPLING AND MONITORING**

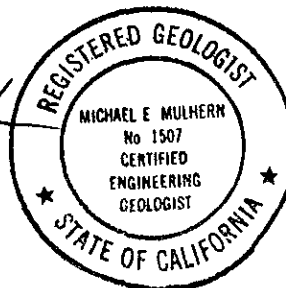
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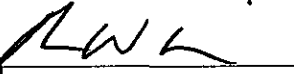
**British Petroleum Service Station  
2008 First Street  
Livermore California**

**Prepared for:  
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**December 8, 1995**

240.320

## TABLE OF CONTENTS

1.0 INTRODUCTION	Page 1
2.0 SITE DESCRIPTION	Page 1
3.0 BACKGROUND	Page 2
4.0 SOIL & GROUNDWATER INVESTIGATION	Page 3
4.1 Soil Boring/Hydropunch Procedures	Page 3
4.2 Hydropunch Groundwater Sampling Procedure	Page 4
4.3 Monitoring Well Installation Procedures	
4.4 Monitoring Well Sampling Procedures	
4.4.1 Geology & Hydrology	Page 6
4.4.2 Soil Sampling Results	Page 6
4.4.3 Groundwater Sampling Results	Page 6
5.0 CONCLUSIONS AND RECOMMENDATIONS	Page 6
6.0 LIMITATIONS	Page 7

### FIGURES

Figure 1.	Location Map
Figure 2.	Vicinity Map With 10/95 Sample Locations
Figure 3.	Plot Plan with Monitoring Wells and Groundwater Flowpath

### TABLES

Table 1.	Groundwater Elevation Data
Table 2.	Summary of Groundwater Sample Analytical Results
Table 3.	Tabulated Soil and Groundwater Analytical Results

### APPENDICES

A.	Soil Boring Logs
B.	Water Sample Logs
C.	Laboratory Reports and Chain of Custody Documentation
D.	Free Product Removal Logs

## 1.0 INTRODUCTION

This report presents the results of on-site and off-site soil and groundwater investigation for the real property located at 2008 First Street, Livermore, Alameda County, California (Figure 1). Remediation Service, Int'l. (RSI) is under contract to Desert Petroleum, Inc. to provide Phase II Assessment of the subject property.

The site is currently occupied by a retail gasoline station operating under the British Petroleum trade name. A site assessment conducted in February, 1988 indicated that both soil and groundwater contained elevated concentrations of petroleum hydrocarbons. One groundwater monitoring well was installed in September, 1988 and three additional wells were installed in June, 1994.

RSI conducted further offsite soil and groundwater assessment and results are documented in RSI's March 1995 Soil and Groundwater Investigation Report. In the March 1995 assessment hydrocarbons were discovered in groundwater at elevated levels offsite to the west. Offsite to the south hydrocarbons were discovered in low levels in the groundwater. Soils in both of these locations near the soil water interface contained corresponding levels of hydrocarbons.

After the March 1995 assessment a second recent release from the underground storage tanks on site was confirmed by the Alameda County Health Care Services Agency. The property owner, Mr B.J. Angle was formally named as a Responsible Party for assessment and mitigation of impacted soil and groundwater. Due to elevated levels of MTBE discovered offsite and chromatogram analysis by other consultants it is believed the second release has impacted offsite soil and groundwater west and northwest of the site.

Under the direction of the Alameda County Health Care Services Agency this investigation consisted of the installation of two groundwater monitoring wells and the drilling of four boreholes and collection of Hydropunch groundwater samples. Soil and groundwater samples were collected from selected locations and submitted for State certified analysis. The procedures and results are detailed in this report.

## 2.0 SITE DESCRIPTION

The site is an operating retail gasoline service station located within a commercial/residential area at the corner of First Street and South "L" Street in Livermore (Figures 2 and 3). A storage/garage building, three underground storage tanks, two pump islands and four

groundwater monitoring wells are present on-site. The three underground storage tanks have holding capacities of 10,000 gallons (Tanks 1 & 2) and 8,000 gallons (Tank 3) and are used for the storage of various grades of unleaded gasoline (Figure 4).

The site is flat, level and paved with asphalt.

### 3.0 BACKGROUND

The following is a summary of the previous work conducted at the site. The analytical results of soil and groundwater samples collected at the site are reported in Tables 1 and 2 and sample locations are shown on Figure 2.

On February 23, 1988, Geonomics Inc., installed four vapor monitoring probes around the tank area. On-site field screening with a Gastechtor organic vapor meter indicated elevated TPH concentrations as vapor in wells DPL-1 and DPL-2. Analysis of a soil sample collected from DPL-1 at 14.5 feet below ground surface (bgs) reported a TPH as gasoline concentration of 400 mg/Kg. Hydrocarbons were not detected in soil samples from DPL-3 and DPL-4 (Geonomics Inc. Vapor Monitoring Probe Report, March 10, 1988).

On September 22, 1988, On-Site Technologies Inc. conducted further subsurface investigation with two soil borings and the completion of one monitoring well (GX-136, later renamed MW-1, Figure 3). Depth to groundwater was measured at 55.8 feet bgs. Analytical results of soil collected from the three borings reported no detectable TPH concentrations above 26 feet bgs and concentrations ranging from 0.8 mg/Kg (DPL-5 at 41 feet) to 1,600 mg/Kg (DPL-6 at 36 feet) below 26 feet bgs. Groundwater was analyzed for TPH as gasoline and BTEX; no hydrocarbon compounds were detected in the groundwater at that time (Table 2, On-Site Technologies, Inc. Report of Hydrogeologic Site Investigation, October 26, 1988).

On August 2, 1990, groundwater in monitoring well GX-136 (MW-1) was sampled for TPH as gasoline and BTEX. Analytical results reported a TPH concentration of 24,000  $\mu\text{g/L}$  and a benzene concentration of 1,300  $\mu\text{g/L}$  (Table 2).

On June 16-18, 1994, RSI conducted a Soil and Groundwater Investigation with the installation of groundwater monitoring wells MW-2, MW-3 & MW-4. Analytical results of soil collected from the three well installations reported hydrocarbons predominantly in well MW-3 with a TPH concentration of 390 mg/Kg (MW-3 @ 10' and 15'). Hydrocarbons were also detected in well MW-2 with a TPH concentration of 77 mg/Kg (MW-2 @ 40'). TPH was not detected in the sample from MW-4; benzene however was detected at a low concentration of 0.009 mg/Kg

(Table 1). Analysis of groundwater samples from the three wells reported TPH concentrations ranging between 810  $\mu\text{g/L}$  (MW-4) and 290,000  $\mu\text{g/L}$  (MW-2). Benzene was detected in all three wells at concentrations between 12  $\mu\text{g/L}$  (MW-4) and 18,000  $\mu\text{g/L}$  (MW-2) (Table 2).

On August 26, 1994 a 0.66 foot immiscible layer of degraded gasoline was measured in well MW-2. This layer was bailed immediately and free product bailing was initiated. During approximately the past six months, levels had been reduced to a sheen; during the time of this investigation no free product was measured or observed. Free product removal logs are available in this office.

In March 1995, RSI conducted a qualitative soil and groundwater assessment to optimize the placement of permanent offsite groundwater monitoring wells. Results of the assessment on the opposite side of South L Street indicated that elevated levels of hydrocarbons exist in soil and groundwater and that the delimitation had not been established in a westerly direction. To the south, well placement criteria was established based upon lower hydrocarbon levels in soil and groundwater and physical access to public right of way and/or private property.

#### **4.0 SOIL & GROUNDWATER INVESTIGATION**

The purpose of this investigation was to further characterize soil and groundwater conditions on and off-site. The investigation was performed from October 10 thru 13, 1995, and consisted of drilling and sampling four soil bore holes offsite and collecting four groundwater hydropunch samples. In addition, one groundwater monitoring well was installed on the west side of South L Street and one groundwater monitoring well was installed onsite in the area of highest historic onsite hydrocarbons in the soil and groundwater. This well, MW-6 was required by the Alameda County Health Department to further evaluate free product presence. Due to unusually high groundwater levels, the well screens in other wells nearby were below the top of the groundwater surface. The addition of MW-6 also provided a properly completed shallow screened well with the potential for extraction in the immediate area of former free product presence. Locations are shown on Figure 2.

##### **4.1 Soil Borings/Hydropunch Procedures**

Prior to beginning the subsurface investigation, a drilling permit was obtained from Zone 7. Underground Service Alert was notified and onsite meetings with agencies, utilities and affected property owners were conducted.

On October 11, 1995, four bore holes, G-1 through G-4, were drilled at the locations shown on

Figure 2. All project drilling reported herein utilized a hollow-stem auger rig supplied and operated by West Hazmat of Newark, California (License #C57-554979). Drilling and soil sampling was supervised by an RSI representative working under the supervision of Michael Mulhern, California Registered Engineering Geologist #1507. A properly calibrated photoionization detector (PID) was used to field screen vapor concentrations and a log of the boring was maintained.

The borings were abandoned by filling with neat cement.

All soil cuttings and decontamination water is contained on-site in covered 55-gallon (17H) DOT approved drums which are sealed and labeled as pending lab analysis. The soil will be disposed of in an appropriate manner based on analytical results.

#### **4.2 Hydropunch Groundwater Sampling Procedures**

During the drilling process on October 11, 1995, groundwater samples were collected from boreholes G-1 through G-4 by driving a Hydropunch II sampling probe below first encountered groundwater at a depth of 40 feet. The Hydropunch tool was then withdrawn approximately 18 inches to allow the temporary well screen to fill. After the chamber was full, a bailer was lowered into the hydropunch. The water collected was transferred into appropriate containers, sealed, labeled, placed on ice, and transported under standard chain of custody procedures to Onsite Environmental, a state certified laboratory in Fremont, California. All samples collected in this investigation were analyzed for TPH and BTEX / MTBE using accepted DHS/EPA methods. Sample analyses are included in the Laboratory Report presented in Appendix C.

#### **4.3 Monitoring Well Installation Procedures**

Groundwater monitoring wells were installed at locations shown on Figure 2. Diagrammatic boring logs with soil descriptions, field screened PID readings and a pictorial cross section of the finished wells are included in Appendix A. Soil descriptions are based on the USCS.

During the installation of MW-5 samples were collected from continuous cores to a depth of 30 feet. Cobbles prohibited further coring and samples were then collected at five foot intervals to 40 feet. Soil samples from this interval were collected by driving a split spoon sampler containing standard brass tubes into undisturbed soil beneath the augers. The samples were properly sealed, stored, transported and analyzed, in the appropriate manner as above. To reduce drilling, analytical, and oversight costs, no soil samples were collected during the installation of MW-6. Lithology and soil contaminant levels in this area were evaluated in two previous investigations.

All sampling equipment was decontaminated between sample collection and bore holes by steam cleaning and/or standard three bucket wash method with TSP.

The monitoring wells were constructed of four-inch diameter schedule 40 PVC casing with 0.02-inch slots over the perforated interval. The wells were installed to a total depth of 40 feet bgs. Slotted casing was installed from 15 feet bgs to total well depth. The annular space around the slotted interval was filter packed with #2 Lonestar sand from a depth of approximately 13 feet bgs to total depth of the well. A two to three foot thick bentonite seal, which was hydrated in-place, was set over each filter pack. Concrete was used as the annular seal from the ground surface to the top of the bentonite. The wells were secured with locking caps and protective traffic-rated well boxes set into the concrete approximately one inch higher than the surrounding ground surface. See Appendix A for well construction details.

After the filter packs were placed and the bentonite seals and concrete had set, the wells were surged with a surge block to set the filter packs and remove any fine sediments. The wells were then further developed a minimum of 48 hours later by vacuum extraction until the water produced was visually free of sediment.

All soil cuttings and discharged water is contained on site in covered 55-gallon (17H) DOT approved drums which were sealed and labeled as pending lab analysis. Final disposal of the soil and groundwater will be based on laboratory results.

#### **4.4 Monitoring Well Groundwater Sampling Procedures**

On September 14 wells MW-1 MW-3 and MW-4 were measured for depth to water to an accuracy of 0.01 feet. The measuring point for each well was the top of the well casing on the north side. They were then vacuum purged until three well volumes had been removed and temperature, conductivity and pH had stabilized. Measured groundwater parameters were recorded on Water Sample Logs (Appendix B). The purged water was placed in 55 gallon DOT approved drums which were sealed and labeled as pending laboratory analysis.

The wells were allowed to recharge to a minimum of 80 percent, then sampled using a disposable polyethylene bailer. Sample handling methodologies as previously discussed.

On October 26, wells MW-5 and MW-6 were purged, and sampled in an identical manner as those listed above.

#### 4.4.1 Geology and Hydrogeology

The site is located on the floor of the Livermore Valley at an elevation of approximately 480 feet above mean sea level with a slight regional gradient towards the west. The subject property lies approximately one mile south of the Arroyo Las Positas Creek and one half mile north of the Arroyo Mocho Creek.

As reported in this and previous investigations, silty sand, sandy gravel, gravel with sand, intermittent layers of sandy clay, and gravelly sand underlie the site to a depth of 60 feet.

During drilling, first groundwater was encountered in clay and sand at a depth of approximately 40 feet bgs. Potentiometric levels stabilized at approximately 30 feet bgs.

#### 4.4.2 Soil Sampling Results

Offsite soil near the capillary fringe has been impacted by hydrocarbons. Soil sample analytical data is reported in Table 3 and Appendix C.

#### 4.4.3 Groundwater Sampling Results

Offsite groundwater has been impacted by hydrocarbons. Onsite groundwater hydrocarbon concentrations continue to exist. Analytical data is reported in Table 2 and Appendix C.

### 5.0 RECOMMENDATIONS

Interim corrective action, as required by Section 2655 of Article 5, Title 23 of the California Code of Regulations, has been performed at this site since August, 1994. *Only did hard boring*

RSI recommends continuing free product monitoring/removal as well as further aquifer characterization in order to assess and mitigate existing and potential future environment impacts.



## **6.0 LIMITATIONS**

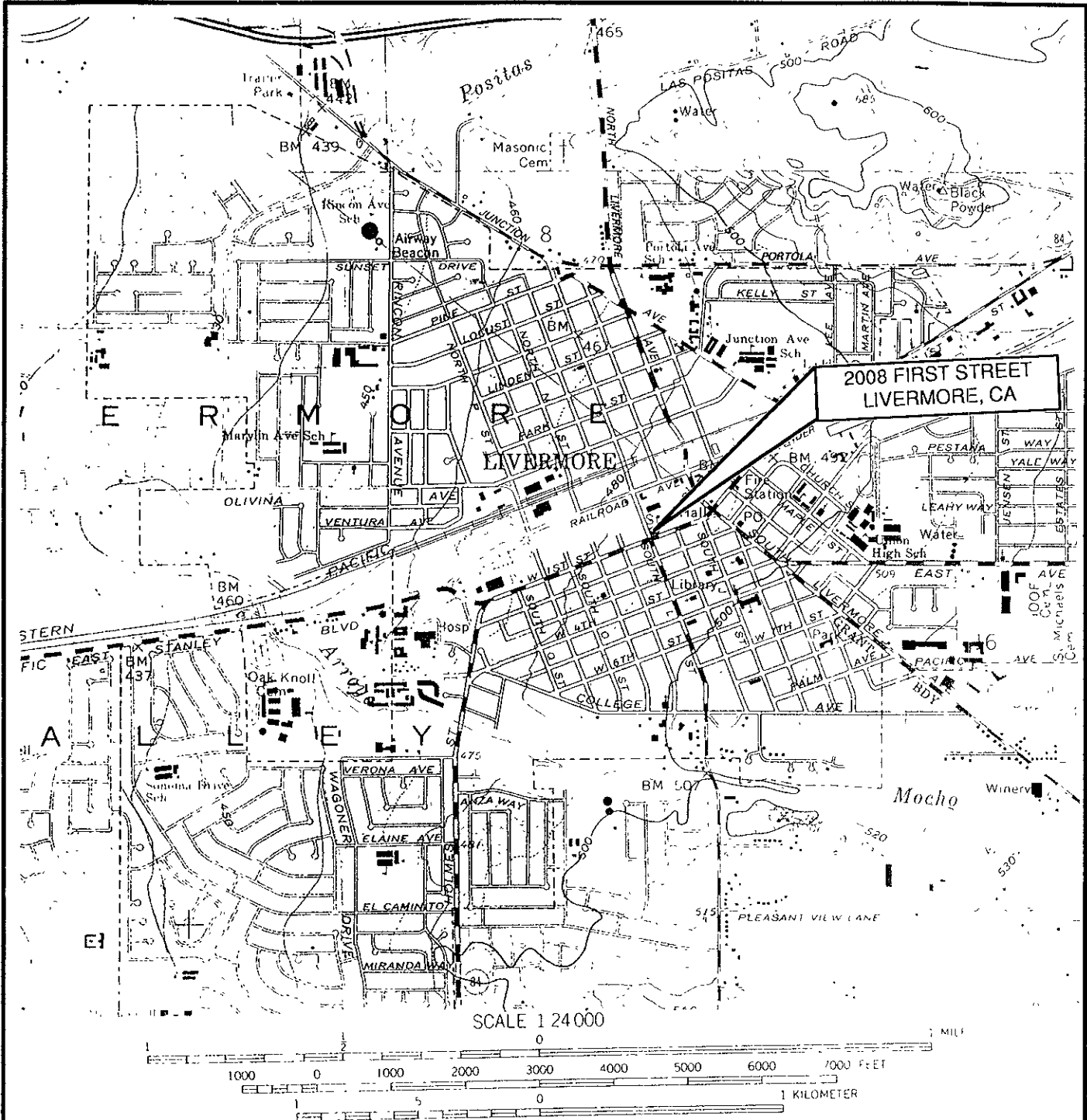
The discussion, conclusion and any recommendations presented in this report are based on the professional performance of the personnel who conducted the investigations, the observations of the field personnel, the results of laboratory analyses performed by a state certified laboratory, any referenced documents and our understanding of the regulations of the State of California and any other applicable local regulations.

Variations in the soil and groundwater conditions may exist beyond the points explored in this and previous investigations.

The services performed by Remediation Service, Int'l. has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the State of California.

Please note that contamination of soil and/or groundwater must be reported to the appropriate agencies in a timely manner.

FIGURES



2008 FIRST STREET  
LIVERMORE, CA

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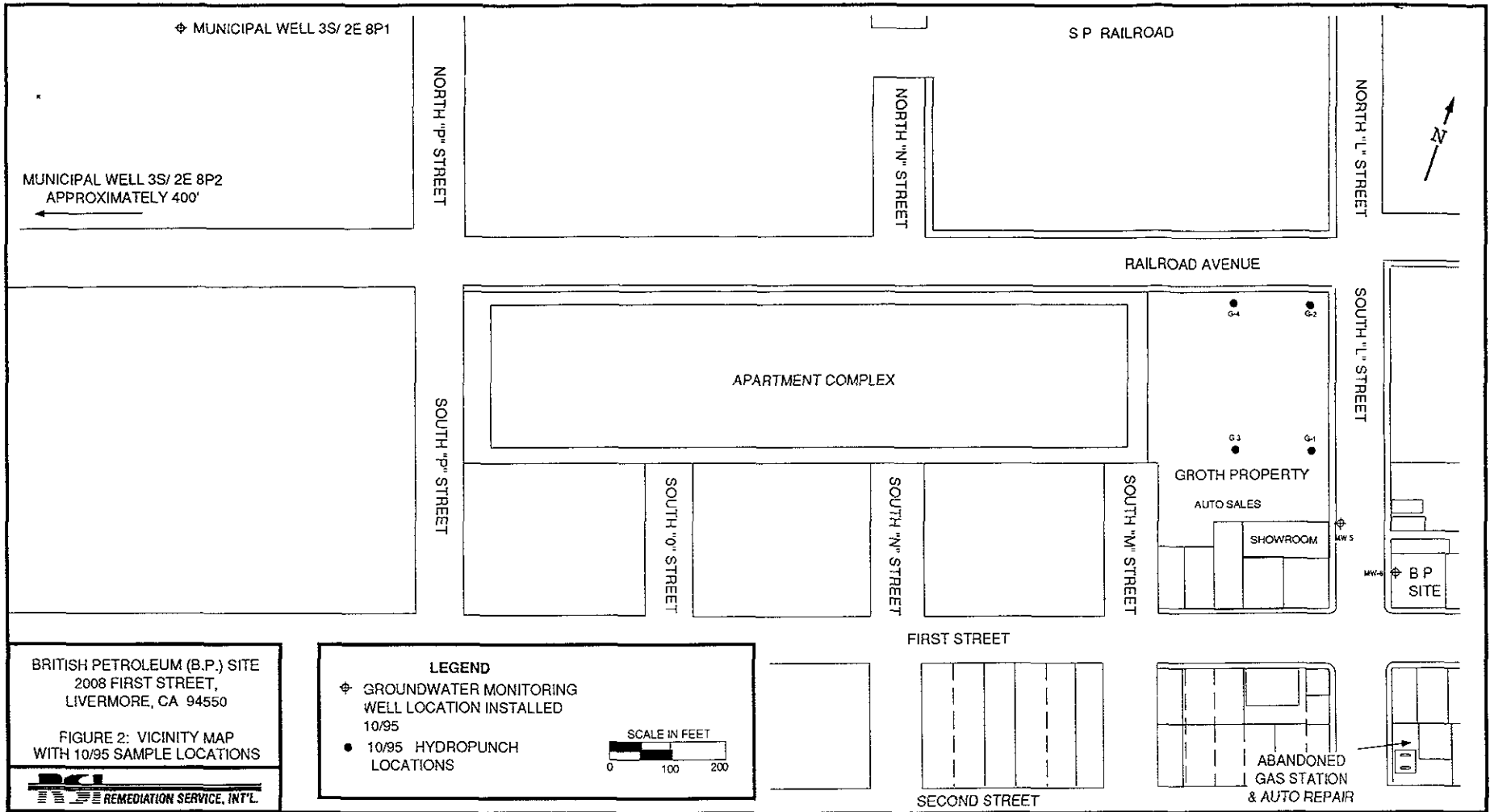
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CALIFORNIA," 1961, PHOTOREVISED  
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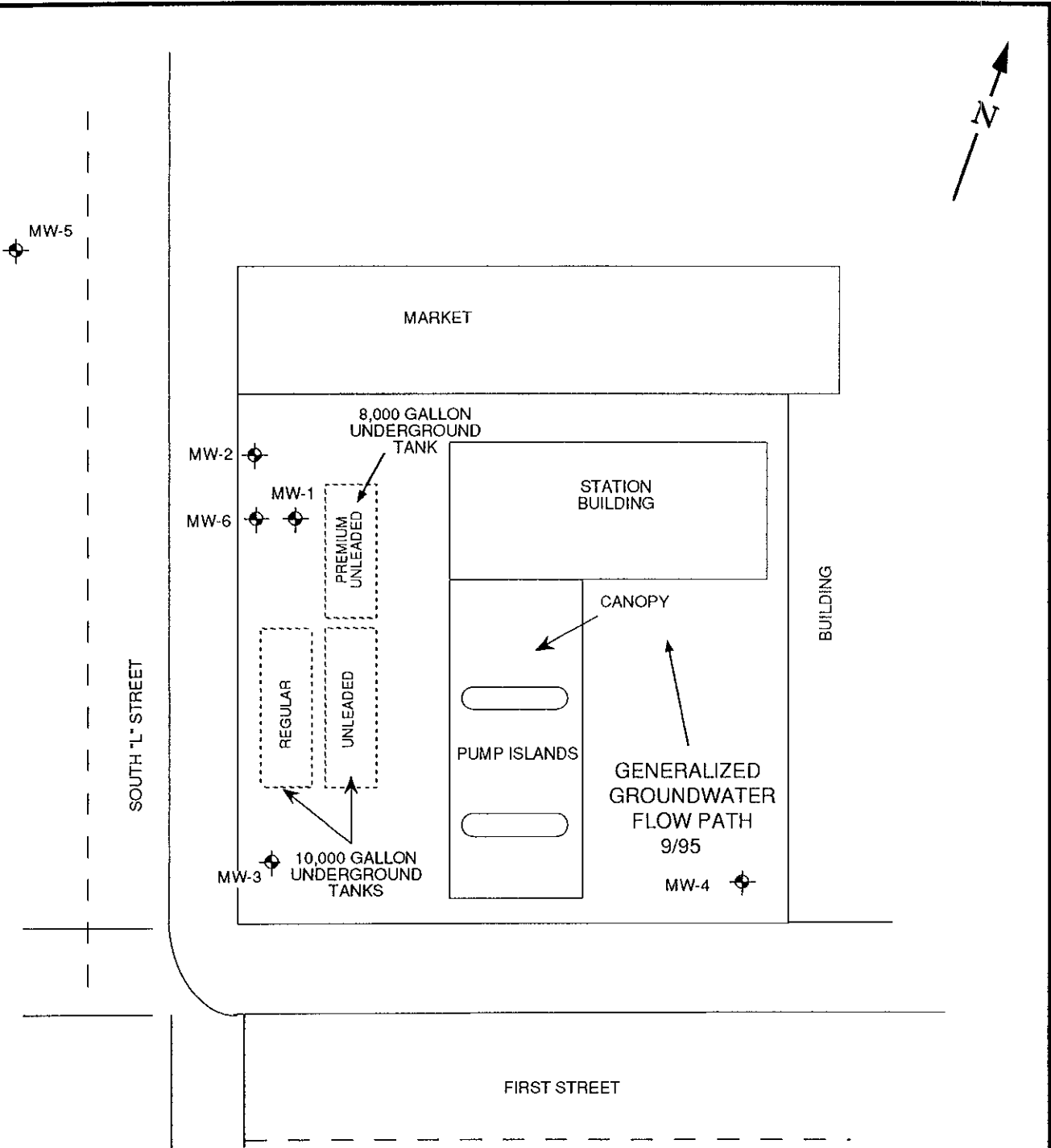
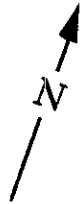


2008 FIRST STREET,  
LIVERMORE, CA

FIGURE 1 LOCATION MAP

RSI - REMEDIATION SERVICE, INT'L





MAP NOT TO SCALE.  
 SURVEYED DISTANCE BETWEEN WELLS, 1" = 25'.

**LEGEND**

 GROUNDWATER MONITORING WELL LOCATION

NOTE : TPH CONCENTRATIONS IN mg/L and  
 BTX CONCENTRATIONS IN µg/L

2008 FIRST STREET,  
 LIVERMORE, CA 94550

FIGURE 3 PLOT PLAN WITH  
 GROUNDWATER FLOWPATH  
 SEPTEMBER 14, 1995



TABLES

**TABLE 1  
GROUNDWATER ELEVATION DATA**

**2008 FIRST STREET  
LIVERMORE, CA**

Measurements are in feet.

Well	Date Measured	Depth to Free Product	Depth to Water	Free Product Thickness	Corrected Depth to Water Table **	Well Head Elevation*	Water Table Elevation*	Change in Elevation
MW-1	9/22/88	—	60.50	—	—	487.00	426.50	
	8/2/90	—	43.10	—	—	—	443.90	17.40
	10/10/91	—	66.39	—	—	—	420.61	-23.29
	1/8/92	—	68.72	—	—	—	418.28	-2.33
	5/11/93	—	34.76	—	—	—	452.24	33.96
	9/21/93	—	38.70	—	—	—	448.30	-3.94
	5/22/94	—	33.57	—	—	—	453.43	5.13
	6/19/94	—	37.51	—	—	484.07	446.56	—
	8/25/94	—	43.27	—	—	—	440.80	-5.76
	11/22/94	—	40.58	—	—	—	443.49	2.69
	3/13/95	—	28.06	—	—	—	456.01	12.52
	6/21/95	—	22.10	—	—	—	461.92	5.91
	9/14/95	—	28.01	—	—	—	456.06	-5.86
MW-2	6/19/94	—	38.15	—	—	483.86	445.71	—
	8/25/94	43.47	44.13	0.66	43.63	—	440.23	-5.48
	11/22/94	40.92	40.96	0.04	40.93	—	442.93	2.70
	3/9/95	28.47	29.28	0.81	28.67	—	455.19	12.26
	3/13/95	28.29	28.71	0.42	28.39	—	455.47	0.28
	6/21/95	—	22.81	—	—	—	461.05	5.58
	9/14/95	—	28.48	—	—	—	455.38	-5.67
MW-3	6/19/94	—	—	—	—	484.24	—	—
	8/25/94	—	42.31	—	—	—	441.93	—
	11/22/94	—	40.07	—	—	—	444.17	2.24
	3/13/95	—	27.94	—	—	—	456.30	12.13
	6/21/95	—	21.68	—	—	—	462.56	6.26
	9/14/95	—	27.50	—	—	—	456.74	-5.82

**TABLE 1 (CONTINUED)  
GROUNDWATER ELEVATION DATA**

Well	Date Measured	Depth to Free Product	Depth to Water	Free Product Thickness	Corrected Depth to Water Table **	Well Head Elevation*	Water Table Elevation*	Change in Elevation
MW-4	6/19/94	—	37.49	—	—	485.04	447.55	—
	8/25/94	—	42.25	—	—	—	442.79	-4.76
	11/22/94	—	40.59	—	—	—	444.45	1.66
	3/13/95	—	28.00	—	—	—	457.04	12.59
	6/21/95	—	21.89	—	—	—	463.15	6.11
	9/14/95	—	27.92	—	—	—	457.12	-6.03
MW-5	10/26/95	—	29.46	—	—	—	—	—
MW-6	10/26/95	—	30.12	—	—	—	—	—

\*Elevations are in feet above mean sea level.

Well Head Elevations to top of casing surveyed 6/94 to City of Livermore Bench Mark: street monument located at the intersection of 1st. street and S. L street.

Bench Mark elevation = 483.82', based on USGS Sea Level Datum 1929

\*\*Corrected depth = Depth to water - (Free product thickness x Specific gravity of product).





TABLE 3

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

2008 FIRST ST.  
LIVERMORE, CA

Groundwater Concentrations are in ug/L  
Soil Concentrations are in mg/Kg

SAMPLE DATE	GROUNWATER SAMPLE LOCATION	TPH	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
10/11/95	G-1	380	61	0.8	ND	1.5	80
10/11/95	G-2	140	2.5	ND	ND	ND	9.4
10/11/95	G-3	92,000	11,000	18,000	2,200	11,000	18000
10/11/95	G-4	8000	46	24	8	28	150

SAMPLE DATE	SOIL SAMPLE LOCATION	TPH	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
10/10/95	MW-5 @ 10'	ND	ND	ND	ND	ND	ND
10/10/95	MW-5 @ 15'	ND	ND	ND	ND	ND	ND
10/10/95	MW-5 @ 20'	ND	ND	ND	ND	ND	ND
10/10/95	MW-5 @ 25'	ND	0.009	ND	ND	ND	0.026
10/10/95	MW-5 @ 30'	790	13	41	13	66	20
10/10/95	MW-5 @ 35'	2.5	0.43	0.15	0.039	0.1	5
10/10/95	MW-5 @ 40'	250	3.1	8	3.1	14	3.2

G= Groundwater Hydropunch  
TPH= Total petroleum hydrocarbons as gasoline



**TABLE 2  
SUMMARY OF LABORATORY ANALYSIS OF GROUNDWATER**

**2008 FIRST STREET  
LIVERMORE, CA**

TPH & Total Lead Concentrations are in mg/L (parts per million)  
BTEX Concentrations are in µg/L (parts per billion)

WELL #	DATE SAMPLED	TPH	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
MW-1	8/2/90	24.00	1,300.00	1,300.00	400.00	2,700.00	NA
	10/10/91	2.20	430.00	170.00	100.00	290.00	NA
	1/8/92	1.20	200.00	120.00	30.00	150.00	NA
	5/11/93	0.96	66.00	8.00	41.00	90.00	NA
	9/21/93	1.90	311.00	118.00	33.80	112.00	NA
	5/22/94	10.00	690.00	1,100.00	340.00	1,200.00	NA
	8/26/94	13.00	290.00	690.00	120.00	670.00	NA
	11/22/94	19.00	400.00	770.00	230.00	1,300.00	NA
	3/13/95	6.00	900.00	100.00	980.00	740.00	NA
	6/21/95	2.40	210.00	380.00	53.00	280.00	1,300.00
	9/14/95	7,800.00 ppb	690.00	1,300.00	220.00	1,200.00	<del>200.00</del> 2000
MW-2	6/19/94	290.00	18,000.00	36,000.00	4,600.00	26,000.00	NA
	8/26/94	NS*	NS*	NS*	NS*	NS*	NA
	11/22/94	NS*	NS*	NS*	NS*	NS*	NA
	3/13/95	NS*	NS*	NS*	NS*	NS*	NA
	6/21/95	25.00	2,300.00	3,400.00	720.00	3,100.00	16,000.00
	9/14/95	NA	NA	NA	NA	NA	NA
MW-3	6/19/94	11.00	640.00	580.00	270.00	790.00	NA
	8/26/94	41.00	1,600.00	2,300.00	330.00	1,800.00	NA
	11/22/94	18.00	8,000.00	10,000.00	900.00	5,000.00	NA
	3/13/95	44.00	1,600.00	1,300.00	5,000.00	6,600.00	NA
	6/21/95	15.00	600.00	1,900.00	490.00	2,600.00	4,200.00
	9/14/95	8,100.00 ppb	710.00	1,100.00	180.00	870.00	2,700.00
MW-4	6/19/94	0.81	12.00	25.00	ND	22.00	NA
	8/26/94	0.85	37.00	51.00	9.50	35.00	NA
	11/22/94	1.70	110.00	110.00	5.80	58.00	NA
	3/13/95	1.30	180.00	8.00	52.00	77.00	NA
	6/21/95	ND	3.00	1.00	ND	1.00	ND
	9/14/95	ND	1.00 0.69	ND	ND	ND	ND < 2.5

*TPHOS  
OK  
12/27/02*


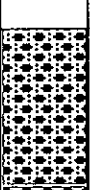











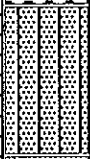

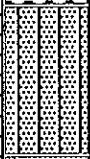

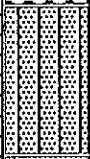

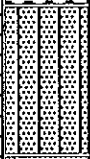

**TABLE 2 (CONTINUED)**  
**SUMMARY OF LABORATORY ANALYSIS OF GROUNDWATER**

WELL #	DATE SAMPLED	TPH	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
MW-5	10/26/95	120,000.00	16,000.00	26,000.00	3,100.00	15,000.00	39,000.00
MW-6	10/26/95	110,000.00	9,900.00	22,000.00	3,200.00	17,000.00	47,000.00
G-1	10/11/95	380.00	61.00	0.80	ND	1.50	80.00
G-2	10/11/95	140.00	2.50	ND	ND	ND	9.40
G-3	10/11/95	92,000.00	11,000.00	18,000.00	2,200.00	11,000.00	18,000.00
G-4	10/11/95	8,000.00	46.00	24.00	8.00	28.00	150.00
Title 22 CCR MCL			1.00	150.00	700.00	1,750.00	

*TPH<sup>25</sup>  
DLP 12/31/06*

TPH = Total petroleum hydrocarbons (gasoline)  
 NA = Not analyzed for this constituent.  
 ND = Not detected at or above minimum detection limit.  
 NS\* = Not sampled due to the presence of free product.

## APPENDICES

DEPTH (feet)	SAMPLE INT.	BLOWS PER 1/2 FOOT	PID (ppm)	BOREHOLE COMPL	LITHOLOGY	USCS	DESCRIPTION
0						GP	GRAVEL, poorly sorted, dry
5			0			GW	GRAVEL, sandy, somewhat silty, medium brown, loose, becoming dense with depth
10			0				
15			0				
20			0				
25			0				
30			0			SM	SAND, silty, clayey, gravelly, moist
35			0				
40			0				
45					 	SP	SAND, gravelly, silty, slightly clayey, medium brown, dense, moist

Drilled By: West Hazmat, #C57-554979  
 Logged By: R. Pilat  
 Reviewed By: Michael Mulhern, EG #1507  
 Drilling Method: Hollow Stem Auger  
 Hole Diameter: 8"  
 Total Depth: 40'  
 Sampling Method: Hydropunch  
 Borehole location: GROTH LOT

PROJECT: 2008 First Street, Livermore, CA

WELL NO.: G-1

DATE: 10/11/95

PAGE 1 OF 1

  
**REMEDIAL SERVICE, INT'L.**  
 2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
 (805) 644-5892 • FAX (805) 654-0720

DEPTH (feet)	SAMPLE INT.	BLOWS PER 1/2 FOOT	PID (ppm)	BOREHOLE COMPL.	LITHOLOGY	USCS	DESCRIPTION
0							
0						GP	GRAVEL, coarse, dry, medium brown, loose
5			0			GP	GRAVEL, very sandy, silty, slightly moist, dark brown, dense
10			0				
15			0			SM	SAND, very gravely, silty, slightly clayey, medium brown, dense moist
20			0			SM	SAND, very silty, gravely, slightly clayey, medium light brown, dense moist
25			0				
30			0				
35			0			SM	SAND, silty, gravely, clayey, wet, dense, yellow brown
40							
45							

Drilled By: West Hazmat, #C57-554979  
 Logged By: R. Pilat  
 Reviewed By: Michael Mulhern, EG #1507  
 Drilling Method: Hollow Stem Auger  
 Hole Diameter: 8"  
 Total Depth: 40'  
 Sampling Method: Hydropunch  
 Borehole location: GROTH Lot

PROJECT: 2008 First Street, Livermore

WELL NO.: G-2

DATE: 10/11/95

PAGE 1 of 1



2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
 (805) 644-5892 • FAX (805) 654-0720

DEPTH (feet)	SAMPLE INT.	BLOWS PER 1/2 FOOT	PID (ppm)	BOREHOLE COMPL	LITHOLOGY	USCS	DESCRIPTION
0							
5			0			GW	GRAVEL, very sandy, slightly silty, medium brown, loose, dry
10			0			SM	SAND, very silty, gravelly, dark brown, loose, dry, slightly organic odor
15			0				
20			0			SW	SAND, gravelly, silty, medium brown, dense, slightly moist
25			0			SM	SAND, very silty, very clayey, medium brown, dense, slightly moist
30			0			GC	GRAVEL, sandy, clay binders, medium-light yellowish brown, soft, moist
35			7 0			GC	GRAVEL, sandy, clayey, medium-light brown, moist, moderately dense, strong hydrocarbon odor
40							
45							

Drilled By: West Hazmat, #C57-554979  
 Logged By: R. Pilat  
 Reviewed By: Michael Mulhern, EG #1507  
 Drilling Method: Hollow Stem Auger  
 Hole Diameter: 8"  
 Total Depth: 40'  
 Sampling Method: Hydropunch  
 Borehole location: GROTH Lot

PROJECT: 2008 First Street, Livermore

WELL NO.: G-3

DATE: 10/11/95

PAGE 1 of 1



2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
 (805) 644-5892 • FAX (805) 654-0720

DEPTH (feet)	SAMPLE INT.	BLOWS PER 1/2 FOOT	PID (ppm)	BOREHOLE COMPL	LITHOLOGY	USCS	DESCRIPTION
0							
5			0			GP	GRAVEL, medium-light brown, loose, dry
10			0				
15			0			SW	SAND, gravelly, silty, clay binder, dense, medium brown, slightly moist
20			0				
25			0				
30			0				
35			0				
40							
45						GP	GRAVEL, medium-light brown, loose, dry

Drilled By: West Hazmat, #C57-554979  
 Logged By: R. Pilat  
 Reviewed By: Michael Mulhern, EG #1507  
 Drilling Method: Hollow Stem Auger  
 Hole Diameter: 8"  
 Total Depth: 40'  
 Sampling Method: Hydropunch  
 Borehole location: GROTH Lot

PROJECT: 2008 First Street, Livermore

WELL NO.: G-4

DATE: 10/11/95

PAGE 1 of 1



2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
 (805) 644-5892 • FAX (805) 654-0720



DEPTH (feet)	SAMPLE INT.	BLOWS PER 1/2 FOOT	PID (ppm)	WELL CONST.	LITHOLOGY	USCS	DESCRIPTION
0							6" asphalt surface
						GP	GRAVEL
						GM	GRAVEL with SAND, poorly graded, silty, loose No Product Odor
5							
10						GC	CLAYEY GRAVEL, sandy, silty, loose, dark brown, dense, consolidated No Product Odor
15						GP	GRAVEL, cobbles to 5 inches in diameter, sandy, dense, Difficult Drilling No Product Odor
20			0			GC	CLAYEY GRAVEL, sandy, silty, dense, grayish brown, No Product Odor
25			0			SM	Silty SAND, clayey, light brown, very moist No Product Odor
							Becomes yellowish brown

CONTINUED ON PAGE 2

Drilled By: West Hazmat  
 Logged By: R. Pilat  
 Reviewed By: Michael Mulhern, EG #1507  
 Drilling Method: Hollow Stem Auger  
 Hole Diameter: 10"  
 Total Depth: 40 Feet  
 Sampling Method: continuous  
 Casing: 4" PVC  
 Screen: 4" x 0.02" PVC  
 Filter Pack: #2 Sand

PROJECT: 2008 First Street, Livermore, CA

WELL NO.: MW-5

DATE: 10/10-11/95

PAGE 1 OF 2



2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
 (805) 644-5892 • FAX (805) 654-0720

DEPTH (feet)	SAMPLE INT.	BLOWS PER 1/2 FOOT	PID (ppm)	WELL CONST.	LITHOLOGY	USCS	DESCRIPTION
27						SM	Silty SAND, clayey, light brown, very moist No Product Odor
30		20/24/60	0				
35		25/62	0				
40		28/75 (6")	6000				TOTAL DEPTH 40 FEET Product Odor

Drilled By: West Hazmat  
 Logged By: R. Pilat  
 Reviewed By: Michael Mulhern, EG #1507  
 Drilling Method: Hollow Stem Auger  
 Hole Diameter: 10"  
 Total Depth: 40 Feet  
 Sampling Method: Split Spoon Sampler  
 Casing: 4" PVC  
 Screen: 4" x 0.02" PVC  
 Filter Pack: #2 Sand

PROJECT: 2008 First Street, Livermore, CA  
 WELL NO.: MW-5  
 DATE: 10/10-11/95



# WATER SAMPLE LOG

DATE: 9/14/95

PROJECT LOCATION: 2008 First St., Livermore, CA

WELL NUMBER: MW-1

WEATHER CONDITIONS: Sunny and warm

FIELD OBSERVATIONS: Replaced rusty locks

TOTAL DEPTH OF WELL: 76.00 feet CASING DIAMETER: 2 inches

DEPTH TO FREE PRODUCT: NONE PURGING METHOD: vacuum

DEPTH TO WATER: 28.01 feet

DEPTHS MEASURED FROM: Top of well casing, north side.

## WELL PURGING DATA

Time	Discharge (gallons)	pH	Temp in F.	Specific Conductance ( $\mu$ mhos/cm)	Comments
12:48	5.0	8.10	71.4	1187.00	Clear and slight odor
12:50	10.0	8.18	7.8	1144.00	
12:55	20.0	8.05	69.4	1136.00	
12:59	30.0	8.10	69.2	1133.00	

TOTAL DISCHARGE: 30.0 gallons

TIME SAMPLE COLLECTED: 1:55 P.M.

DEPTH TO WATER AT TIME OF SAMPLE: 28.66 feet

METHOD OF SAMPLE COLLECTION: Disposable bailer

APPEARANCE OF SAMPLE: Clear, strong product odor present.

AMOUNT AND SIZE OF SAMPLE CONTAINERS: 3 x 40 ml. VOAs

SAMPLE TRANSPORTED TO: Onsite Environmental, Fremont, CA

SAMPLED BY: Walter Lubcke

**RSI**  
**REMEDATION SERVICE, INT'L.**  
2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
(805) 644-5892 • FAX (805) 654-0720

DEPTH (feet)	SAMPLE INT.	BLOWS PER 1/2 FOOT	PID (ppm)	WELL CONST.	LITHOLOGY	USCS	DESCRIPTION
0							3" asphalt surface
						GP	GRAVEL
						GM	GRAVEL, sandy, slightly silty, loose, dark brown, slightly moist Product Odor
5							
10							
15						GC	GRAVEL, clayey, sandy, silty, dark brown, dense, moist Product Odor
20							
25						SM	SAND, silty, clayey, some gravel, light brown, moist Product Odor

CONTINUED ON PAGE 2

Drilled By: West Hazmat  
 Logged By: R. Pilat  
 Reviewed By: Michael Mulhern, EG #1507  
 Drilling Method: Hollow Stem Auger  
 Hole Diameter: 10"  
 Total Depth: 40 Feet  
 Sampling Method: Split Spoon Sampler  
 Casing: 4" PVC  
 Screen: 4" x 0.02" PVC  
 Filter Pack: #2 Sand

PROJECT: 2008 First Street, Livermore, CA

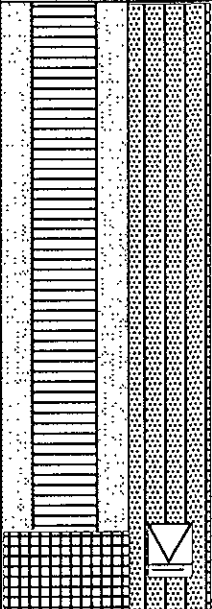
WELL NO.: MW-6

DATE: 10/12/95

PAGE 1 OF 2



2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
 (805) 644-5892 • FAX (805) 654-0720

DEPTH (feet)	SAMPLE INT.	BLOWS PER 1/2 FOOT	PID (ppm)	WELL CONST.	LITHOLOGY	USCS	DESCRIPTION
27						SM	SAND, silty, clayey, some gravel, light brown, moist Product Odor
30							
35							
40							TOTAL DEPTH 40 FEET

Drilled By: West Hazmat  
 Logged By: R. Pilat  
 Reviewed By: Michael Mulhern, EG #1507  
 Drilling Method: Hollow Stem Auger  
 Hole Diameter: 10"  
 Total Depth: 40 Feet  
 Sampling Method: Split Spoon Sampler  
 Casing: 4" PVC  
 Screen: 4" x 0.02" PVC  
 Filter Pack: #2 Sand

PROJECT: 2008 First Street, Livermore, CA

WELL NO.: MW-6

DATE: 10/12/94

PAGE 2 OF 2



2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
 (805) 644-5892 • FAX (805) 654-0720

# WATER SAMPLE LOG

DATE: 9/14/95

PROJECT LOCATION: 2008 First St., Livermore, CA

WELL NUMBER: MW-3

WEATHER CONDITIONS: Sunny and warm

FIELD OBSERVATIONS: \_\_\_\_\_  
\_\_\_\_\_

TOTAL DEPTH OF WELL: 58.60 feet CASING DIAMETER: 4 inches

DEPTH TO FREE PRODUCT: NONE PURGING METHOD: vacuum

DEPTH TO WATER: 27.5 feet

DEPTHS MEASURED FROM: Top of well casing, north side.

## WELL PURGING DATA

Time	Discharge (gallons)	pH	Temp in F.	Specific Conductance ( $\mu$ mhos/cm)	Comments
12:10	5.0	8.18	69.1	1158.00	Clear and slight odor
12:13	10.0	8.11	68.8	1074.00	
12:16	20.0	8.07	68.4	1079.00	
12:22	40.0	8.06	68.4	1105.00	
12:28	60.0	8.05	68.6	1094.00	
12:30	70.0	8.04	68.4	1096.00	

TOTAL DISCHARGE: 70.0 gallons

TIME SAMPLE COLLECTED: 1:45 P.M.

DEPTH TO WATER AT TIME OF SAMPLE: 22.01 feet

METHOD OF SAMPLE COLLECTION: Disposable bailer

APPEARANCE OF SAMPLE: Clear, strong product odor present.

AMOUNT AND SIZE OF SAMPLE CONTAINERS: 3 x 40 ml. VOAs

SAMPLE TRANSPORTED TO: Onsite Environmental, Fremont, CA

SAMPLED BY: Walter Lubcke

**RSI**  
**REMEDIATION SERVICE, INT'L.**  
2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
(805) 644-5892 • FAX (805) 654-0720

# WATER SAMPLE LOG

DATE: 9/14/95

PROJECT LOCATION: 2008 First St., Livermore, CA

WELL NUMBER: MW-4

WEATHER CONDITIONS: Sunny and warm

FIELD OBSERVATIONS: \_\_\_\_\_  
\_\_\_\_\_

TOTAL DEPTH OF WELL: 60.00 feet CASING DIAMETER: 4 inches

DEPTH TO FREE PRODUCT: NONE

DEPTH TO WATER: 27.92 feet PURGING METHOD: vacuum

DEPTHS MEASURED FROM: Top of well casing, north side.

## WELL PURGING DATA

Time	Discharge (gallons)	pH	Temp in F.	Specific Conductance ( $\mu$ mhos/cm)	Comments
11:30	5.0	8.21	68.8	1161.00	Clear and no odor
11:34	10.0	8.15	67.8	1119.00	
11:38	20.0	8.10	67.8	1078.00	
11:42	40.0	8.11	67.4	1125.00	
11:46	60.0	8.12	67.4	1130.00	
11:49	70.0	8.10	67.4	1124.00	

TOTAL DISCHARGE: 70.0 gallons

TIME SAMPLE COLLECTED: 1:20 PM

DEPTH TO WATER AT TIME OF SAMPLE: 27.93 feet

METHOD OF SAMPLE COLLECTION: Disposable bailer

APPEARANCE OF SAMPLE: Clear, strong product odor present.

AMOUNT AND SIZE OF SAMPLE CONTAINERS: 3 x 40 ml. VOAs

SAMPLE TRANSPORTED TO: Onsite Environmental, Fremont, CA

SAMPLED BY: Walter Lubcke

**RSI**  
**REMEDATION SERVICE, INT'L.**  
2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
(805) 644-5892 • FAX (805) 654-0720

# WATER SAMPLE LOG

DATE: 10/26/95

PROJECT LOCATION: 2008 First St., Livermore, CA

WELL NUMBER: MW-5

WEATHER CONDITIONS: Sunny but cool

FIELD OBSERVATIONS: \_\_\_\_\_  
\_\_\_\_\_

TOTAL DEPTH OF WELL: 39.70 feet CASING DIAMETER: 4 inches

DEPTH TO FREE PRODUCT: NONE PURGING METHOD: vacuum

DEPTH TO WATER: 29.46 feet

DEPTHS MEASURED FROM: Top of well casing, north side.

## WELL PURGING DATA

Time	Discharge (gallons)	pH	Temp in F.	Specific Conductance ( $\mu$ mhos/cm)	Comments
9:05	0.0	6.62	68.4	1752.00	Strong odor
9:09	10.0	6.66	67.8	1226.00	
9:14	20.0	6.66	67.7	1204.00	
9:19	30.0	6.70	67.4	1158.00	
9:23	40.0	6.76	67.6	1154.00	
9:29	50.0	6.80	67.6	1147.00	
9:33	55.0	6.81	67.6	1142.00	

TOTAL DISCHARGE: 55.0 gallons

TIME SAMPLE COLLECTED: 10:02 AM

DEPTH TO WATER AT TIME OF SAMPLE: 29.57 feet

METHOD OF SAMPLE COLLECTION: Disposable bailer

APPEARANCE OF SAMPLE: Slightly cloudy

AMOUNT AND SIZE OF SAMPLE CONTAINERS: 3 x 40 ml. VOAs

SAMPLE TRANSPORTED TO: Onsite Environmental, Fremont, CA

SAMPLED BY: Walter Lubcke

**RSI**  
**REMEDATION SERVICE, INT'L.**  
2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
(805) 644-5892 • FAX (805) 654-0720



# WATER SAMPLE LOG

DATE: 10/26/95

PROJECT LOCATION: 2008 First St., Livermore, CA

WELL NUMBER: MW-6

WEATHER CONDITIONS: Sunny and warm

FIELD OBSERVATIONS: \_\_\_\_\_  
\_\_\_\_\_

TOTAL DEPTH OF WELL: 39.50 feet CASING DIAMETER: 4 inches

DEPTH TO FREE PRODUCT: NONE PURGING METHOD: vacuum

DEPTH TO WATER: 30.12 feet

DEPTHS MEASURED FROM: Top of well casing, north side.

## WELL PURGING DATA

Time	Discharge (gallons)	pH	Temp in F.	Specific Conductance ( $\mu$ mhos/cm)	Comments
10:54	0.0	6.89	68.7	1117.00	Strong odor and slight sheen
10:58	10.0	6.98	69	1111.00	
11:04	20.0	6.97	68.8	1107.00	
11:10	30.0	6.87	68.8	1123.00	
11:18	40.0	6.85	68.6	1110.00	
11:25	50.0	6.82	68.4	1108.00	
11:31	55.0	6.81	68.4	1101.00	

TOTAL DISCHARGE: 55.0 gallons

TIME SAMPLE COLLECTED: 11:55 AM

DEPTH TO WATER AT TIME OF SAMPLE: 30.55 feet

METHOD OF SAMPLE COLLECTION: Disposable bailer

APPEARANCE OF SAMPLE: Clear, strong product odor present.

AMOUNT AND SIZE OF SAMPLE CONTAINERS: 3 x 40 ml. VOAs

SAMPLE TRANSPORTED TO: Onsite Environmental, Fremont, CA

SAMPLED BY: Walter Lubcke



2060 KNOLL DR., SUITE 200, VENTURA, CA 93003  
(805) 644-5892 • FAX (805) 654-0720

**LABORATORY ANALYTICAL REPORT**  
EPA Methods 8015 Modified / 8020

Date sampled: 9/14/95  
Date received: 9/14/95  
Date extracted: 9/20/95  
Date analyzed: 9/20/95  
Report Number: 1B140.rpt  
Lab. Number: 1B140

Proj.mgr: Rick Pilat  
Client: Desert Petroleum  
Project: D.P. #795  
Matrix: water  
Units: µg/L  
COC #: -

Lab. ID #	Field ID #	DF	MTBE	Benzene	Toluene	Ethyl Benzene	Xylene	TPHg	Surrogate recovery %
-01	MW #4	1	nd	0.69	nd	nd	nd	nd	107
-02	MW #3	10	2700	710	1100	180	870	8100	120
-03	MW #1	10	2000	690	1300	220	1200	7800	98

Detection limits	2.5	0.5	0.5	0.5	0.5	50
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Notes:

nr Not Requested  
nd Not Detected  
DF Dilution Factor  
µg/L Micrograms per liter (ppb)  
TPHg Total petroleum hydrocarbons as gasoline

Procedures:

BTEX - This analysis was performed using EPA Method 8020, and EPA Method 5030  
TPHg - This analysis was performed using EPA Method 8015 Mod

Certification:

California Department of Health Services ELAP Certificate #1939  
Onsite Environmental Laboratories, 5500 Boscell Common, Fremont, CA 94538 (510) 490-8571/Fax (510) 490-8572

James Parkes  
Laboratory Director

9/26/95  
Date

## QC DATA REPORT

**Date sampled:** 9/14/95  
**Date received:** 9/14/95  
**Date extracted:** 9/20/95  
**Date analyzed:** 9/20/95  
**Report Number:** 1B140.qac  
**Lab. Number:** 1B140-01

**Proj.mgr:** Rick Pilat  
**Client:** Desert Petroleum  
**Project:** D.P. #795  
**Matrix:** water  
**Units:** µg/L  
**COC #:** -

Parameter	M.Blank µg/L	LCS %	R µg/L	SP µg/L	MS µg/L	PR1 %	MSD µg/L	PR2 %	RPD %
MTBE	nd	101	0.7	50	44.3	87	48.5	96	9
Benzene	nd	97	0	10	10.8	108	11.0	110	2
Toluene	nd	97	0	10	10.5	105	10.8	108	3
Ethyl Benzene	nd	99	0	10	10.9	109	11.0	110	1
Xylene	nd	100	0	30	32.9	110	33.4	111	2
TPH as gasoline	nd	-	-	-	-	-	-	-	-
Surr. recov., %	96	108	107		103		104		

**Notes.**

ND - Not Detected

R - Result of Analysis

SP - Spike Concentration Added to Sample

MS - Matrix Spike Results

MSD - Matrix Spike Duplicate Results

PR1 - Percent Recovery of MS:  $\text{ABS}(\text{MS} - \text{R}) / \text{SP} \times 100\%$

PR2 - Percent Recovery of MSD:  $\text{ABS}(\text{MSD} - \text{R}) / \text{SP} \times 100\%$

RPD - Relative Percent Difference:  $[\text{ABS}(\text{MS} - \text{MSD}) / ((\text{MS} + \text{MSD}) \times 2)] \times 100\%$

**Laboratory QC Criteria :**

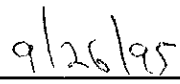
Parameter	Acceptable % Recoveries
MTBE	70% - 130%
BTEX	70% - 130%
TPH as gasoline	70% - 130%
RPD, %	0% - 30%

**Certification:**

California Department of Health Services ELAP Certificate #1939

Onsite Environmental Laboratories, 5500 Boscell Common, Fremont, CA 94538 (510) 490-8571/Fax (510) 490-8572

  
 Laboratory Director

  
 Date

CONSULTING ANALYTICAL CHEMISTS

4197 Lakeside Drive, Suite 170, Richmond, CA 94806

FAX: (510) 222/4817

PHONE: (510) 222-4815

Client/Project ID		Address/Phone		ANALYSES				KPI Project No.	
Project Location		Client Project No.							
Contact		Sampler (Signature)							
Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	No. of Containers	Expected Turnaround Time		Remarks	
MW #4	9-14-95	13:20			3	X	X	STANDARD	-01
MW #3	9-14-95	13:45			3	X	X	↓	-02
MW #1	9-14-95	13:55			3	X	X		-03
Relinquished by: (Signature)		Date	Time	Received by: (Signature)				Date	Time
<i>[Signature]</i>		9-14-95	14:46	<i>[Signature] - ONSITE LAB</i>				9-14-95	14:47
Relinquished by: (Signature)		Date	Time	Received by: (Signature)				Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)				Date	Time
Disposal Method				White Copy : Accompanies Samples Yellow Copy : Sampler					
Disposed by: (Signature)		Date	Time						

8015/8020  
MTBE

**Analytical Laboratory Report**  
EPA Methods 8015 Modified / 8020

Date Sampled: 10-Oct-95  
Date Received: 11-Oct-95  
Date Analyzed: 12-Oct-95  
Date Reported: 13-Oct-95  
Report Number: 1B165a.RPT  
Lab Number: 1B165

Proj Mgr: Rick Pilat  
Client: RSI  
Project: Desert Petroleum  
Project #: 795  
Matrix: Soil  
Units: mg/Kg  
COC #: N / A

Lab ID No.	Field ID No. (MWS @)	Benzene	Toluene	Ethyl- benzene	Xylenes total	MTBE	TPH- Gasoline	BTEX Surrogate %	BTEX Dilution
-01	11 5-2 10'	ND	ND	ND	ND	ND	ND	95	1
-02	" 5-3 15'	ND	ND	ND	ND	ND	ND	95	1
-03	" 5-4 20'	ND	ND	ND	ND	ND	ND	93	1
-04	" 5-5 25'	0.009	ND	ND	ND	0.026	ND	83	1
-05	" 5-6 30'	13	41	13	66	20	790	151 M	500
-06	" 5-7 35'	0.43	0.15	0.039	0.10	5.0 #	2.5	102/97	1 / 100
-07	" 5-8 40'	3.1	8.0	3.1	14	3.2	250	123	200
	OK								
	RP								

Detection Limits SOIL (PQL) mg/Kg	0.005	0.005	0.005	0.005	0.005	1
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**NOTES**  
NR - Not requested  
COC - Chain of custody  
ND - Analytes not detected at, or above the stated detection limit  
TPHd - Total petroleum hydrocarbons as diesel #2  
TPHg - Total petroleum hydrocarbons as gasoline  
mg/Kg - Milligrams per kilogram (PPM)  
PQL - Practical Quantitation Limit  
\* - Higher boiling compounds indicated  
M - matrix interference  
# - 100 fold dilution for MTBE

**PROCEDURES:**  
BTEX - This analysis was performed using EPA Method 8020, and EPA Method 5030  
TPHd - This analysis was performed using EPA Method 8015 Mod and 3550  
TPHg - This analysis was performed using EPA Method 8015 Mod and EPA Method 5030

**CERTIFICATION:**  
California Department of Health Services ELAP Certificate #1774  
Onsite Environmental Laboratories, 5500 Boscell Conunon, Fremont, CA 94538 (510) 490-8571

*James Barlow*  
\_\_\_\_\_  
Laboratory Director

*10/17/95*  
\_\_\_\_\_  
Date

**QC Data Report**

<b>C-O-C #:</b>	N / A	<b>Proj Mgr:</b>	Rick Pilat
<b>Date Received:</b>	10/11/95	<b>Client:</b>	RSI
<b>Date Extracted:</b>	N / A	<b>Project:</b>	DP 795
<b>Date Analyzed:</b>	10/12/95	<b>Matrix:</b>	Soil
<b>Lab ID #:</b>	N / A	<b>Units:</b>	mg/Kg
<b>Report #:</b>	1B165a QAC	<b>Sample ID:</b>	N / A

Parameter	Blank Result mg/Kg	Spike Level mg/Kg	LCS Result mg/Kg	LCS Recov. %	Sample Result mg/Kg	MS Level mg/Kg	MS Result mg/Kg	MS Recov. %	MSD Result mg/Kg	MSD Recov. %	RPD %
Benzene	ND	0.1	0.087	87	-	-	-	-	-	-	-
Toluene	ND	0.1	0.089	89	-	-	-	-	-	-	-
Ethyl benzene	ND	0.1	0.090	90	-	-	-	-	-	-	-
total Xylenes	ND	0.3	0.281	94	-	-	-	-	-	-	-
MTBE	ND	-	-	-	-	-	-	-	-	-	-
TPH <sub>g</sub>	ND	-	-	-	-	-	-	-	-	-	-
TPH <sub>d</sub>	-	-	-	-	-	-	-	-	-	-	-
surr %rec btex	89			97							
surr %rec dsl	-										

**DEFINITION OF TERMS:**

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
RPD - Relative Percent Difference:  $(MS - MSD) / ((MS + MSD) / 2) \times 100$

**LABORATORY QC CRITERIA**

<u>Parameter</u>	<u>Acceptable % Recoveries</u>	
Benzene	70%	130%
Toluene	70%	130%
Ethylbenzene	70%	130%
Xylenes Total	70%	130%
TPH <sub>d</sub>	65%	135%
%RPD	0%	30%

**QC Data Report**

<b>C-O-C #:</b>	N/A	<b>Proj Mgr:</b>	Rick Pilat
<b>Date Received:</b>	10/11/95	<b>Client:</b>	RSI
<b>Date Extracted:</b>	N/A	<b>Project:</b>	DP 795
<b>Date Analyzed:</b>	10/12/95	<b>Matrix:</b>	Water
<b>Lab ID #:</b>	1B165-02	<b>Units:</b>	ug/l
<b>Report #:</b>	1B165.QAC	<b>Sample ID:</b>	G-2

Parameter	Blank Result ug/l	Spike Level ug/l	LCS Result ug/l	LCS Recov. %	Sample Result ug/l	MS Level ug/l	MS Result ug/l	MS Recov. %	MSD Result ug/l	MSD Recov. %	RPD %
Benzene	ND	100	87	87	2.5	-	-	-	-	-	-
Toluene	ND	100	89	89	ND	-	-	-	-	-	-
Ethyl benzene	ND	100	90	90	ND	-	-	-	-	-	-
total Xylenes	ND	300	281	94	ND	-	-	-	-	-	-
MTBE	ND	-	-	-	9.4	2440	2470	101	2560	105	4
TPH <sub>g</sub>	ND	-	-	-	-	-	-	-	-	-	-
TPH <sub>d</sub>	-	-	-	-	-	-	-	-	-	-	-
surr %rec btex	89			97	94			137		128	
surr %rec dsl	-										

**DEFINITION OF TERMS:**

MS - Matrix Spike  
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RPD - Relative Percent Difference  $(MS - MSD) / ((MS + MSD)/2) \times 100$

**LABORATORY QC CRITERIA**

<u>Parameter</u>	<u>Acceptable % Recoveries</u>	
Benzene	70%	130%
Toluene	70%	130%
Ethylbenzene	70%	130%
Xylenes Total	70%	130%
TPH <sub>d</sub>	65%	135%
%RPD	0%	30%





# Chain of Custody and Analysis Request

CLIENT: DESERT RETROFIT  
 ADDRESS: 2600 KIDOLL DR SUNNYVALE, CA 95128  
 PHONE No: 650 644 5811 Fax No: 650 0920  
 Project Manager: RICK PILAT  
 Alternate Contact: \_\_\_\_\_  
 Project No: DR 1795 P.O. No: \_\_\_\_\_

Turn Around Time  
 (Circle one)  
 Same Day 72 Hrs  
 24 Hrs 48 Hrs  
 Normal 5 Day 72 Hrs

Superior Precision Analytical, Inc.  
  
 2085 S. Bascom Ave. #553  
 San Jose, CA 95128  
 Phone: (510) 229-1511 Fax: (510) 229-1512  
 E-mail: info@spai.com

Sampler: [Signature]  
 Regulatory Agency: \_\_\_\_\_

## Section II: Analysis Request


Laboratory Sample Identification	Matrix B - Soil A - Air W - Water	mod 8015 - Gas	mod 8015 - BTEX	mod 8015 - Diesel 8020	8010	8240	CAM17	TCLP Metals:	Metals:	418.1 - TPH by IR	O & G	PCBs	Data Sampled	Time Sampled	Number of Containers	Preservative (yes or no)	Sampling Remarks	
																	<input type="checkbox"/> Bio-remediation	<input type="checkbox"/> Underground storage tank
1 5-1	S												10-10-11:00				Soil - 5"	5"
2 5-2	W	X	X										10-10-10:30				W - 10"	10"
3 5-3	W												10-10-10:50				W - 15"	15"
4 5-4	W												10-10-11:00				W - 20"	20"
5 5-5	W												10-10-12:00				W - 25"	25"
6 5-6	W												10-10-11:50				W - 30"	30"
7 5-7	W												10-10-14:10				W - 35"	35"
8 5-8	W	↓	↓										10-10-11:50				W - 40"	40"
9																		
10																		
11																		
12																		

Requested by: <u>[Signature]</u> Organization: <u>Automated SVU</u>	Date/Time: <u>10/19/11</u>	Received by: <u>[Signature]</u> Organization: <u>DR 1795 SVU</u>	Date/Time: <u>10/19/11</u>	Lab please initial the following: Samples Stored in Ice: <u>R</u> Appropriate Containers: <u>R</u> Samples Preserved: _____ VOAs without Headspace: _____ Comments: _____
Requested by: _____ Organization: _____	Date/Time: _____	Received by: _____ Organization: _____	Date/Time: _____	
Requested by: _____ Organization: _____	Date/Time: _____	Received by: _____ Organization: _____	Date/Time: _____	

# Chain of Custody and Analysis Request

Client: DETECT PETROLEUM  
 Address: 2600 KNOLE DR SUITE 200  
VENTURA, CA 93003  
 Phone No: 644 5892 Fax No: \_\_\_\_\_  
 Project Manager: Rick Allen  
 Alternate Contact: \_\_\_\_\_  
 Project No: DP 195 P.O. No: \_\_\_\_\_

Turn Around Time  
 (Circle one)  
 Same Day 72 Hrs  
 24 Hrs 48 Hrs  
Normal 5 Day  
 Sampler: \_\_\_\_\_  
 Regulatory Agency: \_\_\_\_\_

**Superior Precision Analytical, Inc.**  
  
 P.O. Box 515  
 Marina, California 91553  
 Martinez | 510-221-1515 | Los Angeles | 510-221-1515  
 San Francisco | 415-472-2081

## Section II: Analysis Request

Laboratory Sample Identification	Matrix S = Soil A = Air W = Water	mod 8015 - Gas	mod 8015 - BTEX 8020	mod 8015 - Diesel	8010	8240	CAM17	TCCLP Metals:	Metals:	418.1 - TPH by IR	O & G	PCBs	Data Sampled	Time Sampled	Number of Containers	Preservative (yes or no)	Sampling Remarks				
																	<input type="checkbox"/> Bio-remediation	<input checked="" type="checkbox"/> Underground storage tank	<input type="checkbox"/> Monitoring	<input type="checkbox"/> Recent Contamination	<input type="checkbox"/> Unknown Compounds
1 G-1	W	X	X											8:57							
2 G-2	W	X	X											10:12							
3 G-3	W	X	X											11:41							
4 G-4	W	X	X											14:00						SAMPLE MAY BE HOT	
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Relinquished by: <u>[Signature]</u> Organization: <u>DETECT PETROLEUM</u>	Date/Time: <u>10/1/95 15:22</u>	Received by: <u>[Signature]</u> Organization: <u>DETECT PETROLEUM</u>	Date/Time: <u>10/1/95 2:00</u>	Lab please initial the following: Samples Stored in Ice _____ Appropriate Containers _____ Samples Preserved _____ VOAs without Headspace _____ Comments _____
Relinquished by: _____ Organization: _____	Date/Time: _____	Received by: _____ Organization: _____	Date/Time: _____	
Relinquished by: _____ Organization: _____	Date/Time: _____	Received by: _____ Organization: _____	Date/Time: _____	

**Analytical Laboratory Report**  
 EPA Methods 8015 Modified / 8020

Date Sampled: 26-Oct-95  
 Date Received: 26-Oct-95  
 Date Analyzed: 1-Nov-95  
 Date Reported: 2-Nov-95  
 Report Number: 6B083.rpt  
 Lab Number: 6B083

Proj Mgr: Rick Pilat  
 Client: Desert Petroleum  
 Project: Livermore, CA  
 Project #: 795  
 Matrix: Soil, Water  
 Units: mg/Kg, ug/L  
 COC #: None

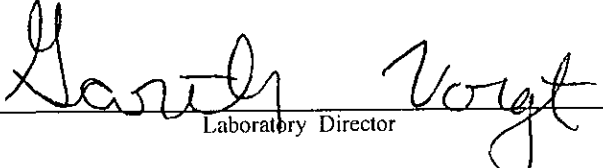
Lab ID No.	Field ID No.	MTBE	Benzene	Toluene	Ethyl- benzene	Xylenes total	TPH- Gas	BTEX Surrogate %	Matrix	BTEX dil
6B083-01	MW #5	39000	16000	26000	3100	15000	120000	110	Water	100
6B083-02	MW #6	47000	9900	22000	3200	17000	110000	110	Water	100
6B083-03	C-1,2,3,4	0.89	ND	4.2	2.8	14	200	116	Soil	50

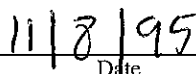
Detection Limits SOIL (PQL) mg/Kg	0.005	0.005	0.005	0.005	0.015	1
Detection Limits WATER (PQL) ug/L	0.5	0.5	0.5	0.5	1.5	50

**NOTES:**  
 NR - Not requested  
 COC - Chain of custody  
 ND - Analytes not detected at, or above the stated detection limit  
 mg/Kg - Milligrams per kilogram (PPM)  
 PQL - Practical Quantitation Limit  
 MTBE - Methyl tert-butylether  
 RE - Rerun of sample because of low surrogate recovery Low surrogate recovery on two extractions of same sample is matrix effects  
 M - Matrix effects

**PROCEDURES:**  
 MTBE/BTEX - This analysis was performed using EPA Method 8020, and EPA Method 5030  
 TPHgas - This analysis was performed using EPA Method 8015, and EPA Method 5030

**CERTIFICATION:**  
 California Department of Health Services ELAP Certificate #2010  
 Onsite Environmental Laboratories, 5500 Boscell Common, Fremont, CA 94538 (510) 490-8571

  
 Laboratory Director

  
 Date

**QC Data Report**

<b>C-O-C #:</b>	NONE	<b>Proj Mgr:</b>	Rick Pilat
<b>Date Received:</b>	10/26/95	<b>Client:</b>	Desert Petroleum
<b>Date Analyzed:</b>	11/01/95	<b>Project:</b>	Livermore, CA
<b>Lab ID #:</b>	6B082-04	<b>Matrix:</b>	Soil
<b>Report #:</b>	01NOV95B.qac	<b>Units:</b>	mg/Kg
		<b>Sample ID:</b>	MW #2-1 @5'

Parameter	Blank Result mg/Kg	Spike Level mg/Kg	LCS Result mg/Kg	LCS Recov. %	Sample Result mg/Kg	MS Level mg/Kg	MS Result	MS Recov. %	MSD Result mg/Kg	MSD Recov. %	RPD %
MTBE	ND	0.050	0.069	138	ND	0.050	0.048	96	0.052	104	8.1
Benzene	ND	0.050	0.052	104	ND	0.050	0.045	89	0.051	102	13.4
Toluene	ND	0.050	0.051	102	ND	0.050	0.042	85	0.049	98	14.6
Ethyl benzene	ND	0.050	0.054	108	ND	0.050	0.044	87	0.050	100	13.7
total Xylenes	ND	0.150	0.166	111	ND	0.150	0.132	88	0.149	99	12.1
Gasoline	ND	-	-	-	ND	-	-	-	-	-	-
surr %rec btex	130	-	116	-	86	-	88	-	95	-	-

**DEFINITION OF TERMS:**

MTBE - Methyl tert-butylether  
LCS - Laboratory Control Spike (Blank Spike)  
MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
RPD - Relative Percent Difference:  $(MS - MSD) / ((MS + MSD)/2) \times 100$

**LABORATORY QC CRITERIA**

<u>Parameter</u>	<u>Acceptable % Recoveries</u>	
MTBE	70%	130%
Benzene	70%	130%
Toluene	70%	130%
Ethylbenzene	70%	130%
Xylenes Total	70%	130%
%RPD	0%	30%

MTBE/BTEX - done by Instrument #72

ON-SITE LABORATORIES.



CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS

4197 Lakeside Drive, Suite 170, Richmond, CA - 94806

FAX: (510) 222/4817 - PHONE: (510)-222-4815

Bill TO: *WELLS METROLOGY 805-644 5892*

Client/Project ID <i>DESURT PETROLIUM # 1795</i>		Address/Phone <i>2060 KINGS BLVD SUITE 200 MESA, CALIF.</i>				ANALYSES				KPI Project No.					
Project Location <i>2009 1ST ST LINDAMERE CA.</i>		Client Project No.				<i>SALE - 9020</i> <i>MTBE</i> <i>CALL R. PILAT FOR ANALYSES</i>				Expected Turnaround Time		Remarks			
Contact <i>RICK PILAT</i>		Sampler (Signature) <i>[Signature]</i>													
Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	No. of Containers						Expected Turnaround Time	Remarks			
<i>MW # 5</i>	<i>10-26-95</i>	<i>10:02</i>			<i>3</i>	<i>X</i>	<i>X</i>				<i>STAND</i>	<i>STRONG GAS OROK</i>			
<i>MW # 6</i>	<i>10-26-95</i>	<i>11:55</i>			<i>3</i>	<i>X</i>	<i>X</i>				<i>"</i>	<i>" " "</i>			
<i>C-1</i>	<i>10-26-95</i>	<i>12:10</i>			<i>1</i>			<i>X</i>			<i>"</i>	<i>Samples TO BE COMPLETED FOR</i> <i>run for TPHg/BTEX</i> <i>per R.P.</i> <i>10-27-95</i>			
<i>C-2</i>	<i>10-26-95</i>				<i>1</i>			<i>X</i>			<i>"</i>				
<i>C-3</i>	<i>10-26-95</i>				<i>1</i>			<i>X</i>			<i>"</i>				
<i>C-4</i>	<i>10-26-95</i>		<i>12:45</i>			<i>1</i>		<i>X</i>			<i>"</i>				
Relinquished by: (Signature) <i>[Signature]</i>		Date <i>10-26-95</i>	Time <i>15:07</i>	Received by: (Signature) <i>Roberto Arcilla</i>		Date <i>10/26/95</i>	Time <i>1507</i>	Relinquished by: (Signature)		Date	Time		Relinquished by: (Signature)		Date
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time	Relinquished by: (Signature)		Date	Time	Relinquished by: (Signature)		Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time	Relinquished by: (Signature)		Date	Time	Relinquished by: (Signature)		Date	Time
Disposal Method				White Copy : Accompanies Samples Yellow Copy : Sampler											
Disposed by: (Signature)		Date	Time												