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Alameda County
Environmental Health

Ms. Barbara Jakub Alameda County Health Care Services Agency 1131 Harbor Bay Parkway Alameda, CA 9502-6577

Subject:

Former Val Strough Chevrolet Site 327 34<sup>th</sup> Street, Oakland, CA

Site ID #3035, RO#0000134

Dear Ms. Jakub:

This letter is to accompany the Second Quarter 2008 Groundwater Monitoring Report for the above-referenced site prepared by LRM Consulting, Inc. of Burlingame, CA.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

If you have any questions, please contact Mr. Mehrdad Javaherian of LRM Consulting, Inc. at 650-343-4633.

Sincerely.

Linda L. Strough

Trustee

cc: Mehrdad Javaherian, LRM Consulting, Inc., 1534 Plaza Lane, #145, Burlingame, CA

94010

Greggory Brandt, Wendel Rosen Black & Dean, 1111 Broadway, 24<sup>th</sup> Floor, Oakland,

CA 94607



### 2nd QUARTER 2008 GROUNDWATER MONITORING REPORT

Former Val Strough Chevrolet Site 327 34<sup>th</sup> Street, Oakland, California Fuel Leak Case No. RO0000134

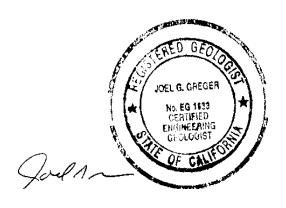
Prepared by LRM Consulting, Inc. 1534 Plaza Lane, #145 Burlingame, CA 94010



## 2<sup>nd</sup> QUARTER 2008 GROUNDWATER MONITORING REPORT

Former Val Strough Chevrolet Site 327 34<sup>th</sup> Street, Oakland, California Fuel Leak Case No. RO0000134

Prepared by LRM Consulting, Inc. 1534 Plaza Lane, #145 Burlingame, CA 94010



Joel G. Greger, C.E.G. No EG 1633 Certified Engineering Geologist

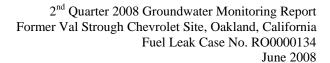
Mehrdad M. Javaherian Principal-in-Charge

June 2008



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### 1.0 INTRODUCTION

At the request of the Strough Family Trust of 1983, LRM Consulting, Inc. (LRM) has prepared this 2<sup>nd</sup> Quarter 2008 Groundwater Monitoring Report for the former Val Strough Chevrolet located in Oakland, California. This report documents the procedures and findings of the 3 June 2008 groundwater monitoring event reflecting water quality reporting and water level gauging for all site wells per the existing ACHCSA-approved monitoring program for the site.

The scope of groundwater monitoring for this quarter corresponded to the ACHCSA-approved program, which for this quarter corresponds to gauging from all seven site wells and sampling from wells MW2, MW3, and MW4. Also worth noting is that this monitoring reflects groundwater conditions approximately two years following cessation of the dual phase extraction (DPE) system at the site; the operation of the DPE system was ceased on 30 June 2006. Groundwater monitoring data and well construction details are shown on the figures and presented in the tables. Groundwater monitoring protocols, field data, and analytical results are provided in the appendices.

### 1.1 General Site Information

Site name: Former Val Strough Chevrolet
Site address: 327 34<sup>th</sup> Street, Oakland, California
Current property owner: Strough Family Trust of 1983

Current site use: Automotive Dealership and Service Center

Current phase of project: Groundwater monitoring and evaluation of need and

approaches for additional remediation

**Tanks at site:** Two former tanks (1 gasoline, 1 waste-oil) removed in

1993

**Number of wells:** 7 (all onsite)

**Site ID #:** 3035 **RO #:** 0000134

### 1.2 Site Contacts

Consultant: Joel Greger, CEG, Senior Engineering Geologist

Mehrdad Javaherian, Principal-in-Charge

LRM Consulting, Inc. 1534 Plaza Lane, # 145 Burlingame, CA 94010

(650) 343-4633



2<sup>nd</sup> Quarter 2008 Groundwater Monitoring Report Former Val Strough Chevrolet Site, Oakland, California Fuel Leak Case No. RO0000134 June 2008

**Regulatory agency:** Barbara Jakub, P.G.

Alameda County Health Services Agency (ACHCSA) 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502-6577

(510) 567-6746



### 2.0 SITE BACKGROUND

### 2.1 Site Description

Site Location and Land Use: The former Val Strough Chevrolet site is currently an active Honda automobile dealership and service center located on the southwestern corner of the intersection of Broadway (Auto Row) and 34<sup>th</sup> Street (Figure 1). The property is located south of Interstate 580. Land use in the area is primarily commercial.

The site is situated approximately two miles east of San Francisco Bay at approximately 61 feet above mean sea level (msl) (EDR, 2003). The land surface in the vicinity slopes toward the south. The nearest surface water body is Lake Merritt, located approximately 1 mile south of the site (Figure 1).

**Site Features:** The site consists of a multi-level building and an adjacent parking lot (Figure 2). The former fuel dispenser and underground storage tanks (USTs) were located in the northwestern portion of the site. Seven groundwater monitoring wells are located at the site. Construction details for the wells are presented in Table 1.

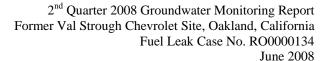
*Underground Utilities:* A box culvert for a former tributary of Glen Echo Creek is located approximately 17 feet below ground surface (bgs) in the eastern portion of the site (Figure 2). The culvert consists of a reinforced concrete box measuring 5 feet by 6 feet. During the winter of 1983, a section of the culvert collapsed and was replaced with a 5-foot-diameter pipeline.

Sanitary sewer, electrical, and natural gas utilities are generally present at depths less than 2 feet bgs at the site. Approximately 40 feet north of the site, along the northern edge of 34<sup>th</sup> Street, a storm sewer pipeline flows toward the east and into the box culvert. Sanitary sewer lines run parallel to both 34<sup>th</sup> Street and Broadway, north and east of the site, respectively. A lateral pipeline located along the western edge of the site connects to the sanitary sewer line below 34<sup>th</sup> Street. Natural gas service is located on the east side of the property. Water service appears to enter the site from the north.

*Water Supply Well Search:* A 2003 report compiled by EDR indicates that there are no federal U.S. Geological Survey wells and no public water supply wells located within a 1-mile radius of the site. No water supply wells were identified by the Alameda County Department of Public Works within a ½-mile radius of the site (ETIC, 2003).

### 2.2 Summary of Previous Investigations and Monitoring Activities

As presented in previous reports, the USTs were removed and multiple investigations, including the installation of seven groundwater monitoring wells, were conducted. In addition, a routine groundwater monitoring program has been in place since 1993. The following paragraphs summarize the findings of these activities.





*Site Hydrogeology:* In general, the site is underlain by silt and clay to depths ranging from approximately 15 to 20 feet bgs. Silty sand and fine-grained sand interbedded with thin clay intervals are encountered from approximately 20 feet bgs to the total explored depth of 35 feet bgs.

The depth to groundwater beneath the site has ranged from approximately 12.5 to 23 feet bgs. As shown in the modified rose diagram on Figure 2, the direction of groundwater flow is generally toward the southwest to south-southeast, with average hydraulic gradients ranging from approximately 0.01 to 0.03 foot/foot.

**Primary Sources:** Two USTs (one gasoline and one waste-oil) were located beneath the sidewalk on the northern side of the property. A fuel dispenser was located inside the building (Figure 2). These primary sources of petroleum hydrocarbons were removed from the site in 1993.

Constituents of Potential Concern: Based on the type of fuel stored in the USTs and the results of previous subsurface investigations, the constituents of potential concern (COPCs) at the site include total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl t-butyl ether (MTBE). TPH as diesel (TPH-d) and TPH as motor oil (TPH-mo) are not routinely detected in groundwater samples and are considered secondary COPCs for the site.

**Residual Source Area:** Elevated concentrations of TPH-g, BTEX, and MTBE have been observed in soil in the vadose zone and upper portion of the water-bearing zone near the former USTs and fuel dispenser. Separate phase petroleum hydrocarbons (SPH) have been intermittently detected in wells MW2 and MW3, but none since March 2004 in MW3 and June 2006 in MW2. These data suggest that most of the residual petroleum hydrocarbon mass is present near the former USTs and fuel dispenser, herein referred to as the residual source area. This is corroborated by the dissolved groundwater data discussed below.

**Petroleum Hydrocarbon Distribution in Groundwater:** The highest concentrations of petroleum hydrocarbons have been detected in samples collected from wells MW2 and MW3. Generally significantly lower levels of petroleum hydrocarbons have been detected in samples collected from well MW4, and the other site wells. The extent of dissolved-phase petroleum hydrocarbons in groundwater is largely defined by relatively low and stable TPH-g, BTEX, and MTBE concentrations detected in downgradient and cross-gradient monitoring wells MW5, MW6, and MW7 (Tables 2 and 3).



2.2 Summary of Interim Remedial Action Activities

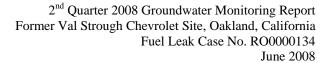
In addition to the routine groundwater monitoring activities, remediation pilot testing and remediation activities were conducted at the site between 2004 and 2006. A summary of these activities and associated regulatory correspondence with the ACHCSA are presented below:

**DPE Pilot Test:** In March 2004, ETIC Engineering, Inc. (ETIC) performed a DPE pilot test at the site. As summarized in the June 2004 *Dual Phase Extraction Pilot Test and Interim Remedial Action Plan* (DPE and IRAP Report), vacuum was applied to source area wells MW2 and MW3 while water and vacuum levels were measured in nearby monitoring wells. The DPE pilot test induced more than 1 foot of drawdown up to 50 feet from the extraction wells and an estimated radius of vacuum influence of 55 to 70 feet. Based on vapor flow rates and petroleum hydrocarbon concentrations in the vapor stream during the short-term pilot test, removal rates of approximately 90 pounds of petroleum hydrocarbons per day were estimated.

June 2004 DPE and IRAP Report: The DPE and IRAP Report (ETIC, 2004) described the planned reduction of residual petroleum hydrocarbon mass in the source area through temporary DPE system installation and operation and dual phase extraction from source area wells MW2 and MW3 to extract soil vapor and groundwater simultaneously. The system was designed to consist of a knockout vessel to be used for separation of the soil vapor and water streams. A thermal oxidizer (with propane as a supplemental fuel) was proposed for treatment of extracted vapor, and aqueous-phase granular activated carbon was proposed for treatment of extracted groundwater.

Interim Remedial Action: Between February 2005 and June 2006, ETIC operated a DPE system on site. Vacuum was applied to remove groundwater and soil vapor from up to two wells (MW2 and/or MW3). The system was temporarily shutdown on 30 January 2006 for conversion of vapor treatment from thermal oxidation to carbon filtration, and remained offline until 22 May 2006, when it was restarted. Because the mass removal rates by the DPE system had reached asymptotic levels and high petroleum hydrocarbon concentrations continued to exist in extraction wells MW2 and MW3 despite the DPE operation, the benefit of continuation of DPE in its current configuration was considered to be low and the DPE operation was ceased on 30 June 2006. ETIC subsequently dismantled the remediation system and removed the skid mounted DPE unit from the site.

25 August 2006 LRM Consulting, Inc. Correspondence and 11 December 2006 LRM Supplemental Source Area Investigation Work Plan: In a 25 August 2006 correspondence, LRM notified the ACHCSA of a project consultant change from ETIC to LRM. Also, based on a review of the available site data, the response of the hydrocarbon concentrations to past DPE operations, and the ACHCSA's comments on ETIC's Work Plan, LRM recommended a technical meeting with the ACHCSA to discuss the project direction. However, because of other commitments of Don Hwang and other ACHCSA staff, a technical meeting could not be scheduled. During a 19 October 2006 telephone conversation with Don Hwang, LRM





presented an approach to conduct a supplemental investigation to define the magnitude and extent of the residual source area in the vicinity of the former fuel dispenser and wells MW2 and MW3. Based on these discussions and as agreed by Mr. Hwang, a supplemental source area investigation work plan outlining the proposed scope of work was prepared and submitted to ACHCSA on 11 December 2006; this work plan was revised through multiple discussions with Donna Drogos of the ACHCSA and was finalized in December of 2007. The subject investigation was conducted beginning on December 12, 2007, the results of which were documented in a report to ACHCSA (LRM, 2008). Per the request of Ms. Barbara Jakub of the ACHCSA, LRM is currently preparing an interim remediation action plan (IRAP) to address the hydrocarbon concentrations remaining in the residual source area at the site.



### 3.0 PROTOCOLS FOR GROUNDWATER MONITORING

The following sections of this report present information relevant to the methods employed during the collection of groundwater samples from site wells on 3 June 2008. The scope of work for the quarterly groundwater monitoring event at the site included:

- Checking all wells for SPH.
- Gauging the depth to groundwater in all seven site wells.
- Purging the monitoring wells prior to sampling.
- Collecting and analyzing groundwater samples from three onsite wells.
- Estimating the hydraulic gradient and general flow direction.
- Evaluating the data and preparing a written report summarizing the results of the monitoring event.

### 3.1 Groundwater Gauging

For this round of monitoring, groundwater gauging was performed for all seven onsite wells. The monitoring wells were opened prior to gauging to allow the groundwater level to equilibrate with atmospheric pressure. The depth to groundwater and depth to SPH, if present, were then measured to the nearest 0.01 feet using an electronic water level meter or optical interface probe. The measurements were made from a fixed reference point at the top of the well casing.

The groundwater elevation map (Figure 2) for this monitoring event was constructed using depth-to-groundwater measurements collected during the current sampling event. Depth-to-groundwater measurements and calculated groundwater elevations are presented in Table 2. Field data forms are presented in Appendix B.

### 3.2 Well Purging

For this round of monitoring, groundwater sampling and field parameters were analyzed for three onsite wells; MW2, MW3, and MW4. Three well casing volumes of water were purged from all wells and field parameters including temperature, pH, specific conductance, and dissolved oxygen were measured. Groundwater monitoring protocols are presented in Appendix A.

### 3.3 Groundwater Sampling

After purging, groundwater was sampled at each of the seven wells using dedicated tubing and a WaTerra inertial pump, or a disposable bailer. Sample containers were sealed, labeled, stored in a cooler and transported under chain-of-custody protocol to Kiff Analytical LLC (Kiff), a state-certified analytical laboratory in Davis, California. Groundwater analytical results and chain-of-custody documentation are presented in Appendix C.



### 4.0 MONITORING RESULTS

### 4.1 Separate-Phase Hydrocarbon Monitoring

The wells were monitored for the presence of SPH using a disposable bailer and/or interface probe. SPH was not detected in any wells during this monitoring event.

### 4.2 Groundwater Elevation and Hydraulic Gradient

On 3 June 2008, the depth to water beneath the site ranged from 14.24 to 23.68 feet bgs (Table 2). Groundwater elevations in the site wells ranged from 41.91 feet above msl in well MW5 to 45.23 feet above msl in well MW7 (Figure 2); these levels mark a rise in water level elevations relative to the previous quarter. Using the results from the 2<sup>nd</sup> quarter 2008 monitoring event, the hydraulic gradient is estimated at 0.0284 ft/ft, with a general flow direction toward the south-southeast.

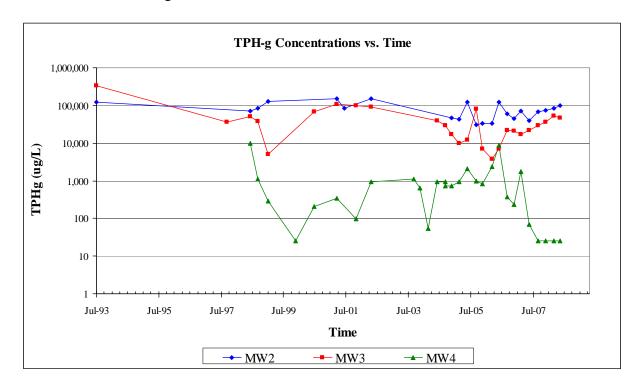
### 4.3 Groundwater Analytical Results

On 3 June 2008, groundwater samples were collected from MW2, MW3, and MW4, and analyzed by Kiff for TPH-g, BTEX, and MTBE by EPA Method 8260B and for TPH-d and TPH-mo by modified EPA Method 8015. Analytical results for this event are presented on Figure 3, and historical results are presented in Table 2. Copies of the chain-of-custody and laboratory analytical reports for the groundwater samples are presented in Appendix C. Laboratory analytical results are summarized below:

- TPH-g was detected in samples collected from well MW2 at 98,000 μg/L, and from MW3 at 47,000 μg/L. TPH-g remained below the detection limit of 50 ug/L in MW3.
- Benzene was detected in the samples collected from well MW2 at 1,900 μg/L, and from well MW3 at 3,900 μg/L. Benzene was below the detection limit of 0.5 μg/L in MW3.
- MTBE was detected in the samples collected from well MW2 at 660 μg/L, MW3 at 470 μg/L, and MW4 at 190 μg/L.
- TPH-d was not detected in groundwater samples collected from any wells this quarter, although detection limits in samples from wells MW2 and MW3 were elevated due to interference from gasoline-range hydrocarbons (see Appendix C). As discussed in the recent supplemental investigation report (LRM, 2008), TPH-d (together with TPH-mo and MTBE) was encountered at higher concentrations in select grab groundwater samples across the downgradient site boundary than in the onsite monitoring wells. Placement of an additional monitoring well in the southeastern corner (downgrdient boundary) of the site has accordingly been recommended and, per ACHCSA's request, will be implemented through the IRAP process.
- TPH-mo was detected in groundwater samples from MW2 at 500 ug/L, but remained undetected (<100 ug/L) in all other onsite wells.



The figure below depicts TPH-g concentration trends for wells MW2, MW3, and MW4 located near and downgradient of the residual source area.



As indicated on the graph, TPH-g concentrations in MW2 continue to fluctuate, reflecting an increase from 40,000 ug/L to 98,000 ug/L over the past five quarters of monitoring. TPH-g concentrations at MW3 exhibit a similar increasing pattern over the past year, increasing from 22,000 ug/L to 54,000 ug/L, with a slight decline to 47,000 during this round; both of these wells exhibit trends consistent with the presence of a residual source of hydrocarbons in the MW2 area, recently encountered by the supplemental investigation (LRM, 2008). Lastly, TPH-g levels in MW4 continue to decline and remain below detection limits over the past several rounds of monitoring.

As shown on Table 2, benzene levels depict a similar trend over the past year, with generally stable (but elevated) levels in MW2 (1,900 ug/L range), slightly increasing levels in MW3 (1,300 to 4,500 ug/L range), and lower/declining levels in MW4 (60 ug/L to <0.5 ug/L).

The hydrocarbon concentrations detected in this quarter remain within the past range of detections and reflect the generally stable trend where data are available away from the residual source area (i.e, MW-4 area). However, within the source area (MW-2 and MW-3), measurable concentrations remain, exhibiting an increasing trend over the past year without evidence of natural attenuation. This residual source area was recently investigated, with recommendations for additional vertical characterization and corrective action being addressed in the forthcoming IRAP for the site.



### 5.0 PLANNED ACTIVITIES

### 5.1 Additional Investigation/Remediation Activities

Based on the operational behavior of the DPE system and the observed responses in hydrocarbon concentrations in wells MW2 and MW3, LRM performed a supplemental investigation to evaluate the extent and magnitude of residual hydrocarbons in the area formerly targeted by the DPE system (i.e., former residual source area in the vicinity of these wells) (see LRM, 2008). Per the ACHCSA's request, this supplemental investigation also included grab groundwater sampling along the downgradient site boundary. The supplemental investigation was conducted in December 2007, with results documented in a report to the ACHCSA in February 2008. To summarize, the results of the investigation indicated the presence of a residual source area in the vicinity of MW2 warranting additional vertical characterization. In additional the investigation indicated the need for monitoring of TPH-d, TPH-mo, and MTBE in the southeastern corner of the site. Per ACHCSA's request, the results of that investigation, together with the monitoring results documented herein are being used to prepare a IRAP for the site. The IRAP will, at a minimum, evaluate three active remediation alternatives to address the residual source area remaining at the site.

### 5.2 Planned Monitoring Activities

Quarterly monitoring per the ACHCSA-approved plan will continue until the IRAP for the site has been developed and approved.

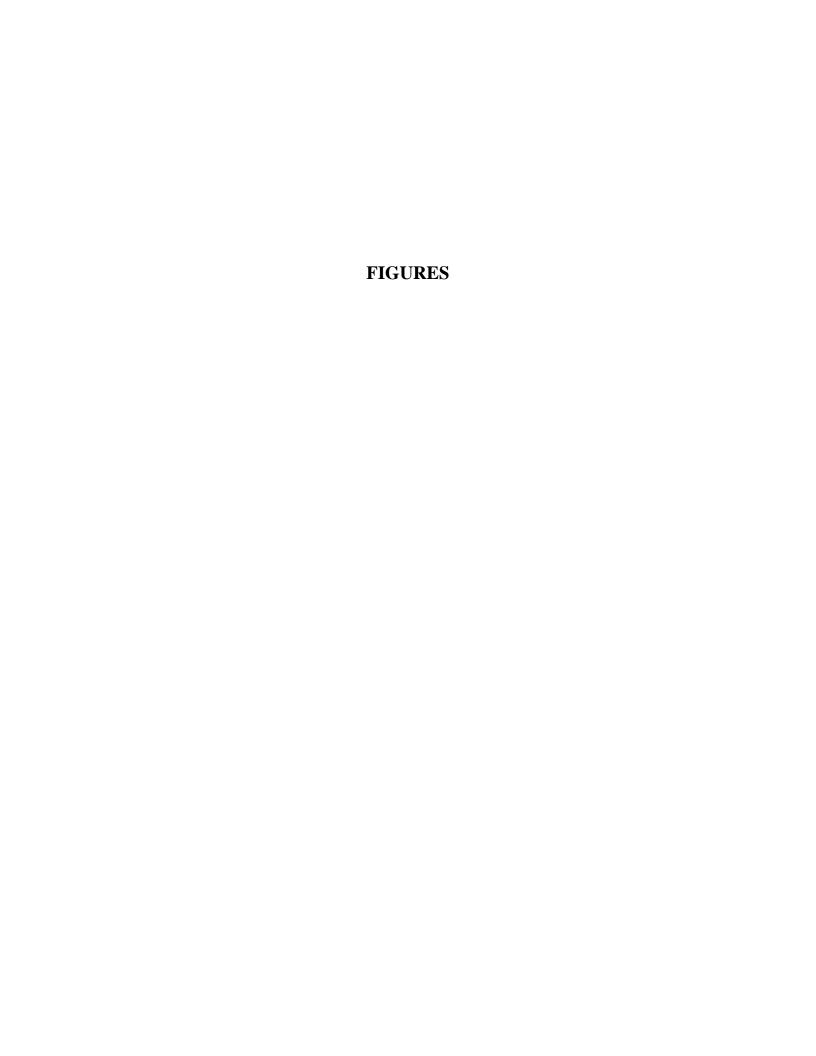


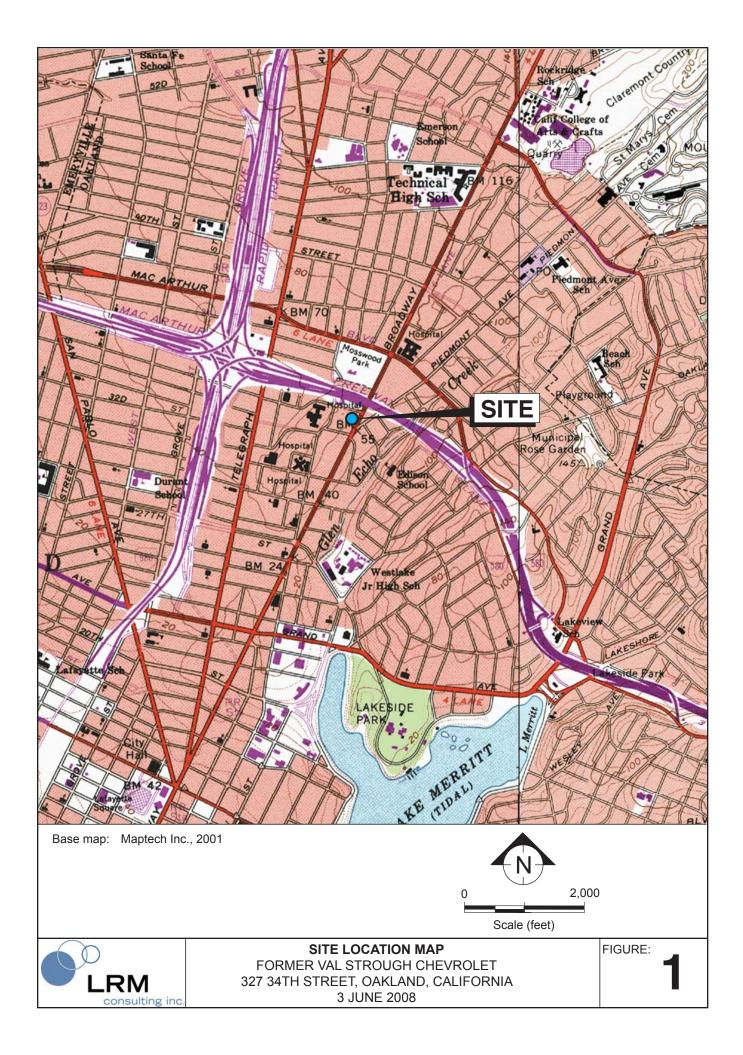
### 6.0 REFERENCES

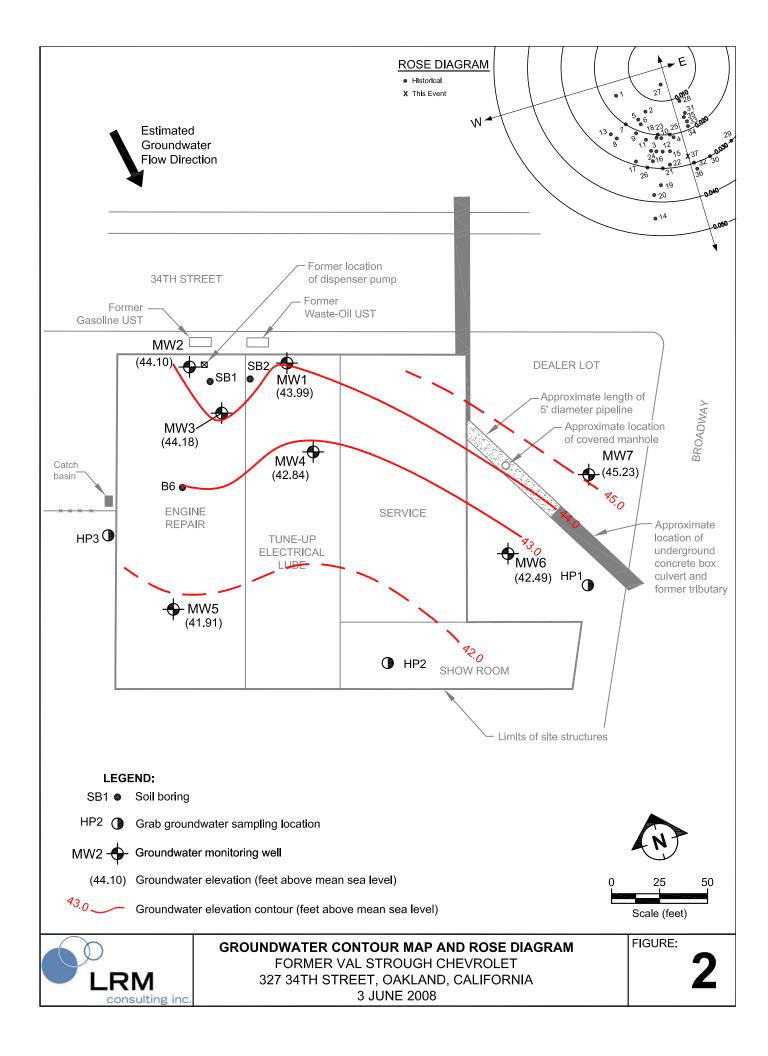
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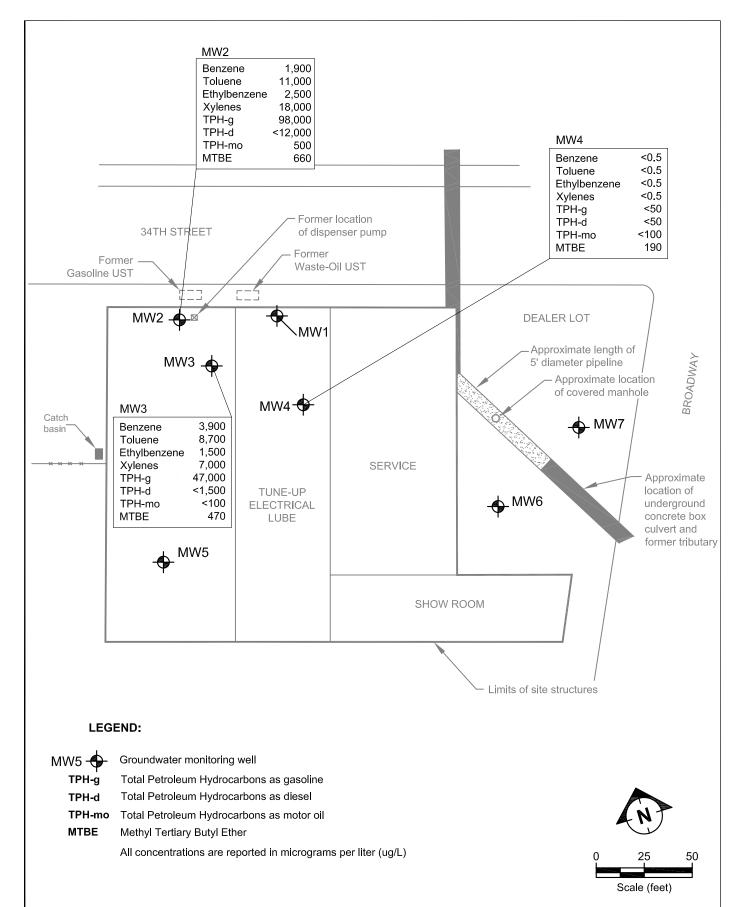


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GROUNDWATER ANALYTICAL DATA FORMER VAL STROUGH CHEVROLET 327 34TH STREET, OAKLAND, CALIFORNIA 3 JUNE 2008 FIGURE:

3

# **TABLES**

TABLE 1 WELL CONSTRUCTION DETAILS
FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

Well ID	Well Installation Date	Top-of-Casing Elevation* (feet)	Casing Material	Total Depth of Borehole (ft bgs)	Casing Diameter (inches)	Screened Interval (ft bgs)	Slot Size (inches)	Filter Pack Interval (ft bgs)	Filter Pack Material
MW1	07/19/93	64.69	PVC	32	2	17-32	0.020	15-32	Gravel Pack
MW2	07/20/93	65.95	PVC	33	2	18-33	0.020	16-33	Gravel Pack
MW3	07/20/93	65.99	PVC	34	2	18-34	0.020	16-34	Gravel Pack
MW4	06/26/98	63.35†	PVC	31	2	15-31	0.020	13-31.5	Lonestar #3 Sand
MW5	06/26/98	65.59	PVC	31	2	15-31	0.020	13-31.5	Lonestar #3 Sand
MW6	07/17/00	59.60	PVC	31.5	2	10-30	0.020	8-30	Lonestar #3 Sand
MW7	07/17/00	59.47	PVC	36.5	2	15-35	0.020	13-35	Lonestar #3 Sand

PVC Polyvinyl chloride.

ft bgs Feet below ground surface.

<sup>\*</sup> Elevations based on a survey conducted August 2002 and referenced benchmark with known elevation (NGVD 29) of 60.40 feet above mean sea level.

<sup>†</sup> The casing elevation is uncertain.

TABLE 2 CUMULATIVE GROUNDWATER ELEVATION AND ANALYTICAL DATA FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

		Casing	Depth to		SPH					tion (µg/L)	ı							Concentra	tion (mg/I	_)			
Well		Elevation	Water	Elevation				Ethyl-	Total					$CO_2$	DO	Eh (mv)	pН						
Number	Date	(feet)	(feet)	(feet)	(feet)	Benzene	Toluene	benzene	Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	(lab)	(field)	(field)	(field)	Fe(II)	Mn	$SO_4$	N-NH <sub>3</sub>	N-NO <sub>3</sub>	o-PO <sub>4</sub>
MW1	07/27/93	100.00	a 20.79	79.21	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50					_							
MW1	10/02/97		a 21.22	78.78	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50			<2.0										
MW1	06/30/98		a 18.21	81.79	0.00	< 0.50	< 0.50	2.1	0.6	84			2.1	204	5		6.16	0.15	0.046	55	< 0.10	< 0.10	2
MW1	07/29/98		a 18.74	81.26	0.00																		
MW1	08/26/98		a 19.28	80.72	0.00																		
MW1	10/01/98		a 19.93	80.07	0.00	<1.0	<1.0	<1.0	<1.0	<50			<2.0	192	3.6		6.49						
MW1	10/30/98		a 20.22	79.78	0.00																		
MW1	11/30/98		a 19.99	80.01	0.00																		
MW1	12/28/98		a 19.81	80.19	0.00																		
MW1	01/25/99		a 19.62	80.38	0.00	<1.0	<1.0	<1.0	<1.0	<50			<2.0	389	3.4		6.72						
MW1	02/26/99		a 17.18	82.82	0.00																		
MW1	03/24/99		a 17.28	82.72	0.00																		
MW1	05/12/99		a 17.91	82.09	0.00																		
MW1	12/15/99		a 21.01	78.99	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50			< 0.50		3.31		6.52						
MW1	03/20/00		a 16.25	83.75	0.00																		
MW1	07/20/00		a 19.63	80.37	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50	<300	3.4	120	7.37		6.66	0.13	< 0.01	54	< 0.10	3.4	< 0.2
MW1	10/11/00		a 20.80	79.20	0.00																		
MW1	04/10-11/01		a 18.81	81.19	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50	<300	1.2	117	NR		NR	< 0.10	0.045	57	< 0.10	6.6	0.15
MW1	07/10/01		a 20.51	79.49	0.00																		
MW1	11/20/01	64.69	b 21.36	43.33	0.00	< 0.50	1.3	< 0.50	0.81	< 50	< 50	<300	<2.0	C	0.65		6.47	0.32	1.8	63	< 0.10		< 0.20
MW1	02/19/02		b 18.95	45.74	0.00																		
MW1	05/21/02	64.69	b 19.82	44.87	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<300	<2.0	120	0.96		6.25	< 0.10	0.5	58	< 0.10	5.5	< 0.20
MW1	06/27/03		b 19.93	44.76	0.00																		
MW1	09/29/03		b 21.24	43.45	0.00	< 0.50	< 0.50	< 0.50	<1.0	< 50	<50	< 500	< 0.50										
MW1	12/12/03		b 21.27	43.42	0.00	< 0.50	< 0.50	< 0.50	1.1	< 50	58	< 500	< 0.50										
MW1	03/15/04		b 18.18	46.51	0.00	< 0.50	< 0.50	< 0.50	<1.0	<50	<50	< 500	< 0.50		0.14								
MW1	06/24/04		b 20.48	44.21	0.00	< 0.50	< 0.50	< 0.50	<1.0	< 50	< 50	< 500	< 0.50		0.15								
MW1	09/29/04		b 21.37	43.32	0.00	< 0.50	0.51	< 0.50	<1.0	< 50	< 50	<500	< 0.50		1.01		6.42						
MW1	12/13/04		b 20.63	44.06	0.00																		
MW1	03/14/05	64.69	b 18.69	46.00	0.00	< 0.50	< 0.50	< 0.50	<1.0	< 50	73	< 500	< 0.50		1.96		6.04						
MW1	06/15/05	64.69	b 20.32	44.37	0.00																		
MW1	09/26/05	64.69	b 22.10	42.59	0.00	< 0.50	< 0.50	< 0.50	<1.0	< 50	< 50	< 500	< 0.50		1.84	317.4	6.43						
MW1	12/12/05	64.69	b 22.39	42.30	0.00																		
MW1	03/29/06	64.69	b 15.24	49.45	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	74		1.57		6.73						
MW1	06/19/06	64.69	b 18.27	46.42	0.00																		
MW1	09/29/06	64.69	b 20.06	44.63	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	7.9		0.43		6.40						
MW1	12/12/06	64.69	b 20.32	44.37	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	9.4		0.38		6.39						
MW1	03/01/07	64.69	b 18.68	46.01	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	3.5		0.86		6.39						
MW1	06/12/07	64.69	b 20.28	44.41	0.00																		
MW1	09/25/07	64.69	b 21.37	43.32	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	1.8		16.87		6.40						
MW1	12/20/07	64.69	b 21.48	43.21	0.00																		
MW1	03/26/08	64.69	b 20.98	43.71	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	< 0.50		3.1	71.10	6.11						
MW1	06/03/08	64.69	b 20.70	43.99	0.00																		
MW2	07/27/93	101.27	a 22.10	79.17	0.00	10,000	27,000	2,900	20,000	120,000													
MW2	10/02/97	101.27	a 22.91	78.36	0.43	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2	06/30/98	101.27	a 19.69	81.58	0.45	7,300	18,000	2,500	15,600	72,000			5,500	185	2.2		5.98						
MW2	07/29/98	101.27	a 20.11	81.16	0.29																		
MW2	08/26/98	101.27	a 20.54	80.73	0.08																		
MW2	10/01/98	101.27	a 21.52	79.75	0.42	6,400	17,000	2,600	17,000	84,000			2,000		2.7		6.47						
MW2	10/30/98	101.27	a 21.54	79.73	0.10																		
MW2	11/30/98	101.27	a 21.21	80.06	0.04																		
MW2	12/28/98	101.27	a 21.10	80.17	0.02																		
MW2	01/25/99	101.27	a 20.80	80.47	0.01	9,000	26,000	3,800	27,500	130.000			5,800	386	0.3		6.69						

TABLE 2 CUMULATIVE GROUNDWATER ELEVATION AND ANALYTICAL DATA FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

		Casing	Depth		SPH					tion (µg/L)	1							Concentra	tion (mg/l	L)			
Well	_	Elevation					<b></b> .	Ethyl-	Total	mn	mn	mp.r		CO <sub>2</sub>	DO	Eh (mv)	pН			a -			
Number	Date	(feet)	(feet	(feet)	(feet)	Benzene	Toluene	benzene	Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	(lab)	(field)	(field)	(field)	Fe(II)	Mn	$SO_4$	N-NH <sub>3</sub>	N-NO <sub>3</sub>	o-PO
MW2	02/26/99	101.27	a 18.0	83.27	sheen														_				
MW2	03/24/99	101.27			trace																		
MW2	05/12/99		a 19.0		trace																		
MW2	12/15-16/99		a 22.4		0.025	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2	03/20/00	101.27			0.026																		
MW2	07/20/00		a 20.8		0.017	*	*	*	*	*	*	*	*	*	0.88	*	6.37	*	*	*	*	*	*
MW2	10/11/00		a 22.1		0.00																		
MW2	04/10-11/01		a 19.9		0.00	8,000	22,000	2,600	23,500	150,000	1,500	<600	3,600	168	NR		NR	3.1	2.5	16	0.14	0.19	< 0.20
MW2	07/10/01	101.27	a 21.8	79.42	0.00	5,900	15,000	2,300	12,100	83,000	5,700	<1,500	2,800										
MW2	11/20/01	65.95	b 22.7	43.20	0.00									120	NR		6.15	1.8	2	16	< 0.10		< 0.20
MW2	02/19/02	65.95	b 20.1	45.83	0.00																		
MW2	05/21/02	65.95	b 21.1	44.85	0.00	8,600	25,000	3,500	26,000	150,000	31,000	<3,000	4,800	160	0.88		5.99	3.9	1.7	13	< 0.10	0.54	< 0.20
MW2	06/27/03	65.95	b 21.4	44.47	0.35																		
MW2	09/29/03	65.95	b 23.0	42.91	0.48	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2 <sup>e</sup>	12/12/03	65.95	b 22.7	43.31	0.16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2 <sup>e</sup>	03/15/04	65.95	b 19.2	46.72	0.01	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2 <sup>e</sup>	06/24/04	65.95	b 22.1		0.31	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2 <sup>e</sup>	09/29/04	65.95	b 22.8		sheen	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2 <sup>e</sup>	12/13/04	65.95	b 22.0		0.08	3,700	12,000	1,900	10,000	47,000	2,600	< 500	1,200	*	0.27	*	6.63	*	*	*	*	*	*
MW2 <sup>J</sup>	03/14/05	65.95	b 25.0		0.00	780	3,700	920	6,400	43,000	43,000	<5,000	<200	*	*	*	*	*	*	*	*	*	*
MW2	06/15/05	65.95	b 21.1		0.00	2,900	15,000	2,400	22,000	120,000	13,000	<2,500	810		3.05	-147.6							
MW2	07/18/05	65.95	NM		NM	2,700	13,000	1,800	15,000	120,000	17,000		530										
MW2	09/26/05	65.95	22.9		0.00	570	4,000	620	6,200	31,000	63,000	28,000	<50										
MW2	12/12/05	65.95	25.4		0.00	670	5,300	1,100	9,800	34,000	2,800	<500	65										
MW2	03/29/06	65.95	15.6		sheen	620	2,800	540	4,700	33,000	<4,000	<100	37		7.59		6.9						
MW2	06/19/06	65.95	19.1		sheen	680	5,200	990	16,000	120,000	<30,000	1,900	170		1.78		6.21						
MW2	09/29/06		b 21.1		0.00	1,200	5,100	1,200	9,300	59,000	<8000	300	230		1.71		6.66						
MW2 MW2	12/12/06 03/01/07	65.95 65.95	b 21.4 b 19.4		0.00	850 1,400	4,400 5,200	1,100 980	8,900 9,500	45,000	<10000 <18000	360 460	110 160		1.5 1.2		6.61 6.7						
										71,000													
MW2 MW2	06/12/07 09/25/07	65.95 65.95	b 20.9 b 22.5		0.00	1,300 1,400	4,900 6,500	1,200 1,900	8,900 13,000	40,000 68,000	<3000 <12000	<100 250	130 240		1.12 2.52		6.7 6.57						
MW2	12/20/07	65.95	b 22.7		0.00	1,400	7,000	2,400	16,000	75,000	<5000	650	270		1.1		6.47						
MW2	03/26/08		b 22.5		0.00	1,400	6,200	1,800	16,000	83,000	<10000	360	480		4.13	-5.7	6.18						
MW2	06/03/08		b 21.8		0.00	1,900	11,000	2,500	18,000	98,000	<12000	500 500	660		0.91	-24.6	6.43						
	00/03/00	05.75	0 21.0	74.10	0.00	1,500	11,000	2,500	10,000	20,000	<12000	200	000		0.51	-24.0	0.45						
MW3	07/27/93	101 29	a 22.2	79.01	0.02	9,100	24,000	5,300	33,000	330,000													
MW3	10/02/97		a 22.7		0.03	4,200	11,000	1,800	10,600	36,000			3,500										
MW3	06/30/98		a 19.4		0.00	4,800	11,000	1,200	7,100	51,000			3,900	300	2		6.03	1.4	9.8	13	1.4	< 0.10	2.4
MW3	07/29/98		a 20.0		0.00																		
MW3	08/26/98		a 20.6		0.00																		
MW3	10/01/98		a 21.3		0.00	3,900	8,500	1,200	6,000	38,000			2,300	240	2		6.65						
MW3	10/30/98		a 21.6		0.00																		
MW3	11/30/98	101.29	a 21.3	79.98	0.00																		
MW3	12/28/98	101.29	a 21.1	80.14	0.06																		
MW3	01/25/99	101.29	a 20.7	80.50	0.00	4,000	10,000	1200	6700	5,100			2900	238	1		7.01						
MW3	02/26/99	101.29	a 18.0	83.27	0.00																		
MW3	03/24/99	101.29	a 18.3	82.92	0.00																		
MW3	05/12/99	101.29	a 19.2	82.07	0.0083																		
MW3	12/15-16/99	101.29	a 22.4	78.86	0.00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3	03/20/00	101.29	a 17.1	84.15	0.00																		
MW3	07/20/00	101.29	a 20.9	80.31	0.00	5,700	14,000	1,600	9,300	69,000	2,900	<300	3,300	128	2.05		6.73	3.9	6.6	20	< 0.10	0.55	< 0.20
MW3	10/11/00	101.29	a 22.2	79.05	0.00																		
MW3	04/10-11/01	101.29	a 20.7	80.59	0.00	7,200	< 0.001	2,300	12,900	110,000	4,700	<1,500	4,300	137	NR		NR	1	6	8.2	< 0.10	0.13	< 0.20
MW3	07/10/01	101.29	a 21.9	79.32	0.00																		

TABLE 2 CUMULATIVE GROUNDWATER ELEVATION AND ANALYTICAL DATA FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

		Casing		Depth to	GW	SPH					tion (µg/L)								Concentra	tion (mg/l	L)			
Well		Elevation	n		Elevation				Ethyl-	Total					$CO_2$	DO	Eh (mv)	pH						
Number	Date	(feet)		(feet)	(feet)	(feet)	Benzene	Toluene	benzene	Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	(lab)	(field)	(field)	(field)	Fe(II)	Mn	$SO_4$	N-NH <sub>3</sub>	N-NO <sub>3</sub>	o-PO <sub>4</sub>
MW3	11/20/01	65.99	b	22.80	43.19	0.00	6,300	16,000	2,400	14,900	100,000	5,900	<900	4,000	120	2.93	_	6.67	0.84	12	31	< 0.10		< 0.20
MW3	02/19/02	65.99		20.11	45.88	0.00			2,400	14,500		3,500			120	2.93		0.07	0.64			<0.10 		<0.20
MW3	05/21/02	65.99			44.79	0.00	6,500	17,000	2,200	12,700	91,000	14,000	<3,000	2,200	130	1.01		6.62	4.2	9.6	25	< 0.10	0.77	< 0.20
MW3	06/27/03	65.99		21.32	44.67	sheen																		
MW3	09/29/03	65.99	b	22.79	43.20	sheen	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3 <sup>e</sup>	12/12/03	65.99		22.73	43.27	0.01	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3 <sup>e</sup>	03/15/04	65.99	b	19.32	46.67	sheen	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3	06/24/04	65.99	b	21.99	44.00	0.00	3,400	7,700	1,000	4,800	39,000	1,700	< 500	1,100		0.07								
MW3	09/29/04	65.99	b	22.54	43.45	0.00	2,900	6,700	980	4,300	29,000	2,200	< 500	1,100		0.80		6.42						
MW3	12/13/04	65.99	b	22.06	43.93	0.00	1,700	2,900	790	3,400	17,000	1,300	< 500	490		0.16		6.7						
MW3 <sup>j</sup>	03/14/05	65.99	b	24.00	41.99	0.00	680	1,700	380	1,600	10,000	670	< 500	67										
MW3	06/15/05	65.99	b	21.13	44.86	0.00	260	960	330	1,400	12,000	1,200	< 500	31		1.93	-150.4							
MW3	07/18/05	65.99	b	NM	NC	NM	1,000	5,600	1,100	4,300	23,000	1,700		81										
MW3	09/26/05	65.99	b	22.92	43.07	0.00	4,000	17,000	1,900	17,000	79,000	5,100	540	270										
MW3	12/12/05	65.99	b	23.30	42.69	0.00	200	710	450	1,400	7,000	550	< 500	<10										
MW3	03/29/06	65.99	b	15.70	50.29	0.00	110	300	130	490	3,800	<200	<100	13		1.23		6.89						
MW3	06/19/06	65.99	b	19.11	46.88	0.00	160	500	320	840	7,000	<300	<100	3.1		2.30		6.40						
MW3	09/29/06	65.99			44.84	0.00	1,300	2,300	720	2,900	22,000	<1500	<100	110		1.05		6.78						
MW3	12/12/06	65.99		21.38	44.61	0.00	1,400	2,200	670	2,600	21,000	<1500	<100	130		0.6		6.72						
MW3	03/01/07	65.99	b	19.50	46.49	0.00	1,100	2,500	510	2,200	17,000	<600	<100	51		1.11		6.76						
MW3	06/12/07	65.99		21.00	44.99	0.00	1,800	4,000	800	3,300	22,000	<1500	<100	150		0.97		6.74						
MW3	09/25/07	65.99		22.59	43.40	0.00	2,400	5,000	1,000	4,600	29,000	<500	<100	220		1.62		6.63						
MW3	12/20/07	65.99		22.59	43.40	0.00	2,400	4,900	1,100	4,700	36,000	<2000	<100	240		0.9		6.62						
MW3 MW3	03/26/08 06/03/08	65.99 65.99	b b	22.13 21.81	43.86 44.18	0.00	4,500 <b>3,900</b>	11,000 <b>8,700</b>	1,700 <b>1,500</b>	7,800 <b>7,000</b>	54,000 <b>47,000</b>	<1500 <1500	<100 <100	340 <b>470</b>		2.2 <b>0.88</b>	3.1 <b>-29.2</b>	6.35 <b>6.64</b>						
IVI VV 3	00/03/08	03.99	ь	21.01	44.10	0.00	3,900	0,700	1,500	7,000	47,000	<1500	<100	470		0.00	-29.2	0.04						
MW4	06/30/98	98.65	a	16.93	81.72	0.00	2,200	930	850	2,100	10,000			1,800	222	2.6		6.18	0.14	4.3	14	0.8	0.8	1.5
MW4	07/29/98	98.65	a	17.48	81.17	0.00																		
MW4	08/26/98	98.65	a	18.65	80.00	0.00																		
MW4	10/01/98	98.65	a	18.74	79.91	0.00	570	46	130	36	1,100			1,300	320	3.4		< 0.001						
MW4	10/30/98	98.65	a	19.02	79.63	0.00																		
MW4	11/30/98	98.65	a	18.74	79.91	0.00																		
MW4	12/28/98	98.65	a	18.60	80.05	0.00																		
MW4	01/25-26/99	98.65	a	18.32	80.33	0.00	230	<8.3	<8.3	<8.3	290			1,300	475	6.7		7						
MW4	02/26/99	98.65	a	15.81	82.84	0.00																		
MW4	03/24/99	98.65	a	16.01	82.64	0.00																		
MW4	05/12/99	98.65	a	17.71	80.94	0.00																		
MW4	12/15-16/99	98.65	a	19.83	78.82	0.00	5.8	< 0.50	< 0.50	< 0.50	< 50			1,400		1.75		7.02						
MW4	03/20/00	98.65	a	14.9	83.75	0.00																		
MW4	07/20/00	98.65	a	18.38	80.27	0.00	91	4.6	19	12.9	210	<50	<300	1,500	126	3.88		6.67	9.5	5.3	11	< 0.10	0.04	< 0.20
MW4	10/11/00	98.65	a	19.61	79.04	0.00																		
MW4	04/10-11/01	98.65			81.10	0.00	110	<5.0	<5.0	<5.0	350	<50	<300	1,100	107	NR		NR	0.8	6.3	10	< 0.10	< 0.05	< 0.20
MW4	07/10/01	98.65	a	19.34	79.31	0.00							-200	2.500	120			6.51		10				
MW4 MW4	11/20/01 02/19/02	63.35 63.35	b b	20.16 17.34	43.19 46.01	0.00	<2.5	4	<2.5	3.7	96	<50	<300	2,500	130	0.83		6.51	1.6	10	11	<0.10		< 0.20
MW4 MW4	02/19/02 05/21/02	63.35	b b	17.34	44.78	0.00	340	5.7	70	<1.0	940	83	<300	1,600	150	1.65		6.32	3.1	8.4	9	< 0.10	0.06	< 0.20
MW4 MW4	06/27/03	63.35	b	18.72	44.78	0.00	340	3.7		<1.0	24U	0.5	\J00	1,000	130	1.03		0.32	J.1	0.4	,	\0.10	0.00	<b>√0.20</b>
MW4 MW4	09/29/03	63.35	b	20.11	43.24	0.00	<5.0	<5.0	<5.0	<10	1,100	<50	<500	1,700										
MW4 MW4	12/12/03	63.35		20.11	43.24	0.00	<13	<13	<13	<25	<1,300	<50	<500	1,000				-	-	-				
MW4	03/15/04	63.35	b	16.89	46.46	0.00	1.5	<0.50	<0.50	<1.0	54	<50	<500	41		0.16								
MW4	06/24/04	63.35	b	19.31	44.04	0.00	69	<5.0	<5.0	<10	920	<50	<500	1,100		0.15								
MW4	09/29/04	63.35	b	20.20	43.15	0.00	<5.0	<5.0	<5.0	<10	940	<50	<500	1,200		0.13		6.63						
MW4	12/13/04	**	b	20.44	NC	0.00	<5.0	<5.0	<5.0	<10	740	<50	<500	860		0.58		6.84						
MW4	03/14/05	**	b	18.30	NC	0.00	20	<5.0	<5.0	<10	930	<50	<500	930		0.28		6.34						
			-																					

TABLE 2 CUMULATIVE GROUNDWATER ELEVATION AND ANALYTICAL DATA FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

		Casing	Depth to		SPH					tion (µg/L)	)							Concentra	ntion (mg/I	.)			
Well		Elevation	Water	Elevation				Ethyl-	Total					$CO_2$	DO	Eh (mv)	pН						
Number	Date	(feet)	(feet)	(feet)	(feet)	Benzene	Toluene	benzene	Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	(lab)	(field)	(field)	(field)	Fe(II)	Mn	$SO_4$	N-NH <sub>3</sub>	N-NO <sub>3</sub>	o-PO <sub>4</sub>
MW4	06/15/05	**	b 20.03	NC	0.00	350	6.1	<5.0	<10	2100	89	<500	1,100		0.46	-98.9							
MW4	07/18/05	**	NM	NC	NM	11	<5.0	<5.0	<10	540	<50		1,100										
MW4	09/26/05	**	21.79 21.89	NC	0.00	<5.0	<5.0	<5.0	<10	960	<50	<500	660		2.20	210.4	6.73						
MW4 MW4	12/12/05	**		NC	0.00	<5.0	<5.0	<5.0	<10	820	<50	<500	1,000		2.05		6.62						
MW4 MW4	03/29/06 06/19/06	**	14.85 17.96	NC NC	0.00	49 100	160 940	120 540	300 1,800	2,400 8,800	<100 <400	<100 <100	130 55		1.07 2.49		6.82 5.76						
MW4	09/29/06		b 19.85	43.50	0.00	18.0	2.6	1.5	3.5	370.0	<50	<100	180		0.25		6.66						
MW4	12/12/06		b 20.03	43.32	0.00	11.0	0.77	<0.5	<0.5	230.0	<50	<100	260		0.90		6.61						
MW4	03/01/07		b 18.33	45.02	0.00	63.0	7.10	40.0	190.0	1,800.0	<50	<100	130		0.76		6.6						
MW4	06/12/07		b 19.70	43.65	0.00	9.3	<0.5	<0.5	<0.5	70.0	<50	<100	150		1.06		6.9						
MW4	09/25/07		b 21.27	42.08	0.00	<0.5	<0.5	<0.5	<0.5	<50	<50	<100	300		6.67		6.59						
MW4	12/20/07		b 21.30	42.05	0.00	<0.5	<0.5	<0.5	< 0.5	<50	<50	<100	370		1.45		6.57						
MW4	03/26/08	63.35	b 20.89	42.46	0.00	< 0.5	< 0.5	< 0.5	< 0.5	< 50	< 50	<100	260		4.56	65	6.35						
MW4	06/03/08		b 20.51	42.84	0.00	< 0.5	< 0.5	< 0.5	< 0.5	< 50	< 50	<100	190		1.34	101.3	6.49						
MW5	06/30/98	100.9	a 20.60	80.30	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50			23	220	4.3		6.1						
MW5	07/29/98	100.9	a 21.52	79.38	0.00																		
MW5	08/26/98	100.9	a 22.21	78.69	0.00																		
MW5	10/01/98	100.9	a 22.95	77.95	0.00	<1.0	<1.0	<1.0	<1.0	< 50			<2.0	256	4.8		6.71						
MW5	10/30/98	100.9	a 23.23	77.67	0.00																		
MW5	11/30/98	100.9	a 23.12	77.78	0.00																		
MW5	12/28/98	100.9	a 23.18	77.72	0.00																		
MW5	01/25-26/99	100.9	a 22.61	78.29	0.00	<1.0	<1.0	<1.0	<1.0	< 50			<2.0	305	9.7		7.04						
MW5	02/26/99		a 19.78	81.12	0.00																		
MW5	03/24/99		a 20.25	80.65	0.00																		
MW5	05/12/99		a 21.06	79.84	0.00																		
MW5	12/15-16/99		a 24.19	76.71	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50			< 0.50		2.72		7.19						
MW5	03/20/00	100.9	a 19.15	81.75	0.00									124				0.11	0.017				
MW5	07/20/00		a 21.84	79.06	0.00	< 0.50	0.98	< 0.50	< 0.50	<50	<50	<300	1.9	134	5.58		6.35	0.11	0.017	49	< 0.10	3.9	< 0.20
MW5 MW5	10/11/00 04/10-11/01	100.9 100.9	a 23.4 a 22.3	77.50 78.60	0.00	<0.50	2.6	<0.50		<50		<300	1.5	102			NR	<0.10	0.042	45	< 0.10	2.9	0.11
MW5	07/10/01	100.9	a 22.3 a 23.64	77.26	0.00	<0.50	2.6	<0.50	0.6	<30	<50	<300	1.5	183	66		NK	<0.10	0.042	43	<0.10	2.9	0.11
MW5	11/20/01		b 24.65	40.94	0.00	0.83	12	1.2	11	140	860	2,500	10	c	66		6.01	0.2	2.5	42	< 0.10		<0.20
MW5	02/19/02		b 22.37	43.22	0.00	0.63		1.2				2,300					0.01	0.2	2.3		<0.10		<0.20
MW5	05/21/02		b 23.10	42.49	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	2,200	<300	<2.0	140	66		6.3	< 0.1	0.22	44	< 0.10	3	< 0.20
MW5	06/27/03		b 23.07	42.52	0.00						2,200								0.22				<0.20
MW5	09/29/03		b 24.38	41.21	0.00	< 0.50	0.52	7.1	35	100	<50	<500	1.4										
MW5	12/12/03		b 23.90	41.69	0.00	< 0.50	< 0.50	< 0.50	<1	<50	<50	< 500	1.5										
MW5	03/15/04		b 20.82	44.77	0.00	< 0.50	< 0.50	< 0.50	<1.0	<50	<50	< 500	< 0.50		6.4								
MW5	06/24/04		b 23.57	42.02	0.00	< 0.50	< 0.50	< 0.50	<1.0	< 50	130	< 500	0.79		5.56								
MW5	09/29/04	65.59	b 24.44	41.15	0.00																		
MW5	12/13/04	65.59	b 23.87	41.72	0.00																		
MW5	03/14/05	65.59	b 20.18	45.41	0.00	< 0.50	1.3	1.5	8.6	82	< 50	< 500	< 0.50		3.91		5.57						
MW5	06/15/05	65.59	b 12.96	52.63	0.00																		
MW5	09/26/05	65.59	b 23.60	41.99	0.00																		
MW5	12/12/05	65.59	b 23.84	41.75	0.00																		
MW5	03/29/06		b 17.19	48.40	0.00	< 0.50	< 0.50	< 0.50	< 0.50	73	< 50	<100	< 0.50		2.3		6.3						
MW5	06/19/06	65.59	b 20.22	45.37	0.00																		
MW-5	09/29/06		b 22.80	42.79	0.00																		
MW-5	12/12/06		b 23.08	42.51	0.00																		
MW-5	03/01/07	65.59	b 21.02	44.57	0.00	< 0.50	< 0.50	< 0.50	< 0.50	54	< 50	<100	< 0.50		4.35		6.08						
MW-5	06/12/07		b 22.78	42.81	0.00																		
MW-5	09/25/07		b 24.45	41.14	0.00	< 0.50	1.5	< 0.50	< 0.50	< 50	< 50	<100	0.64		18.71		6.26						
MW-5	12/20/07	65.59	b 24.52	41.07	0.00																		

TABLE 2 CUMULATIVE GROUNDWATER ELEVATION AND ANALYTICAL DATA FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

		Casing		Depth to	GW	SPH	-				tion (µg/L)	)							Concentra	ntion (mg/l	L)			
Well		Elevation	1	Water	Elevation	n Thickness			Ethyl-	Total					$CO_2$	DO	Eh (mv)	pH						
Number	Date	(feet)		(feet)	(feet)	(feet)	Benzene	Toluene	benzene	Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	(lab)	(field)	(field)	(field)	Fe(II)	Mn	$SO_4$	N-NH <sub>3</sub>	N-NO <sub>3</sub>	o-PO <sub>4</sub>
	02/26/00	65.50	,	24.00	41.51	0.00	0.50	1.5	.0.50	0.50	-50	-50	-100	.0.5		7.02	00	5.06						
MW-5	03/26/08	65.59		24.08	41.51	0.00	< 0.50	1.5	< 0.50	< 0.50	<50	<50	<100	< 0.5		7.93	88	5.86						
MW-5	06/03/08	65.59	b	23.68	41.91	0.00			-			-	-		-		-			-			-	
MW6	07/20/00	96.60	a	18.30	78.30	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50	<300	160	122	2.72		6.66	120	1.9	53	6	0.05	< 0.20
MW6	10/11/00	96.60	a	18.69	77.91	0.00																		
MW6	04/10-11/01	96.60	a	17.85	78.75	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<300	180	142	NR		NR	22	2.2	0.69	5.2	< 0.05	< 0.20
MW6	07/10/01	96.60	a	18.43	78.17	0.00																		
MW6	11/20/01	59.60	b	18.67	40.93	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<300	450	100	2.03		6.44	29	5.2	1.1	3.4		< 0.20
MW6	02/19/02	59.60	b	17.40	42.20	0.00																		
MW6	05/21/02	59.60	b	17.68	41.92	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<300	170	100	0.76		6.6	11	3.4	1.4	8.9	0.65	< 0.20
MW6	06/27/03	59.60	b	17.73	41.87	0.00																		
MW6	09/29/03	59.60	b	18.48	41.12	0.00	<1.0	<1.0	<1.0	< 2.0	230	< 50	< 500	340										
MW6	12/12/03	59.60	b	17.89	41.71	0.00	<2.5	< 2.5	<2.5	< 5.0	<250	51	< 500	190										
MW6	03/15/04	59.60	b	16.46	43.14	0.00	<1.0	<1.0	<1.0	< 2.0	200	< 50	< 500	220		0.11								
MW6	06/24/04	59.60	b	17.97	41.63	0.00	<1.0	<1.0	<1.0	< 2.0	130	< 50	< 500	190		0.05								
MW6	09/29/04	59.60	b	18.55	41.05	0.00	< 0.50	0.61	< 0.50	1.2	210	< 50	< 500	190		0.37		6.60						
MW6	12/13/04	59.60	b	17.88	41.72	0.00																		
MW6	03/14/05	59.60	b	16.82	42.78	0.00	< 0.50	< 0.50	< 0.50	1.8	160	< 50	< 500	190		0.08		5.65						
MW6	06/15/05	59.60	b	17.60	42.00	0.00																		
MW6	09/26/05	59.60	b	NM	NM	0.00																		
MW6	12/12/05	59.60	b	18.33	41.27	0.00	0.62	< 0.50	< 0.50	1.0	81	<50	<500	140		1.52		6.61						
MW6	03/29/06	59.60	b	14.53	45.07	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50	<100	120		6.93		6.06						
MW6	06/19/06	59.60	b	16.46	43.14	0.00																		
MW6	09/29/06	59.60	b	17.60	42.00	0.00	0.87	< 0.50	< 0.50	< 0.50	<50	<50	<100	140		0.16		6.49						
MW6	12/12/06	59.60	b	16.93	42.67	0.00	0.67	< 0.50	< 0.50	< 0.50	<50	<50	230	89		0.5		6.68						
MW6	03/01/07	59.60	b	16.30	43.30	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50	<100	78		0.83		6.66						
MW6	06/12/07	59.60	b	17.38	42.22	0.00																		
MW6	09/25/07	59.60	b	18.36	41.24	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50	<100	89		8.5		6.78						
MW6	12/20/07	59.60	b	17.90	41.70	0.00																		
MW6	03/26/08	59.60		17.37	42.23	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50	<100	68		5.57	-35	6.38						
MW6	06/03/08	59.60		17.11	42.49	0.00																		
MW7	07/20/00	96.75	a	15.93	80.82	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<300	< 0.50	32.2	7.15		7.43	< 0.1	0.002	7.5	< 0.10	2.6	0.13
MW7	10/11/00	96.75	a	16.90	79.85	0.00																		
MW7	04/10-11/01	96.75	a	15.80	80.95	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<300	< 0.50	77.6	NR		NR	0.18	0.048	49	< 0.10	2.7	0.31
MW7	07/10/01	96.75	a	16.71	80.04	0.00																		
MW7	11/20/01	59.47	b	16.17	43.30	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<300	< 2.0	62	0.96		7.11	0.16	1.8	63	< 0.10		< 0.20
MW7	02/19/02	59.47	b	14.92	44.55	0.00																		
MW7	05/21/02	59.47	b	15.18	44.29	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<300	< 0.50	68	1.03		7.57	0.11	0.35	51	< 0.10	2.8	0.11
MW7	06/27/03	59.47	b	16.28	43.19	0.00																		
MW7	09/29/03	59.47	b	16.88	42.59	0.00	< 0.50	< 0.50	< 0.50	<1.0	< 50	< 50	< 500	0.62										
MW7	12/12/03	59.47	b	14.95	44.52	0.00	< 0.50	< 0.50	< 0.50	<1.0	< 50	< 50	< 500	< 0.50										
MW7	03/15/04	59.47	b	14.77	44.70	0.00	< 0.50	< 0.50	< 0.50	<1.0	< 50	< 50	< 500	< 0.50		0.54								
MW7	06/24/04	59.47	b	16.33	43.14	0.00	< 0.50	< 0.50	< 0.50	<1.0	<50	300	<500	< 0.50		0.20								
MW7	09/29/04	59.47	b	16.88	42.59	0.00																		
MW7	12/13/04	59.47	b	15.26	44.21	0.00																		
MW7	03/14/05	59.47	b	15.00	44.47	0.00	< 0.50	< 0.50	< 0.50	<1.0	<50	<50	<500	< 0.50		0.47		6.15						
MW7	06/15/05	59.47	b	15.32	44.15	0.00																		
MW7	09/26/05	59.47	b	NM	NM	0.00																		
MW7	12/12/05	59.47	b	15.99	43.48	0.00																		
MW7	03/29/06	59.47	b	12.65	46.82	0.00	< 0.50	< 0.50	< 0.50	< 0.50	<50	<50	<100	< 0.50		0.72		5.81						
MW7	06/19/06	59.47	b	14.49	44.98	0.00	<0.50 											5.01						
MW7	09/29/06	59.47	b	16.67	42.80	0.00											-							
MW7	12/12/06	59.47			44.26	0.00				-								-						
1V1 VV /	14/14/00	39.47	b	13.21	44.20	0.00																		

TABLE 2 CUMULATIVE GROUNDWATER ELEVATION AND ANALYTICAL DATA FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

		Casing	Depth to	GW	SPH				Concentra	tion (µg/L)								Concentrat	tion (mg/I	.)			
Well		Elevation	Water	Elevation	Thickness			Ethyl-	Total					$CO_2$	DO	Eh (mv)	pН						
Number	Date	(feet)	(feet)	(feet)	(feet)	Benzene	Toluene	benzene	Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	(lab)	(field)	(field)	(field)	Fe(II)	Mn	$SO_4$	N-NH <sub>3</sub>	N-NO <sub>3</sub>	o-PO
MW7	03/01/07	59.47	b 14.68	44.79	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	< 0.50		0.92		6.84						
MW7	06/12/07	59.47	b 16.2	43.27	0.00																		
MW7	09/25/07	59.47	b 16.72	42.75	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	< 0.50		6.11		6.78						
MW7	12/20/07	59.47	b 15.02	44.45	0.00																		
MW7	03/26/08	59.47	b 15.95	43.52	0.00	< 0.50	< 0.50	< 0.50	< 0.50	< 50	< 50	<100	< 0.50		3.3	23	6.46						
MW7	06/03/08	59.47	b 14.24	45.23	0.00																		

SPH Separate-phase hydrocarbons.

CO<sub>2</sub> Carbon dioxide.

DO Dissolved oxygen.

Fe(II) Ferrous iron.

Mn Manganese.

SO<sub>4</sub> Sulfate.

N-NH<sub>3</sub> Ammonia.

N-NO<sub>3</sub> Nitrate.

DO OIL DI I

o-PO<sub>4</sub> Ortho-Phosphate.

GW Groundwater.

TPH-g Total Petroleum Hydrocarbons as gasoline.

TPH-d Total Petroleum Hydrocarbons as diesel.

TPH-mo Total Petroleum Hydrocarbons as motor oil.

MTBE Methyl tertiary butyl ether.

NC Not calculated.

NM Not measured.

NR Not reported.

μg/L Micrograms per liter.

mg/L Milligrams per liter.

\* SPH present; not sampled.

\*\* Well MW4 elevation modified due to site renovation activities. Not Surveyed.

- -- Not analyzed or not sampled.
- < Less than the laboratory reporting limits.
- a Elevations are referenced to monitoring well MW1, with assumed datum of 100.00 feet.
- b Elevations based on a survey conducted August 2002 and referenced benchmark with known elevation (NGVD 29) of 60.40 feet above mean sea level.
- Analysis not conducted due to broken sample containers.
- d Hydrocarbon reported in the gasoline range does not match laboratory gasoline standard.
- e Groundwater elevation in wells with LPH are corrected by multiplying the specific gravity of gasoline (0.69) by the LPH thickness and adding this value to the water elevation.
- Hydrocarbon reported is in the early diesel range, and does not match the laboratory diesel standard.
- g Sample contained discrete peak in gasoline range and identified by lab as MTBE.
- h Quantity of unknown hydrocarbon(s) in sample based on diesel.
- i The concentration reported reflect(s) individual or discrete unidentified peaks not matching a typical fuel pattern.
- j Depth to groundwater is based on the depth of the stingers.
- k Quantity of unknown hydrocarbon(s) in sample based on mtor oil.

TABLE 3 HISTORICAL GRAB GROUNDWATER ANALYTICAL DATA FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

Concentrations	(ug/L)
Concentrations	$(\mu g/L)$

Boring		Depth			Ethyl-	Total										
ID	Date	(feet)	Benzene	Toluene	benzene	Xylenes	TPH-g	TPH-d	TPH-mo	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB
HP1	12/18/2003	26-30	< 5.0	< 5.0	< 5.0	11	410	180	< 500	< 50	480	<10	< 5.0	< 5.0	< 5.0	< 5.0
HP3	12/18/2003	32-36	< 0.50	< 0.50	< 0.50	<1.0	< 50	75	< 500	< 5.0	0.55	<1.0	< 0.50	< 0.50	1.3	< 0.50

TPH-g Total Petroleum Hydrocarbons as gasoline.
TPH-d Total Petroleum Hydrocarbons as diesel.
TPH-mo Total Petroleum Hydrocarbons as motor oil.

TBA t-butyl alcohol.

MTBE Methyl tertiary butyl ether.

DIPE di-isopropyl ether.

ETBE ethyl t-butyl ether.

TAME t-amyl methyl ether.

1,2-DCA 1,2-dichloroethane.

EDB ethylene dibromide.

< less than the laboratory reporting limits.

TABLE 4 GROUNDWATER MONITORING SCHEDULE FORMER VAL STROUGH CHEVROLET, 327 34th STREET OAKLAND, CALIFORNIA

XX7.11	Groundwater	Groundwa	ter Sampling and Analysis	Frequency
Well Number	Gauging Frequency	BTEX and TPH-g	МТВЕ	ТЕРН
MW1	Q	S	S	S
MW2	Q	Q	Q	Q
MW3	Q	Q	Q	Q
MW4	Q	Q	Q	Q
MW5	Q	A	A	A
MW6	Q	S	S	S
MW7	Q	A	A	A

Q = Quarterly.

S = Semiannual.

A = Annual.

BTEX = Benzene, toluene, ethylbenzene, total xylenes.

MTBE = Methyl tertiary butyl ether.

TPH-g = Total Petroleum Hydrocarbons as gasoline.

TEPH = Total Extractable Petroleum Hydrocarbons, includes TPH-diesel and TPH-motor oil.

# APPENDIX A PROTOCOLS FOR GROUNDWATER MONITORING



### **APPENDIX A**

### PROTOCOLS FOR GROUNDWATER MONITORING

### **GROUNDWATER GAUGING**

Wells are opened prior to gauging to allow the groundwater level in the wells to equilibrate with atmospheric pressure. The depth to groundwater and depth to liquid-phase hydrocarbons, if present, are then measured to the nearest 0.01 feet using an electronic water level meter or optical interface probe. The measurements are made from a permanent reference point at the top of the well casing. If less than 1 foot of water is measured in a well, the water is bailed from the well and, if the well does not recover, the well is considered "functionally dry." Wells with a sheen or measurable liquid-phase hydrocarbons are generally not purged or sampled.

### WELL PURGING

After the wells are gauged, each well is purged of approximately 3 well casing volumes of water to provide representative groundwater samples for analysis. Field parameters of pH, temperature, and electrical conductance are measured during purging to ensure that these parameters have stabilized before groundwater in a well is sampled. Groundwater in each well is purged using an inertial pump (WaTerra), an electric submersible pump, or a bailer. After the well is purged, the water level is checked to ensure that the well has recharged to at least 80 percent of its original water level.

### **GROUNDWATER SAMPLING**

After purging, groundwater in each well is sampled using dedicated tubing and an inertial pump (WaTerra) or a factory-cleaned disposable bailer. Samples from extraction wells are typically collected from sample ports associated with the groundwater remediation system. Samples collected for volatile organic analysis are placed in Teflon septum-sealed 40-milliliter glass vials. Samples collected for diesel analysis are placed in 1-liter amber glass bottles. Each sample bottle is labeled with the site name, well number, date, sampler's initials, and preservative. The samples are placed in a cooler with ice for delivery to a state-certified laboratory. The information for each sample is entered on a chain-of-custody form prior to transport to the laboratory.

# APPENDIX B FIELD DOCUMENTS

# H or Purge Water Drum L

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	┖	٠,	ш		11	ιı							ĸ	M			

Site Address: 327 34th St. Dakland

STATUS OF DRUM(S) UPON ARRIVAL						
Date	6/3/08					
Number of drum(s) empty:						
Number of drum(s) 1/4 full:	1					
Number of drum(s) 1/2 full:						
Number of drum(s) 3/4 full:						
Number of drum(s) full:	2					
Total drum(s) on site:	3					
Are the drum(s) properly labeled?	Y					
Drum ID & Contents:	Purgewater					
If any drum(s) are partially or totally filled, what is the first use date:						

- If you add any SPH to an empty or partially filled drum, drum must have at least 20 gals. of Purgewater or DI Water.
- -If drum contains SPH, the drum MUST be steel AND labeled with the appropriate label.
- -All BTS drums MUST be labeled appropriately.

STATUS OF DRUM(S) UPON DEPARTURE						
Date	0/3/08					
Number of drums empty:						
Number of drum(s) 1/4 full:						
Number of drum(s) 1/2 full:						
Number of drum(s) 3/4 full:	×					
Number of drum(s) full:	2					
Total drum(s) on site:	3					
Are the drum(s) properly labeled?	Y					
Drum ID & Contents:	Purgevater					

# LOCATION OF DRUM(S)

Describe location of drum(s): Behind site, in Fenced compound on Webster in back of partitions area

FINAL STATUS				
Number of new drum(s) left on site this event	0			
Date of inspection:	4/3/08			
Drum(s) labelled properly:	Y			
Logged by BTS Field Tech:	DR			
Office reviewed by:	80			

# TEST EQUIPMENT CALIBRATION LOG

PROJECT NUMBER Un Strugh Itanola				
IALS				
2				

#### WELL GAUGING DATA

Project	t# <i>080</i>	1603-De	RI	Date	6/3/08	Client	-12M	
Site	327	34th	SF.	Oakline	1 CA			

		Well Size	Sheen /	1	Thickness of Immiscible	Immiscibles Removed	Depth to water		Survey Point: TOB or	
Well ID	Time	(in.)	Odor	Liquid (ft.)	Liquid (ft.)	(ml)	(ft.)	bottom (ft.)	70C,	Notes
mw-1	0915	Ź					20.70	24.13		<b>C</b> .0
m2	0926	١					21.85	31.73		5
11m - 3	0932	2					21.81	31.58		5
nw-4	0920	2					20.51	27.60		5
pw-5	0931	2					23.68	26-47		6.0
mw-6	6962	2					17.11	26.62		6.0
4n-7	0906	2					14.24	341.45	<b>V</b>	6.0
								·		٠
						=				
										· · · · · · · · · · · · · · · · · · ·
							***************************************			
										·

#### WELLHEAD INSPECTION CHECKLIST

Page of \_\_\_\_

Date	6/3/08	Client _	LRM			<del></del>		
Site Address	327	Client _ 3416 <i>Sf.</i>	Oakland	CA		11		
Job Number					hnician	D	)n	
Well ID	Well Inspected - No Corrective Action Required	From (	Wellbox Components Cleaned	Cap Replaced	Debris Removed From Wellbox	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
pres -1	X							
prv-2								
m-3	X							
an -4							*	
mu-6	X							
ľ							X	
Mw -7							*	
						······································		
		-						
						ng na dalah sebasakan dalah sanggan paggan pagna		
NOTES:		lew grade.	lf45	Scharle	I.d cui	~ well.	Mv-6	Sum 45
Mu-7	MW-4 (	irrelace ap	cin ,					
				***************************************	PPL MANUELLE .		**************************************	

## LOW FLOW WELL MONITORING DATA SHEET

Project #:	: 0806c	3- Drl		Client:	LRM			
Sampler:				Date:	6/3/28			
Well I.D.	: Mw-	2		Well Dian	neter: Ø	3 4	6 8	
Total We	ll Depth:	31-73	3	Depth to V	Vater	Pre: 2/	.85 Post:	
Depth to	Free Produ	ict:	-	Thickness	of Free Pr			
Reference	ed to:	ØV.S	Grade	Flow Cell	Туре:	45	1 556	
Purge Methor Sampling M Flow Rate:		2" Grundfo Dedicated	os Pump Tubing	1.6 glev x3 = 4.8	Peristaltic P New Tubing Pump Deptl		Bladder Pump Other_	XDispesall bas
Time	Temp.	pН	Cond. (mS or µS)-	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1101	17.98	6.40	745		6.84	-21.3	ו פעל ימיו	oder Sheen
1105	18).19	6.42	747		0.86	-24.6	1.6	\
1108	18,22	6.43	784	Action to the second	0.91	-22.3	3.2	. • • •
	18.24	6.43	789		0.90	-22.0	4-8	e
			-					
				·				
Did well	dewater?	Yes	NG	La company of the Com	Amount a	actually e	vacuated: 4	.8
Sampling	Time:	1115			Sampling	Date: 6	11/08	
Sample I.	D.: mw-				Laborator		:FF	
Analyzed	for:	TPH-G	BTEX MTE	BE TPH-D		Other: 5	ac CoC	
Equipmen	nt Blank I.	D.:	@ Time		Duplicate	: I.D.:		

## LOW FLOW WELL MONITORING DATA SHEET

Project #	: 68060	3-Dal		Client:	LRM			
Sampler:	DR			Date:	5/3/08			
Well I.D.	: Mw-	3		Well Dian	neter: ②	3 4	6 8	
Total We	ll Depth:	31-88		Depth to V	Vater	Pre: 21.	F) Post:	
Depth to	Free Prod	uct:		Thickness				
Reference	ed to:	PVO	Grade	Flow Cell	Type:	45	1556	
Purge Methors Sampling M	lethod:	2" Grundf Dedicated		1.6 g/cu x3 = 48	Peristaltic F New Tubing Pump Deptl	g	Bladder Pump Other_	× Dispusable × Dispusable
Time	Temp.	pН	Cond. (mS or (S))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1125	18.27	6.61	969	-	0.88	-29.2	instral	oder
1128	18.32	6.63	970		0.81	-23.6	1-6	1
1131	18.33	6.64	981		0.79	. 25,4	3,2	. /.
1134	18.34	6.63	98 <b>9</b>		0.80	_27.0	4.8	ſ <sub>j</sub>
					1			
·····								
Did well	dewater?	Yes (	N <sub>9</sub>		Amount a	actually e	vacuated: 식	-8
Sampling	Time:	1145			Sampling	Date: 6	5/3/28	
Sample I.	D.: MW	-3			Laborato	ry:	K, FF	
Analyzed	for:	ТРН-G	BTEX MTE	BE TPH-D		Other:	See CC	
Equipmen	nt Blank I.	D.:	@ Time		Duplicate	i.D.:		

## LOW FLOW WELL MONITORING DATA SHEET

Project #:	0806	03. DR)		Client:	LRM			
Sampler:	D	Z.		Date: 6				
Well I.D.	: Nw-L	1		Well Dian	neter: ②	3 4	6 8	
Total We	ll Depth:	27.60		Depth to V	Vater	Pre: 20	S) Post:	,
Depth to 1	Free Produ	ıct:		Thickness	of Free Pr	oduct (fe	et):	
Reference	ed to:	PVO	Grade	Flow Cell	Type:	451	556	
Purge Metho Sampling M Flow Rate: _	ethod:	2" Grundfo Dedicated	or 1.	$\frac{1}{3} = \frac{3}{3}$	Peristaltic P New Tubing Pump Deptl	g	Bladder Pump' Other_	Kwahra Pimp
Time	Temp.	pН	Cond. (mS or $\mu$ S).	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (galsor mL)	Observations
1021	16.78	(.49	882		1.10	88.9	isivel	
1025	18.74	6.44	878		1.34	97.3	1.1	
1028	18.73	6.44	883		1.29	100.9	2-2	
1031	18.73	6.43	881		1.27	101.3	3.3	
		<b></b>				·		
							***************************************	
			·.					
	<i>i</i> .							
							-	
Did well	dewater?	Yes	No		Amount a		evacuated: 3	3
Sampling	Time:	1035			Sampling	g Date:	6/3/08	
Sample I.	D.: MU.	. 4			Laborato	ry: 🎤	riff	
Analyzed	for:	TPH-G	BTEX MT	BE TPH-D		Other:	S- 60	
Equipmen	nt Blank I.	D.:	@ Time		Duplicate	e I.D.:		

#### **APPENDIX C**

# LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION



Date: 06/11/2008

Mehrdad Javaherian LRM Consulting, Inc. 1534 Plaza Lane, #145 Burlingame, CA 94010

Subject: 3 Water Samples
Project Name: 327 34th Street
Project Number: 080603-DR1

Dear Mr. Javaherian,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,



Date: 06/11/2008

Project Name : **327 34th Street**Project Number : **080603-DR1** 

Sample: MW-2 Matrix: Water Lab Number: 63017-01

Sample Date :06/03/2008

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	1900	20	ug/L	EPA 8260B	06/06/2008
Toluene	11000	20	ug/L	EPA 8260B	06/06/2008
Ethylbenzene	2500	20	ug/L	EPA 8260B	06/06/2008
Total Xylenes	18000	25	ug/L	EPA 8260B	06/07/2008
Methyl-t-butyl ether (MTBE)	660	20	ug/L	EPA 8260B	06/06/2008
TPH as Gasoline	98000	2000	ug/L	EPA 8260B	06/06/2008
1,2-Dichloroethane-d4 (Surr)	97.2		% Recovery	EPA 8260B	06/06/2008
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	06/06/2008
TPH as Diesel (w/ Silica Gel) (Note: MRL increased due to interference	< 12000 from Gasoline	12000 -range hydrod	ug/L carbons.)	M EPA 8015	06/10/2008
TPH as Motor Oil (w/ Silica Gel)	500	100	ug/L	M EPA 8015	06/10/2008
Octacosane (Silica Gel Surr)	120		% Recovery	M EPA 8015	06/10/2008

Approved By:

Joel Kiff

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800



Date: 06/11/2008

Project Name : **327 34th Street**Project Number : **080603-DR1** 

Sample: MW-3 Matrix: Water Lab Number: 63017-02

Sample Date :06/03/2008

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	3900	25	ug/L	EPA 8260B	06/06/2008
Toluene	8700	25	ug/L	EPA 8260B	06/06/2008
Ethylbenzene	1500	25	ug/L	EPA 8260B	06/06/2008
Total Xylenes	7000	25	ug/L	EPA 8260B	06/06/2008
Methyl-t-butyl ether (MTBE)	470	25	ug/L	EPA 8260B	06/06/2008
TPH as Gasoline	47000	2500	ug/L	EPA 8260B	06/06/2008
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	06/06/2008
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	06/06/2008
TPH as Diesel (w/ Silica Gel) (Note: MRL increased due to interference	< 1500 e from Gasoline	1500 -range hydrod	ug/L carbons.)	M EPA 8015	06/10/2008
TPH as Motor Oil (w/ Silica Gel)	< 100	100	ug/L	M EPA 8015	06/10/2008
Octacosane (Silica Gel Surr)	99.3		% Recovery	M EPA 8015	06/10/2008

Approved By:

Joel Kiff

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800



Project Name: **327 34th Street**Project Number: **080603-DR1** 

Report Number: 63017

Date: 06/11/2008

Sample: MW-4 Matrix: Water Lab Number: 63017-03

Sample Date :06/03/2008

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	06/05/2008
Toluene	< 0.50	0.50	ug/L	EPA 8260B	06/05/2008
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	06/05/2008
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	06/05/2008
Methyl-t-butyl ether (MTBE)	190	0.50	ug/L	EPA 8260B	06/05/2008
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	06/05/2008
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	06/05/2008
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	06/05/2008
TPH as Diesel (w/ Silica Gel)	< 50	50	ug/L	M EPA 8015	06/10/2008
TPH as Motor Oil (w/ Silica Gel)	< 100	100	ug/L	M EPA 8015	06/10/2008
Octacosane (Silica Gel Surr)	110		% Recovery	M EPA 8015	06/10/2008

Approved By:

Joel Kiff

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Analysis Method Date Analyzed

Date: 06/11/2008

QC Report : Method Blank Data

Project Name: 327 34th Street

Project Number: 080603-DR1

the state of the s			Method						Method
TPH as Motor Oil (w/ Silica Gel)         < 100	Parameter	Measured Value			Analysis Method	Date Analyzed	Parameter	Measured Value	Reporting Limit Units
Octacosane (Silica Gel Surr)         123         %         M EPA 8015         06/06/2008           TPH as Diesel (w/ Silica Gel)         < 50	TPH as Diesel (w/ Silica Gel)	< 50	50	ug/L	M EPA 8015	06/06/2008			
TPH as Diesel (w/ Silica Gel)	TPH as Motor Oil (w/ Silica Gel)	< 100	100	ug/L	M EPA 8015	06/06/2008			
TPH as Motor Oil (w/ Silica Gel)         < 100         ug/L         M EPA 8015         06/10/2008           Octacosane (Silica Gel Surr)         105         %         M EPA 8015         06/10/2008           Benzene         < 0.50	Octacosane (Silica Gel Surr)	123		%	M EPA 8015	06/06/2008			
Octacosane (Silica Gel Surr)         105         %         M EPA 8015         06/10/2008           Benzene         < 0.50	TPH as Diesel (w/ Silica Gel)	< 50	50	ug/L	M EPA 8015	06/10/2008			
Benzene	TPH as Motor Oil (w/ Silica Gel)	< 100	100	ug/L	M EPA 8015	06/10/2008			
Ethylbenzene         < 0.50         0.50         ug/L         EPA 8260B         06/06/2008           Toluene         < 0.50	Octacosane (Silica Gel Surr)	105		%	M EPA 8015	06/10/2008			
Toluene         < 0.50         0.50         ug/L         EPA 8260B         06/06/2008           Total Xylenes         < 0.50	Benzene	< 0.50	0.50	ug/L	EPA 8260B	06/06/2008			
Total Xylenes         < 0.50         0.50         ug/L         EPA 8260B         06/06/2008           Methyl-t-butyl ether (MTBE)         < 0.50	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	06/06/2008			
Methyl-t-butyl ether (MTBE)         < 0.50         0.50         ug/L         EPA 8260B         06/06/2008           TPH as Gasoline         < 50	Toluene	< 0.50	0.50	ug/L	EPA 8260B	06/06/2008			
TPH as Gasoline	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	06/06/2008			
1,2-Dichloroethane-d4 (Surr)       97.6       %       EPA 8260B       06/06/2008         Toluene - d8 (Surr)       101       %       EPA 8260B       06/06/2008         Total Xylenes       < 0.50	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	06/06/2008			
Toluene - d8 (Surr)         101         %         EPA 8260B         06/06/2008           Total Xylenes         < 0.50	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	06/06/2008			
Total Xylenes < 0.50	1,2-Dichloroethane-d4 (Surr)	97.6		%	EPA 8260B	06/06/2008			
Benzene < 0.50 0.50 ug/L EPA 8260B 06/05/2008 Ethylbenzene < 0.50 0.50 ug/L EPA 8260B 06/05/2008 Toluene < 0.50 0.50 ug/L EPA 8260B 06/05/2008 Total Xylenes < 0.50 0.50 ug/L EPA 8260B 06/05/2008 Methyl-t-butyl ether (MTBE) < 0.50 0.50 ug/L EPA 8260B 06/05/2008 TPH as Gasoline < 50 50 ug/L EPA 8260B 06/05/2008 1,2-Dichloroethane-d4 (Surr) 101 % EPA 8260B 06/05/2008	Toluene - d8 (Surr)	101		%	EPA 8260B	06/06/2008			
Ethylbenzene         < 0.50	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	06/07/2008			
Toluene         < 0.50	Benzene	< 0.50	0.50	ug/L	EPA 8260B	06/05/2008			
Total Xylenes         < 0.50	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	06/05/2008			
Methyl-t-butyl ether (MTBE)         < 0.50			0.50	ug/L					
TPH as Gasoline < 50 50 ug/L EPA 8260B 06/05/2008  1,2-Dichloroethane-d4 (Surr) 101 % EPA 8260B 06/05/2008	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	06/05/2008			
1,2-Dichloroethane-d4 (Surr) 101 % EPA 8260B 06/05/2008	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	06/05/2008			
	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	06/05/2008			
Toluene - d8 (Surr) 101 % EPA 8260B 06/05/2008	1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	06/05/2008			
	Toluene - d8 (Surr)	101		%	EPA 8260B	06/05/2008			

Approved By:

Joel Kiff

Date: 06/11/2008

Project Name: 327 34th Street

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Number: 080603-DR1

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Percent	Duplicat Spiked Sample Percent Recov.	Relative	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
TPH-D (Si Gel)	BLANK	<50	1000	1000	1060	1020	ug/L	M EPA 8015	6/6/08	106	102	4.23	70-130	25
Benzene Methyl-t-butyl ethe		<0.50 <0.50	39.7 39.7	40.0 40.0	40.6 37.7	40.4 40.1	ug/L ug/L	EPA 8260B EPA 8260B	6/6/08 6/6/08	102 95.0	101 100	1.36 5.26	70-130 70-130	
Toluene	63029-01	<0.50	39.1	39.5	41.1	41.0	ug/L	EPA 8260B	6/6/08	105	104	1.11	70-130	25
Toluene	63057-02	<0.50	39.5	39.5	41.5	41.2	ug/L	EPA 8260B	6/6/08	105	104	0.709	70-130	25
Benzene	63018-07	<0.50	40.1	40.1	41.7	41.1	ug/L	EPA 8260B	6/5/08	104	102	1.56	70-130	25
Methyl-t-butyl ethe	r 63018-07	6.2	40.1	40.1	45.6	45.4	ug/L	EPA 8260B	6/5/08	98.2	97.6	0.572	70-130	25
Toluene	63018-07	<0.50	39.5	39.5	42.0	40.8	ug/L	EPA 8260B	6/5/08	106	103	2.95	70-130	25
TPH-D (Si Gel)	BLANK	<50	1000	1000	988	997	ug/L	M EPA 8015	6/10/08	98.8	99.7	0.985	70-130	25

Date: 06/11/2008

QC Report : Laboratory Control Sample (LCS)

Project Name : 327 34th Street

Project Number: 080603-DR1

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.1	ug/L	EPA 8260B	6/6/08	100	70-130
Methyl-t-butyl ether	40.1	ug/L	EPA 8260B	6/6/08	95.4	70-130
Toluene	39.5	ug/L	EPA 8260B	6/6/08	103	70-130
Toluene	39.5	ug/L	EPA 8260B	6/6/08	104	70-130
Benzene	40.0	ug/L	EPA 8260B	6/5/08	107	70-130
Methyl-t-butyl ether	40.0	ug/L	EPA 8260B	6/5/08	99.5	70-130
Toluene	39.4	ug/L	EPA 8260B	6/5/08	109	70-130

Approved By:

Joe Kiff

BLAINE	CAN 1005	1680 RO	GERS AVEN	UE		COI	NDUC	T ANAL	YSIS	TO DE	TECT	LAB	KIFF V	501/	1
_ <del></del>	SAN JUSE,	E, CALIFORNIA 95112-1105 FAX (408) 573-7771				T			Τ			ALL ANALYSES MU	ST MEET SPECI	ICATIONS AN	DHS #
TECH SERVICES, INC.	PHONE (408) 573-0555			ł		15M		1 1			ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND				
CHAIN OF CUSTODY						ļ	801		<b>,</b>			☐ EPA		RWQCB RE	EGION
	BTS# 0800	603 - D	) <sub>A</sub> 1	1,	1	ľ	*	1				OTHER			
ICLIENI		<u> </u>	· · · · · · · · · · · · · · · · · · ·	CONTAINERS		1	Oij)								
LRM Consulting, Inc.							o i				] ]	SPECIAL INSTRUCT	TIONS		
327 34th Street					(8260)	i	Motor					Invoice to:	I DM Carra	14! T	
Oakland, CA					BTEX	[	8	]			1 1		LRM Cons	-	
4						6						Attn:	Mehrdad Ja	vaherian	
MATRIX CONTAINERS					_	(8260)	(Diesel					Report to:	Mehrdad Ja	vaherian	
SAMPLE I.D. DATE T	S= SOIL W=H <sub>2</sub> 0	TOTAL		= COMPOSITE	TPH-Gas	MTBE	ТЕРН (					* Silica Gel Clea	nup Required	1 	·
		-		ပ	I :	2						ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
1	115 W	6			X	X	X				Ī				01
	45 W	6			X	X	X								02
1 MW.4 10	735 W	6			X	X	Х								03
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	<del>-                                    </del>			$\dashv$	_	_				$\perp$		Time 614 Co.	lant present:	AR/No	
SAMPLING DATE TIN	ME SAMPLIN														
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RELEASED BY DATE					, TIME			RECEIVED BY		/ED DV	NO LATER THAN	Standard T			
				1.8						) <sup>4</sup>	- (sample (ukdia	}	6/3/08	TIME	
DATE						Ţī	/530 TIME		RECEIVED BY		/ED BY	- (sample (4/kd/an			1535
RELEASED BY					los	-	121		4					DATE	TIME
DATE							IME		_ <b>_</b> RI	CEIV	ED BY	r.d An	المنطام	DATE	TIME
SHIPPED VIA									<b>1/4</b>			Bay KiA An	inyiiw '	060408	1212
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