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Alameda County Environmental Health

# GROUNDWATER MONITORING REPORT - THIRD QUARTER 2008

ALLRIGHT PARKING 1432 HARRISON STREET OAKLAND, CALIFORNIA

FUEL LEAK CASE NO. RO0000266

Prepared by: Conestoga-Rovers & Associates

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### 1.0 INTRODUCTION

On behalf of the Est. of A. Bacharach/Barbara Jean Borsuk, Conestoga-Rovers & Associates (CRA) has prepared this *Groundwater Monitoring Report – Third Quarter 2008* for the above-referenced site (see Figure 1). Presented in this report are the third quarter 2008 groundwater monitoring activities and results, and the anticipated fourth quarter 2008 activities.

Figure 1 is a vicinity map. Figure 2 presents groundwater elevation contours and hydrocarbon concentrations for this monitoring event. Table 1 provides well construction details. Table 2 presents recent and historic well water depth measurements and hydrochemical data, and separate phase hydrocarbon (SPH) measurements and observations. Appendix A contains CRA's standard field procedures for groundwater monitoring and sampling. Appendix B is the analytical laboratory report for the groundwater sampling event. Appendix C contains field sheets for the third quarter 2008 monitoring events. Appendix D contains benzene concentrations and depth to water time-series graphs.

### 1.1 <u>SITE INFORMATION</u>

Site Address 1432 Harrison Street, Oakland

Site Use Parking Facility

Client and Contact Mark Borsuk

**Consultant and Contact Person** CRA, Mark Jonas

**Lead Agency and Contact Person** ACEH, Jerry Wickham

### 2.0 SITE ACTIVITIES AND RESULTS

### 2.1 <u>CURRENT QUARTER'S ACTIVITIES</u>

### 2.1.1 FIELD ACTIVITIES

On September 9, 2008, CRA coordinated with Muskan Environmental Sampling (MES) to conduct quarterly monitoring activities. MES gauged groundwater levels and inspected for SPH in all monitoring wells. No measurable SPH was detected in any of the wells. Groundwater samples were collected from wells MW-2, MW-4, and MW-5. There was insufficient water available in well MW-1 to collect a groundwater sample. Groundwater monitoring field data sheets are provided in Appendix C. The groundwater monitoring data has been submitted to the GeoTracker database.

Field activities associated with well sampling included well purging, water quality measurements, sample collection, and equipment decontamination. Prior to sampling, the monitoring wells were purged by repeated bailing using a new, disposable bailer for each well. Field measurements of pH, specific conductance, and temperature of the purged groundwater were measured after extraction of each successive casing volume or at regular volume intervals. Purging of groundwater from each monitoring well continued until at least three casing volumes of water were extracted and consecutive pH, conductivity, and temperature measurements appeared to stabilize. Field water quality measurements purge volumes, and sample collection data were recorded on field sampling data forms (Appendix C).

Groundwater samples were collected using disposable bailers. The samples were decanted from the bailers into 40-milliliter (mL) glass volatile organic analysis (VOA) vials supplied by McCampbell Analytical, Inc. (McCampbell) of Pittsburg, California. Immediately after collection, the sample containers were labeled and placed on water-based ice in a cooler. Chain-of-custody procedures were followed from sample collection to transfer to the laboratory (Appendix B).

To minimize the potential for cross-contamination, groundwater monitoring equipment was decontaminated prior to being deployed in the first monitoring well and between successive wells. The probe of the electric well sounder used for water level measurements was rinsed thoroughly with distilled water and Alconox TM detergent prior to first use and between subsequent water level measurements. The disposable bailers were discarded after use at each well.

### 2.1.2 SAMPLE ANALYSES

Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015; and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021; and methyl tertiary butyl ether (MTBE) by EPA Method 8260. All analyses were performed by McCampbell. The laboratory analytical report is included as Appendix B. Hydrocarbon concentrations are summarized on Figure 2 and presented in Table 2. The analytical data were submitted to the GeoTracker database.

### 2.2 CURRENT QUARTER'S RESULTS

**Groundwater Flow Direction** North-northeast

Hydraulic Gradient 0.003

Range of Measured Water Depth 19.65 to 21.09 feet

from Top of Casing in Monitoring Wells

Were Measureable Separate Phase No

**Hydrocarbons Observed** 

### 2.2.1 GROUNDWATER FLOW DIRECTION

Based on depth-to-water measurements collected during the September 9, 2008 site visit, groundwater beneath the site apparently flows toward the north-northeast, at a gradient of 0.003 feet/feet. Groundwater flow conditions observed during the third quarter 2008 are consistent with conditions observed during previous monitoring events. Groundwater elevation data is summarized on Figure 2 and presented in Table 2.

### 2.2.2 HYDROCARBON DISTRIBUTION IN GROUNDWATER

Hydrocarbon concentrations were detected in all three of the sampled wells. TPHg concentrations ranged from 460 micrograms per liter ( $\mu$ g/L) to 65,000  $\mu$ g/L, with the highest concentration detected in well MW-2. Benzene concentrations ranged from 9.4  $\mu$ g/L to 8,900  $\mu$ g/L, with the highest concentration detected in well MW-5. Toluene concentrations ranged from 0.95  $\mu$ g/L to 510  $\mu$ g/L, with the highest concentration detected in well MW-2. Ethylbenzene concentrations ranged from 3.1  $\mu$ g/L to

 $1,700 \,\mu g/L$ , with the highest concentration detected in well MW-2. Xylenes concentrations ranged from  $19 \,\mu g/L$  to  $4,700 \,\mu g/L$ , with the highest concentration detected in well MW-2. No MTBE was detected in any of the sampled wells. Refer to Table 2 for dissolved hydrocarbon concentrations, and Appendix D for benzene concentration trend graphs for wells MW-2, MW-4, and MW-5. The unshaded symbols on the graphs represent results below laboratory detection limits.

### 2.3 PROPOSED ACTIVITIES FOR NEXT QUARTER

### 2.3.1 MONITORING ACTIVITIES

CRA will coordinate with MES to perform quarterly monitoring activities. MES will gauge all monitoring wells; check wells for SPH; and collect groundwater samples from wells not containing SPH. As per the sampling schedule, wells MW-1, MW-2, MW-4, and MW-5 will be sampled during the fourth quarter event. Groundwater samples will be analyzed for TPHg by modified EPA Method 8015, BTEX by EPA Method 8021 and MTBE by EPA Method 8260B. Groundwater monitoring and sampling results will be submitted to the State's GeoTracker database. CRA will summarize groundwater monitoring activities and results in the *Groundwater Monitoring Report - Fourth Quarter* 2008.

### 2.3.2 IMPLEMENT WORK PLAN

An Additional Site Characterization Work Plan (Work Plan) was submitted July 1, 2008. Mr. Wickham (ACEH) responded with conditional approval in an August 1, 2008 letter from ACEH. CRA is in the process of obtaining the necessary access agreement to conduct the proposed off-site work.

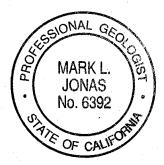
# All of Which is Respectfully Submitted, CONESTOGA-ROVERS & ASSOCIATES

my for

Michael Werner Staff Geologist

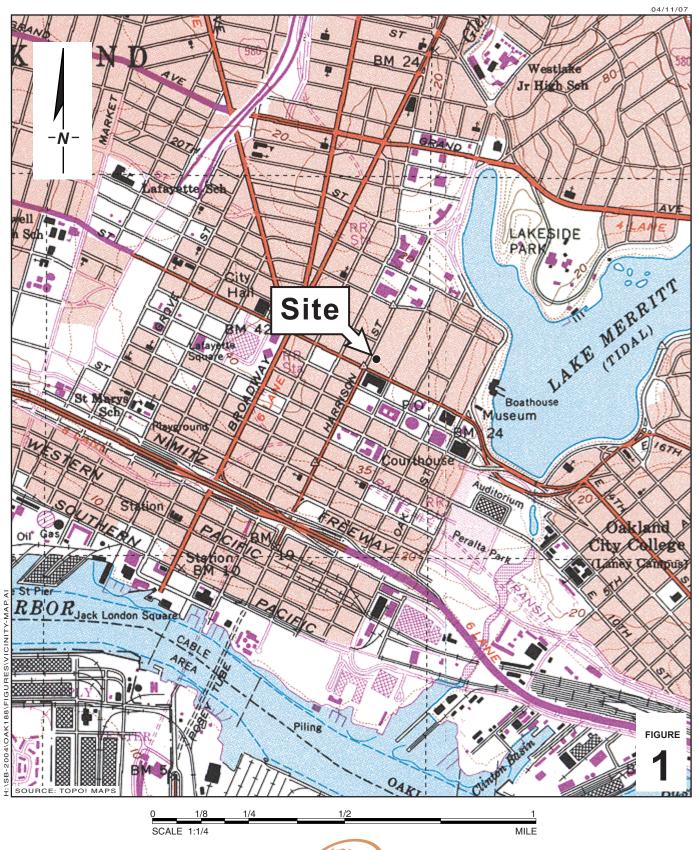
Mark Jonas, P.G.

Senior Geologist



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### **FIGURES**

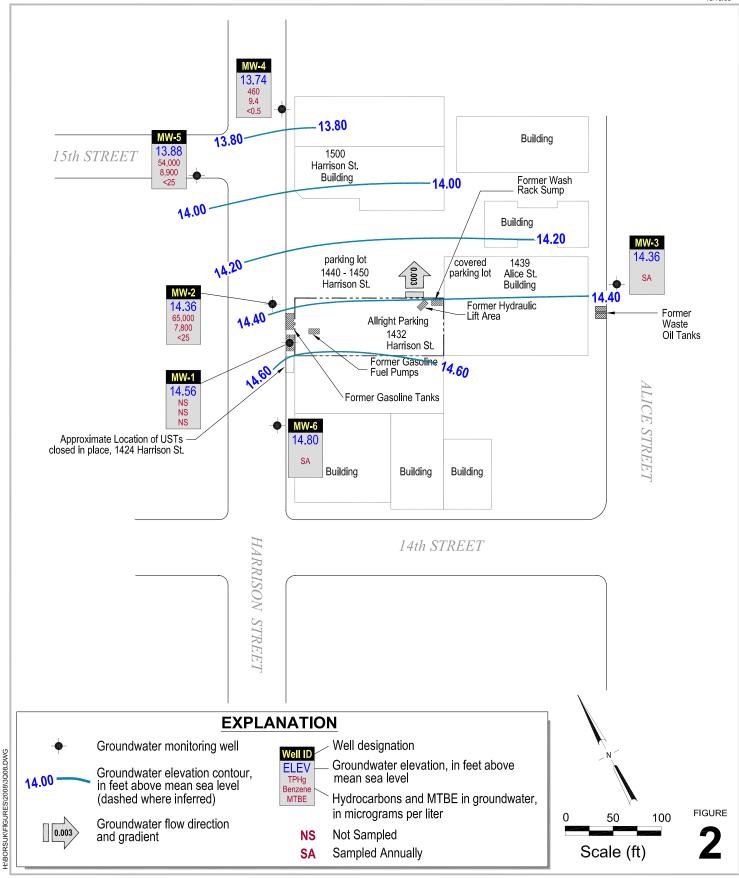


**Allright Parking** 

1432 Harrison Street Oakland, California



**Vicinity Map** 





1432 Harrison Street Oakland, California



TABLE 1

# WELL CONSTRUCTION DETAILS ALLRIGHT PARKING 1432 HARRISON STREET, OAKLAND, CALIFORNIA

Well No.	<b>Installation</b> Date	<b>Total Depth</b> (ft-bgs)	Boring Diameter (inch)	Well Diameter (inch)	Screen Size (inch)	Screened Interval (ft-bgs)	Sand Pack Interval (ft-bgs)	Surface Seal (ft-bgs)	TOC Elevation (ft-msl)
MW-1	1/12/1994	27	12	4	0.020	16-26.5	14.5-27	0-14.5	35.37
MW-2	7/30/1994	26		2	0.010	11-26	9-26	0-9	35.21
MW-3	7/30/1994	25		2	0.010	15-25	13-25	0-13	34.01
MW-4	10/2/1996	25	8	2	0.010	15-25	13-25	0-13	33.75
MW-5	10/2/1996	30	8	2	0.010	14-29	12-30	0-12	34.63
MW-6	10/2/1996	30.5	8	2	0.010	14-29	30-Dec	0-12	35.89
VES-1 (VE) VES-1 (AS)	7/23/1999	30	8	3 1	0.020 0.020	5-20 28-30	4.5-20 27.5-30	0-5 0-27.5	 
VES-2 (VE) VES-2 (AS)	7/22/1999	29.5	8	3 1	0.020 0.020	5-20 27.5-29.5	4-20 27-29.5	0-4 0-27	 
VES-3 (VE) VES-3 (AS)	7/23/1999	30	8	3 1	0.020 0.020	5-20 28-30	4-20 25-30	0-4 0-25	 
VES-4 (VE) VES-4 (AS)	7/23/1999	29	8	3 1	0.020 0.020	5-20 27-29	4-20 26.5-28.5	0-4 0-26.5	

Notes:

ft-bgs Feet below ground surface ft-msl Feet above mean sea level

Not surveyedVE Vapor extractionAS Air sparge

# WELL CONSTRUCTION DETAILS ALLRIGHT PARKING 1432 HARRISON STREET, OAKLAND, CALIFORNIA

Comments			

#### GROUNDWATER ELEVATION AND ANALYTICAL DATA ALLRIGHT PARKING 1432 HARRISON STREET, OAKLAND, CALIFORNIA

TOC Well ID SPH Groundwater TPHg MTBE Sample ID Date Depth to Groundwater Thickness Elevation Benzene Toluene Ethylbenzene Xylenes Notes TOC (ft amsl) (ft below TOC) (feet) (ft amsl) (μg/L) Monitoring Well Sample Results: MW-1 8/1/1994 170,000 35,000 51,000 2,400 13,000 19.53 41.000 100,000 34.95 12/21/1994 --15.42 180,000 64,000 3.100 3/13/1995 18.66 \_\_ 16.29 150,000 31,000 45,000 2,500 17,000 6/27/1995 18.20 --16.75 71,000 17,000 18,000 1,600 7,700 7.700 7/7/1995 18.35 16.60 71,000 17.000 18,000 1.600 9/28/1995 18.20 16.75 110,000 27,000 34,000 1,700 14,000 12/20/1995 120,000 33,000 19.96 --14.99 43,000 2,300 15,000 --140,000 29,000 36,000 1,900 13,000 <200\* 3/26/1996 19.27 15.68 d 110,000 30.000 38,000 2.200 13.000 <200\* 6/20/1996 18.64 16.31 9/26/1996 19.35 15.60 28,000 15,000 ND\*\* 170,000 40,000 2.200 10/28/1996 19.58 --15.37 110,000 36,000 47,000 16,000 ND\* 19.68 15.27 2,500 12/12/1996 --24,000 3/31/1997 18.80 --16.15 160,000 39,000 1.900 13,000 ND\* 6/27/1997 19.26 --15.69 130,000 25,000 36,000 2.000 14,000 ND\* 19.70 15.25 99,000 22,000 27,000 1,600 13,000 270\* 9/9/1997 15.70 160,000 30,000 44,000 2,200 15,000 ND\*\*\* 12/18/1997 19.25 ND\*\*\* 3/12/1998 17.52 --17.43 190,000 20,000 49,000 2,500 18,000 --90.000 19.000 2.100 16.000 6/22/1998 18.63 16.32 40.000 9/18/1998 18.60 16.35 190,000 29,000 48,000 2,400 17,000 12/23/1998 19.18 15.77 140,000 24,000 44,000 2,000 8,200 181.000 16.43 22,200 40.100 1.844 12.200 3/29/1999 18.52 6/23/1999 18.60 16.35 80,000 20,000 33,000 1,600 11,000 9/24/1999 19.05 --15.90 117,000 15,100 20,700 1,550 11,800 19.95 12/23/1999 15.00 186,000 25,900 39,000 1,990 12,400 --3/21/2000 18.48 16.47 210,000 35,000 42,000 2,200 13,000 <3,000 18 95 16.00 200,000 33,000 46,000 2.200 15,000 <200\* 7/3/2000 a Sheen Field 9/7/2000 19.45 15.50 12/5/2000 19.90 15.05 220,000 42,000 57,000 2,700 17,000 <200 3/6/2001 18.20 16.75 180,000 27,000 39,000 2,000 13,000 <1200\* /<20\*\*\* a,l 170,000 28.000 6/8/2001 20.14 14.81 40.000 1.900 13.000 <200 a 8/27/2001 21.19 13.76 130,000 24,000 33,000 1,600 11,000 <350 a 10/25/2001 21.74 13.21 160,000 22,000 28,000 1,500 10,000 <350 a 21.39 0.41 13.84 3/1/2002 51,000 210,000 30,000 22,000 <1.000\* 6/10/2002 22.30 12.65 3.100 а 34.96 9/3/2002 21.40 13.56 2,500,000 31,000 170,000 29,000 170,000 2,500,000\* a 2,600 28,000 89,000 <1.700 12/22/2002 20.50 14 46 9.300 530 a,m Sheen <sup>Lab</sup> 1/23/2003 18.57 16.39 130,000 600 1,600 <100 41,000 <50\*\*\* a,b,l 15.91 6/12/2003 19.10 0.07 7/23/2003 19.42 0.07 15.59<sup>x</sup> ----------18.29<sup>x</sup> 35.37# 12/22/2003 17.09 0.01 \_\_ \_\_ 190 250 13.82 21.55 22,000 <10 5,100 <100 3/10/2004 a,c 23 6/16/2004 14.75 20.62 2,700 160 13 520 <25 a Sheen Field 17 35 580 <10\*\*\* 9/27/2004 18.02 27,000 2.000 56 6.800 a,m 12/22/2004 11.25 24.12 250 3.5 18 <0.5 47 <0.5\*\*\* a,m 3/3/2005 14.42 --20.95 320 5.2 13 3.2 46 < 5.0 a 34.96## 17.80 6/9/2005 17.16 9/9/2005 18.26 \_\_ 16.70 \_\_ --\_\_ \_\_ \_\_ \_\_ 12/20/2005 18.68 16.28 --3/26/2006 16.96 18.00 23,000 270 400 65 4,400 <50 6/23/2006 17.55 17.41 30,000 340 680 170 6,900 <500 a,m 9/7/2006 18.53 16.43 34,000 540 630 190 7,000 < 500 a Sheen Field 19.43 15.53 20,000 550 55 130 4,700 <100\*/<0.5\*\*\* 12/29/2006 a,m Sheen Field 3/21/2007 18.92 16.04 23,000 910 210 140 5.900 <250\* Sheen Field 6/7/2007 19.22 15.74 24,000 680 61 190 4,300 <100\* a.b 9/28/2007 20.19 14.77 --+ 12/9/2007 20.40 14.56 Sheen Lab 3/3/2008 19.16 15.80 10,000 510 28 <10 1,700 <2.5\*\*\* a,b,m,l 6/4/2008 20.05 14.91

9/9/2008

20.40

14.56

Well ID Sample ID TOC (ft amsl)	Date	Depth to Groundwater (ft below TOC)	SPH Thickness (feet)	TOC Groundwater Elevation (ft amsl)	трн <sub>д</sub> ←	Benzene	Toluene ——— (μg/L	Ethylbenzene	Xylenes	МТВЕ <b>→</b>	Notes
-		, , , , , , , , , , , , , , , , , , ,	,					,		<del>-</del>	
MW-2	8/1/1994				130,000	28,000	35,000	3,000	12,000		
35.18	12/21/1994	19.91		15.27	200	140,000	200,000	3,500	22,000		
MW-2	3/13/1995	19.15		16.03	500	9,200	23,000	7,000	36,000		-
(cont.)	6/27/1995	18.74		16.44	120,000	23,000	30,000	2,700	13,000		
	7/7/1995	18.80		16.38	120,000	23,000	30,000	2,700	13,000		
	9/28/1995	19.30		15.88	110,000	23,000	29,000	2,500	11,000		
	12/20/1995	20.24		14.94	83,000	980	1,800	2,200	10,000		
	3/26/1996	19.69		15.49	150,000	23,000	32,000	2,800	12,000	<200*	d
	6/20/1996	19.20		15.98	94,000	15,000	23,000	2,400	12,000	<200*	
	9/26/1996	19.80		15.38	150,000	20,000	29,000	2,800	12,000	ND**	
	10/28/1996	20.18		15.00							
	12/12/1996	20.17		15.01	58,000	3,100	11,000	1,700	8,100	220*	
	3/31/1997	19.67		15.51	38,000	6,000	7,900	690	3,300	ND*	
	6/27/1997	19.68		15.50	62,000	13,000	16,000	1,300	6,000	ND*	
	9/9/1997	20.20		14.98	81,000	16,000	18,000	1,800	8,600	ND***	
	12/18/1997	19.80		15.38	110,000	18,000	26,000	2,200	9,500	ND***	
	3/12/1998	18.07		17.11	120,000	16,000	26,000	2,200	9,400	ND***	
	6/22/1998	18.29		16.89	38,000	9,800	9,500	1,500	6,000		
	9/18/1998	19.09		16.09	68,000	12,000	16,000	1,400	5,900		
	12/23/1998	19.67		15.51	180,000	16,000	22,000	2,200	8,300		
	3/29/1999	18.97		16.21	16,600	1,380	1,920	373	1,840		
	6/23/1999	18.25		16.93	41,000	10,000	9,400	1,100	5,000		
	9/24/1999	19.60		15.58	40,600	4,880	3,490	1,090	4,560		
	12/23/1999	20.21		14.97	61,900	6,710	9,320	1,150	5,360		
	3/21/2000	18.93		16.25	98,000	14,000	21,000	1,600	6,900	<1600	a
	7/3/2000	19.38		15.80	140,000	18,000	33,000	2,600	11,000	<200*	a
	9/7/2000	19.83		15.35	110,000	17,000	21,000	2,200	9,700	<100***	a,l
	12/5/2000	20.30		14.88	130,000	19,000	28,000	2,500	11,000	<200	a
	3/6/2001	19.57		15.61	32,000	3,400	3,400	580	2,500	<200	a
	6/8/2001	20.59		14.59	72,000	9,400	9,200	1,300	5,800	<200	a
	8/27/2001	21.79		13.39	110,000	17,000	28,000	2,600	11,000	<950	a
	10/25/2001	22.05		13.13	110,000	15,000	18,000	2,000	8,700	<350	a
	3/1/2002	21.80		13.38	3,100	370	180	62	330	<5.0*	a
	6/10/2002	22.83		12.35	7,800	2,000	1,100	76	570	<100*	a
35.21	9/3/2002	22.03		13.18	21,000	2,400	2,900	320	1,400	<500	a
	12/22/2002	22.70		12.51	630	48	56	19	82	<5.0	a
	1/23/2003	20.49		14.72	1,100	27	32	19	150	<25	a
	6/12/2003	21.03		14.18	10,000	2,100	1,600	150	660	<250	a
	7/23/2003	21.40		13.81	28,000	4,800	4,800	380	1,700	<500	a
	12/22/2003	19.33		15.88	<50	<0.5	<0.5	<0.5	< 0.5	<5.0	
	3/10/2004	19.33		15.88	3,100	460	290	38	240	<50	a
	6/16/2004	19.90		15.31	9,100	1,600	1,200	220	830	<400	a
	9/27/2004	22.08		13.13	14,000	2,800	490	340	1,600	<350	a
	12/22/2004	21.74		13.47	1,100	300	28	22	71	<15	a
	3/3/2005	19.60		15.61	340	12	4.4	9.1	28	<10	a
	6/9/2005	18.65		16.56	240	22	2.7	6.4	27	<10	a
	9/9/2005	19.27		15.94	7,800	1,100	170	380	690	<160	a
	12/20/2005	19.70		15.51	150	10	1.9	2.8	10	<5.0	a
	3/26/2006	18.51		16.70	2,200	93	19	66	130	<50	a
	6/23/2006	18.47		16.74	8,800	1,600	110	500	480	<500	a,m
	9/7/2006	18.97		16.24	29,000	4,800	280	940	1,000	<500	a
	12/29/2006	19.76		15.45	4,500	720	54	250	480	75* <sup>1</sup> /<0.5***	a
	3/21/2007	19.59	Lab	15.62	34,000	9,100	500	890	2,500	<1,100*	a
	6/7/2007	19.74	Sheen Lab	15.47	46,000	7,100	410	870	2,400	<800*	a,b
	9/28/2007	20.23		14.98	44,000	9,400	630	1,400	3,600	<0.5***	a
	12/9/2007	20.68		14.53	37,000	8,400	550	1,400	4,500	<17***	a,l
	3/3/2008	20.11		15.10	40,000	7,700	490	1,400	4,400	<17***	a,l
	6/4/2008	20.40		14.81	56,000	7,400	600	1,500	4,100	<25***	a,j
	9/9/2008	20.85	-	14.36	65,000	7,800	510	1,700	4,700	<25***	a,l
MW-3	8/1/1994		-		<50	<0.5	<0.5	<0.5	<2.0		

Well ID Sample ID TOC (ft amsl)	Date	Depth to Groundwater (ft below TOC)	SPH Thickness (feet)	TOC Groundwater Elevation (ft amsl)	ТРНg ←	Benzene	Toluene ——— (μg/l	Ethylbenzene	Xylenes	MTBE →>	Notes
		•		·							
33.97	12/21/1994	18.82		15.15	<50	<0.5	< 0.5	<0.5	<0.5		
	3/13/1995	17.86		16.11	<50	<0.5	< 0.5	<0.5	< 0.5		e
MW-3	7/7/1995	18.25		15.72							f,g
(cont.)	9/28/1995	18.00		15.97							h
	12/20/1995	18.74		15.23							
	3/26/1996	18.25		15.72							
	6/20/1996	18.35		15.62							
	9/26/1996	19.12		14.85							
	10/28/1996	19.11		14.86							
	12/12/1996	18.61		15.36							
	3/31/1997	18.35		15.62							
	6/27/1997	18.81		15.16							
	9/9/1997	19.18		14.79							
	12/18/1997	18.64		15.33							
	3/12/1998	17.56		16.41							
	6/22/1998	18.64		15.33							
	9/18/1998	18.33		15.64							
	12/23/1998	18.60		15.37		-					
	3/29/1999	17.85	-	16.12		-	-	-			
	6/23/1999	18.67		15.30							
	9/24/1999	18.64		15.33		-					
	12/23/1999	19.32	-	14.65		-		-			
	3/21/2000	17.89		16.08							
	7/3/2000	18.40		15.57							
	9/7/2000	18.75		15.22							
34.01	12/5/2000	19.03		14.94	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0	
	3/6/2001	18.12		15.85	<50	<0.5	<0.5	<0.5	< 0.5	<5.0	
	6/8/2001	20.02	-	13.95	<50	< 0.5	< 0.5	<0.5	< 0.5	<5.0	
	8/27/2001	21.09		12.88	<50	<0.5	<0.5	<0.5	< 0.5	<5.0	
	10/25/2001	21.29	-	12.68	<50	< 0.5	< 0.5	<0.5	< 0.5	<5.0	
	3/1/2002	21.14		12.83	<50	<0.5	<0.5	<0.5	< 0.5	<5.0*	
	6/10/2002	21.99		11.98	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0*	
	9/3/2002	21.17		12.84							
	12/22/2002	21.94		12.07							
	1/23/2003	20.08		13.93	<50	< 0.5	< 0.5	< 0.5	< 0.5	<5.0	
	6/12/2003	20.95		13.06							
	7/23/2003	21.28		12.73							
	12/22/2003	19.05		14.96							
	3/10/2004	18.22		15.79	<50	<0.5	< 0.5	< 0.5	< 0.5	<5.0	
	6/16/2004	18.82		15.19							
	9/27/2004	21.03		12.98							
	12/22/2004	20.69		13.32							
	3/3/2005	17.94		16.07	<50	<0.5	<0.5	<0.5	< 0.5	<5.0	
	6/9/2005	18.00		16.01							
	9/9/2005	18.43		15.58							
	12/20/2005	18.18		15.83		_					
	3/26/2006	17.42		16.59	<50	<0.5	<0.5	<0.5	< 0.5	<5.0	
	6/23/2006	17.77		16.24							
	9/7/2006	18.20		15.81							
	12/29/2006	18.49		15.52		_					
	3/21/2007	18.44		15.57	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	
	6/7/2007	18.68		15.33							
	9/28/2007	19.19	_	14.82			-	_			
		19.19	_	14.82			-	_			
	12/9/2007 3/3/2008										
		18.68 19.11	_	15.33 14.90	<50 	<0.5	<0.5	<0.5	<0.5	<0.5***	
	6/4/2008		-			-	-	-			
	9/9/2008	19.65	-	14.36		-	-	-			
3 4747 *	10/20/2000	40.00		4.40	10.000	2 000	400	400	0.00	*000*	
MW-4	10/28/1996	19.32		14.43	10,000	3,900	420	400	360	<200*	n
33.75	12/12/1996	19.42		14.33	11,000	4,200	410	420	260	32*	
	3/31/1997	18.67		15.08	ND	ND	ND	ND	ND	ND*	

Well ID Sample ID TOC (ft amsl)	Date	Depth to Groundwater  (ft below TOC)	SPH Thickness (feet)	TOC Groundwater Elevation (ft amsl)	TPHg <b>←</b>	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ <b>→</b>	Notes
100 (1 111101)		(ji beiow TOC)	(Jeer)	(ji umsi)			(μg/L	) —			
	6/27/1997	19.08		14.67	160	49	1.2	ND	5.9	ND*	
	9/9/1997	19.33		14.42	7,400	5,000	410	230	470	33*	
	12/18/1997	19.17	_	14.58	710	170	8.0	ND	39	ND***	
MW-4	3/12/1998	17.68	_	16.07	1,300	410	21	ND	57	ND***	
(cont.)	6/22/1998	17.63		16.12	ND	ND	ND	ND	ND		
(com)	9/18/1998	18.58		15.17	ND	42	1.6	ND	4.8		
	12/23/1998	19.01		14.74	1,900	1,000	76	50	120		
	3/29/1999	18.35		15.40	ND	ND	ND	ND	ND		
	6/23/1999	17.58		16.17	ND	ND	ND	ND	ND		
	9/24/1999	19.05		14.70	9,150	3,270	131	34	537		
	12/23/1999	19.41		14.34	12,200	5,360	275	424	592		
	3/21/2000	18.42		15.33	45,000	16,000	1,100	1,400	1,900	1400* /<35***	a,l
	7/3/2000	18.82		14.93	33,000	10,000	720	840	1,800	<200*	a
	9/7/2000	19.21		14.54	26,000	8,800	800	740	1,500	<50***	a,c,l
	12/5/2000	19.60		14.15	41,000	11,000	840	930	1,900	<200	a
	3/6/2001	18.24		15.51	1,100	400	5.7	<0.5	20	<5.0	a
	6/8/2001	20.91		12.84	92	19	<0.5	<0.5	1	<5.0	a
	8/27/2001	21.63		12.12	49,000	17,000	1700	1,700	3,200	<260	a
	10/25/2001	21.70		12.05	57,000	16,000	1,500	1,600	2,600	<300	a
	3/1/2002	21.53		12.22	400	140	2.3	<0.5	12	<5.0*	a
	6/10/2002	22.23		11.52	<50	2.5	< 0.5	< 0.5	< 0.5	<5.0*	
	9/3/2002	21.85		11.90	31,000	9,700	300	650	1,100	<1,000	a
	12/22/2002	22.39		11.36	35,000	13,000	310	1,100	1,800	<1,500	a
	1/23/2003	20.61		13.14	51,000	18,000	430	1,500	2,200	<5.0***	a,l
	6/12/2003	21.20		12.55	80	12	< 0.5	< 0.5	1.0	<10	a
	7/23/2003	21.51		12.24	20,000	7,600	100	65	660	<250	a
	12/22/2003	19.60		14.15	26,000	9,500	200	380	1,100	<150	a
	3/10/2004	18.81		14.94	14,000	4,800	150	320	530	<400	a
	6/16/2004	19.32		14.43	2,800	1,100	24	17	100	<50	a
	9/27/2004	21.45		12.30	45,000	16,000	260	1,700	2,000	<25***	a
	12/22/2004	21.15		12.60	29,000	10,000	160	890	1,200	<5.0***	a,j
	3/3/2005	18.60		15.15	18,000	6,400	98	500	610	<600	a
	6/9/2005	18.11		15.64	20,000	6,100	110	460	580	<500	a
	9/9/2005	18.65		15.10	17,000	6,400	100	470	730	<250	a
	12/20/2005	19.01		14.74	26,000	8,500	160	640	800	<120	a
	3/26/2006	17.84		15.91	1,900	700	22	49	85	<50 260	a
	6/23/2006 9/7/2006	17.96 18.29		15.79 15.46	12,000 8,600	3,400 1,800	130 100	370 170	510 220	260 <210	a
	12/29/2006	18.93		14.82	4,200	1,100	120	150	280	<150*/<0.5***	a,i a
	3/21/2007	18.76		14.99	550	30	2.0	4.5	5.1	<30*	a
	6/7/2007	18.92		14.83	85	4.4	<0.5	0.77	0.82	<5.0*	a
	9/28/2007	19.41		14.34	140	7.0	<0.5	1.2	<0.5	<0.5***	a
	12/9/2007	19.86		13.89	120	4.5	< 0.5	0.62	<0.5	<0.5	a
	3/3/2008	19.22		14.53	63	0.78	< 0.5	< 0.5	< 0.5	<0.5***	i
	6/4/2008	19.58		14.17	86	2.2	< 0.5	<0.5	0.58	<0.5***	a
	9/9/2008	20.01		13.74	460	9.4	0.95	3.1	19	<0.5***	a
MW-5	10/28/1996	19.88		14.75	90	4.0	0.6	< 0.50	< 0.50	16*	
34.63	12/12/1996	20.09		14.54	230	5.6	0.9	ND	0.9	3.6*	n
	3/31/1997	19.24		15.39	90	3.1	ND	ND	ND	ND*	
	6/27/1997	19.16		15.47	ND	ND	ND	ND	ND	ND*	
	9/9/1997	19.93		14.70	ND	ND	ND	ND	ND	ND*	
	12/18/1997	19.77		14.86	ND	ND	ND	ND	ND	ND***	
	3/12/1998	19.77		14.86	79	2.3	ND	0.8	ND	ND*	
	6/22/1998	18.08		16.55	ND	ND	ND	ND	ND		
	9/18/1998	19.12		15.51	ND	ND	ND	ND	ND		
	12/23/1998	19.60		15.03	ND	0.8	0.9	ND	ND		
	3/29/1999	18.88		15.75	ND	ND	ND	ND	ND		
	6/23/1999	18.05		16.58	ND	ND	ND	ND	ND		
	9/24/1999	19.61		15.02	ND	ND	ND	ND	ND		

Well ID Sample ID TOC (ft amsl)	Date	Depth to Groundwater	SPH Thickness	TOC Groundwater Elevation (ft amsl)	ТРНg	Benzene	Toluene	Ethylbenzene	Xylenes	МТВЕ	Notes
		(ft below TOC)	(feet)	(ji umsi)	$\leftarrow$		(μg/I	.)		<del></del>	
	12/23/1999	20.01		14.62	ND	ND	ND	ND	ND		
	3/21/2000	19.05		15.58	140	<0.5	<0.5	<0.5	<0.5	<5.0	
		19.40			85	8.1	3.1	1.6	7.8	<5.0*	k
MW-5	7/3/2000	19.40		15.23 15.01	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	
	9/7/2000			14.38		<0.5	<0.5		<0.5	<5.0	a 
(cont.)	12/5/2000	20.25			<50			<0.5			
	3/6/2001 6/8/2001	19.07 20.77		15.56 13.86	91 290	5.5 22.0	<0.5 0.8	<0.5 <0.5	<0.5 <0.5	<5.0 <5.0	
	8/27/2001	21.33		13.30	660	24.0	2.2	1.3	4.0	<25	a
	10/25/2001	21.62		13.01	55	3.5	<0.5	<0.5	<0.5	<5.0	a
	3/1/2002	21.49		13.14	200	1.9	0.69	<0.5	<0.5	<5.0*	a
	6/10/2002	22.15	_	12.48	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	a
	9/3/2002	21.50		13.13	60	1.9	<0.5	<0.5	0.77	<5.0	
	12/22/2002	22.19		12.44	82	0.57	<0.5	0.68	<0.5	<5.0	a
	1/23/2003	20.27		14.36	<50	2.1	<0.5	<0.5	<0.5	<5.0	a
	6/12/2003	21.10		13.53	<50	0.88	<0.5	<0.5	<0.5	<5.0	a 
	7/23/2003	21.47		13.16	<50	4.0	<0.5	<0.5	<0.5	<5.0	
	12/22/2003	19.57	_	15.06	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	3/10/2004	19.61	_	15.02	990	200	2.9	4.0	20	<70	
	6/16/2004	20.15	_	14.48	250	42	<0.5	0.88	<0.5	<35	a
	9/27/2004	22.14		12.49	1,600	140	4.8	45	18	<110	a
	12/22/2004	21.81		12.82	<50	5.3	< 0.5	<0.5	0.66	<5.0	
	3/3/2005	19.35		15.28	2,000	330	4.4	63	39	<150	a
	6/9/2005	18.73		15.90	250	42	1.4	14	3.2	<5.0	a
	9/9/2005	19.30		15.33	2,000	390	5.0	71	38	<400	a
	12/20/2005	19.65		14.98	4,300	760	18	170	150	<35	a
	3/26/2006	18.58		16.05	1,600	460	3.3	35	32	<50	a
	6/23/2006	18.57		16.06	1,900	500	3.9	81	56	<17	a
	9/7/2006	18.98		15.65	8,800	1,900	12	350	220	<260	a,i
	12/29/2006	19.70		14.93	15,000	3,400	69	610	700	<450*/<0.5***	a
	3/21/2007	19.57		15.06	9,900	2,300	24	360	410	<240*	a
	6/7/2007	19.70		14.93	14,000	3,800	40	790	720	<550*	a
	9/28/2007	20.16		14.47	26,000	7,200	84	1,100	1,600	<25***	a,l
	12/9/2007	20.56		14.07	25,000	7,000	59	1,100	2,000	<17	a,l
	3/3/2008	19.97		14.66	30,000	6,200	31	900	1,400	<10*** <10***	a,l
	6/4/2008 <b>9/9/2008</b>	20.32 <b>20.75</b>	_	14.31 13.88	7,500 <b>54,000</b>	1,600 <b>8,900</b>	4.6 <b>76</b>	25 <b>1,300</b>	91 <b>1,700</b>	<25***	a,j <b>a,l</b>
	9/9/2008	20.75	-	13.66	34,000	8,900	70	1,300	1,700	<b>\2</b> 5	d,1
MW-6	10/28/1996	20.02		15.87	<50	<0.50	<0.50	<0.50	<0.50	<2.0*	
35.89	12/12/1996	20.02		15.77	ND	ND	ND	ND	ND	ND*	n
35.65	3/31/1997	19.81		16.08							
	6/27/1997	19.76		16.13		-		_			
	9/9/1997	20.06	_	15.83	ND	ND	ND	ND	ND	ND*	
	12/18/1997	19.90		15.99	ND	ND	ND	ND	ND		
	3/12/1998	18.00		17.89	ND	ND	ND	ND	ND	ND*	
	6/22/1998	18.43		17.46	ND	ND	ND	ND	ND		
	9/18/1998	19.10		16.79	ND	ND	ND	ND	ND		
	12/23/1998	19.61	_	16.28	ND	ND	ND	ND	ND		
	3/29/1999	18.92		16.97	ND	ND	ND	ND	ND		
	6/23/1999	18.41	_	17.48	ND	ND	ND	ND	ND		
	9/24/1999	19.61		16.28	ND	ND	ND	ND	ND		
	12/23/1999	20.30	_	15.59	ND	ND	ND	ND	ND		
	3/21/2000	18.97		16.92	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	7/3/2000	19.46		16.43	59	5.1	2.3	1.1	5.3	<5.0*	
	9/7/2000	19.95		15.94	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	a
	12/5/2000	20.50		15.39	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	3/6/2001	19.54		16.35	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	6/8/2001	20.92		14.97	<50	<0.5	<0.5	<0.5	<0.5	<5.1	
	8/27/2001	21.37		14.52	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	10/25/2001	21.59		14.30	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	3/1/2002	21.33		14.56	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	

#### GROUNDWATER ELEVATION AND ANALYTICAL DATA ALLRIGHT PARKING 1432 HARRISON STREET, OAKLAND, CALIFORNIA

TOC Well ID SPH Groundwater Depth to Groundwater Thickness**TPHg** MTBE Sample ID Date Elevation Benzene Toluene Ethylbenzene Xylenes Notes TOC (ft amsl) (ft below TOC) (feet) (ft amsl) (μg/L) 6/10/2002 21.97 13.92 <50 < 0.5 < 0.5 < 0.5 < 0.5 <5.0\* 9/3/2002 21.55 --14.34 12/22/2002 22.25 13.64 <50 < 0.5 <0.5 <0.5 <0.5 <5.0 MW-6 1/23/2003 20.47 15.42 <50 < 0.5 < 0.5 < 0.5 < 0.5 <5.0 6/12/2003 21.09 14.80 (cont.) 7/23/2003 21.42 14.47 --------12/22/2003 19.49 16.40 3/10/2004 20.20 15.69 <50 < 0.5 < 0.5 <0.5 <0.5 <5.0 6/16/2004 20.73 15.16 9/27/2004 22.88 13.01 --12/22/2004 22.53 13.36 3/3/2005 19.87 16.02 <50 < 0.5 < 0.5 < 0.5 <0.5 <5.0 18.95 --6/9/2005 16.94 \_\_ \_\_ \_\_ 9/9/2005 19.45 16.44 --12/20/2005 19.90 15 99 17.04 <50 < 0.5 <0.5 <0.5 <0.5 3/26/2006 18.85 <5.0 6/23/2006 18.57 17.32 ----9/7/2006 19.13 16.76 12/29/2006 19.96 --15.93 19.87 16.02 <50 < 0.5 < 0.5 < 0.5 < 0.5 3/21/2007 <5.03 m 6/7/2007 20.05 15.84 9/28/2007 20.51 \_\_ 15.38 \_\_ \_\_ \_\_ \_\_ 20.90 14.99 12/9/2007 --3/3/2008 20.47 15.42 <50 < 0.5 < 0.5 < 0.5 <0.5 < 0.5\*\*\* 6/4/2008 20.70 15 19 ----9/9/2008 21.09 14.80 Trip Blank 3/21/2000 <50 < 0.5 < 0.5 < 0.5 < 0.5 <5.0 9/7/2000 <50 <0.5 <0.5 < 0.5 <0.5 <5.0 Grab Groundwater Sample Results: 330 16 3.6 4.9 SB-A 7/6/1995 ~20 1.3 i,j SB-B 7/7/1995 ~20 450 55 3.1 5.0 5.1 a SB-C 7/6/1995 ~20 44,000 6,600 5,900 980 4,400 a SB-D 7/6/1995 ~20 ----70,000 7,400 10,000 1,600 7,200 a 1,000 3,000 2,700 SB-E ~20 --25,000 610 7/6/1995 a SB-G 7/7/1995 ~20 84,000 9,400 16,000 2,200 9,900 a,b SB-I 7/7/1995 ~20 24,000 6,100 1,400 680 1,600 a SB-J 7/7/1995 ~20 960 110 8.7 71 66 a SB-K 7/7/1995 ~20 72,000 9,600 9,600 1,800 7,000 2,700 <3000\* CB-1-W 7/22/1999 110,000 1.300 16,000 12,000 a.b.c CB-2-W 7/22/1999 4,700 21 13 170 76 <50\* a,c GW-1 7/30/1994 <50 < 0.5 < 0.5 < 0.5 <2.0 7/29/1994 <50 < 0.5 < 0.5 <0.5 <2.0 GW-2\*

<50

< 0.5

< 0.5

<0.5

<2.0

GW-3 \*

7/29/1994

#### GROUNDWATER ELEVATION AND ANALYTICAL DATA ALLRIGHT PARKING 1432 HARRISON STREET, OAKLAND, CALIFORNIA

				TOC								
Well ID			SPH	Groundwater								
Sample ID	Date	Depth to Groundwater	Thickness	Elevation	ТРНд	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes	
TOC (ft amsl)		(ft below TOC)	(feet)	(ft amsl)	←		(μg/l	.)		<b>→</b>		

#### Abbreviations, Methods, & Notes

TOC = Top of casing elevation

ft amsl = feet above mean sea level

SPH = Separate-phase hydrocarbons

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method SW8015C

Benzene, toluene, ethylbenzene, and xylenes by EPA Method SW8021B

MTBE = Methyl tert-butyl ether

\* = MTBE by EPA Method SW8021B

\*\* = MTBE by EPA Method SW8240

\*\*\* = MTBE by EPA Method SW8260

1 = Not confirmed with EPA Method 8260B.

 $\mu g/L$  = micrograms per liter, equivalent to parts per billion

 ${\dots}$  = Not sampled, not analyzed, not applicable, or no SPH was measured or observed

<n = Not detected in sample above n mg/L

ND = Not detected above laboratory detection limit

 $\mathbf{x}$  = Groundwater elevation adjusted for SPH by the relation:

Groundwater Elevation = TOC Elevation - Depth to Groundwater + (0.7 x SPH thickness)

 $\mbox{\it \#}$  = The wellhead elevation was raised by 0.41 feet when well MW-1 was connected to the SVE system on October 31, 2003.

## = The wellhead elevation was lowered by 0.41 feet when well MW-1 was disconnected from the SVE system on April 30. 2005.

+ = Well de-watered during purging, no measurable water to sample.

Sheen = A sheen was observed on the water's surface

Field = Observed in the field

Lab = Observed in analytical laboratory

\*= Samples associated with 1439 Alice St. Property

- a = Unmodified or weakly modified gasoline is significant.
- b = Lighter than water immiscible sheen is present.
- c = Liquid sample that contains greater than ~2 vol. % sediment.
- d = MTBE result confirmed by secondary column or GC/MS analysis.
- e = Sample analyzed for purgeable hydrocarbons by EPA Method SW8010, no purgeable hydrocarbons were detected.
- $f = Sample \ analyzed \ for VOCs$  by EPA Method SW8240, no non-BTEX compounds were detected.
- ${\rm g}$  = Sample analyzed for Total Petroleum Hydrocarbons as motor oil (TPHmo) by Method SW8015,
- h = Analytic sampling discontinued. Approved by Alameda County Department of Environmental Health.
- i = Lighter gasoline range compounds are significant.
- $j = Gasoline \ range \ compounds \ having \ broad \ chromatographic \ peaks \ are \ significant.$
- k = No recognizable pattern.
- 1 = Sample diluted due to high organic content.
- m = Liquid sample that contains greater than ~1 vol. % sediment.
- n = TOC well elevation was increased by 3 ft based on a benchmark discrepancy discovered during a well survey performed on September 11, 2002

### APPENDIX A

STANDARD FIELD PROCEDURES FOR GROUNDWATER MONITORING AND SAMPLING

# Conestoga-Rovers & Associates

# STANDARD FIELD PROCEDURES FOR GROUNDWATER MONITORING AND SAMPLING

This document presents standard field methods for groundwater monitoring, purging and sampling, and well development. These procedures are designed to comply with Federal, State and local regulatory guidelines. CRA's specific field procedures are summarized below.

### **Groundwater Elevation Monitoring**

Prior to performing monitoring activities, the historical monitoring and analytical data of each monitoring well shall be reviewed to determine if any of the wells are likely to contain non-aqueous phase liquid (NAPL) and to determine the order in which the wells will be monitored (i.e. cleanest to dirtiest). Groundwater monitoring should not be performed when the potential exists for surface water to enter the well (i.e. flooding during a rainstorm).

Prior to monitoring, each well shall be opened and the well cap removed to allow water levels to stabilize and equilibrate. The condition of the well box and well cap shall be observed and recommended repairs noted. Any surface water that may have entered and flooded the well box should be evacuated prior to removing the well cap. In wells with no history of NAPL, the static water level and total well depth shall be measured to the nearest 0.01 foot with an electronic water level meter. Wells with the highest contaminant concentrations shall be measured last. In wells with a history of NAPL, the NAPL level/thickness and static water level shall be measured to the nearest 0.01 foot using an electronic interface probe. The water level meter and/or interface probe shall be thoroughly cleaned and decontaminated at the beginning of the monitoring event and between each well. Monitoring equipment shall be washed using soapy water consisting of Liqui-nox<sup>TM</sup> or Alconox<sup>TM</sup> followed by one rinse of clean tap water and then two rinses of distilled water.

### **Groundwater Purging and Sampling**

Prior to groundwater purging and sampling, the historical analytical data of each monitoring well shall be reviewed to determine the order in which the wells should be purged and sampled (i.e. cleanest to dirtiest). No purging or groundwater sampling shall be performed on wells with a measurable thickness of NAPL or floating NAPL globules. If a sheen is observed, the well should be purged and a groundwater sample collected only if no NAPL is present. Wells shall be purged either by hand using a disposal or PVC bailer or by using an aboveground pump (e.g. peristaltic or Wattera<sup>TM</sup>) or down-hole pump (e.g. Grundfos<sup>TM</sup> or DC Purger pump).

Groundwater wells shall be purged approximately three to ten well-casing volumes (depending on the regulatory agency requirements) or until groundwater parameters of temperature, pH, and conductivity have stabilized to within 10% for three consecutive readings. Temperature, pH, and conductivity shall be measured and recorded at least once per well casing volume removed. The total volume of groundwater removed shall be recorded along with any other notable physical characteristic such as color and odor. If required, field parameters such as turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) shall also be measured prior to collection of each groundwater sample.

Groundwater samples shall be collected after the well has been purged. If the well is slow to recharge, a sample shall be collected after the water column is allowed to recharge to 80% of the pre-purging static water level. If the well does not recover to 80% in 2 hours, a sample shall be collected once there is enough groundwater in the well. Groundwater samples shall be collected using clean disposable bailers or pumps (if an operating remediation system exists on site and the project manager approves of its use for sampling) and shall be decanted into clean containers

# Conestoga-Rovers & Associates

supplied by the analytical laboratory. New latex gloves and disposable tubing or bailers shall be used for sampling each well. If a PVC bailer or down-hole pump is used for groundwater purging, it shall be decontaminated before purging each well by using soapy water consisting of Liqui-nox<sup>TM</sup> or Alconox<sup>TM</sup> followed by one rinse of clean tap water and then two rinses of distilled water. If a submersible pump with non-dedicated discharge tubing is used for groundwater purging, both the inside and outside of pump and discharge tubing shall be decontaminated as described above.

### Sample Handling

Except for samples that will be tested in the field, or that require special handling or preservation, samples shall be stored in coolers chilled to 4° C for shipment to the analytical laboratory. Samples shall be labeled, placed in protective foam sleeves or bubble wrap as needed, stored on crushed ice at or below 4° C, and submitted under chain-of-custody (COC) to the laboratory. The laboratory shall be notified of the sample shipment schedule and arrival time. Samples shall be shipped to the laboratory within a time frame to allow for extraction and analysis to be performed within the standard sample holding times.

Sample labels shall be filled out using indelible ink and must contain the site name; field identification number; the date, time, and location of sample collection; notation of the type of sample; identification of preservatives used; remarks; and the signature of the sampler. Field identification must be sufficient to allow easy cross-reference with the field datasheet.

All samples submitted to the laboratory shall be accompanied by a COC record to ensure adequate documentation. A copy of the COC shall be retained in the project file. Information on the COC shall consist of the project name and number; project location; sample numbers; sampler/recorder's signature; date and time of collection of each sample; sample type; analyses requested; name of person receiving the sample; and date of receipt of sample.

Laboratory-supplied trip blanks shall accompany the samples and be analyzed to check for cross-contamination, if requested by the project manager.

## Waste Handling and Disposal

Groundwater extracted during sampling shall be stored onsite in sealed U.S. DOT H17 55-gallon drums and shall be labeled with the contents, date of generation, generator identification, and consultant contact. Extracted groundwater may be disposed offsite by a licensed waste handler or may be treated and discharged via an operating onsite groundwater extraction/treatment system.

I:\IR\- MGT IR Group Info\SOPs\Groundwater Monitoring and Sampling SOP 07-2005.doc

### APPENDIX B

CERTIFIED ANALYTICAL REPORTS AND CHIAIN OF CUSTODY DOCUMENTATION

# McCampbell Analytical, Inc.

1534 Willow Pass Road, Pittsburg, CA 94565-1701 Web: www.mccampbell.com E-mail: main@mccampbell.com Telephone: 877-252-9262 Fax: 925-252-9269

Conestoga-Rovers & Associates	Client Project ID: #540188; Borsuk	Date Sampled: 09/09/08
5900 Hollis St, Suite A		Date Received: 09/09/08
Emeryville, CA 94608	Client Contact: Mark Jonas	Date Reported: 09/15/08
Zinery (inc., Cr. ) 1000	Client P.O.:	Date Completed: 09/15/08

WorkOrder: 0809235

September 15, 2008

Dear .	M	ar	k:
--------	---	----	----

### Enclosed within are:

- 1) The results of the 3 analyzed samples from your project: #540188; Borsuk,
- 2) A QC report for the above samples,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius Laboratory Manager

McCampbell Analytical, Inc.

## McCAMPBELL ANALYTICAL, INC.

534 WILLOW PASS ROAD 0809235

Website: www.m:campbell.com Email: main@mccampbell.com

### CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HR

48 HR

72 HR 5 DAY

GeoTracker EDF DP PDF Excel Write On (DW)

Telephone: (877) 252-9262 Fax: (925) 252-9269 Company: Conestoge-Rovers FASSOCIATES

5900 Hollis St., Ste. A

Emeryville, CA

E-Mail: Check if sample is effluent and "J" flag is required Analysis Request Other Comments Filter Grease (1664 / 5520 E/B&F) Samples for Metals CAM 17 Metals (200.7 / 200.8 / 6010 / 6020) LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020) Fax: (510)420-9170 Tele: (510)420-3305 analysis: Total Petroleum Hydrocarbons (418.1) EPA 515 / 8151 (Acidic Cl Herbicides) Project #: 540188 Project Name: 130x5W Yes / No Project Location: 1432 Harrison St.
Sampler Signature: Muskum Former Oakland METHOD MATRIX SAMPLING Fotal Petroleum Oil & TPH as Diesel (8015) PRESERVED Containers BTEX & TPH as LOCATION/ SAMPLE ID Field Point Sludge Water Name Date Time HNO3 Other HCL ICE MN-2 9-9-08 11:50 4 Von ML-4 10:50 MW-5 Relinquished B ICE/t°\_\_\_\_ Time: Received By: COMMENTS: 1416 GOOD CONDITION HEAD SPACE ABSENT Relinquished By Time: Received By: DECHLORINATED IN LAB APPROPRIATE CONTAINERS PRESERVED IN LAB Relinquished By: Date: Time: Received By: O&G METALS OTHER

PRESERVATION

pH<2

### McCampbell Analytical, Inc.

1534 Willow Pass Rd Pittsburg, CA 94565-1701 (925) 252-9262

# CHAIN-OF-CUSTODY RECORD

Page 1 of 1

J-flag

workOrd	er: 0809235	Che	ntCode: CETE	
Excel	Fax	✓ Email	HardCopy	ThirdParty

Bill to: Report to: Requested TAT: 5 days

**✓** EDF

mjonas@CRAworld.com Accounts Payable Mark Jonas Email:

WriteOn

Conestoga-Rovers & Associates Conestoga-Rovers & Associates cc:

Date Received: 09/09/2008 PO: 5900 Hollis St, Suite A 5900 Hollis St, Ste. A ProjectNo: #540188; Borsuk Emeryville, CA 94608 Date Printed: Emeryville, CA 94608 09/09/2008

(510) 420-0700 FAX (510) 420-9170

						Requested Tests (See legend below)										
Lab ID	Client ID	Matrix	<b>Collection Date</b>	Hold	1	2	3	4	5	6	7	8	9	10	11	12
0809235-001	MW-2	Water	9/9/2008 11:50		Α	В	Α									
0809235-002	MW-4	Water	9/9/2008 10:50		Α	В										
0809235-003	MW-5	Water	9/9/2008 11:17		Α	В										

### Test Legend:

1	G-MBTEX_W	2 MTBE_W	3 PREDF REPORT	4	5
6		7	8	9	10
11		12			
					Prepared by: Maria Venegas

#### **Comments:**

## **Sample Receipt Checklist**

Client Name:	Conestoga-Rovers & A	ssociates			Date ar	nd Time Received:	09/09/08 3	:05:35 PM
Project Name:	#540188; Borsuk				Checkl	ist completed and re	eviewed by:	Maria Venegas
WorkOrder N°:	<b>0809235</b> Matrix	<u>Water</u>			Carrier	: Client Drop-In		
		<u>Chain o</u>	f Cus	stody (C	OC) Informat	<u>tion</u>		
Chain of custody	present?	•	<b>Yes</b>	V	No 🗆			
Chain of custody	signed when relinquished ar	nd received?	Yes	<b>V</b>	No 🗆			
Chain of custody	agrees with sample labels?	•	⁄es	<b>✓</b>	No 🗌			
Sample IDs noted	by Client on COC?	•	⁄es	<b>V</b>	No 🗆			
Date and Time of	collection noted by Client on C	COC?	⁄es	<b>✓</b>	No $\square$			
Sampler's name r	noted on COC?	`	⁄es	<b>~</b>	No 🗆			
		San	nple	Receipt	Information			
Custody seals in	tact on shipping container/coo	oler?	⁄es		No 🗆		NA 🔽	
Shipping contain	er/cooler in good condition?	,	Yes -	<b>V</b>	No 🗆			
Samples in prope	er containers/bottles?	•	Yes	<b>V</b>	No 🗆			
Sample containe	ers intact?	•	Yes -	<b>✓</b>	No 🗆			
Sufficient sample	e volume for indicated test?	•	⁄es	<b>✓</b>	No 🗌			
	<u>S</u>	ample Preserva	ation	and Ho	old Time (HT)	Information		
All samples recei	ived within holding time?	,	Yes -	<b>V</b>	No 🗌			
Container/Temp I	Blank temperature	(	Coole	r Temp:	3.2°C		NA $\square$	
Water - VOA via	ls have zero headspace / no	bubbles? `	⁄es	<b>✓</b>	No $\square$	No VOA vials subm	itted 🗆	
Sample labels ch	necked for correct preservation	n? `	⁄es	<b>~</b>	No 🗌			
TTLC Metal - pH	acceptable upon receipt (pH<	2)?	⁄es		No $\square$		NA 🗹	
Samples Receive	ed on Ice?	`	Yes	<b>~</b>	No 🗆			
		(Ice Type:	WE	TICE	)			
* NOTE: If the "N	No" box is checked, see com	ments below.						
=====		=====	==	:		======	====	======
Client contacted:		Date contacted	i:			Contacted	by:	
0								

Extraction method SW5030B

1534 Willow Pass Road, Pittsburg, CA 94565-1701 Web: www.mccampbell.com E-mail: main@mccampbell.com Telephone: 877-252-9262 Fax: 925-252-9269

Work Order: 0809235

Conestoga-Rovers & Associates	Client Project ID: #540188; Borsuk	Date Sampled: 09/09/08
5900 Hollis St, Suite A		Date Received: 09/09/08
	Client Contact: Mark Jonas	Date Extracted: 09/11/08-09/12/08
Emeryville, CA 94608	Client P.O.:	Date Analyzed 09/11/08-09/12/08

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE\*

Analytical methods SW8021B/8015Cm

Xylenes Lab ID Client ID Matrix TPH(g) MTBE Benzene Toluene Ethylbenzene DF % SS 001A 1700 4700 MW-2 W 65,000,d1 7800 510 112 002A MW-4W 0.95 19 1 110 460,d1 9.4 3.1 003A MW-5 W 54,000,d1 8900 76 1300 1700 100 114

Reporting Limit for DF =1;	W	50	5.0	0.5	0.5	0.5	0.5	μg/L
ND means not detected at or above the reporting limit	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg
	II TOLD	0 CDI D	1 . / /	/ 1 1 / 1:1		<i>a</i> •	1 . / .	·

<sup>\*</sup> water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in  $\mu$ g/wipe, product/oil/non-aqueous liquid samples in mg/L.

<sup>#</sup> cluttered chromatogram; sample peak coelutes with surrogate peak.

<sup>+</sup>The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant

Conestoga-Rovers & Associates	Client Project ID: #540188; Borsuk	Date Sampled: 09/09/08
5900 Hollis St, Suite A		Date Received: 09/09/08
	Client Contact: Mark Jonas	Date Extracted: 09/12/08
Emeryville, CA 94608	Client P.O.:	Date Analyzed 09/12/08

### Methyl tert-Butyl Ether\*

Extraction method SW5030B Analytical methods SW8260B Work Order: 0809235

traction method SW5	030B	Analytical me	thods SW8260B	Work Order: 08	09235
Lab ID	Client ID	Matrix	Methyl-t-butyl ether (MTBE)	DF	% SS
001B	MW-2	w	ND<25,a3	50	92
002B	MW-4	W	ND	1	93
003B	MW-5	W	ND<25,a3	50	92
	B MW-4				
	ng Limit for DF =1; ans not detected at or	W	0.5		g/L
	the reporting limit	S	NA	N	ΙA

above the reporting limit		1,11	1111
* water and vapor samples are reported in µg/L, soil/slu	dge/solid samp	les in mg/kg, product/oil/non-aqueous liquid samples and al	1 TCLP & SPLP
extracts are reported in mg/L, wipe samples in µg/wipe.	•		

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

# surrogate diluted out of range or surrogate coelutes with another peak.

a3) sample diluted due to high organic content

### QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 38089 WorkOrder 0809235

EPA Method SW8021B/8015Cm	Extra	ction SW	5030B	30B Spiked Sample ID: 0809220-019									
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acce	eptance	Criteria (%)		
ruidiyto	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD	
TPH(btexf)	ND	60	111	111	0	91.2	101	10.1	70 - 130	20	70 - 130	20	
MTBE	ND	10	89.5	91.5	2.12	92.6	93.7	1.21	70 - 130	20	70 - 130	20	
Benzene	ND	10	96	94.2	1.84	92.7	94	1.37	70 - 130	20	70 - 130	20	
Toluene	ND	10	93.2	94	0.880	92.5	94.6	2.34	70 - 130	20	70 - 130	20	
Ethylbenzene	ND	10	97.7	95	2.80	98.7	100	1.55	70 - 130	20	70 - 130	20	
Xylenes	ND	30	95.8	92.7	3.30	110	112	2.16	70 - 130	20	70 - 130	20	
%SS:	96	10	111	111	0	99	95	4.00	70 - 130	20	70 - 130	20	

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions: NONE

#### BATCH 38089 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809235-001A	09/09/08 11:50 AM	09/11/08	09/11/08 3:46 PM	0809235-002A	09/09/08 10:50 AM	09/12/08	09/12/08 6:05 PM
0809235-003A	09/09/08 11:17 AM	09/11/08	09/11/08 4:47 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

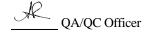
MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.



QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 38091 WorkOrder: 0809235

EPA Method SW8260B Extraction SW5030B Spiked								Spiked Sa	mple ID	: 0809220-	020C	
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acce	eptance	Criteria (%)	
, and y to	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Methyl-t-butyl ether (MTBE)	ND	10	96.4	100	3.92	105	107	1.83	70 - 130	30	70 - 130	30
%SS1:	100	25	99	99	0	100	100	0	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions: NONE

#### BATCH 38091 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809235-001B	09/09/08 11:50 AM	I 09/12/08	09/12/08 1:04 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

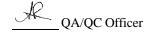
% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.



### QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 38102 WorkOrder: 0809235

EPA Method SW8260B		Spiked Sample ID: 0809248-0										
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acce	eptance	Criteria (%)	1
, many to	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Methyl-t-butyl ether (MTBE)	ND	10	88.7	95.4	7.23	99.5	105	5.04	70 - 130	30	70 - 130	30
%SS1:	97	25	96	94	1.28	90	98	8.35	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions: NONE

#### **BATCH 38102 SUMMARY**

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809235-002B	09/09/08 10:50 AM	09/12/08	09/12/08 1:44 AM	0809235-003B	09/09/08 11:17 AM	09/12/08	09/12/08 2:22 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

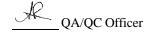
% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.



### APPENDIX C

FIELD DATA SHEETS



# WELL GAUGING SHEET

Client:	Conestoga-Rovers and Associate	S

Site

Address: 1432 Harrison Street, Oakland, CA

Date:

9/9/2008

Signature:

Well ID	Time	Depth to SPH	Depth to Water	SPH Thickness	Depth to Bottom	Comments
MW-1	10:25	·	20.40		20,44	
MW-2	10:20		20.85		25,56	
MW-3	10:00		19,65		23.95	
MW-4	10:10		20.01		24.49	
MW-5	10:15		20.75	·	27,90	
MW-6	10:05		21.09		28.24	



	···.		, , , , , , , ,			TO TOTAL	-			
Date:		9/9/2008								
Client:	Conestoga-Rovers and Associates									
Site Addı	te Address: 1432 Harrison Street, Oakland, CA									
Well ID:		MW-1								
Well Diar	neter:	4"								
Purging D	evice:									
Sampling	Method:									
Total Wel	l Depth:			20.44	Fe=	mg/L				
Depth to	Water:			20.40	ORP=	mV				
Water Co	lumn Height	:		0.04	DO=	mg/L		:		
Gallons/fi				0.65						
1 Casing	Volume (gal	):		0.03	СОММЕ	ENTS:				
	Volumes (ga			0.08	Insufficient water, NO SAMPLE TAKEN					
TIME:	CASING VOLUME (gal)	TEMP (Celsius)	pН	COND.						
TIVIE.	0.0	(0023333)	PI		_					
	0.1				1					
	0.1									
								<u> </u>		
Sample ID:	Sample Da	nte:	Sample Time:	Containe	er Type	Preservative	Analytes	Method		
-										
		·								
						Signatur	e: //			
-	<del></del>						777			



Date:		9/9/2008		•							
Client:	Conestoga-Rovers and Associates										
Site Addr		1432 Harris									
Well ID:		MW-2	on Succi,	Oakianu, C	<i>Σ</i> Λ						
Well Dian		2"			<del></del>			<del>,</del> , ,			
Purging D		Disposable	Bailer								
Sampling		Disposable		· · · ·							
Total Wel				25,56	Fe=	mg/L					
Depth to V	Water:			20.85	ORP=	mV					
Water Col	umn Height	t:		4.71	DO=	mg/L					
Gallons/ft				0.16				·			
1 Casing	Volume (gal	):		0.75	СОММЕ	NTS:					
	Volumes (ga			2.26	-	very turbid, very silty					
TIME:	CASING VOLUME (gal)	TEMP (Celsius)	pН	COND.							
11:45	0.8	20.4	6.79	1046	1						
11:47	1.5	20.9	6.75	1031							
11:48	2.3	21.1	6.75	1023							
Sample ID:	Sample Da	nte:	Sample Time:	Containe	er Type	Preservative	Analytes	Method			
MW-2		2008	11:50	40 ml VC		HCl, ICE	TPHg BTEX MTBE	8015, 8021, 8260			
						Signatui	re:				



	·	0/0/0000		<u> </u>							
Date:	<del> </del>	9/9/2008									
Client:		Conestoga-Rovers and Associates									
Site Addı	ess:	1432 Harrison Street, Oakland, CA									
Well ID:		MW-4									
Well Dian	neter:	2"									
Purging D	evice:	Disposable	Bailer								
Sampling	Method:	Disposable	Bailer								
Total Wel	l Depth:			24.49	Fe=	mg/L					
Depth to V	Water:			20.01	ORP=	mV					
Water Co	lumn Heigh	ıt:		4.48	DO=	mg/L		· · · · · · · · · · · · · · · · · · ·			
Gallons/ft	:			0.16							
1 Casing	Volume (ga	ıl):		0.72	COMM	COMMENTS:					
	Volumes (g			2.15	turbid						
TIME:	CASING VOLUME (gal)	TEMP (Celsius)	pН	COND.							
10:45	0.7	21.2	6.98	439	-						
10:46		21.1	6.99	437	1						
10:47		21.0	6.94	437							
Sample ID:	Sample D	ate:	Sample Time:	Containe	er Type	Preservative	Analytes				
MW-4	9/9	9/9/2008 10:50 40 ml VC		DA .	HCl, ICE	TPHg BTEX MTBE	8015, 8021, 8260				
						Signatu	re: //				



Date:		9/9/2008										
Client:	Conestoga-Rovers and Associates											
Site Addr	ess:	ess: 1432 Harrison Street, Oakland, CA										
Well ID:		MW-5										
Well Dian	neter:	2"										
Purging D	evice:	Disposable	Bailer			,						
Sampling	Method:	Disposable	Bailer									
Total Wel	l Depth:			27.90	Fe=	mg/L						
Depth to V	Water:	· · · · · · · · · · · · · · · · · · ·		20.75	ORP=	mV						
Water Col	umn Heigh	t:	·	7.15	DO=	mg/L						
Gallons/ft	· ·			0.16								
1 Casing \	Volume (gal	l):		1.14	СОММЕ	ENTS:						
3 Casing V	Volumes (ga	al):		3.43	turbid							
TIME:	CASING VOLUME (gal)	TEMP (Celsius)	pН	COND.								
11:10	1.1	19.3	6.74	900								
11:12	2.3	18.7	6.77	928								
11:14	3.4	18.9	6.76	897	_							
Sample ID:	Sample Da	ate:	Sample Time:	Containe	r Type	Preservative	Analytes	Method				
MW-5		2008	11:17	40 ml VC		HCI, ICE	TPHg BTEX MTBE	8015, 8021, 8260				
					<del></del>							
						Signatur	re: //					

### APPENDIX D

# BENZENE CONCENTRATION AND DEPTH TO WATER VS. TIME-SERIES GRAPHS

