April 30, 2003



Mr. Barney Chan Alameda County Health Care Services Agency 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502

Re: Groundwater Monitoring and System Progress Report First Quarter 2003

Former Exxon Service Station 3055 35th Avenue Oakland, California Cambria Project #130-0105

Dear Mr. Chan:

On behalf of Mr. Lynn Worthington of Golden Empire Properties, Cambria Environmental Technology, Inc. (Cambria) has prepared this groundwater monitoring and system progress report for the above-referenced site. Presented in the report are the fourth quarter 2002 activities and the anticipated first quarter 2003 activities.

If you have any questions or comments regarding this report, please call me at (510) 420-3327.

Sincerely, Cambria Environmental Technology, Inc.

Ron Scheele, R.G. Associate

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Attachments: Groundwater Monitoring and System Progress Report, First Quarter 2003

cc: Mr. Lynn Worthington, Golden Empire Properties, Inc. 5942 MacArthur Boulevard, Suite B, Oakland, California 94605

Cambria Environmental Technology, Inc.

5900 Hollis Street Suite A Emeryville, CA 94608 Tel (510) 420-0700 Fax (510) 420-9170

### **GROUNDWATER MONITORING AND SYSTEM PROGRESS REPORT**

### **FIRST QUARTER 2003**

Former Exxon Service Station 3055 35th Avenue Oakland, California Cambria Project #130-0105

April 30, 2003



Prepared for:

Mr. Lynn Worthington Golden Empire Properties, Inc. 5942 MacArthur Boulevard, Suite B Oakland, California 94605

Prepared by:

Cambria Environmental Technology, Inc. 6262 Hollis Street Emeryville, California 94608

No. 6842

Gretchen M. Hellmann

Project Engineer

Ron Scheele, R.G.

Associate

# GROUNDWATER MONITORING AND SYSTEM PROGRESS REPORT FIRST QUARTER 2003

Former Exxon Service Station 3055 35th Avenue Oakland, California Cambria Project #130-0105

April 30, 2003

#### INTRODUCTION

On behalf of Mr. Lynn Worthington of Golden Empire Properties, Cambria Environmental Technology, Inc. (Cambria) has prepared this groundwater monitoring and system progress report for the above-referenced site (see Figure 1). Presented in the report are the first quarter 2003 groundwater monitoring and corrective action activities and the anticipated second quarter 2003 activities.

#### **FIRST QUARTER 2003 ACTIVITIES**

#### **Monitoring Activities**

*Field Activities:* On January 13, 2003, Cambria conducted quarterly monitoring activities. Cambria gauged and inspected for separate-phase hydrocarbons (SPH) in monitoring wells MW-1, MW-2, MW-3 and MW-4 (Figure 1). Groundwater samples were collected from all scheduled wells. Field data sheets are presented in Appendix A.

Sample Analyses: Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and total petroleum hydrocarbons as diesel (TPHd) with silica gel clean-up by modified EPA Method 8015, and benzene, toluene, ethylbenzene and xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8021B. The groundwater analytical results are summarized in Table 1. The laboratory analytical report is presented as Appendix B.



### **Monitoring Results**

Groundwater Flow Direction: Depth-to-water measurements were collected during Cambria's January 13, 2003 site visit (Figure 1). During this visit, the two-phase extraction (TPE) remediation system was temporarily off and the groundwater table was under static conditions. Based on the depth to water measurements, groundwater flows toward the northwest with a gradient of 0.015 feet/foot, which is consistent with historical groundwater gradients. Groundwater monitoring data is presented in Table 1. See Appendix E for the electronic delivery confirmations of groundwater monitoring data.



Hydrocarbon Distribution in Groundwater: Hydrocarbon concentrations have decreased in wells MW-1, MW-2, and MW-3 and increased in well MW-4 as compared with the previous sampling event. SPH were not detected in any of the wells. The maximum TPHg, TPHd, and benzene concentrations were detected in well MW-4 at 35,000, 15,000, and 5,100 micrograms per liter (μg/L), respectively. MTBE concentrations were below laboratory detection limits in all sampled wells. Since the start of TPE remediation (June 2000), monitoring wells MW-1, MW-3, and MW-4 have exhibited a decreasing hydrocarbon concentration trend (See Appendix D for individual well concentration trend graphs). Analytical results are summarized in Table 1. See Appendix E for electronic delivery confirmations of analytical data to the State's Geotracker Database.

#### **Corrective Action Activities**

System Design and Modifications: The TPE remediation system consists of a trailer mounted allelectric catalytic oxidizer, a 20-horsepower liquid-ring pump, a 150-gallon moisture knockout with automatic float controls, a 1 horsepower centrifugal transfer pump, a particulate filter, and two 1000pound carbon vessels connected in series. Nine wells are connected to the remediation system (RW-5 through RW-13) via an underground, 4-inch diameter, PVC trunk line and 1-inch diameter PVC branch lines. See Figure 2 for the location of remediation enclosure and wells. Wells RW-5 through RW-14, and MW-1 through MW-4 have 1-inch diameter, flexible, suction hose stingers which are sealed at the wellhead to allow simultaneous extraction of soil vapor and groundwater from the well.

Remediation System Operations and Maintenance Activities: During the first quarter, Cambria performed TPE system operation and maintenance (O&M) activities two to three times per month. During O&M activities, individual well flow, vacuum, and hydrocarbon concentration measurements were collected from all TPE wells and from the system (see Tables 2, 3, and 4). During O&M site visits, system parameters were recorded in specialized field forms for future system optimization and agency inspection. System influent and effluent vapor samples were collected and submitted for laboratory analysis on a monthly basis. As per the Bay Area Air Quality Management District

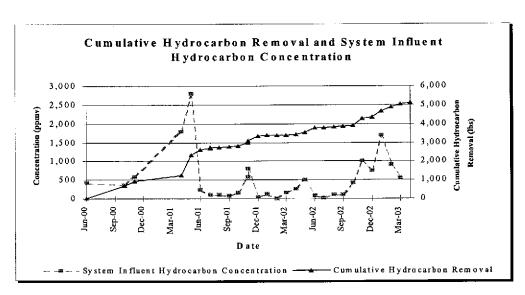
(BAAQMD) permit, a catalytic oxidizer operating temperature greater than 600 degrees Fahrenheit was maintained and system operation parameters were continuously measured using a chart recorder.

System influent and effluent vapor samples were collected and submitted for laboratory analysis on January 8, February 4, and March 4, 2003. System effluent vapor concentrations were below laboratory detection limits indicating that the catalytic oxidizer was achieving proper destruction efficiency and was operating within permit requirements. Table 2 summarizes soil vapor extraction system operations and analytical results.



Groundwater treatment system influent and effluent samples were collected on January 8, February 4, and March 4, 2003. System effluent groundwater concentrations for TPHg and BTEX were below laboratory detection limits indicating that no hydrocarbons were discharged to the sanitary sewer system and that the groundwater extraction portion of the TPE system was operating within permit requirements. A site inspection by Rodney Temples of East Bay Municipal Utility District (EBMUD) on March 25, 2003 confirmed compliance with the sewer discharge permit requirements. Table 3 summarizes groundwater extraction system parameters and analytical results. The system analytical laboratory reports are included as Attachment C.

Remediation System Performance: From January 8, 2003 through April 2, 2003, the TPE system operated for a total of 1,711 hours. The system shutdown automatically a couple of times during the quarter due to high water in the knockout tank. System influent TPHg vapor concentrations were variable during the quarter and ranged from 540 to 1,700 parts per million by volume (ppmv). Influent hydrocarbon concentrations spiked in January after system optimization efforts involving the collection of individual well flow and vapor concentration measurements. To maximize site cleanup, select remediation wells were opened and closed and well stinger depths were adjusted to account for



April 30, 2003

### CAMBRIA

seasonal changes in the groundwater table (see Table 4). Hydrocarbon removal rates for soil vapor decreased during the quarter due to lower vapor flow rates. The hydrocarbon removal rates ranged from 3.5 to 7.6 pounds per day. To date, approximately 5,102 pounds of petroleum hydrocarbons have been destroyed by vapor extraction (see inserted graph above and Table 2).

From January 8, 2003 to April 2, 2003, approximately 192,780 gallons of groundwater were extracted and treated onsite using granular activated carbon. Influent groundwater concentrations ranged from 860 to 3,500 µg/L during the quarter and exhibited a decreasing trend. Seasonal rains and the rising groundwater table likely caused the influent groundwater concentrations to drop during the quarter. The groundwater extraction rate ranged from 1.4 to 2.2 gallons per minute and increased relative to the previous quarter due to higher vacuum and more aggressive groundwater extraction. To date, approximately 9.0 pounds of hydrocarbons have been treated by aqueous-phase carbon.



### **Monitoring Activities**

Cambria will gauge the site wells, check the wells for SPH, and collect groundwater samples from all wells not containing SPH. Groundwater samples will be analyzed for TPHg and TPHd with silica gel clean-up by Modified EPA Method 8015 and BTEX and MTBE by EPA Method 8021B. Cambria will prepare a groundwater monitoring report summarizing the monitoring activities and results. Cambria will submit groundwater monitoring and analytical data to the State's Geotracker database.

#### **Corrective Action Activities:**

Cambria will continue to perform TPE operation and maintenance activities approximately two to three times per month during the second quarter of 2003. The depth of extraction stingers will be adjusted in an effort to maximize hydrocarbon removal and TPE operations may vary between select wells to optimize site cleanup. System influent and effluent vapor and groundwater samples will be collected on a monthly basis, and system operation and performance will be evaluated and optimized. Records will be kept for a period of two years for possible future BAAQMD inspection.



#### **ATTACHMENTS**

Figure 1 – Groundwater Elevation and Analytical Summary Map

 $Table \ 1-Groundwater \ Elevations \ and \ Analytical \ Data$ 

Table 2 – TPE System Performance and Analytical Results - Soil Vapor Extraction

Table 3 – TPE System Performance and Analytical Results - Groundwater Extraction

Table 4 – TPE Well Parameters

Appendix A – Groundwater Monitoring Field Data Sheets

Appendix B - Analytical Results for Quarterly Groundwater Sampling

Appendix C – Analytical Results for TPE System Operation

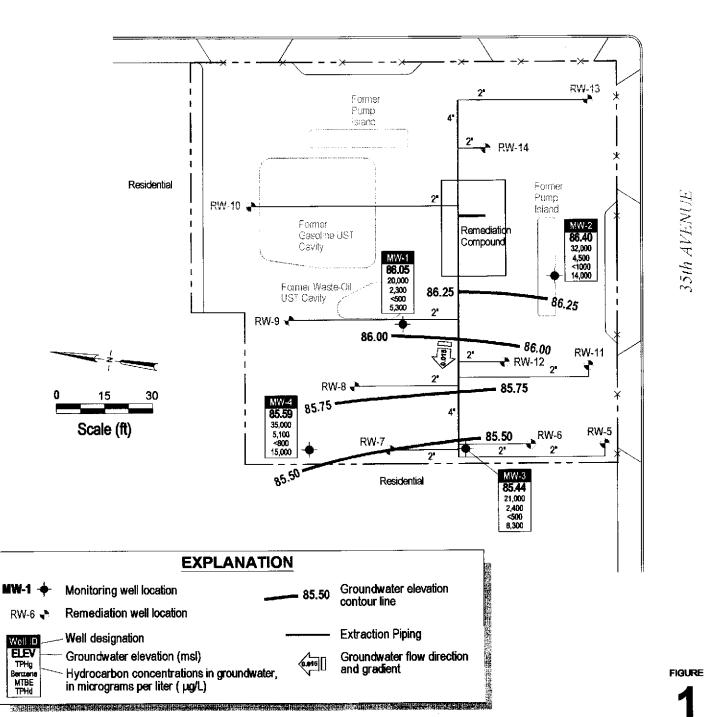
Appendix D – TPHg and Benzene Concentration Trend Graphs

Appendix E – Electronic Delivery Confirmations

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Note: TPE remediation system not operating at time of groundwater monitoring event.

### **Former Exxon Station**

3055 35th Avenue Oakland, California



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### **Groundwater Elevation and Analytical Summary Map**

Table 1. Groundwater Elevations and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	GW	SPH	GW	TPHg	TPHd	ΤΡΗπιο	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO
(TOC)		Depth (ft)	(ft)	Elev. (ft)	< <del>-</del>		Concentra	tions in microg	rams per liter (j	ug/L)		>	(mg/L)
MW-1	05/25/94	16.79	Sheen	84.06	120,000	25,000	<50,000	22,000	17,000	2,800	16,000		
100.85	07/19/94	20.77		80.08									
	08/18/94	21.04	Sheen	79.81	925,000			16,500	6,200	1,000	9,400		
	11/11/94	15.80		85.05	57,000			14,000	4,400	1,400	6,400		
	02/27/95	15.53		85.32	45,000			2,900	2,500	760	4,100		
	05/23/95	15.29		85.56	22,000			9,900	990	790	2,000		
	08/22/95	20.90		79.95	23,000			6,900	340	1,200	1,900		
	11/29/95	22.19		78.66	37,000			9,900	530	1,600	2,900		
	02/21/96	11.69		89.16	33,000	4,300		10,000	480	1,000	1,800	3,300	
	05/21/96	14.62		86.23	36,000	8,500		8,500	1,400	1,300	2,800	1,900	
	08/22/96	22.30		78.55	41,000	6,200		8,600	1,300	1,500	2,900	<200	8.0
	11/27/96	17.24	Sheen	83.61	38,000	6,100	=~~	9,600	950	1,600	3,100	<400	5.6
	03/20/97	16.65		84.20	33,000	10,000		6,100	560	970	2,200	<400	8.5
	06/25/97	19.77		81.08	31,000	7,400°		7,400	440	890	1,800	<400	3.7
	09/17/97	20.12		80.73	$32,000^{d}$	3,500°		9,100	550	1,000	2,000	<1,000	2.1
	12/22/97	12.95		87.90	26,000 <sup>d</sup>	5,800°		7,900	370	920	1,500	<790	0.7
	03/18/98	12.34	Sheen	88.51	$30,000^{\rm d}$	4,200°,f		7,800	820	840	2,000	<1,100	1.3
	07/14/98	17.34		83.51	41,000 <sup>d</sup>	8,900°.′		8,200	1,100	1,200	3,000	<200	1.8
	09/30/98	19.90		80.95	37,000	3,300		11,000	950	1,200	2,800	<20	2.0
	12/08/98	15.62		85.23	22,000	3,700		3,000	1,200	730	3,100	<900	
	03/29/99	11.98		88.87	36,000 <sup>d</sup>	6,800°		12,000	750	1,300	2,400	950	0.50
	06/29/99	20.77		80.08	28,000 <sup>d</sup>	3,500°		7,300	420	810	1,700	<1,300	0.10
	09/28/99	19.68		81.17	13,000 <sup>d</sup>	3,600 <sup>e,f</sup>		3,200	130	320	1,100	<210	0.55
	12/10/99	17.02		83.83	25,000 <sup>d</sup>	2,900 <sup>e,f</sup>		5,400	130	620	1,400	<1,000	1.03
	03/23/00	12.76		88.09	21,000 <sup>d</sup>	3,300 <sup>f</sup>		4,700	140	470	1,100	<350	
	09/07/00	19.45		81.40	40,000 <sup>d,g</sup>	12,000 <sup>e,g</sup>		3,700	1,400	910	4,900	<50	0.17
	12/05/00	18.60		82.25	26,000°	3,400 <sup>e</sup>		7,900	150	580	810	<300	0.35
	03/07/01	16.19		84.66	13,000	2,400		2,700	43	69	300	<100	0.49
	06/06/01	18.47		82.38	19,000	4,000		4,500	130	270	430 .	<400	0.39
	08/30/01	21.70		79.15	8,800"	1,400 <sup>d</sup>		2,100	45	91	240	<130	0.27
	12/07/01	26.55		74.30	8,700 <sup>d</sup>	1,900 <sup>e,r</sup>		1,300	160	38	730	<20	0.59
	03/11/02	17.13		83.72	9,400 <sup>d</sup>	1,400°	***	2,100	200	74	470	<20	0.39
	06/10/02	24.10		76.75	4,200 <sup>d</sup>	$900^{c,k}$		830	170	110	460	<100	
	09/26/02	20.30		80.55	7,000 <sup>d</sup>	1,300 <sup>e,f,k</sup>		1,300	190	200	760	<100	0.70
	11/21/02	21.55		79.30	83,000 <sup>d,g</sup>	200,000°.¢		7,100	1,700	3,000	13,000	<1,000	0.49
	01/13/03	14.80		86.05	20,000 <sup>d</sup>	5,300°,f		2,300	480	300	2,100	<500	0.33

Table 1. Groundwater Elevations and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	GW	SPH	GW	TPHg	TPHd	TPHmo	Benzene	Топиене	Ethylbenzene	Xylenes	MTBE	DO
(TOC)		Depth (ft)	(ft)	Elev. (ft)	<		Concentra	tions in microg	rams per liter (	.tg/L)		>	(mg/L)
MW-2	05/25/94	15.65		84.35	61,000	6,900	<5,000	9,900	7,400	960	4,600		
100.00	07/19/94	19.81	FRE	80.19								747	
	08/18/94	20.37		79.63	88,000			10,750	10,500	1,850	9,600		
	11/11/94	15.52		84.48	54,000			5,900	6,700	1,300	7,500		
	02/27/95	14.46	Sheen	85.54	44,000	****		5,100	5,300	930	6,400		
	05/23/95	14.17	***	85.83	33,000			8,200	5,600	900	6,600		
	08/22/95	19.80		80.20	38,000			6,400	5,000	1,100	5,600		
	11/29/95	21.05		78.95	46,000			7,100	5,300	1,300	6,000	***	
	02/21/96	10.53		89.47	59,000			8,000	6,000	1,800	8,900	4,500	
	05/21/96	13.47		86.53	51,000	3,400		8,200	5,200	1,300	6,600	2,400	
	08/22/96	19.12		80.88	37,000	5,700		5,100	3,500	960	4,500	<200	3.0
	11/27/96	16.61	Sheen	83.39	54,000	10,000		9,800	7,000	1,800	7,900	<2,000	3.1
	03/20/97	15.39		84.61	27,000	6,100		3,700	2,300	580	2,800	<400	8.1
	06/25/97	18.62		81.38	42,000	7,800 <sup>b</sup>		7,400	3,800	1,200	5,700	<200	0.9
	09/17/97	19.05	Sheen	80.95	41,000 <sup>d</sup>	8,900°		5,200	3,400	1,300	5,900	<700	1.2
	12/22/97	14.09		85.91	47,000 <sup>d</sup>	6,100°		8,500	4,600	1,800	8,400	<1,200	1.2
	03/18/98	10.83	Sheen	89.17	58,000 <sup>d</sup>	7,000 <sup>e,f</sup>		9,300	6,100	1,800	8,200	<1,100	1.1
	07/14/98	16.07		83.93	42,000 <sup>d</sup>	5,300 <sup>c,f</sup>		6,000	3,000	1,000	4,800	<200	1.5
	09/30/98	18.71		81.29	22,000	2,400		3,600	1,300	720	3,200	<30	1.8
	12/08/98	14.80		85.20	32,000	3,100		9,200	680	1,100	2,300	<2,000	
	03/29/99	11.81		88.19	$28,000^{d}$	7,500 <sup>e,t</sup>		4,400	1,600	950	4,100	410	1.86
	06/29/99	19.54		80.46	$28,000^{d}$	3,300°		3,500	1,100	690	3,100	<1,000	0.41
	09/28/99	18.61		81.39	15,000 <sup>d</sup>	3,400 <sup>e,f</sup>		1,200	540	230	2,300	<36	1.18
	12/10/99	16.53		83.47	17,000 <sup>d</sup>	2,500 <sup>e,f</sup>		1,300	780	420	2,700	<40	0.17
	03/23/00	13.56		86.44	25,000 <sup>d</sup>	$3,100^{i}$		1,900	1,100	660	3,700	<500	
	09/07/00	18.25		81.75	62,000 <sup>d.g</sup>	32,000 <sup>e,g</sup>		5,300	2,300	1,500	8,400	<100	0.39
	12/05/00	17.45		82.55	60,000 <sup>d,g</sup>	87,000 <sup>e,f,g</sup>		5,100	2,200	1,600	9,000	<200	0.31
	03/07/01	15.68		84.32	34,000	3,900		1,200	770	620	4,300	<200	0.44
	06/06/01	17.51		82.49	110,000	48,000		14,000	9,000	1,900	12,000	<950	0.24
	08/30/01	21.00		79.00	43,000 <sup>a,h</sup>	15,000 <sup>d,h</sup>		3,100	720	980	5,500	<200	
	12/07/01	24.45		75.55	4,100 <sup>d</sup>	750 <sup>e,f</sup>		510	88	8.2	580	<20	0.47
	03/11/02	16.95		83.05	4,700 <sup>d</sup>	590°		1,200	150	30	310	<50	0.24
	06/10/02	18.59		81.41	14,000 <sup>d</sup>	2,000°		2,600	710	150	2,000	<800	
	09/26/02	20.39		79.61	4,800 <sup>d</sup>	660°		770	200	140	740	<50	0.29
	11/21/02	18.75		81.25	210,000 <sup>d,g</sup>	350,000 <sup>e,g</sup>		14,000	23,000	4,400	28,000	<1,700	0.43
	01/13/03	13.60		86.40	32,000 <sup>d.g</sup>	14,000°,£g,k		4,500	1,600	920	3,600	<1000	0.39

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Table 1. Groundwater Elevations and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	GW	SPH	GW	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DÓ
(TOC)		Depth (ft)	(ft)	Elev. (ft)	<		Concentra	tions in microg	rams per liter (	μg/L)		>	(mg/L)
MW-3	05/25/94	13.93	Sheen	82.94	56,000	14,000	<50,000	14,000	14,000	1,300	11,000		
96.87	07/19/94	17.04		79.83									
	08/18/94	17.75		79.12	116,000			28,300	26,000	2,400	15,000		
	11/11/94	17.80	***	79.07	89,000			1,600	1,900	1,900	14,000		
	02/27/95	11.86	Sheen	85.01	250,000			22,000	26,000	7,800	21,000	*	
	05/23/95	11.60	Sheen	85.27	310,000		***	18,000	17,000	4,500	2,800		
	08/22/95	17.10		79.77	74,000			14,000	13,000	1,900	11,000		
	11/29/95	16.34	~~-	80.53	220,000			25,000	25,000	3,500	19,000		
	02/21/96	7.92		88.95	60,000			10,000	7,800	1,500	8,800	3,400	
	05/21/96	10.86	Sheen	86.01	69,000	13,000		17,000	9,400	1,700	9,400	2,600	
	08/22/96	16.50		80.37	94,000	16,000		17,000	15,000	2,100	12,000	330	2.0
	11/27/96	13.47	Sheen	83.40	82,000	24,000		14,000	13,000	2,400	13,000	<1,000	2.4
	03/20/97	12.86		84.01	56,000	11,000		9,900	6,900	1,300	8,000	3,500	9.0
	06/25/97	15.98		80.89	49,000	7,700 <sup>b</sup>		9,700	7,100	1,300	7,000	220	5.8
	09/17/97	16.34	Sheen	80.53	78,000 <sup>d</sup>	15,000°		11,000	9,900	1,800	10,000	<1,200	0.7
	12/22/97	10.71	Sheen	86.16	49,000 <sup>d</sup>	14,000°		7,300	5,300	1,400	7,500	<1,100	3.1
	03/18/98	8.41	Sheen	88.46	120,000 <sup>d</sup>	20,000 <sup>e,f</sup>		21,000	19,000	2,600	15,000	<1,600	1.6
	07/14/98	13.51		83.36	94,000 <sup>d,g</sup>	65,000 <sup>e,f,g</sup>		18,000	14,000	1,900	11,000	<1,400	1.8
	09/30/98	16.14		80.73	91,000	9,800		17,000	13,000	2,100	12,000	<1300	2.0
	12/08/98	11.20		85.67	51,000	4,200		8,000	6,800	1,400	7,500	<1,100	
	03/29/99	7.95		88.92	39,000 <sup>d</sup>	4,600e		8,900	4,400	940	4,500	810	0.56
	06/29/99	16.98		79.89	71,000 <sup>d</sup>	6,900°		12,000	7,300	1,400	8,400	<1,700	0.19
	09/28/99	15.99		80.88	60,000 <sup>d</sup>	7,800 <sup>e</sup>		9,400	9,200	1,000	9,900	200	0.53
	12/10/99	13.31		83.56	53,000 <sup>d</sup>	5,300 <sup>e,f</sup>		8,000	6,400	1,100	8,100	<200	0.48
	03/23/00	8.98		87.89	77,000 <sup>d,g</sup>	11,000 <sup>g j</sup>		10,000	9,400	1,600	11,000	<430	
	09/07/00	15.61		81.26	100,000 <sup>d,g</sup>	19,000 <sup>e.f,g</sup>		17,000	12,000	1,600	11,000	<500	
	12/05/00	14.80		82.07	110,000 <sup>d,g</sup>	17,000 <sup>e,g</sup>		17,000	11,000	1,900	12,000	<750	0.37
	03/07/01	14.27		82.60	60,000	13,000		7,000	4,600	900	7,100	<350	0.49
	06/06/01	14.88		81.99	43,000	12,000	***	3,000	1,000	770	5,200	<400	1.71
	08/30/01	12.43		84.44	95,000 <sup>a,h</sup>	190,000 <sup>d,h</sup>		6,900	10,000	2,700	15,000	<250	0.24
	12/07/01	24.65		72.22	25,000 <sup>d</sup>	3,900°''		2,500	1,700	64	2,200	<200	0.19
	03/11/02	14.69		82.18	30,000 <sup>d</sup>	2,800 <sup>f,e,k</sup>		5,000	2,400	190	1,800	<1,300	0.30
	06/10/02	22.94		73.93	9,000 <sup>d</sup>	990°.k		1,800	1,300	96	1,000	<300	
	09/26/02	18,85		78.02	50,000 <sup>d,g</sup>	130,000°,g		3,900	5,400	820	6,600	<500	0.19
	11/21/02	17.85	0.05	79.06	37,000 <sup>d,g</sup>	120,000 <sup>e,g</sup>		4,000	660	1,200	5,100	<1,700	0.28
	01/13/03	11.43		85.44	21,000 <sup>d,g</sup>	6.300 <sup>e,f,g,k</sup>		2,400	2,300	390	3,000	<500	0.31

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Table 1. Groundwater Elevations and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	GW	SPH	GW	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO
(TOC)		Depth (ft)	(ft)	Elev. (ft)	<		Concentra	itions in microg	rams per liter (	μg/L)		>	(mg/L)
MW-4	03/20/97	13.75		83.59	47,000	3,100		11,000	4,500	1,100	5,200	3,400	8.4
97.34	06/25/97	16.15		81.19	61,000	5,800 <sup>h</sup>		16,000	6,100	1,500	5,900	780°	1.4
	09/17/97	17.10		80.24	60,000 <sup>d</sup>	4,400°		17,000	4,900	1,500	5,700	<1,500	1.5
	12/22/97	9.21		88.13	43,000 <sup>d</sup>	3,100°		13,000	3,900	1,100	4,200	<960	3.7
	03/18/98	9.54		87.80	58,000 <sup>d</sup>	5,500 <sup>e,r</sup>		14,000	4,700	1,400	5,700	<1,200	0.8
	07/14/98	14.15		83.19	73,000 <sup>d</sup>	2,900 <sup>e,f</sup>		22,000	7,000	1,800	7,300	<200	1.0
	09/30/98	16.84		80.50	39,000	2,100		12,000	2,700	1,000	3,400	510	1.1
	12/08/98	13.45		83.89	27,000	1,600		8,900	1,600	730	2,300	<1,500	
	03/29/99	9.10		88.24	48,000 <sup>d</sup>	2,400°,¢h		15,000	3,000	1,300	5,000	1,300	1.32
	06/29/99*												
	09/28/99	16.58		80.76	$24,000^{d}$	3,200°,f		7,500	1,200	190	2,200	210	14.29#
	12/10/99	13.99		83.35	47,000 <sup>d</sup>	3,100 <sup>e,f</sup>		12,000	1,800	1,000	4,400	<100	0.62
	03/23/00	10.22		87.12	40,000 <sup>d</sup>	$3{,}100^{e,f}$		11,000	1,600	910	3,100	690	
	09/07/00	16.40		80.94	43,000 <sup>d</sup>	5,900°		10,000	1,100	1,100	3,400	<450	1.04
	12/05/00	15.55		81.79	69,000 <sup>d,g</sup>	2,600 <sup>e,g</sup>		16,000	1,300	1,300	3,400	<200	0.35
	03/20/01	14.03		83.31	46,000			13,000	1,000	900	2,800	<350	0.39
	06/06/01	15.49		81.85	75,000	5,400		22,000	1,800	1,900	6,400	<1,200	2.22
	08/30/01	18.00		79.34	43,000°	3,200 <sup>d</sup>		6,400	630	510	2,600	<200	0.32
	12/07/01	23.45		73.89	32,000 <sup>d,g</sup>	$11,000^{\rm e,t,g}$		4,500	740	310	2,300	<200	0.21
	03/11/02	14.95		82.39	15,000 <sup>d</sup>	1,600 <sup>e,f,k</sup>		3,700	500	92	790	<500	0.30
	06/10/02	22.30		75.04	$9,400^{\rm d}$	3,400°		1,400	50	<5.0	690	<200	
	09/26/02	17.93		79.41	21,000 <sup>d</sup>	800°		3,300	1,300	450	2,900	<500	0.24
	11/21/02	17.55		79.79	5,700 <sup>d</sup>	2,400 <sup>e,k</sup>		1,400	290	63	640	550	
	01/13/03	11-75		85.59	35,000 <sup>d.g</sup>	15,000 <sup>e.f.g.k</sup>		5,100	1,500	510	4,500	<800	0.28

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Table 1. Groundwater Elevations and Analytical Data - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	GW	SPH	GW	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO
(TOC)		Depth (ft)	(ft)	Elev. (ft)	<		Concentra	tions in microg	rams per liter (	μg/L)		>	(mg/L)
m: a	0.7/4.1/0.0					-50		10 E	-0.5	-0.5	-0 E	~= 0	
Trip Blank	07/14/98				<50	<50		<0.5	<0.5	<0.5	<0.5	<5.0	
	09/30/98				<50	<50		<0.5	< 0.5	< 0.5	< 0.5	<5.0	
	12/08/98				<50			<0.5	< 0.5	< 0.5	<0.5	<5.0	
	03/29/99				<50			< 0.5	< 0.5	< 0.5	< 0.5	<5.0	
	06/29/99				<50			<0.5	< 0.5	< 0.5	< 0.5	< 5.0	
	03/23/00				< 50		***	< 0.5	< 0.5	< 0.5	< 0.5	<5.0	
	09/07/00	***			<50			<0.5	1.1	< 0.5	1.1	<5.0	

#### Abbreviations:

TOC = Top of casing elevation relative to an arbitrary datum

GW = Groundwater

SPH = Separate-phase hydrocarbons

--- = not observed/not analyzed

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015

TPHd = Total petroleum hydrocarbons as diesel by modified EPA Method 8015

TPHmo = Total petroleum hydrocarbons as motor oil by modified EPA Method 8015

Benzene, Ethylbenzene, Tohiene, and Xylenes by EPA Method 8020

MTBE = Methyl Tertiary Butyl Ether by EPA Method 8020

DO = Dissolved oxygen

 $\mu g/L$  = Micrograms per liter, equivalent to parts per billion in water

mg/L = Milligrams per liter, equivalent to parts per million in water

\* = Well inaccessible during site visit

#### Notes:

- a = Result has an atypical pattern for diesel analysis
- b = Result appears to be a lighter hydrocarbon than diesel
- c = There is a >40% difference between primary and confirmation analysis
- d = Unmodified or weakly modified gasoline is significant
- e = Gasoline range compounds are significant
- f = Diesel range compounds are significant; no recognizable pattern
- g = lighter than water immiscible sheen is present
- h = one to a few isolated peaks present
- i = medium boiling point pattern does not match diesel (stoddard solvent)
- j = aged diesel is significant
- k = oil range compounds are significant

TOC Elevation of Well MW-4 surveyed relative to an arbitrary site datum by David Hop,

Licensed Surveyor on April 19, 1997

# = abnormally high reading due to added hydrogen peroxide

Date	Hour Meter Readings (hrs)	System Uptime (per interval) (%)	System Inlet Temp. (degrees F)	System Flow Rate ( (acfm)	System Vacoum ("Hg)	System Flow Rate (scfm)	System Influent HC Conc. (ppnw)	HC C	Effluent Conc. <sup>1</sup> mv) Benz	HC Removal Rate <sup>2</sup> (lbs/day) TPHg	F	nission Late <sup>2</sup> s/day) Benz	TPHg Destruction Efficiency (%)	Gasoline Cumulative Removal <sup>3</sup> (lbs)
6/24/00	0		_			_								0
9/28/00	454	20%	789	-		175	420	22	0,24	23.6	1.24	0.012	95	446
10/12/00	696	72%	950			88	360	<10	<0.15	10.1	<0.28	<0.004	*	684
11/9/00	1251	83%	820			55	590	<10	<0.15	10.5	<0.18	<0.002	*	918
1/23/01	1313	3%	1											945
3/28/01	0					-	-			-				945
4/5/01	194	(01%	908	85	6.0	68	1,800	34	0.52	39.2	0.74	010.0	98	1261
5/3/01	863	100%	1000	54	14	29	2,800	<10	<0.15	25.8	<0.09	<0.001	*	2355
6/4/01	1114	33%	820	101	6.5	79	240	<10	<0.15	6.1	<0.25	<0.003	*	2625
7/2/01	1429	47%	804	109	10.0	73	92	26	0.34	2.1	<0.61	<0.007	72	2705
7/10/01	1621	100%	900	150	8.0	110	92	<10	<0.15	3.2	<0.35	<0.005	*	2722
8/2/01	1759	25%	940	79	5.0	65	110	<10	<0.15	2.3	<0.21	<0.003	*	2740
9/7/01	2301	63%	854	[4]	12.0	84	81	34	0.52	2.2	<0.92	<0.013	58	2793
10/3/01	2470	27%	854	230	9.0	161	160	<10	0.31	8.3	<0.52	<0.015	*	2808
11/6/01	3015	67%	955	97	8.5	69	590	31	0.43	13.1	<0.69	<0.009	95	2995
11/14/01	3184	88%	860	69	10.0	46	810	<10	<0.15	11.9	<0.15	<0.002	*	3087

Date	Hour Meter Readings (hrs)	System Uptime (per interval)	System Inlet Temp.	System Flow Rate (acfm)	System Vacuum ("Hg)	System Flow Rate (scfm)	System Influent HC Conc. <sup>1</sup> (ppmv)	HC (pp	Effluent onc.   mv)	HC Removal Rate <sup>2</sup> (lbs/day)	R (1b:	ission ate <sup>2</sup> s/day)	TPHg Destruction Efficiency	Gasoline Cumulative Removal
		(%)	(degrees F)			<u>                                       </u>	TPHg	TPHg	Benz	TPHg	TPHg	Benz	(%)	(lbs)
12/6/01	3710	100%	806	53	11.0	33	50	<10	<0.15	0.5	<0.11	<0.001	*	3349
1/7/02	4472	99%	841	42	10.5	27	120	<10	<0.15	1.0	<0.09	<0.001	*	3366
2/4/02	4938	69%	817	78	10.5	51	<	<10	<0.15	0.1	<0.16	<0.002	•	3386
3/5/02	5396	66%	665	26	10.5	17	170	<10	<0.15	0.9	<0.05	<0.001	•	3388
4/2/02	6068	100%	670	67	12.5	39	260	<10	<0.15	3.3	<0.13	<0.002	*	3413
5/6/02	6885	100%	667	76	10.0	50	500	<10	<0.15	8.1	<0.16	<0.002	*	3524
6/5/02	7608	100%	751	72	8.5	51	73	<10	<0.15	1.2	<0.16	<0.002	*	3767
7/2/02	8253	100%	736	80	9.0	56	26	<15	<0.15	0.5	<0.27	<0.002	*	3799
8/6/02	7	100%	739	140	13.0	79	97	<10	<0.15	2.5	<0.25	<0.003	*	3815
9/10/02	528	76%	723	150	11.5	92	103	<10	<0.15	3.0	<0.30	<0.004	*	3869
10/2/02	938	100%	723	125	8.5	39	430	<10	<0.15	12.3	<0.29	<0.004	*	3921
11/6/02	1614	100%	658	105	13.5	58	1,000	<10	<0.15	18.5	<0.18	<0.003		4269
12/5/02	1720	65%	675	115	14.0	61	740	<10	<0.15	14.5	<0.20	<0.003	*	4350
1/8/03	2279	69%	675	30	16.0	14	1700	<10	<0.15	7.6	<0.04	<0.001	*	4688
2/4/03	2896	95%	671	48	18.0	19	910	<10	<0.15	5.6	<0.06	<0.001	*	4884
3/4/03	3571	100%	657	47	17.0	20	540	<10	<0.15	3.5	<0.07	<0.001	*	5041
4/2/03	3990	60%	705	38	18.0	15	_							5102

Table 2. TPE System Performance and Analytical Results - Soil Vapor Extraction -	Galdon Empira Propartiae (Worthington) 2055-25th Street Oakland California

ĺ	Hour Meter	System	System	System	System	System	System Influent	System Effluent	HC	Eir	nission	TPHg	Gasoline
Date	Readings	Uptime	lnlet	Flow Rate	Vacuum	Flow Rate	HC Conc. 1	HC Conc.	Removal Rate 2	F	tate <sup>2</sup>	Destruction	Cumulative
H	(lus)	(per interval)	Temp.	(acfm)	("Hg)	(scfm)	(ppmv)	(ppniv)	(lbs/day)	(Ib	s/day)	Efficiency	Removal <sup>4</sup>
1 .	<b>l</b> .	(%)	(degrees F)			L	TPllg	TPHg Benz	TPHg	TPHg	Benz	(%)	(lbs)

#### Notes and Abbreviations:

TPHg = Total petroleum hydrocarbons as gasoline

Вени = Вениене

HC Conc. = Hydrocarbon Concentrations

ppmy = Parts per million by volume. Analytical lab results converted from micrograms per liter (µg/l) to ppmy assumes the molecular weight of gasoline to be equal to that of because.

at 1 atmosphere of pressure and 20 degrees Celsius.

<sup>&</sup>lt;sup>1</sup> TPHg and benzene concentrations based on lab results by Modified EPA Methods 8015 and 8020.

<sup>&</sup>lt;sup>2</sup> The hydrocarbon removal/emission rate is based on the Bay Area Air Quality Management's District's (BAAQMD) Procedures for Soil Vapor Extraction where Rate = concentration (ppmv) x flow rate (scfm) x 1 lb-mole/386x10<sup>6</sup>ft<sup>3</sup> x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene) x 1440 min/day.

<sup>3</sup> Gasoline Cumulative Removal = The previous removal rates multiplied by the interval days of operation plus the previous total removal amount. The total TPHg removal is based on lab analytical results.

As per BAAQMD permit conditions, system destruction efficiency need not be calculated for effluent TPHg concentrations less than 10 ppmv

The TPE system was modified on August 6, 2002, and the PD blower was replaced with a liquid-ring blower. The previous system hour meter was also replaced at a total reading of 9089 hours. In addition, all previous flow rate measurements were converted from acfin to sofin adjusting the Hydrocarbon Removal Rates and Gasoline Cumulative Removal

<sup>\*\*\*</sup> The hour meter was not operating properly. System uptime is calculated based on the operational status upon arrival.

Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA

Date	Hour Meter Readings (hrs)	Water Meter Readings (gallons)	Total Groundwater Extracted (gallons)	System Flow Rate Per Period (gpm)	Sample ID	TPHg (µg/L)	Benzene (µg/L)	Toluene (μg/L)	Ethylbenzene (µg/L)	Total Xylenes (μg/L)	HCs Removed Per Period (lbs)	Total HCs Removed (lbs)
10/20/00	878	0	0	NC	Inf Eff		<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5		-1
10/30/00	1004		50	NC	Inf Eff		170 <0.5	140 <0.5	16 <0.5	200 <0.5		
11/9/00	1,251		50	NC	Inf Eff	760 <50	120 <0.5	86 <0.5	4.2 <0.5	84 <0.5	NC	NC
12/15/00	1,267	760a	50	NC								
1/23/01	1,313	3,790	3,080	1.1	In Mid Eff	3,000 <50 <50	440 <0.5 <0.5	360 <0.5 <0.5	57 <0.5 <0.5	350 <0.5 <0.5	0.019	0.019
3/28/01	0	3,970	3,210	NC	Replacement C	atox System S	Startup				0.005	0.024
4/13/01	378	17,366	16,606	0.6	IN EF-1	360 <50	45 <0.5	39 <0.5	5.1 <0.5	43 <0.5	0.335	0.359
6/4/01	1,114	36,058	35,298	0.4	IN Mid EF	54 <50 <50	<0.5 <0.5 <0.5	0.69 <0.5 <0.5	<0.5 <0.5 <0.5	3.1 <0.5 <0.5	0.056	0.415

Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA

Date	Hour Meter	Water Meter	Total Groundwater	System Flow Rate		·					HCs Removed	Total HCs
	Readings (hrs)	Readings (gallons)	Extracted (gallons)	Per Period (gpm)	Sample ID	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (μg/L)		Removed (lbs)
7/2/01	1,429	39,433	38,673	0.2	IN Mid EF	<50 <50 <50	2.5 <0.5 <0.5	1 <0.5 <0.5	<0.5 <0.5 <0.5	5 <0.5 <0.5	0.002	0.417
9/7/01	2,301	48,566	47,806	0.2	INF EFF-1 EFF-2	4,600 <50 	24 <0.5 	57 <0.5 	15 <0.5 	140 <0.5 	0.004	0.421
11/16/01	3,184	61,892	61,132	0.3	INF EFF-1 EFF-2	1100 <50 	57 <0.5 	42 <0.5 	6.5 <0.5 	110 <0.5 	0.512	0.932
12/6/01	3,710	80,094	79,334	0.6	INF EFF-1 EFF-2	410 <50 	31 <0.5 	14 <0.5 	3.2 <0.5 	48 <0.5 	0.167	1.099
1/7/02	4,472	132,337	131,577	1.1	INF EFF-1 EFF-2	120 <50 	17 <0.5	7.7 <0.5 	1.5 <0.5 	13 <0.5 	0.179	1.278
2/4/02	4,938	164,774	164,014	1.2	INF EFF-1 EFF-2	140 <50 	18 <0.5 	5.1 <0.5 	0.86 <0.5 	12 <0.5 	0.032	1.310

Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA

F. (	II. Maria	District Management	Total Groundwater	System							HCs	Total
Date	Hour Meter Readings (hrs)	Water Meter Readings (gallons)	Extracted (gallons)	Flow Rate Per Period (gpm)	Sample ID	TPHg (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethylbenzene (µg/L)	Total Xylenes (μg/L)	Removed Per Period (lbs)	HCs Removed (lbs)
3/5/02	5,396	208,997	208,237	1.6	INF EFF-1 EFF-2	170 <50 	22 <0.5 	12 <0.5 	1.8 <0.5 	24 <0.5 	0.052	1.362
4/2/02	6,068	263,563	262,803	1.4	INF EFF-1 EFF-2	160 <50 	15 <0.5 	17 <0.5 	3.3 <0.5 	20 <0.5	0.077	1.439
5/6/02	6,886	306,765	306,005	0.9	INF EFF-1 EFF-2	100 <50 	3.5 <0.5 	1.7 <0.5 	1.0 <0.5 	4.0 <0.5 	0.058	1.497
6/5/02	7,608	340,020	339,260	0.8	INF EFF-1 EFF-2	<50 <50 	2.8 <0.5	1.4 <0.5 	<0.5 <0.5 	2.5 <0.5 	0.028	1.525
7/2/02	8,253	361,717	360,957	0.6	INF EFF-1 EFF-2	<50 <50 	1.5 <0.5	<0.5 <0.5 	<0.5 <0.5 	0.94 <0.5 	0.009	1.534
8/6/2002*	7	383,750	382,990	0.4	INF EFF-1 EFF-2	<50 <50	1.8 <0.5	0.92 <0.5 	<0.5 <0.5 	2.0 <0.5 	0.009	1.543

Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA

Date	Hour Meter	Water Meter	Total Groundwater	System Flow Rate							HCs Removed	Total HCs
Date	Readings (hrs)	Readings (gallons)	Extracted (gallons)	Per Period (gpm)	Sample ID	ΤΡΗg (μg/L)	Benzene (µg/l.)	Toluene (μg/L)	Ethylbenzene (μg/L)	Total Xylenes (μg/L)	t I	Removed (lbs)
9/10/02	528	392,405	391,645	0.3	INF EFF-1 EFF-2	570 <50 	15 <0.5 	17 <0.5	2.9 <0.5 	30 <0.5 	0.004	1.547
10/2/02	938	400,145	399,385	0.3	INF EFF-1 EFF-2	2,300 <50 	230 <0.5	190 <0.5 	38 <0.5 	280 <0.5 	0.025	1.550
11/6/02	1,614	419,850	419,090	0.5	INF EFF-1 EFF-2	4,400 <50 	120 <0.5 	150 <0.5 	27 <0.5 	380 <0.5 	0.378	1.928
12/5/02	1,720	424,899	424,139	0.8	INF EFF-1 EFF-2	8,900 <50 	140 <0.5	200 <0.5 	33 <0.5 	470 <0.5 	0.185	2.113

Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA

1			Total	Caratana					i i	Ti Ti	HCs	Total
		<b> </b>	Total	System								
Date	Hour Meter	Water Meter	Groundwater	Flow Rate							Removed	HCs
	Readings	Readings	Extracted	Per Period	Sample	TPHg	Benzene	Toluene	Ethylbenzene	Total Xylenes	Per Period	Removed
	(hrs)	(gallons)	(gallons)	(gpm)	ID	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(lbs)	(lbs)
1/8/03	2,279	473,395	472,635	1.4	INF	3,500	120	300	48	700	3.602	5.715
					EFF-1	<50	< 0.5	<0.5	<0.5	<0.5		
					EFF-2							
									E			,
2/4/03	2,896	554,336	553,576	2.2	INF	1,100	51	74	14	190	2.364	8.079
					EFF-1	<50	< 0.5	< 0.5	<0.5	<0.5		
					EFF-2	<50	< 0.5	<0.5	<0.5	<0.5		
3/4/03	3,571	614,530	613,770	1.5	INF	860	30	59	11	180	0.553	8.631
N :					EFF-I	<50	< 0.5	<0.5	<0.5	<0.5		
1 1					EFF-2							
									1			
4/2/03	3,990	666,175	665,415	2.1	INF						0.371	9.002
			ĺ									
H				Sewer	Effluent Disch		5.0	5.0	5.0	5.0		
						(µg/L)						

#### Notes:

TPHg = Total Petroleum Hydrocarbons as Gasoline

BTEX = Benzene, Toluene, Ethylbenzene, Total Xylenes

MTBE = Methyl tertiary butyl ether

 $\mu g/L = micrograms per liter$ 

a = Malfunctioning totalizer replaced 12/15/00 (initial reading at 760 gallons)

\* = TPE system upgrade. Previous system hour meter = 9089

ND = non detect

<n = below noted practical laboratory quantitation limits

Inf = Influent Sample

Eff = Effluent Sample

NC = Not calculated, insufficient data

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
NAME I	11/2/01		90				20
MW-I	11/6/01	open	80				28
	11/12/01	open	125				28
	11/14/01	open	85	qui min			28
	11/21/01	open	95				28
	12/6/01	open	115				28
	12/19/01	open	110				25 25
	1/17/02	open	130				25 20
	2/4/02	open	105				28
	2/14/02	closed					**
	3/5/02	closed	**				
	3/11/02	closed				••	
	3/25/02	open	130			<del></del>	21
	4/2/02	open	130				21
	4/5/02	open	135	50			21
	4/19/02	open	130	49			22
	5/6/02	open	100	42			22
	5/21/02	open	105	49		•-	23.5
	6/19/02	open	90	42			24
	6/28/02	open	95	47			25
	7/10/02	open	97	41		-	25
	7/26/02	closed					
	8/6/02	open	<del></del>				21.5
	8/26/02	open	95	47			21.5
	9/16/02	open	105				21.5
	9/20/02	open	85	40	••		21.5
	10/2/02	open	75	22			21.5
	10/11/02	open	110	32			21.5
	10/16/02	open	125	103	5.0	1475	21.5
	10/31/02	open	150	70			21.5
	11/6/02	open	155	101			21.5
	11/22/02	open	145-160	115			21.5
	12/5/02	open	140	91			21.5
	12/20/02	open	>150				19.5
	1/8/03	open	>150	135			19.5
	1/13/03	closed	>150	140	6.0	80	20
	1/22/03	closed					
	1/24/03	closed					
	1/30/03	open	>150	150			21
	2/4/03	open	>150	140			21
	2/12/03	open	140				21
	3/4/03	open	150	110			21
	3/13/03	open	>150	150			21
	3/17/03	open	>150				21
	3/25/03	open	>150	130			21
	4/2/03	open	>150	>150			21

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
MW-2	11/6/01	open	80	(Menes of 1120)			27
	11/12/01	open	125				27
	11/14/01	open	85				27
	11/21/01	open	95				27
	12/6/01	open	115				28
	12/19/01	closed					
	1/17/02	closed			••		
	2/4/02	open	105				28
	2/14/02	closed					
	3/5/02	closed					
	3/11/02	closed					
	3/25/02	open	130	<u></u>			21
	4/2/02	open	130		 		21
	4/5/02	open	135	70			21
	4/19/02	open	130	55			22
	5/6/02	closed					
	5/21/02	closed	 		**		<del></del>
	6/19/02	closed	 	 			
	6/28/02	open	95	52			22
	7/10/02	•	97	51			22
	7/26/02	open	92	19			25.5
	8/6/02	open			 	 	21.5
	8/26/02	open	 95	 25			21.5
	9/16/02	open	105	35			21.5
	9/10/02	open		30		<del></del>	21.5
	10/2/02	open	85 75				21.5
		open		72 60			21.5
	10/11/02	open	110	60		2020	21.5
	10/16/02	open	125	108	8.5	2030	21.5
	10/31/02	open	150	65 05			
	11/6/02	open	155	95			21.5
	11/22/02	closed					<del></del>
	12/5/02	closed				**	~ <del>~</del>
	12/20/02	closed					
	1/8/03	closed		120	 ()	205	
	1/13/03	open	>150	130	5.0	385	19
	1/22/03	open	>150				19
	1/24/03	open	>150	140			20
	1/30/03	open	>150	120			20
	2/4/03	open	>150	75			21
	2/12/03	open	140				21
	3/4/03	open	150	93			21
	3/13/03	open	>150	140			20
	3/17/03	open	>150				20 19
	3/25/03	open	>150	97			19

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Wall (D	Do4s	Well Status	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate	Hydrocarbon Vapor Concentration	Stinger Depth (ft below TOC)
Well ID MW-3	Date 11/6/01	(open/closed)	80	· · · · · · · · · · · · · · · · · · ·	(cfm)	(ppmv) 	25
IVI VV - 3	11/12/01	open					25
		open	125			~ <del>~</del>	25
	11/14/01	open	85 05				25
	11/21/01 12/6/01	open	95				25 25
		open	115	er er			25
	12/19/01	open	110				25
	1/17/02	open	130	<del></del>			25
	2/4/02	open	105				
	2/14/02	closed					
	3/5/02	closed					
	3/11/02	closed	**				
	3/25/02	closed			••		
	4/2/02	closed					
	4/5/02	closed					
	4/19/02	closed					70
	5/6/02	open	100	28			20
	5/21/02	open	105	7			22
	6/19/02	open	90	10	•-		24
	6/28/02	open	95	11			24
	7/10/02	open	97	6			23
	7/26/02	open	92	7			23
	8/6/02	open				<b>→</b> ▼	19
	8/26/02	ореп	95	44			19
	9/16/02	open	105			~~	19
	9/20/02	open	85	50			19
	10/2/02	open	75	29			19
	10/11/02	open	110	25	-		19
	10/16/02	open	125	115	17	1286	19
	10/31/02	open	150	70			19
	11/6/02	open	155	89	~~		19
	11/22/02	open	145-160	92			19
	12/5/02	open	140	86			19.5
	12/20/02	open	>150	æ			18
	1/8/03	open	>150	145			18
	1/13/03	open	>150	150	5.6	700	17
	1/22/03	open	>150				17
	1/24/03	open	>150	>150		•-	17
	1/30/03	open	>150	>150			17
	2/4/03	open	>150	140			18
	2/12/03	open	140				18
	3/4/03	open	150	120			18
	3/13/03	open	>150	>150			18
	3/17/03	open	>150				18
	3/25/03	open	>150	145			18
	4/2/03	open	>150	>150			18

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

	<b>.</b>	Well Status	System/Stinger Vacuum	Well Annulus Vacuum	Flow Rate	Hydrocarbon Vapor Concentration	Stinger Depth
Well ID	Date	(open/closed)	(inches of H2O)	(inches of H2O)	(cfm)	(ppmv)	(ft below TOC)
MW-4	11/6/01	open	80				25
	11/12/01	open	125		-		25
	11/14/01	open	85		••		25
	11/21/01	open	95				25
	12/6/01	open	115				25
	12/19/01	open	110				25
	1/17/02	open	130				25
	2/4/02	open	105				25
	2/14/02	closed					
	3/5/02	closed					
	3/11/02	closed					
	3/25/02	closed					
	4/2/02	closed					
	4/5/02	closed					
	4/19/02	closed					
	5/6/02	open	100	26			20
	5/21/02	open	105	31		-+	21
	6/19/02	open	90	26			21
	6/28/02	closed		7-			
	7/10/02	closed					
	7/26/02	open	92	14			24.5
	8/6/02	open					19
	8/26/02	open	95	39			19
	9/16/02	open	105				19
	9/20/02	open	85	35			19
	10/2/02	open	75	34			19
	10/11/02	open	110	31		<del></del>	19
	10/16/02	open	125	100	4.7	1780	19
	10/31/02	open	150	60			19
	11/6/02		155	82			19
	11/0/02	open open	145-160	82 82			19
	12/5/02	open	140	62 77	 		19.5
	12/20/02	-	>150				18
	1/8/03	open	>150	130	 		18
		open closed		130	6.5	150	17
	1/13/03		>150				17
	1/22/03	closed	>150				19
	1/24/03	open	>150	130		~*	19
	1/30/03	open	>150	135			
	2/4/03	open	>150	120			19
	2/12/03	open	140				19
	3/4/03	open	150	104			19
	3/13/03	open	>150	150			19
	3/17/03	open	>150				19
	3/25/03	open	>150	110		#Frank	19
	4/2/03	open	>150	150			19

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-5	5/24/00	(open/crosen)	80	(menes of 1120)	(CIII)		11.64
	10/6/00		100				
	11/29/00	open	>100			4320	
	3/29/01	open	54			650	
	4/14/01	open	100				
	4/26/01	open	85				15
	5/3/01	open	80				15
	5/23/01	open	10	-+			15
	6/4/01	open	50				15
	6/21/01	open	65				15
	7/2/01	-	55	<del></del>			15
	7/16/01	open	45			 	16
		open					
	8/2/01 8/10/01	open	35 20			<del></del>	
	8/10/01 8/15/01	open	20		**	<del></del>	
	8/15/01 8/27/01	open	20 65			 	
	9/7/01	open					
		closed					
	9/14/01	closed					
	10/3/01	closed					
	10/8/01	closed	<del></del>				
	10/22/01	closed					
	10/29/01	closed					
	11/6/01	closed					
	11/12/01	closed					
	11/14/01	closed					
	11/21/01	closed					
	12/6/01	closed					
	12/19/01	open	110				20
	1/17/02	open	130				20
	2/4/02	closed					
	2/14/02	closed					
	3/5/02	closed					444
	3/11/02	closed					
	3/25/02	open	130				16
	4/2/02	open	130				16
	4/5/02	open	135	90			16
	4/19/02	open	130	72			18
	5/6/02	open	100	43			18
	5/21/02	open	105	55			19
	6/19/02	open	90	33			19.5
	6/28/02	ореп	95	48			20
	7/10/02	closed					
	7/26/02	closed					
	8/6/02	open					19
	8/26/02	open	95	27			19
	9/16/02	open	105	<del></del>			19
	9/20/02	open	85	22			19
	10/2/02	open	75	32			19
	10/11/02	open	110	28			19
	10/16/02	open	125	38	62	240	19
	10/31/02	open	150	44			19
	11/6/02	open	155	50	<del></del>		19
	11/22/02	open	145-160	26			20

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
	12/5/02	open	140	26	(ciii)	(pp.n.v)	20
	12/20/02	open	>150				18
	1/8/03	open	>150	130			18
>RW-5	1/13/03	open	>150	115	5.5	1750	17
1111	1/22/03	open	>150				17
	1/24/03	open	>150	140			17
	1/30/03	open	>150	140		<del></del>	17
	2/4/03	open	>150	128			18
	2/12/03	open	140			<b>-</b> *	18
	3/4/03	open	150	105			18
	3/13/03	open	>150	145			18
	3/17/03	open	>150				18
	3/25/03	open	>150	90	ac.	<del></del>	18
	4/2/03	open	>150	125			18
	1.2.40	Spon .	- 120	· desgr			••
RW-6	5/24/00		80				11.78
2277 07	10/6/00				<b>~-</b>		
	11/29/00	open	>100			260	
	3/29/01	open	54			2050	
	4/14/01	open	100				20
	4/26/01	closed					
	5/3/01	closed					
	5/23/01	closed					
	6/4/01	open	50				15
	6/21/01	open	65				15
	7/2/01	open	55				15
	7/16/01	open	45				16
	8/2/01	open	35				
	8/10/01	open	20				
	8/15/01	open	20				
	8/27/01	open	65				
	9/7/01	closed		==	 		
	9/1/01	closed				 	
	10/3/01	closed					
	10/3/01	closed					
	10/8/01	closed		<del></del>			
	10/22/01						
		closed					
	11/6/01	closed					<del></del>
	11/12/01	closed closed	<del></del>		<b></b>		
	11/14/01					<b></b>	
	11/21/01	closed				<b></b>	
	12/6/01 12/19/01	closed		w-			
		closed					
	1/17/02	closed					
	2/4/02	closed				<del></del>	
	2/14/02	closed					
	3/5/02	closed	120			**	•- 16
	3/11/02	open	130				16
	3/25/02	open	130				16
	4/2/02	open	12				16
	4/5/02 4/19/02	open	135 130	85 75			16 18
	A ( H H H ) ( )	open	1.70	75		<del>-</del> -	1 😾

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

	5/21/02 6/19/02 6/28/02 7/10/02 7/26/02 8/6/02 8/26/02 9/16/02 9/20/02 10/2/02 10/11/02	closed closed closed closed open open open open open	(inches of H2O) 97 92		(cfm)  	(ppmv)  	(ft below TOC)
	6/19/02 6/28/02 7/10/02 7/26/02 8/6/02 8/26/02 9/16/02 9/20/02 10/2/02 10/11/02	closed closed open open open open	 97 92	  54			
	6/28/02 7/10/02 7/26/02 8/6/02 8/26/02 9/16/02 9/20/02 10/2/02 10/11/02	closed open open open open	 97 92	 54			
	7/10/02 7/26/02 8/6/02 8/26/02 9/16/02 9/20/02 10/2/02 10/11/02	open open open open	97 92	54			
	7/26/02 8/6/02 8/26/02 9/16/02 9/20/02 10/2/02 10/11/02	open open open	92				
	8/6/02 8/26/02 9/16/02 9/20/02 10/2/02 10/11/02	open open					20
	8/26/02 9/16/02 9/20/02 10/2/02 10/11/02	open open		39			20
	9/16/02 9/20/02 10/2/02 10/11/02	•					19
	9/16/02 9/20/02 10/2/02 10/11/02	•	95	34			19
	10/2/02 10/11/02	,	105				19
	10/2/02 10/11/02	open	85	45			19
	10/11/02	open	75	30			19
		open	110				19
		open	125	54	34	644	19
	10/31/02	closed					
	11/6/02	closed		<del>-</del>			
	11/22/02		145-160	70			19.5
	12/5/02	open	140	69			19.5
	12/3/02	open	>150				18
		open		125			18
	1/8/03	open	>150	135	4.5		17
	1/13/03	open	>150	110	4.5	1550	
	1/22/03	open	>150				17
	1/24/03	open	>150	150			17
	1/30/03	open	>150	140			17
	2/4/03	open	>150	125			18
	2/12/03	open	140				18
	3/4/03	open	150	108			18
	3/13/03	open	>150	150			18
	3/17/03	open	>150				18
	3/25/03	open	>150	110			18
	4/2/03	open	>150	145			18
RW-7	5/24/00		80				12.5
	10/6/00						
	11/29/00	open	>100			0	**
	3/29/01	open	54			52	
	4/14/01	open	100				20
	4/26/01	open	85				15
	5/3/01	open	80				15
	5/23/01	open	10				15
	6/4/01	open	50				15
	6/21/01	open	65				15
	7/2/01	open	55				15
	7/16/01	open	45				16
	8/2/01	open	35				
	8/10/01	open	20				
	8/15/01	open	20	<del>-</del> -		<del></del>	
	8/27/01	open	65				
	9/7/01	closed					
	9/14/01	closed					
	10/3/01	closed				 	
	10/8/01	closed				 	
		ะเบระน					
		alasad					
	10/22/01 10/29/01	closed closed		 		 	

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
munu	11/12/01	closed	(menes of 1120)	(menes of H2O)	(CIIII)	<u>(ppm+)</u>	(1t below 10C)
	11/12/01	closed					
	11/21/01	closed					
	12/6/01	closed					<b></b>
	12/19/01	closed					
	1/17/02	closed					
	2/4/02	closed					
	2/14/02	closed					
	3/5/02	closed					
>RW-7	3/11/02	closed				w/ un	
	3/25/02	closed					
	4/2/02	closed	~-			~*	
	4/5/02	closed	~-		prode		
	4/19/02	closed					
	5/6/02	closed					**
	5/21/02	closed					
	6/19/02	closed		TO OF			
	6/28/02	closed					
	7/10/02	closed					
	7/26/02	closed				4.4	
	8/6/02	closed					
	8/26/02	closed					
	9/16/02	closed					
	9/20/02	closed					
		closed					
	10/2/02						
	10/11/02	closed			25	 16	 19
	10/16/02	closed	125	19	35	36	
	10/31/02	closed					
	11/6/02	closed					
	11/22/02	closed					
	12/5/02	closed	7.5	₹			
	12/20/02	closed					
	1/8/03	closed					
	1/13/03	closed	>150	135	4.5	25	17
	1/22/03	closed					
	1/24/03	closed				<b></b>	
	1/30/03	closed					
	2/4/03	closed	w. <del></del>				••
	2/12/03	closed					
	3/4/03	closed					
	3/13/03	closed					
	3/17/03	closed					
	3/25/03	closed					
	4/2/03	closed					
	712103	CIOSCU			- <del>-</del>	-	
RW-8	5/24/00						
	10/6/00			***			
	11/29/00	open	>100			44	
	3/29/01	·	54	 		60	
	3/29/01 4/14/01	open	100				20
		open					15
	4/26/01	open	85 80				15
	5/3/01	open	80				
	5/23/01	open	10				15

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
	6/4/01	open	50				15
	6/21/01	open	65				
	7/2/01	open	55				
	7/16/01	open	45				
	8/2/01	open	35				
	8/10/01	open	20				••
	8/15/01	open	20				
	8/27/01	open	65				**
	9/7/01	closed	<b></b>				
	9/14/01	closed					***
	10/3/01	closed					
	10/8/01	closed					
>RW-8	10/22/01	closed					
	10/29/01	closed					
	11/6/01	closed		****			
	11/12/01	closed					
	11/14/01	closed					
	11/21/01	closed					
	12/6/01	closed		<del></del>			
	12/19/01	closed	**	*	un.		
	1/17/02	closed					<del></del>
	2/4/02	closed					
	2/14/02	closed		~~		**	<b></b>
	3/5/02	closed					
	3/11/02	closed		 			18
	3/11/02	closed			 		
	4/2/02	closed			 	 	
	4/5/02	closed					
	4/19/02	closed				 	
	5/6/02	closed					
	5/21/02	closed				 	
	6/19/02	closed					<del></del>
	6/28/02	closed					
		closed					
	7/10/02 7/26/02					<del></del>	
		closed					
	8/6/02	closed	the ref				**
	8/26/02	closed					
	9/16/02	closed		<del></del>			
	9/20/02	closed		p.o.			4-
	10/2/02	closed			-1-6	<b>₽</b> ₹	
	10/11/02	closed	106		20	 1 <i>5</i>	
	10/16/02	open	125	33	29	15	19
	10/31/02	closed					
	11/6/02	closed					
	11/22/02	closed		<del></del>			
	12/5/02	closed					<del></del>
	12/20/02	closed					
	1/8/03	closed					
	1/13/03	closed	>150	140	4.0	5	18
	1/22/03	closed					
	1/24/03	closed					
	1/30/03	closed					
	2/4/03	closed					

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Data	Well Status	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
Well ID	<b>Date</b> 2/12/03	(open/closed)	(inches of H2O)	(inches of H2O)	(cim)	(ppmv)	(IL DEIOW TOC)
	3/4/03	closed closed		<del></del>			 
	3/13/03	closed				<b>#</b>	
	3/17/03	closed	<b>→-</b>				
	3/25/03	closed					<b></b>
	4/2/03	closed			**		<del></del>
RW-9	5/24/00						12.5
	10/6/00						
	11/29/00	**	>100			43	
	3/29/01	open	54			90	
	4/14/01	open	100			•-	
	4/26/01	open	85			<b></b> .	
	5/3/01	open	80				
	5/23/01	open	10				
->RW-9	6/4/01	open	50				
	6/21/01	open	65	79.9F			
	7/2/01	open	55		**		
	7/16/01	open	45				
	8/2/01	open	35	<del></del>			
	8/10/01	open	20				
	8/15/01	open	20				<b></b>
	8/27/01	open	65				
	9/7/01	closed	<u></u>				
	9/14/01	closed					
	10/3/01	closed					
	10/8/01	closed	<del>*~</del>				<b>*</b> -
	10/22/01	closed				<del></del>	
	10/29/01	closed				44.44	<u></u>
	11/6/01	closed				**	
	11/12/01	closed			 J.		
	11/14/01	closed					
	11/21/01	closed					
	12/6/01	closed					
	12/0/01	closed		<b></b>			
			~~	<b>~</b> -			<b></b>
	1/17/02	closed					
	2/4/02	closed	125				20
	2/14/02	open	125				20 20
	3/5/02	open	115	<del></del>			
	3/11/02	closed				<del></del>	
	3/25/02	closed					
	4/2/02	closed					<del></del>
	4/5/02	closed					
	4/19/02	closed				ν.	20
	5/6/02	open	100	38			20
	5/21/02	open	105	56			20
	6/19/02	open	90	47			20
	6/28/02	closed					
	7/10/02	closed					
	7/26/02	closed					
	8/6/02	open					19
	8/26/02	open	95	15			19
	9/16/02	closed					

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
	9/20/02	closed	<del></del>	<del></del>			
	10/2/02	closed					
	10/11/02	closed					
	10/16/02	closed	125	12	56	12	19
	10/31/02	closed					
	11/6/02	closed					
	11/22/02	closed					
	12/5/02	closed			·		
	12/20/02	closed					
	1/8/03	open	>150	120		~~	16
	1/13/03	open	>150	150	4.0	225	17
->RW-9	1/22/03	open	>150				17
	1/24/03	open .	>150	>150			17
	1/30/03	open	>150	140			17
	2/4/03	open	>150	135			17
	2/12/03	open	140				17
	3/4/03	open	150	105			17
	3/13/03	open	>150	>150			18
	3/17/03	open	>150				18
	3/25/03	open	>150	120			18
	4/2/03	open	>150	>150		**	18
		- r					
RW-10	5/24/00						
	10/6/00		***				
	11/29/00		>100			>10,000	
	3/29/01	open	54	p==		850	
	4/14/01	open	100				
	4/26/01	open	85				
	5/3/01	open	80				
	5/23/01	open	10				
	6/4/01	open	50				
	6/21/01	open	65				
	7/2/01	open	55			<del></del>	
	7/16/01	open	45				
	8/2/01	open	35			<u></u>	
	8/10/01	open	20				
	8/15/01	open	20			**	
	8/27/01	open	65				
	9/7/01	closed					<del></del>
	9/14/01	closed	 			**	
	10/3/01	closed	 				
	10/8/01	closed				 	
	10/22/01	closed				 	
	10/22/01	closed					
	11/6/01	closed	 	 		<del></del>	
	11/12/01	closed					- <del>-</del>
	11/12/01	closed				<del></del>	<del></del>
						<del></del>	
	11/21/01 12/6/01	closed	~~			 	
		closed	~~				
	12/19/01	closed				**	
	1/17/02	closed					
	2/4/02	closed					

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well 1D		M/all Chadra	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow W-4-	Hydrocarbon Vapor Concentration	Stinger Depth (ft below TOC)
	Date	Well Status (open/closed)			Flow Rate (cfm)	(ppmv)	
	3/5/02	open	115				20
	3/11/02	open	<b>-+</b>				20
	3/25/02	closed					
	4/2/02	closed			**		
	4/5/02	closed					
	4/19/02	closed	<del></del>				
	5/6/02	ореп	100	31			20
	5/21/02	open	105	70			20
	6/19/02	open	90	56			20
	6/28/02	closed					
	7/10/02	closed		<del></del>			
	7/26/02	closed					
	8/6/02	open		<del></del>			19
	8/26/02	closed	 				
	9/16/02	closed					<b></b>
	9/10/02	closed					
		closed					
	10/2/02						
	10/11/02	closed	125	20	40	1.0	 19
	10/16/02	closed	125	38	48	18	
	10/31/02	closed		<u></u>			
> D17/ (0	11/6/02	closed		7-			
>RW-10	11/22/02	closed					
	12/5/02	closed	<del></del>				
	12/20/02	closed					
	1/8/03	closed					<del></del>
	1/13/03	closed	>150	135	3.2	90	17
	1/22/03	closed					
	1/24/03	open	>150	>150			16
	1/30/03	open	>150	>150			16
	2/4/03	open	>150	>150			16
	2/12/03	open	140				16
	3/4/03	open	150	139			16
	3/13/03	open	>150	>150			16
	3/17/03	open	>150				16
	3/25/03	open	>150	>150			16
	4/2/03	open	>150	>150			16
RW-11	5/24/00		80				11.65
	10/6/00						
	11/29/00		>100			2280	
	3/29/01	open	54			784	
	4/14/01	ореп	100				
	4/26/01	open	85				15
	5/3/01	open	80				15
	5/23/01	open	10				15
	6/4/01	open	50				20
	6/21/01	open	65				15
	7/2/01	open	55			**	15
	7/16/01	open	45				16
	8/2/01	open	35				
	8/10/01	open	20	<del></del>		<del></del>	<del></del>
	8/15/01	open	20	<del></del>			
	8/27/01	орен	65				

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

			System/Stinger	Well Annulus			
		Well Status	Vacuum	Vacuum	Flow Rate	Vapor Concentration	Stinger Depth
Well ID	Date	(open/closed)	(inches of H2O)	(inches of H2O)	(cfm)	(ppmv)	(ft below TOC)
,, en 10	9/7/01	closed	(Menes of H2O)	(Menes of Haro)		(РРАСТ)	
	9/14/01	closed					
	10/3/01	closed					
	10/8/01	closed					
	10/22/01	closed					
	10/29/01	closed					
	11/6/01	closed					
	11/12/01	closed					
	11/14/01	closed					
	11/21/01	closed					
	12/6/01	closed					
	12/19/01	closed					
	1/17/02	closed		<b>*</b> -			
	2/4/02	closed			**	<b>64</b>	
	2/14/02	closed					
	3/5/02	closed					
	3/11/02	open					18
	3/25/02	closed					
	4/2/02	closed					
	4/5/02	closed					
	4/19/02	closed					
	5/6/02	closed	+-				
	5/21/02	closed					
	6/19/02	closed					
->RW-11	6/28/02	closed					
	7/10/02	closed					
	7/26/02	closed					
	8/6/02	closed					
	8/26/02	closed					
	9/16/02	closed					
	9/20/02	closed					
	10/2/02	closed					
	10/11/02	closed			-4-		
	10/16/02	closed	125	86	24	255	19
	10/31/02	open	150	62			19
	11/6/02	open	155	45			19
	11/22/02	open	145-160	77			19.5
	12/5/02	open	140	65			19.5
	12/20/02	open	>150				18
	1/8/03	open	>150	110			18
	1/13/03	open	>150	125	7.0	180	16
	1/22/03	open	>150	**			17
	1/24/03	open	>150	155			17
	1/30/03	open	>150	150			17
	2/4/03	open	>150	142			17
	2/12/03	open	140				17
	3/4/03	open	150	106		+-	17
	3/13/03	open	>150	155			17
	3/17/03	open	>150				17
	3/25/03	open	>150	115			17
	4/2/03	open	>150	148			17

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

		Well Status	System/Stinger Vacuum	Well Annulus Vacuum	Flow Rate	Hydrocarbon Vapor Concentration	Stinger Depth
Well ID	Date	(open/closed)	(inches of H2O)	(inches of H2O)	(cfm)	(ppmv)	(ft below TOC)
RW-12	5/24/00						
	10/6/00						
	11/29/00	open	>100			24	
	3/29/00	open	54			72	
	4/14/01	open	100				
	4/26/01	open	85				15
	5/3/01	open	80				15
	5/23/01	open	10				15
	6/4/01	open	50				15
	6/21/01	open	65				15
	7/2/01	open	55				15
	7/16/01	open	45				16
	8/2/01	open	35				
	8/10/01	open	20				
	8/15/01	open	20				
	8/27/01	open	65				
	9/7/01	closed					
	9/14/01	closed					
	10/3/01	closed			**		
	10/8/01	closed					
	10/22/01	closed	*				
	10/29/01	closed					
	11/6/01	closed			<b>-</b> -		**
	11/12/01	closed					
	11/14/01	closed					
	11/21/01	closed				<b></b>	
	12/6/01	closed					
	12/19/01	closed				**	
	1/17/02	closed					
	2/4/02	closed					
	2/14/02	closed	 			<del></del>	
	3/5/02	closed					
	3/11/02	closed		<del></del>	 		
	3/11/02						16
	4/2/02	open	130 130			 	16
		open		 97			16
	4/5/02 4/19/02	open	135	97 75			18
		open	130	/3		<del></del>	
	5/6/02	closed				<del></del>	
	5/21/02	closed	44				<del></del>
	6/19/02	closed	 0.5	1.6			20
	6/28/02	open	95 97	16			20
	7/10/02	open	97 92	5			20
	7/26/02	open	92	5			20
	8/6/02	open	 or			<del></del>	19
	8/26/02	open	95 105	6			19
	9/16/02	open	105				19
	9/20/02	open	85	6			19
	10/2/02	open	75	4			19
	10/11/02	open	110	4			19
	10/16/02	closed	125	1	20	75	19
	10/31/02	closed					
	11/6/02	closed					
	11/22/02	closed					

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H2O)	Well Annulus Vacuum (inches of H2O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
	12/5/02	closed					
	12/20/02	closed	<del>-</del> -				
	1/8/03	closed					
>RW-12	1/13/03	closed	>150	115	4.5	20	17
	1/22/03	closed					4-4
	1/24/03	closed					
	1/30/03	open	>150	145			17
	2/4/03	open	>150	135			17
	2/12/03	open	140				17
	3/4/03	open	150	115			17
	3/13/03	open	>150	>150			17
	3/17/03	open	>150	-			17
	3/25/03	open	>150	150			17
	4/2/03	open	>150	>150			17
	2. 33	√ <b>γ</b> γγ.1	120	- 120			- <i>'</i>
RW-13	5/24/00	27	80				12.59
	10/6/00			<del></del>			
	11/29/00		>100			77	
	3/29/01	open	54			124	
	4/14/01	open	100				
	4/26/01	<u> </u>	85				
	5/3/01	open	80				<del></del>
	5/23/01	open					<del></del>
	6/4/01	open	10				
		open	50				<b></b>
	6/21/01	open	65				
	7/2/01	open	55			••	
	7/16/01	open	45				
	8/2/01	open	35				
	8/10/01	open	20				
	8/15/01	open	20				
	8/27/01	open	65				
	9/7/01	closed					
	9/14/01	closed					
	10/3/01	closed			414		
	10/8/01	closed					
	10/22/01	closed					**
	10/29/01	closed					
	11/6/01	closed			~~	Servi	
	11/12/01	closed					
	11/14/01	closed					
	11/21/01	closed					**
	12/6/01	closed					
	12/19/01	closed					
	1/17/02	closed				•-	
	2/4/02	closed					
	2/14/02	open	125				20
	3/5/02	open	115				20
	3/11/02	open					16
	3/25/02	closed					
	4/2/02	closed					~~
	4/5/02	closed					
	4/19/02	closed					<b>~~</b>
	11.11.02	CIOSCU	=		_		

## **CAMBRIA**

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Man re	Dat	Well Status	System/Stinger Vacuum	Well Annulus Vacuum	Flow Rate	Hydrocarbon Vapor Concentration	Stinger Depth (ft below TOC)
Well ID	Date	(open/closed)	(inches of H2O)	(inches of H2O)	(cfm)	(ppmv)	<u> </u>
	5/21/02	closed					<b>-</b> -
	6/19/02	closed					
	6/28/02	closed					
	7/10/02	closed	~4*				
	7/26/02	closed					
	8/6/02	closed			••		
->RW-13	8/26/02	closed				<del></del>	
	9/16/02	closed	<del></del>				
	9/20/02	closed					
	10/2/02	closed		**			
	10/11/02	closed					
	10/16/02	closed	125	29	41	7	21.5
	10/31/02	closed					
	11/6/02	closed					
	11/22/02	closed					
	12/5/02	closed					
	12/20/02	closed					
	1/8/03	closed		~~			
	1/13/03	closed	>150	110	8.0	2	16
	1/22/03	closed					
	1/24/03	closed			••		
	1/30/03	closed					
	2/4/03	closed					
	2/12/03	closed					
	3/4/03	closed					
	3/13/03	closed					
	3/17/03	closed					
	3/25/03	closed					
	4/2/03	closed			+-		
RW-14	5/24/00		80				12.33
	10/6/00		100				
	11/29/00		>100			5830	
	3/29/01	open	54			120	
	4/14/01	open	100				
	4/26/01	open	85				
	5/3/01	open	80	**		*-	***
	5/23/01	open	10				
	6/4/01	open	50			÷=	
	6/21/01	open	65				
	7/2/01	open	55				
	7/16/01	open	45				
	8/2/01	open	35				
	8/10/01	open	20	**			
	8/15/01	open	20				
	8/27/01	open	65				
	9/7/01	closed		a.a.			
	9/14/01	closed					
	10/3/01	closed					
	10/8/01	closed					
	10/22/01	closed					
	10/22/01	closed	 			<del></del>	
	11/6/01	closed	 	<del></del>		 	

## **CAMBRIA**

Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

		Well Status	System/Stinger Vacuum	Well Annulus Vacuum	Flow Rate	Hydrocarbon Vapor Concentration	Stinger Depth
Well ID	Date	(open/closed)	(inches of H2O)	(inches of H2O)	(cfm)	(ppmv)	(ft below TOC)
	11/12/01	closed		•-			
	11/14/01	closed					
	11/21/01	closed					
	12/6/01	closed					
	12/19/01	closed					
	1/17/02	closed				**	
	2/4/02	closed			**		
	2/14/02	open	125				20
	3/5/02	open	115				20
>RW-14	3/11/02	closed					
	3/25/02	closed					
	4/2/02	closed					
	4/5/02	closed					
	4/19/02	closed					
	5/6/02	closed					
	5/21/02	closed					
	6/19/02	closed					
	6/28/02	closed					
	7/10/02	closed				•-	<del></del>
	7/26/02	closed			~~		
	8/6/02	closed					
	8/26/02	closed					
	9/16/02	closed					••
	9/20/02	closed	 				
	10/2/02	closed	 				 
	10/11/02	closed	 		 	 	 
	10/11/02		125			535	19
	10/10/02	open		80	14		19
		open	150	18		**	
	11/6/02	closed					~~
	11/22/02	closed					
	12/5/02	closed					~#
	12/20/02	closed					
	1/8/03	open	>150	140			14
	1/13/03	closed	>150	90	7.0	35	16
	1/22/03	closed				and the	
	1/24/03	closed					
	1/30/03	closed					
	2/4/03	closed					**
	2/12/03	closed					
	3/4/03	closed					
	3/13/03	closed					
	3/17/03	closed					
	3/25/03	closed					
	4/2/03	closed					

### Notes:

<sup>-- =</sup> Data not available or not collected



## **APPENDIX A**

**Groundwater Monitoring Field Data Sheets** 

# **Groundwater Monitoring Field Sheet**

Well ID	Time	DTP	DTW	Product Thickness	Amount of Product Removed	Casing Diam.	Comment
MW-1	4:05		14.80				,
MW-2	!		13.60				
MW-3	9:20	-	11.43				
MW-3 MW-4	9:15		11-75				
							,

Project Name: Worthing ton	Project Number/Task: 130-0/05 /
o and	
Measured By:	Date: /-13-03
Measured by.	

•	ELL SA	MPLING	rok.			
Project Name: Losthington Cambria Mgr. RAS					MW-I	
Project Number: 130-0105	Date: /_	13-03		Well Yie		
Site Address: 30 5 5 35 <sup>th</sup> St.	Sampling Mo	ethod:		Well Dia	meter: 4 🛭 pvc	
Oakland Ca	Disposable Bailer		Technician(s):			
Initial Depth to Water: 14.80 Total Well Depth:				Water Column Height:		
Volume/ft: 1 Casing Volume:				3 Casing Volumes:		
Purging Device: Rendiation System	Did Well De	water?:		Total Gallons Purged:		
Start Purge Time:	Stop Purge T	Time:		Total Time:		
Casing Volume = Water column height x Volume/ ft.			Wel	1 Diam. 2" 4" 6"	Volume/ft (gallons) 0.16 0.65 1.47	
Time Casing Volume	Temp. (°C)	рН		ond. uS)	Comments	

Time	Casing Volume	Temp. (°C)	рН	Cond. (uS)	Comments
15 mi	n purg	e with	System		
		,			·
			<u> </u>		

Fe =	mg	ŗ/L	ORP =	m <sup>v</sup>	$\mathbf{V} \qquad \mathbf{DO} = o \cdot 33$	mg/L
Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-1	1-13-03	9:50	f	HCI	TPHS BTEX MTBE	8590 8012/8050
		<u>.</u>				

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MW-2	
Project Number: 130-0105	Date: /-/3-03	Well Yield:	
Site Address: 30 5 5 35 th St.	Sampling Method:	Well Diameter: 4 [] pvc	
Oakland, Ca	Disposable Bailer	Technician(s):	
Initial Depth to Water: 13.60	Total Well Depth:	Water Column Height:	
Volume/ft:	1 Casing Volume:	3 Casing Volumes:	
Purging Device: Rendiation System	Did Well Dewater?:	Total Gallons Purged:	
Start Purge Time:	Stop Purge Time:	Total Time:	

1 Casing Volume = Water column height x Volume/ ft.

Well Diam,	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. (°C)	рН	Cond. (uS)	Comments
/5 mi	n purg	2 with	System		· ·

Fe = mg/L ORP = mV DO = 0.39 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	1-13-03	10:05	3 voa 1 Amb	HCI	TPHY BTEX MTBE	8590 8012/8050
					·	

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MW-3	
Project Number: 130-0105	Date: /-/3-03	Well Yield:	
Site Address: 30 5 5 35 th St.	Sampling Method:	Well Diameter: 2 1 pvc	
Oakland, Ca	Disposable Bailer	Technician(s):	
Initial Depth to Water: 11.43	Total Well Depth:	Water Column Height:	
Volume/ft:	1 Casing Volume:	3 Casing Volumes:	
Purging Device: Rendiation System	Did Well Dewater?:	Total Gallons Purged:	
Start Purge Time:	Stop Purge Time:	Total Time:	

Time	Casing Volume	Temp. (°C)	рН	Cond. (uS)	Comments
/5 mi	n purg	2 with	System		
		,			·

Fe =	mg	g/L	ORP =	m <sup>7</sup>	$\mathbf{V} \qquad \mathbf{DO} = 0.31$	mg/L
Sample ID	Date	Time	Container Type	Preservative	Analyteš	Analytic Method
MN-3	1-13-03	10:20	3 VOQ 1 Amb	MCI	TPHY BTEX MTDE	8580 8012/8050
		-				

Project Name: Lox thingson	Cambria Mgr: RAS	Well ID: MW-LI
Project Number: 130-0105	Date: /-/3-03	Well Yield:
Site Address: 30 5 5 35 th St.	Sampling Method:	Well Diameter: 2 ll pvc
Oakland, Ca	Disposable Bailer	Technician(s):
Initial Depth to Water: 11.75	Total Well Depth:	Water Column Height:
Volume/ft:	1 Casing Volume:	3 Casing Volumes:
Purging Device: Rendiation System	Did Well Dewater?:	Total Gallons Purged:
Start Purge Time:	Stop Purge Time:	Total Time:

| Casing Volume = Water column height x Volume/ft. | Well Diam. | Volume/ft (gallous) | 2" | 0.16 | 4" | 0.65 | 6" | 1.47

Time	Casing Volume	Temp. (°C)	рН	Cond. (uS)	Comments
/5 mi	n purg	e with	system		
		1			

Fe =	mg	g/L	ORP =	m\	$\mathbf{DO} = 0.28$	mg/L
Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MH-L	1-13-03	10:35	3 voa 1 Amb	MCI	TPHY BTEX MTBE TPHA	8590 8012/8050
		· · · · · · · · · · · · · · · · · · ·				

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	MICCAN	110 2 <sup>nd</sup> A	VENUE S	CII OUTH	107. .#D7	נוג ט	NC	•	98-1	1	Ľ	1	ቦሰ	1 C	)	ſĽ	RN	[A]	RO	UN	D'	CIV	<b>Æ</b> :		_ [					_				<b>2</b>	
an i i		PACHE	CO, CA 94:	553-55	60					L	Ĺ	, 1	U	4	217	 		:l	10 6	_	<b>3</b> 7			NT.	RU	ISH	2	24 F	IOU	ЛR	48 I	JOH	UR 5	DAY	,
Report To: Qny	ne: (925) 798	3-1620		יים ווי מ	<u> </u>	ax:	(92	5) 7	98-1	162	2		<del>- 1</del>	<u> </u>	ועב	CK	equ	irec						INC	)										
Company: Cambr.	1 Sche	ental Tack	1	3111 1	o: <b>C</b>	د۵	ωj	<u>a</u> 5	۵.د	Ŀ	Δ	<u> -</u> _	ec	4	· T	<u>}                                    </u>	7	1	An	alys	is R	equ	est				7	_	ㄴ	Ot	her		Com	nents	
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	ville, CA 946	508	E-mail:											┨╓	۔ ا	FB			١,		.			0											
Tele: 510-450			Fax: 510	0-450	-8295				-					- 5		38	=	<u> </u>			Ì			831					l						
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Project #: \30-	3055	35th	54.	()a	k۱۸	<u> </u>	<u></u>	~	<del>3 '</del>	<u>, , , , , , , , , , , , , , , , , , , </u>				֓֞֞֞֓֓֓֓֓֓֓֟֞֓֓֓֟֟֓֓֓֟֟֓֓֡֡֡֡֡֡֡֡֡֡֡֡֡֡	נו (	Se C	ons (		020		눌			. 182			6			İ			l		
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A				ST.	Type Containers					┪	1,00		T T	၂ ္ဗိ	8)	Ę	l mg	10	<u> </u>	8	8	407	02	's b	als	<u>্</u> য	421/								
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### **APPENDIX B**

Analytical Results for Quarterly Groundwater Sampling

 d	McCampbell	Analytical	Inc.
	-	-	

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone: 925-798-1620 Fax: 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105; Worthington	Date Sampled: 01/13/03
6262 Hollis St.		Date Received: 01/14/03
71 (2) 04(00	Client Contact: Ron Scheele	Date Reported: 01/17/03
Emeryville, CA 94608	Client P.O.:	Date Completed: 01/17/03

WorkOrder: 0301156

January 17, 2003

Dear Ron:

#### Enclosed are:

- 1). the results of 4 analyzed samples from your #130-0105; Worthington project,
- 2). a QC report for the above samples
- 3), a copy of the chain of custody, and
- 4). a bill 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 please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Angela Rydelius, Lab Manager

Yours truly,

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105; Worthington	Date Sampled: 01/13/03
6262 Hollis St.		Date Received: 01/14/03
T	Client Contact: Ron Scheele	Date Extracted: 01/15/03
Emeryville, CA 94608	Client P.O.:	Date Analyzed: 01/15/03

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

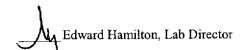
Extraction method: SW5030B Analytical methods: SW8021B/8015Cm

Work Order: 0301156

Extraction 1	nethod: SW5030B			Analytical methods: SW8021B/8015Cm				WOIK	Order: O.	30(130
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-I	w	20,000,a	ND<500	2300	480	300	2100	100	103
002A	MW-2	w	32,000,a,h	ND<1000	4500	1600	920	3600	100	109
003A	MW-3	w	21,000,a,h	ND<500	2400	2300	390	3000	100	92.8
004A	MW-4	w	35,000,a,h	ND<800	5100	1500	510	4500	100	107
					-				-	
										<u> </u>
Reporting	g Limit for DF =1; s not detected at or	W	50	5.0	0.5	0.5	0.5	0.5	1	μg/L
	he reporting limit	S	NA	NA	NA	NA	NA	NA	] ]	mg/Kį

\*water and vapor samples are reported in μg/L, soil and sludge samples in mg/kg, wipe samples in μg/wipe, and TCLP extracts in μg/L.

<sup>+</sup>The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.



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

d	McCampbell	Analytical	Inc.
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Telephone: 925-798-1620 Fax: 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105; Worthington	Date Sampled: 01/13/03
6262 Hollis St.		Date Received: 01/14/03
Emanuella CA 04600	Client Contact: Ron Scheele	Date Extracted: 01/14/03
Emeryville, CA 94608	Client P.O.:	Date Analyzed: 01/15/03-01/16/03

#### Diesel Range (C10-C23) Extractable Hydrocarbons with Silica Gel Clean-Up\*

	510C	•	cal methods: SW8015C		030115
Lab ID	Client ID	Matrix	TPH(d)	DF	% S:
0301156-001B	MW-1	w	5300,d,b	l	97.4
0301156-002B	MW-2	w	14,000,d,b,g,h	1	98.8
0301156-003B	MW-3	w	6300,d,b,g,h	1	112
0301156-004B	MW-4	W	15,000,d,b,g,h	1	102
1					
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	·· <del>····</del>				: T
Reporting Li	mit for DF =1; of detected at or	W S	50 NA		g/L NA

above the reporting limit		<del>-</del>		
<u></u>				
* water and vapor samples are reported in	ı μg/L	, wipe san	mples in ug/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liqui	id samples in
mg/L, and all TCLP / STLC / SPLP extra	cts in	ue/L		

<sup>+</sup>The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) unknown medium boiling point pattern that does not appear to be derived from diesel; f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; k) kerosene/kerosene range; l) bunker oil; m) fuel oil; n) stoddard solvent / mineral spirit.



<sup>#</sup> cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0301156

EPA Method: SW802	21B/8015Cm E	xtraction:	SW5030E	3	BatchID:	5623	s	piked Sampl	e ID: N/A	
	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
Compound	µg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	N/A	60	N/A	N/A	N/A	93.1	99.6	6.83	80	120
MTBE	N/A	10	N/A	N/A	N/A	88.8	92.2	3.76	80	120
Benzene	N/A	10	N/A	N/A	N/A	95.3	98.3	3.11	80	120
Toluene	N/A	10	N/A	N/A	N/A	97.2	103	6.01	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	95.2	99.3	4.26	80	1 <b>2</b> 0
Xylenes	N/A	30	N/A	N/A	N/A	99.7	103	3.61	80	120
%SS:	N/A	100	N/A	N/A	N/A	94.6	93.3	1.40	80	120

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

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

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.

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

<sup>\*</sup> MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

NONE

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

### QC SUMMARY REPORT FOR SW8015C

Matrix: W

WorkOrder: 0301156

EPA Method: SW8015C	Ε	xtraction:	SW35100	>	BatchID:	5624	S	piked Sampl	le ID: N/A	
	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
Compound	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(d)	N/A	7500	N/A	N/A	N/A	101	102	0.184	70	130
%SS:	N/A	100	N/A	N/A	N/A	94.3	94	0.382	70	130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

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

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 lanalyte content.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

-<del>le</del>te

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	McCAN	IPBELL 110 2 <sup>nd</sup> A'	J ANAI	JYT) Meri	ICAI	_ IN	IC.						ĺ		ΓUΙ	RN	ΑF	ROT	JN.	DΊ	ΓIM	Œ:			)		[				)		X	
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Tele: 510 -450- Project #: 130 - Project Location: Sampler Signature:	\$	L.K.	<u> </u>				<del>``</del>				•		2802	اعائنة مزاني	Grea	carb		12 / 8		8		-	625			/601					-			
		SAME	LING		Ş	1	MAT	RIX		ME PRES	THO	)D	Gas (602/8020+	TPH as Diese! (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)		BTEX ONLY (EPA 602 / 8020)		EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260		PAH's / PNA's by EPA 625 / 8270 /			Lead (7240/7421/239.2/6010)								
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## **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

110 Second Avenue South, #D7 Pacheco, CA 94553-5560 (925) 798-1620

WorkOrder: 0301156

Client:

Cambria Env. Technology

6262 Hollis St.

Emeryville, CA 94608

TEL:

(510) 450-1983

FAX: ProjectNo: (510) 450-8295 #130-0105; Worthington

PO:

Date Received:

1/14/03

Date Printed:

1/14/03

Sample ID	ClientSamplD	Matrix	Collection Date	Hold	<>	SW8015C			**************************************	 	
0301156-001	MW-1	Water	1/13/03 9:50:00 AM		Α	В	Α				
0301156-002 0301156-003 0301156-004	MW-2 MW-3 MW-4	Water Water Water	1/13/03 10:05:00 AM 1/13/03 10:20:00 AM 1/13/03 10:35:00 AM			В В В	A	· · · · · · · · · · · · · · · · · · ·			

Prepared by: Sonia Valles

#### Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.



### **APPENDIX C**

Analytical Results for TPE System Operation

McCampbell	Analytical	Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105; Worthington	Date Sampled: 01/08/03
6262 Hollis St.		Date Received: 01/10/03
- W GL 04600	Client Contact: Ron Scheele	Date Reported: 01/17/03
Emeryville, CA 94608	Client P.O.:	Date Completed: 01/17/03

WorkOrder: 0301110

January 17, 2003

#### Dear Ron:

### Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105; Worthington project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill 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 please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Angela Rydelius, Lab Manager

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105; Worthington	Date Sampled: 01/08/03
6262 Hollis St.		Date Received: 01/10/03
T 111- CIA 04C09	Client Contact: Ron Scheele	Date Extracted: 01/10/03-01/11/03
Emeryville, CA 94608	Client P.O.:	Date Analyzed: 01/10/03-01/11/03

Extraction metho	d: SW5030B			Analytical	methods: SW8021	B/8015Cm		Work (	Order: 0	301110
Lab ID (	INF W 3500,a 140 120	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS			
001A	INF	w	3500,a	140	120	300	48	700	2	102
002A	EFF-I	W	ND	ND	ND	ND	ND	ND	1	101
										1
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								<del></del>	100	
Reporting Lim		W	50	5.0	0.5	0.5	0.5	0.5	1	μg/
ND means not above the rep		S	NA	NA	NA	NA	NA	NA	1	mg/F

water and vapor samples are reported in µg/L, soil and sludge samples in mg/kg, wipe samples in µg/wipe, and TCLP extracts in µg/L.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.



### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0301110

EPA Method: SW802	21B/8015Cm E	xtraction:	SW5030E	3	BatchID: 9	5600	S	piked Sampl	e ID: 03011	07-001A
O	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
Compound	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	104	107	3.73	100	96.7	3.33	80	120
МТВЕ	ND	10	103	92.7	10.6	90.5	94.3	4.09	80	120
Benzene	0.5772	10	100	98	2.02	97.1	103	5.99	80	120
Toluene	ND	10	101	101	0.0441	99.7	106	5.92	80	120
Ethylbenzene	0.93	10	91.7	93.3	1.57	95.4	98.4	3.17	80	120
Xylenes	ND	30	96.7	96.7	0	99.3	103	3.95	80	120
%SS:	115	100	102	103	1.16	91.6	97.9	6.61	80	120

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

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.	Tele: (510) 450-19	816, CA 9400	/6					<u> </u>					_   [		138	.						=			7	ŀ	li	1	1		¥ .	
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RESULTS



110 Second Avenue South, #D7 Pacheco, CA 94553-5560 (925) 798-1620

## **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

WorkOrder: 0301110

Client:

Cambria Env. Technology

6262 Hollis St.

Emeryville, CA 94608

TEL:

(510) 450-1983

FAX: ProjectNo: (510) 450-8295

PO:

#130-0105; Worthington

Date Received:

1/10/03

Date Printed:

1/10/03

Sample ID	ClientSamplD	Matrix	Collection Date	Hold	8021B/8015	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	Requested		
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0301110-002	EFF-1	Water	1/8/03 3:30:00 PM	:	A				
0301110-003	EFF-2	Water	1/8/03 3:30:00 PM	✓	A				

Prepared by: Elisa Venegas

#### Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

<b>1</b>	110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
McCampbell Analytical Inc.	Telephone: 925-798-1620 Fax: 925-798-1622
i i i composit i mary tront and	http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105; Worthington	Date Sampled: 01/08/03
6262 Hollis St.		Date Received: 01/10/03
	Client Contact: Ron Scheele	Date Reported: 01/14/03
Emeryville, CA 94608	Client P.O.:	Date Completed: 01/15/03

WorkOrder: 0301116

January 15, 2003

Dear Ron:

#### Enclosed are:

- 1), the results of 2 analyzed samples from your #130-0105; Worthington project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill 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 please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Angela Rydelius, Lab Manager

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105; Worthington	Date Sampled: 01/08/03
6262 Hollis St.		Date Received: 01/10/03
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Extracted: 01/10/03-01/11/03
	Client P.O.:	Date Analyzed: 01/10/03-01/11/03

Extraction n	nethod: SW5030I	3		Analytical r	methods: SW80211	3/8015Cm		Work (	Order: 0	301116
Lab ID	Client ID	Matrix	TPH(g)	МТВЕ	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	A	1700,a	ND<15	23	30	4.4	37	10	112
002A	EFF	A	ND	ND	ND	ND	ND	ND	ı	93.4
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ppm (mg/L)	to ppmv (	(ul/L) conversion	for TPH(g) assur	mes the molecula	r weight of gasoli	ne to be equal to	that of hexane.		
Reporting Limit for DF =1; ND means not detected at or	A	10	1.5	0.15	0.15	0.15	0.25	l	uL/L
above the reporting limit	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

\*water and vapor samples are reported in μg/L, soil and sludge samples in mg/kg, wipe samples in μg/wipe, and TCLP extracts in μg/L.

<sup>+</sup>The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.



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

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: A

WorkOrder: 0301116

EPA Method: SW8021B/	/8015Cm I	Extraction:	SW5030E	3	BatchID:	5604	s	piked Samp	le ID: 0301	114-001A
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
Compound	uL/L	uL/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	117	112	3.85	109	110	1.29	80	120
мтве	ND	10	106	92.1	14.0	86.5	88.1	1.90	80	120
Benzene	ND	10	116	112	3.21	109	111	1.95	80	120
Toluene	ND	10	117	107	8.42	104	106	1.13	80	120
Ethylbenzene	ND	10	116	113	2.46	109	111	1.19	80	120
Xylenes	ND	30	113	110	2.99	103	107	3.17	80	120
%SS:	112	100	116	103	12.3	101	103	1.31	80	120

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

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

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.

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

MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

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## **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

WorkOrder: 0301116

Client:

Cambria Env. Technology

6262 Hollis St.

Emeryville, CA 94608

TEL:

(510) 450-1983

FAX:

(510) 450-8295

ProjectNo: PO: #130-0105; Worthington

Date Received:

1/10/03

Date Printed:

1/10/03

Sample ID	ClientSamplD	Matrix	Collection Date	Hold 8021B/8015	Requested Tests	
0301116-001 0301116-002	INF EFF	Air Air	1/8/03 6:00:00 PM 1/8/03 6:00:00 PM	A		

Prepared by: Elisa Venegas

#### Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105-350;	Date Sampled: 02/04/03
5900 Hollis Street, Suite A	Worthington	Date Received: 02/05/03
Emorraille CA 04609	Client Contact: Ron Scheele	Date Reported: 02/12/03
Emeryville, CA 94608	Client P.O.:	Date Completed: 02/12/03

WorkOrder: 0302036

February 12, 2003

#### Dear Ron:

#### Enclosed are:

- 1). the results of 3 analyzed samples from your #130-0105-350; Worthington project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill 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 please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Angela Rydelius, Lab Manager

Yours truly,

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105-350;	Date Sampled: 02/04/03
5900 Hollis Street, Suite A	Worthington	Date Received: 02/05/03
T (11) CIA 04/09	Client Contact: Ron Scheele	Date Extracted: 02/06/03-02/11/03
Emeryville, CA 94608	Client P.O.:	Date Analyzed: 02/06/03-02/11/03

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

Extraction r	method: SW5030B	, and the second second second second second second second second second second second second second second se	, ,	Analytical	methods: SW8021	B/8015Cm		Work (	Order: 0:	302036
Lab ID	Client ID	Matrix	TPH(g)	мтве	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	w	1100,a		51	74	14	190	5	88.5
002A	EFF-1	w	ND		ND	ND	ND	ND	1	99.1
003A	EFF-2	w	ND		ND	ND	ND	ND	1	95.6
-										
				2						
		-								
	. M. —									
Reporting	Limit for DF =1; not detected at or	w	50	5.0	0.5	0.5	0.5	0.5	1	μg/I
	not detected at or ne reporting limit	S	NA	NA	NA	NA	NA	NA	1	mg/K

water and vapor samples are reported in µg/L, soil and sludge samples in mg/kg, wipe samples in µg/wipe, and TCLP extracts in µg/L.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

Angela Rydelius, Lab Manager

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0302036

EPA Method: SW802	1B/8015Cm E	Extraction: SW5030B			BatchID:	5805	Spiked Sample ID: N/A					
Company	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)		
Compound	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High		
TPH(gas)	N/A	60	N/A	N/A	N/A	101	103	2.53	80	120		
MTBE	N/A	10	N/A	N/A	N/A	83.2	90.3	8.12	80	120		
Benzene	N/A	10	N/A	N/A	N/A	95.2	97.8	2.69	80	120		
Toluene	N/A	10	N/A	N/A	N/A	90.2	93.2	3.20	80	120		
Ethylbenzene	N/A	10	N/A	N/A	N/A	96.7	99.4	2.75	80	120		
Xylenes	N/A	30	N/A	N/A	N/A	93	96.7	3.87	80	120		
%SS:	N/A	100	N/A	N/A	N/A	95.4	95.7	0.335	80	120		

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

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

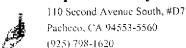
N/A = not enough sample to perform matrix spike and matrix spike duplicate.

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.

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

MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

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	Date	Time	# Conta	Type Co	Water	Soil	Shrdge	Other F	HCI	HING	UTINET PH	TPH as Diesel (8015)	Total Petroleum	Total Petroleum, Hydrocarbons (418.1)	0108 / 109 vara	HTEX.CIMEY (EPA 602 / 8020) EPA 6047-8080	EPA 608 / 8080 PC IN SOMILY	EPA 624 / 8240	EPA 625 / 8270	PAH's / PNA's by EPA	CAM-17 Metals	LUFT 5 Metals	d (7240					"	1
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## **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

WorkOrder: 0302036

Client:

Cambria Env. Technology 5900 Hollis Street, Suite A Emeryville, CA 94608 TEL:

PO:

(510) 450-1983 (510) 450-8295

FAX: ProjectNo:

#130-0105-350; Worthington

Date Received:

2/5/03

Date Printed:

2/5/03

Sample ID	ClientSamplD	Matrix	Collection Date	Hold	8021B/8015	Requested Tests	:
0302036-001 0302036-002 0302036-003	INF EFF-1 EFF-2	Water Water Water	2/4/03 12:00:00 PM 2/4/03 12:00:00 PM 2/4/03 12:00:00 PM	<b>*</b>	A A A		

Prepared by: Melissa Valles

#### Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

d	McCampbell	Analytical	Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105-350;	Date Sampled: 02/04/03
5900 Hollis Street, Suite A	Worthington	Date Received: 02/05/03
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Reported: 02/12/03
	Client P.O.:	Date Completed: 02/12/03

WorkOrder: 0302035

February 12, 2003

#### Dear Ron:

#### Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-350; Worthington project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill 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 please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Angela Rydelius, Lab Manager

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105-350;	Date Sampled: 02/04/03
5900 Hollis Street, Suite A	Worthington	Date Received: 02/05/03
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Extracted: 02/05/03
Linery vine, Ozi 54000	Client P.O.:	Date Analyzed: 02/05/03

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

Extraction	Extraction method: SW5030B Analytical methods: SW8021B/8015Cm Work Order: 0302035													
Lab ID	Client ID	Matrix	TPH(g)	МТВЕ	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS				
001A	INF	A	910,a	ND<15	20	22	3.8	28	4	114				
002A	EFF	A	ND	ND	ND	ND	ND	ND	1	96				
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ppm (mg/L)	to ppmv	(ul/L) conversion	for TPH(g) assur	nes the molecula	r weight of gasoli	ne to be equal to	that of hexane.		
Reporting Limit for DF =1; ND means not detected at or	A	10	1.5	0.15	0.15	0.15	0.25	1	uL/L
above the reporting limit	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

<sup>\*</sup>water and vapor samples are reported in µg/L, soil and sludge samples in mg/kg, wipe samples in µg/wipe, and TCLP extracts in µg/L.

<sup>+</sup>The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.



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

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: A

WorkOrder: 0302035

EPA Method: SW802	21B/8015Cm E	xtraction:	SW5030B		BatchID:	5805	Spiked Sample ID: N/A					
Comment	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)		
Compound	uL/L	uL/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High		
TPH(gas)	N/A	60	N/A	N/A	N/A	101	103	2.53	80	120		
МТВЕ	N/A	10	N/A	N/A	N/A	83.2	90.3	8.12	80	120		
Benzene	N/A	10	N/A	N/A	N/A	95.2	97.8	2.69	80	120		
Toluene	N/A	10	N/A	N/A	N/A	90.2	93.2	3.20	80	120		
Ethylbenzene	N/A	10	N/A	N/A	N/A	96.7	99.4	2.75	80	120		
Xylenes	N/A	30	N/A	N/A	N/A	93	96.7	3.87	80	120		
%SS:	N/A	100	N/A	N/A	N/A	95.4	95.7	0.335	80	120		

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

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

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.

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

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

<sup>\*</sup> MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

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Sent By: McCampbell Analytical, Inc.;



110 Second Avenue South, #D7 Pacheco, CA 94553-5560 (925) 798-1620

## **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

WorkOrder: 0302035

Client:

Cambria Env. Technology 5900 Hollis Street, Suite A Emeryville, CA 94608 TEL:

(510) 450-1983

FAX; ProjectNo: (510) 450-8295 #130-0105-350; Worthington

PO:

Date Received:

2/5/03

Date Printed:

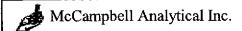
2/5/03

					Requested Tests
Sample ID	ClientSampID	Matrix	Collection Date	Hold 8021B/8015	
0302035-001	INF	Air	2/4/03 11:00:00 AM	А	:
0302035-002	EFF	Air	2/4/03 11:00:00 AM	A	

Prepared by: Melissa Valles

#### Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.



110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone: 925-798-1620 Fax: 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105-350;	Date Sampled: 03/04/03
5900 Hollis St, Suite A	Worthington	Date Received: 03/05/03
F	Client Contact: Gretchen Hellmann	Date Reported: 03/10/03
Emeryville, CA 94608	Client P.O.:	Date Completed: 03/10/03

WorkOrder: 0303048

March 10, 2003

### Dear Gretchen:

#### Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-350; Worthington project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4), a bill 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 please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Angela Rydelius, Lab Manager

Yours truly,

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone: 925-798-1620 Fax: 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105-350;	Date Sampled: 03/04/03
5900 Hollis St, Suite A	Worthington	Date Received: 03/05/03
Emeryville, CA 94608	Client Contact: Gretchen Hellmann	Date Extracted: 03/07/03-03/08/03
Emeryvine, eri 94000	Client P.O.:	Date Analyzed: 03/07/03-03/08/03

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

Extraction	method: SW5030B	_	, ( ,	•	methods: SW8021		ILII DI EX AIIU		Order: 0	303048
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	w	860,a		30	59	11	180	5	113
002A	EFF-1	w	ND		ND	ND	ND	ND	1	111
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	Limit for DF =1; not detected at or	w	50	5.0	0.5	0.5	0.5	0.5	1	μg/L
	ne reporting limit	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

\*water and vapor samples are reported in µg/L, soil and sludge samples in mg/kg, wipe samples in µg/wipe, and TCLP extracts in µg/L.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0303048

EPA Method: SW802	21B/8015Cm E	xtraction:	SW5030E	3	BatchID:	6069	S	piked Sampl	e ID: 03030	041-004A
Camazanad	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
Compound	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	115	105	9.86	99.2	109	9.08	80	120
МТВЕ	ND	10	81.2	91	11.4	103	87.5	15.9	80	120
Benzene	ND	10	115	116	1.30	88.9	93	4.49	80	120
Toluene	ND	10	110	111	0.320	82.5	88.3	6.76	80	120
Ethylbenzene	ND	10	115	119	3.76	89.6	95.3	6.20	80	120
Xylenes	ND	30	120	120	0	87.3	92.7	5.93	80	120
%SS:	110	100	111	112	0.625	101	97.4	3.37	80	120

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

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

## **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1



110 Second Avenue South, #D7 Pacheco, CA 94553-5560 (925) 798-1620

WorkOrder: 0303048

Client:

Cambria Env. Technology 5900 Hollis St, Suite A Emeryville, CA 94608

TEL:

(510) 450-1983

FAX: ProjectNo: (510) 450-8295

PO:

#130-0105-350; Worthington

Date Received:

3/5/03

Date Printed:

3/5/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	8021B/8015	Requested Tests
0303048-001 0303048-002 0303048-003	INF EFF-1 EFF-2	Water Water Water	3/4/03 1:30:00 PM 3/4/03 1:30:00 PM 3/4/03 1:30:00 PM	<b>~</b>	A A A	

Prepared by: Melissa Valles

#### Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

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HEAD SPAC	e absent Vated in <b>Lab</b>	PE	ESERVED	NLA																	T										
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McCampbell Analytical In	c.
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110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone: 925-798-1620 Fax: 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105-350;	Date Sampled: 03/04/03
5900 Hollis St, Suite A	Worthington	Date Received: 03/05/03
Emorarillo CA 04609	Client Contact: Gretchen Hellmann	Date Reported: 03/10/03
Emeryville, CA 94608	Client P.O.:	Date Completed: 03/10/03

WorkOrder: 0303045

March 10, 2003

#### Dear Gretchen:

#### Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-350; Worthington project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill 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 please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Angela Rydelius, Lab Manager

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 http://www.mccampbell.com E-mail: main@mccampbell.com

Cambria Env. Technology	Client Project ID: #130-0105-350;	Date Sampled: 03/04/03
5900 Hollis St, Suite A	Worthington	Date Received: 03/05/03
Emeryville, CA 94608	Client Contact: Gretchen Hellmann	Date Extracted: 03/05/03-03/06/03
Emeryvine, CA 94008	Client P.O.:	Date Analyzed: 03/05/03-03/06/03

extraction n	nethod: SW5030E	3		Analytical r	nethods: SW80211	3/8015Cm		Work (	Order: 0.	303045
ab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% S
001A	INF	A	540,a	ND<5.0	6.2	7.2	1.3	12	4	<del>h</del>
002A	EFF	A	ND	ND	ND	ND	ND	ND	1	#
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Reporting Limit for DF =1; 10 0.15 0.15 0.25 uL/L Α 1.5 0.15 1 ND means not detected at or S above the reporting limit NA NA NA NA NA NA mg/Kg

\*water and vapor samples are reported in µg/L, soil and sludge samples in mg/kg, wipe samples in µg/wipe, and TCLP extracts in µg/L.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant, b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than -2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.



### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: A

WorkOrder: 0303045

EPA Method: SW802	21B/8015Cm E	xtraction:	SW50308	3	BatchID:	6069	Spiked Sample ID: 0303041-004A									
0	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)						
Compound	uL/L	uL/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High						
TPH(gas)	ND	60	115	105	9.86	99.2	109	9.08	80	120						
MTBE	ND	10	81.2	91	11.4	103	87.5	15.9	80	120						
Benzene	ND	10	115	116	1.30	88.9	93	4.49	80	120						
Toluene	ND	10	110	111	0.320	82.5	88.3	6.76	80	120						
Ethylbenzene	ND	10	115	119	3.76	89.6	95.3	6.20	80	120						
Xylenes	ND	30	120	120	0	87.3	92.7	5.93	80	120						
%SS:	110	100	111	112	0.625	101	97.4	3.37	80	120						

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if. a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



110 Second Avenue South, #D7 Pacheco, CA 94553-5560 (925) 798-1620

# **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

WorkOrder: 0303045

Client:

Cambria Env. Technology 5900 Hollis St, Suite A

5900 Hollis St, Suite A Emeryville, CA 94608 TEL:

PO:

(510) 450-1983

FAX:

(510) 450-8295

ProjectNo:

#130-0105-350; Worthington

Date Received:
Date Printed:

3/5/03

3/5/03

			· · · · · · · · · · · · · · · · · · ·			Requested Tests	
Sample ID	ClientSampID	Matrix	Collection Date	Hold	8021B/8015		! :
0303045-001	INF	Air	3/4/03 4:35:00 PM		А	;	
.0303045-002	EFF	Air	3/4/03 4:30:00 PM	•	A		

Prepared by: Melissa Valles

#### Comments:

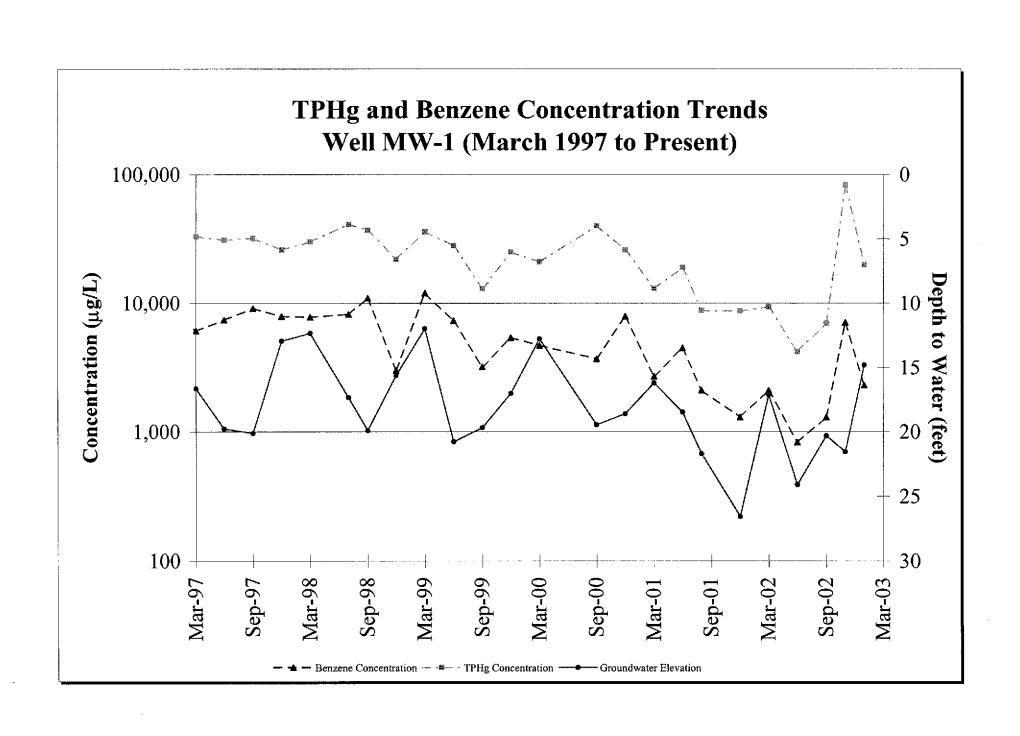
NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

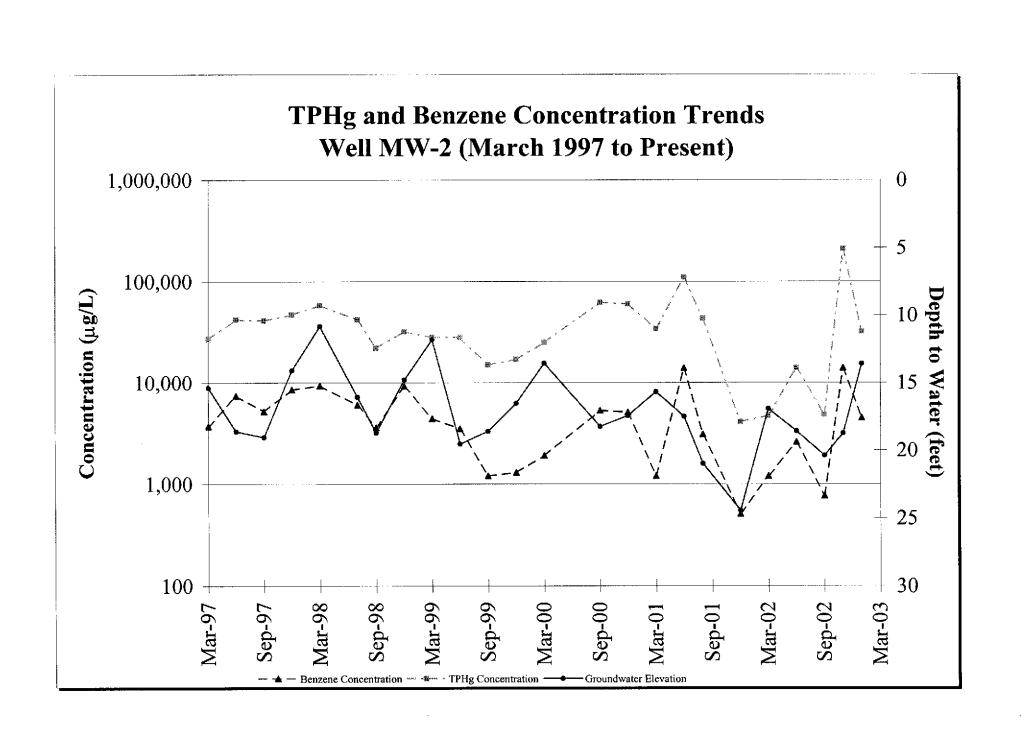
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PACHECO, CA 94553-5560											RUSH 24 HOUR 48 HOUR 5 DA EDF Required? Yes XX No												Υ.										
Telephone: (925) 798-1620         Fax: (925) 798-1622           Report To: Gretchen Hellmann         Bill To: SAME												CI	7.C	Req	ure				-		-X	ΙΝ	0	·									
	Company: Cambria Environmental Technology, Inc.											-}-					Aı	naly	sis F	tequ	test						<del></del>	Othe	<del></del>	Co	nmer	ts	
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Emeryville, CA 94608 E-mail:ghellmann@cambria-env.com										؛ ا	BE		Grease (5520 E&F/B&F) carbons (418.1)	ĺ				}		0	1												
Tele: 510 420-3305 Fax: 510 420-9170										5	3015 y MTBE		83 C							/ 8310						,							
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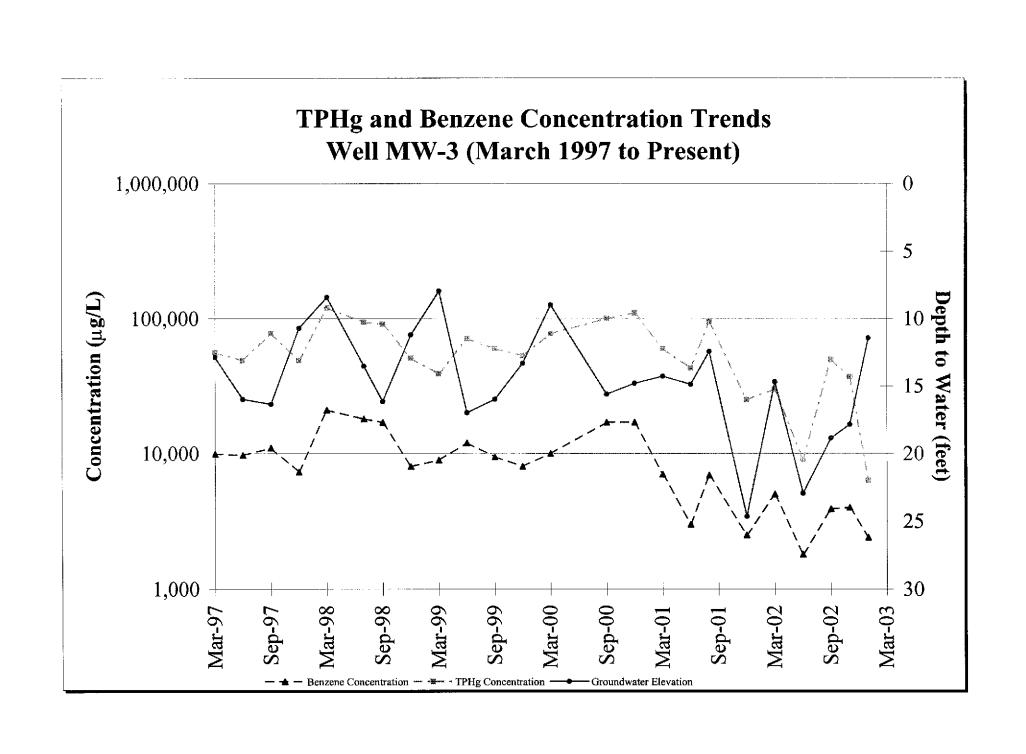


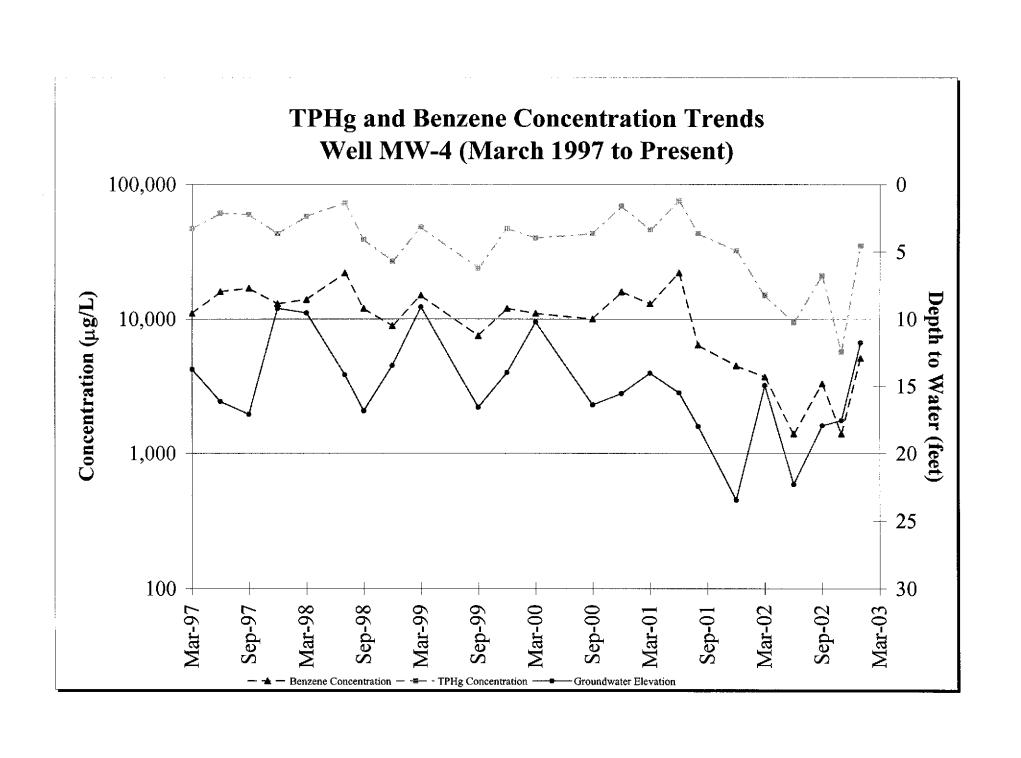
### **APPENDIX D**

TPHg and Benzene Concentration Trend Graphs











### **APPENDIX E**

**Electronic Delivery Confirmations** 

## **AB2886 Electronic Delivery**

Main Menu | View/Add Facilities | Upload EDD | Check EDD

### **UPLOADING A GEO\_WELL FILE**

Processing is complete. No errors were found! Your file has been successfully submitted!

**Submittal Title:** 

1QM03 geo\_well

worthington

Submittal Date/Time: 5/6/2003 8:59:12 AM

**Confirmation** 

Number:

1626011490

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CONTACT SITE ADMINISTRATOR.

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Main Menu | View/Add Facilities | Upload EDD | Check EDD

Your EDF file has been successfully uploaded!

Confirmation Number: 6651594638

Date/Time of Submittal: 5/6/2003 9:00:24 AM

Facility Global ID: T0609700695

Facility Name: A. F. O'CONNOR STATION

**Submittal Title:** 1QM03 Worthington **Submittal Type:** GW Monitoring Report

Logged in as CAMBRIA-EM (AUTH RP)

CONTACT SITE ADMINISTRATOR.