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

AUG 1 2 2002

Re: Groundwater Monitoring and System Progress Report Second Quarter 2002

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 second quarter 2002 activities and the anticipated third quarter 2002 activities.

If you have any questions or comments regarding this report, please call me at (510) 450-1983.

Sincerely,

Cambria Environmental Technology, Inc.

Ron Scheele, RG

Senior Geologist

Attachments: Groundwater Monitoring and System Progress Report, Second Quarter 2002

Mr. Lynn Worthington, Golden Empire Properties, Inc. 5942 MacArthur Boulevard, Suite B, Oakland, CA 94605 Mr. Robert Cave, BAAOMD, Permit Services Division, 939 Ellis Street, San Francisco, CA 94109

Ms. Marie Kulka, Source Control Division, EBMUD, 375 11th Street, Oakland, CA 94607

Oakland, CA San Ramon, CA Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street Suite B Oakland, CA 94608 Tel (510) 420-0700 Fax (510) 420-9170

GROUNDWATER MONITORING AND SYSTEM PROGRESS REPORT

SECOND QUARTER 2002

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

August 1, 2002

AUG 1 2 2002



Prepared for:

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

Prepared by:

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

No. 6842

No. 6842

No. 6842

Matthew A. Meyers Staff Geologist

Ron Scheele, RG Senior Geologist

GROUNDWATER MONITORING AND SYSTEM PROGRESS REPORT

SECOND QUARTER 2002

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

August 1, 2002



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 second quarter 2002 groundwater monitoring and corrective action activities and the anticipated third quarter 2002 activities.

SECOND QUARTER 2002 ACTIVITIES

Monitoring Activities

Field Activities: On June 10, 2002, 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 not containing SPH. 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) 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.

August 1, 2002

Monitoring Results

Groundwater Flow Direction: Depth-to-water measurements were collected during Cambria's June 10, 2002 site visit (Figure 1). The groundwater gradient is affected by a two phase extraction (TPE) remediation system in which down-well stingers are used to extract groundwater from wells MW-1, MW-3, MW-4, RW-5, RW-9, and RW-10. Since 1994, the primary groundwater flow direction has been towards the northwest with a change towards the southwest usually occurring during the fourth and/or second quarters. Groundwater monitoring data is presented in Table 1.



Hydrocarbon Distribution in Groundwater: Hydrocarbon concentrations have decreased in wells MW-1, MW-3, and MW-4 and increased in well MW-2 as compared with the previous sampling event. No SPH were detected in any of the wells. The increase of concentrations in well MW-2 is likely due to varying TPE system operations and temporary closing of MW-2 to optimize extraction from other areas. Since the start of TPE remediation (June 2000), all monitoring wells exhibit a decreasing hydrocarbon concentration trend (See Appendix D for individual well concentration trend graphs). The maximum TPHg and benzene concentrations were detected in well MW-2 at 14,000 and 2,600 micrograms per liter (μ g/L), respectively. The maximum TPHd concentration was detected in well MW-4 at 3,400 μ g/L. MTBE concentrations were below laboratory detection limits in all sampled wells. Analytical results are summarized in Table 1. See Appendix E for confirmation of groundwater data submittal to the State Geotracker Database.

Corrective Action Activities

System Design: The TPE remediation system consists of a trailer mounted all-electric catalytic oxidizer, a 300-cfm positive-displacement blower, a 150-gallon moisture knockout with automatic float controls, a 1-hp centrifugal transfer pump, and two 1,000-lb carbon vessels connected in series. Fourteen wells are connected to the remediation system (RW-5 through RW-14, and MW-1 through MW-4) via a 4-inch diameter PVC trunk line. One-inch diameter stingers are inserted into each well to allow the simultaneous extraction of soil vapor and groundwater from the well.

Remediation System Operations and Maintenance Activities: During the second quarter, Cambria performed TPE system operation and maintenance activities approximately 3 times per month. During operation and maintenance activities, individual well flow, vacuum, and hydrocarbon concentration measurements were collected from all remediation system wells and from the catalytic oxidizer/blower (See Tables 2, 3, and 4). During site visits, system operation parameters were also recorded in specialized field forms for future system optimization and agency inspection. As per the Bay Area Air Quality Management (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

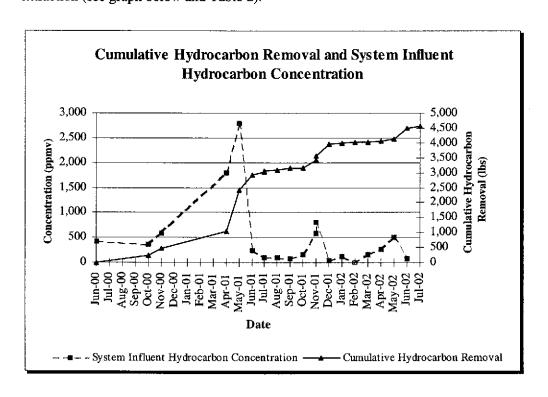
August 1, 2002

CAMBRIA

laboratory analysis on a monthly basis. Groundwater treatment system influent and effluent samples were collected on a monthly basis. Table 2 summarizes soil vapor extraction system operations and analytical results. Table 3 summarizes groundwater extraction system parameters and analytical results. Table 4 summarizes the individual extraction well parameters. The system analytical laboratory reports are included as Attachment C.

Remediation System Performance: From April 2 through July 2, the TPE system operated continuously without shutdowns, for a total of 2,185 hours. To maximize site cleanup select remediation wells were opened and closed, and well stinger depths were adjusted to account for seasonal changes in the groundwater table (See Table 4). System influent and effluent vapor samples were collected and submitted for laboratory analysis on April 4, May 6, and June 5, 2002. Influent vapor concentrations increased relative to the first quarter and ranged from 73 to 500 parts per million by volume (ppmv). This increase is likely due to seasonally lower water table conditions exposing hydrocarbons trapped below groundwater. Hydrocarbon removal rate ranged from 1.7 to 12.2 lbs/day. 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. To date, a total of 4,556 pounds of hydrocarbons have been destroyed by vapor extraction (see graph below and Table 2).





Groundwater Monitoring and System Progress Report, Second Quarter 2002

Former Exxon Service Station

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From April 2 to July 2, 2002, approximately 98,154 gallons of groundwater was extracted and treated onsite using granular activated carbon. The average flowrate was 0.95 gallons per minute. Groundwater treatment system influent and effluent samples were collected on April 2, March 6, and June 5, 2002. 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. To date, a total of 1.534 pounds of hydrocarbons have been removed by groundwater extraction and treatment.



CAMBRIA

ANTICIPATED THIRD QUARTER 2002 ACTIVITIES

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 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:

To reduce system noise and complaints from neighbors the existing TPE equipment (10-hp blower) will be replaced with a quieter 20-hp liquid ring pump. These equipment changes will take place in the third quarter.

Cambria will continue to perform TPE operation and maintenance activities twice per month during the third quarter of 2002. The groundwater extraction stingers may from time to time be switched between select wells in an effort to help maximize hydrocarbon removal and 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.

Groundwater Monitoring and System Progress Report, Second Quarter 2002
Former Exxon Service Station
Oakland, California
August 1, 2002

ATTACHMENTS

Figure 1 – Groundwater Elevation and Analytical Summary Map

Table 1 – Groundwater Elevation 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

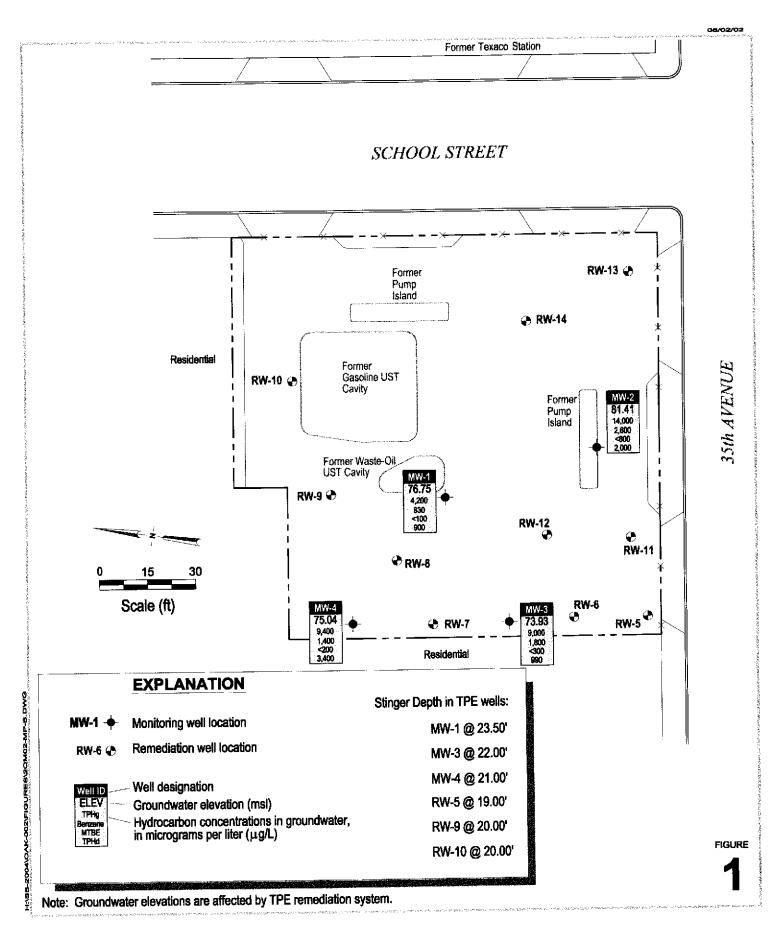
Appendix C – Analytical Results for TPE System Operation

Appendix D – TPHg and Benzene Concentration Trend Graphs

Appendix E – Electronic Delivery Confirmations

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Former Exxon Station

3055 35th Avenue Oakland, California



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

100.85	05/25/94 07/19/94 08/18/94 11/11/94 02/27/95 05/23/95 08/22/95	Depth (ft) 16.79 20.77 21.04 15.80 15.53 15.29	Sheen Sheen	84.06 80.08 79.81 85.05	120,000 925,000	25,000	<50,000	22,000	s per billion (цg/L) 2,800	16,000		(mg/L)
100.85	07/19/94 08/18/94 11/11/94 02/27/95 05/23/95	20.77 21.04 15.80 15.53	Sheen	80.08 79.81 85.05	925,000				17,000	2,800	16,000		
100.85	07/19/94 08/18/94 11/11/94 02/27/95 05/23/95	20.77 21.04 15.80 15.53	Sheen	80.08 79.81 85.05	925,000				17,000	2,800	16,000		
	08/18/94 11/11/94 02/27/95 05/23/95	21.04 15.80 15.53	Sheen	79.81 85.05	925,000								
	11/11/94 02/27/95 05/23/95	15.80 15.53		85.05									
	02/27/95 05/23/95	15.53			57 000			16,500	6,200	1,000	9,400		
	05/23/95				57,000			14,000	4,400	1,400	6,400		
		15.29		85.32	45,000			2,900	2,500	760	4,100		
	08/22/95			85.56	22,000			9,900	990	790	2,000		
		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	$26,000^{d}$	5,800 ^e		7,900	370	920	1,500	<790	0.7
	03/18/98	12.34	Sheen	88.51	$30,000^{d}$	4,200°,1		7,800	820	840	2,000	<1,100	1.3
	07/14/98	17.34		83.51	$41,000^{d}$	8,900°,1		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 ^d	6,800°		12,000	750	1,300	2,400	950	0.50
	06/29/99	20.77		80.08	28,000 ^d	3,500°		7,300	420	810	1,700	<1,300	0.10
	09/28/99	19.68		81.17	13,000 ^d	3,600 ^{c,f}		3,200	130	320	1,100	<210	0.55
	12/10/99	17.02		83.83	25,000 ^d	2,900 e,f		5,400	130	620	1,400	<1,000	1.03
	03/23/00	12.76		88.09	21,000 ^d	3,300 ^f		4,700	140	470	1,100	<350	
	09/07/00	19.45		81.40	40,000 ^{d,g}	12,000 ^{e,g}		3,700	1,400	910	4,900	<50	0.17
	12/05/00	18.60		82.25	26,000°	3,400°		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 ^d		2,100	45	91	240	<130	0.27

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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	ТРНА	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO
(TOC)		Depth (ft)	(ft)	Elev. (ft)	•	<	Concen	trations in part	s per billion (μg/L)	>		(mg/L)
	12/07/01	26.55		74.30	8,700 ^d	1,900 ^{e,f}		1,300	160	38	730	<20	0.59
	03/11/02	17.13		83.72	9,400 ^d	1,400°		2,100	200	74	470	<20	0.39
	06/10/02	24.10		76.75	4,200 ^d	900 ^{e,k}		830	170	110	460	<100	
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		80.19									
	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 ^b		7,400	3,800	1,200	5,700	<200	0.9
	09/17/97	19.05	Sheen	80.95	$41,000^{d}$	8,900°		5,200	3,400	1,300	5,900	<700	1.2
	12/22/97	14.09		85.91	47,000 ^d	6,100°		8,500	4,600	1,800	8,400	<1,200	1.2
	03/18/98	10.83	Sheen	89.17	58,000 ^d	7,000 ^{e,f}		9,300	6,100	1,800	8,200	<1,100	1.1
	07/14/98	16.07		83.93	$42,000^{d}$	5,300°.f		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 ^{e.f}		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 ^d	3,400 ^{e,f}		1,200	540	230	2,300	<36	1.18
	12/10/99	16.53		83.47	$17,000^{d}$	2,500 ^{e,f}		1,300	780	420	2,700	<40	0.17
	03/23/00	13.56	***	86.44	$25,000^{d}$	3,100 ⁱ		1,900	1,100	660	3,700	<500	
	09/07/00	18.25		81.75	$62,000^{d,g}$	32,000°,g		5,300	2,300	1,500	8,400	<100	0.39
	12/05/00	17.45		82.55	$60,000^{d,g}$	87,000°,f,g		5,100	2,200	1,600	9,000	<200	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)		<	Concent	trations in part	s per billion (tg/L)	>	<u>-</u>	(mg/L)
	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 ^{s,h}	$15,000^{d,h}$		3,100	720	980	5,500	<200	
	12/07/01	24.45		75.55	$4,100^{d}$	750°.f		510	88	8.2	580	<20	0.47
	03/11/02	16.95		83.05	$4,700^{d}$	590°		1,200	150	30	310	<50	0.24
	06/10/02	18.59		81.41	14,000 ^d	2,000°		2,600	710	150	2,000	<800	
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. 0 7	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 ^b		9,700	7,100	1,300	7,000	220	5.8
	09/17/97	16.34	Sheen	80.53	$78,000^{d}$	15,000°		11,000	9,900	1,800	10,000	<1,200	0.7
	12/22/97	10.71	Sheen	86.16	$49,000^{d}$	14,000°		7,300	5,300	1,400	7,500	<1,100	3.1
	03/18/98	8.41	Sheen	88.46	$120,000^{d}$	$20,000^{\circ,f}$	***	21,000	19,000	2,600	15,000	<1,600	1.6
	07/14/98	13.51		83.36	$94,000^{d,g}$	65,000°,f,g		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 ^d	4,600°		8,900	4,400	940	4,500	810	0.56
	06/29/99	16.98		79.89	71,000 ⁴	6,900°		12,000	7,300	1,400	8,400	<1,700	0.19
	09/28/99	15.99		80.88	$60,000^{d}$	7,800°		9,400	9,200	1,000	9,900	200	0.53
	12/10/99	13.31		83.56	53,000 ^d	5,300 ^{e,f}		8,000	6,400	1,100	8,100	<200	0.48

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)		<	Concen	trations in part	s per billion (μg/L)	>		(mg/L
	03/23/00	8.98		87.89	77,000 ^{d,g}	11,000 ^{g j}		10,000	9,400	1,600	11,000	<430	
	09/07/00	15.61		81.26	100,000 ^{d,g}	19,000 ^{e.f,g}		17,000	12,000	1,600	11,000	<500	
	12/05/00	14.80		82.07	110,000 ^{d,g}	17,000 e.g		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 ^{a,h}	190,000 ^{d,h}		6,900	10,000	2,700	15,000	<250	0.24
	12/07/01	24.65		72.22	25,000 ^d	3,900 ^{e,f}		2,500	1,700	64	2,200	<200	0.19
	03/11/02	14.69		82.18	30,000 ^d	2,800 ^{f,e,k}		5,000	2,400	190	1,800	<1,300	0.30
	06/10/02	22.94		73.93	9,000 ^d	990 ^{c,k}		1,800	1,300	96	1,000	<300	
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 ^b		16,000	6,100	1,500	5,900	780°	1.4
	09/17/97	17.10		80.24	60,000 ⁴	4,400°		17,000	4,900	1,500	5,700	<1,500	1.5
	12/22/97	9.21		88.13	43,000 ^d	3,100°		13,000	3,900	1,100	4,200	<960	3.7
	03/18/98	9.54		87.80	58,000 ^d	5,500 ^{t,f}		14,000	4,700	1,400	5,700	<1,200	0.8
	07/14/98	14.15		83.19	$73,000^{d}$	$2,900^{\epsilon,f}$		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 ^d	2,400 ^{e,f,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°.ſ		7,500	1,200	190	2,200	210	14.29
	12/10/99	13.99		83.35	47,000 ^d	3,100°,f		12,000	1,800	1,000	4,400	<100	0.62
	03/23/00	10.22		87.12	$40,000^{d}$	3,100 ^{e,f}		11,000	1,600	910	3,100	690	
	09/07/00	16.40		80.94	43,000 ^d	5,900°		10,000	1,100	1,100	3,400	<450	1.04
	12/05/00	15.55		81.79	$69,000^{d,g}$	2,600°-,g		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 ^d		6,400	630	510	2,600	<200	0.32
	12/07/01	23.45		73.89	$32,000^{d,g}$	11,000°,f,g		4,500	740	310	2,300	<200	0.21
	03/11/02	14.95		82.39	15,000 ^d	1,600°,f,k		3,700	500	92	790	<500	0.30
	06/10/02	22.30		75.04	9,400 ^d	3,400 ^e		1,400	50	<5.0	690	<200	

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)		<	Concen	trations in part	ts per billion (μg/L)	>		(mg/L)
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 aribitrary 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, Toluene, and Xylenes by EPA Method 8020

MTBE = Methyl Tertiary Butyl Ether by EPA Method 8020

DO = Dissolved oxygen

 μ 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

Table 2. TPE System Performance and Analytical Results - Soil Vapor Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, California TPHg System Influent System Effluent HC Gasoline Emission Hour Meter System System System Rate 2 HC Conc. 1 HC Conc. 1 Removal Rate 2 Destruction Cumulative Date Readings Uptime Inlet Flow Rate (lbs/day) Removal³ (lbs/day) Efficiency (ppmv) (hrs) (per interval) Temp. (after dilution) (ppmv) (degree F) TPHg TPHg Benz TPHg TPHg Benz (%) (lbs) (%) (cfm) 0 6/24/2000 0 0.012 95 446 789 175 420 22 0.24 23.6 1.24 9/28/2000 454 20% 10.1 < 0.28 < 0.004 684 10/12/2000 696 72% 950 88 360 <10 < 0.15 < 0.18 < 0.002 918 55 <10 < 0.15 10.5 11/9/2000 1251 83% 820 590 945 3% 1/23/2001 1313 --945 3/28/2001 0 98 1341 0.013 4/5/2001 194 101% 908 85 1,800 34 0.52 49.1 0.93 48.5 < 0.17 < 0.002 2709 5/3/2001 863 100% 1000 54 2,800 <10 < 0.15 6/4/2001 1114 33% 820 101 240 <10 < 0.15 7.8 < 0.32 < 0.004 3217 0.34 3.2 < 0.91 <0.011 72 3319 7/2/2001 1429 47% 804 109.0 92 26 < 0.48 < 0.007 3345 1621 100% 900 150 92 <10 <0.15 4.4 7/10/2001 940 79 110 <10 < 0.15 2.8 < 0.25 < 0.003 3370 8/2/2001 1759 25% 854 141 81 34 0.52 3.7 <1.54 < 0.021 58 3433 2301 63% 9/7/2001 < 0.74 < 0.021 3458 2470 27% 854 230 160 <10 0.31 11.8 10/3/2001 97 0.43 18.3 < 0.96 < 0.012 95 3727 67% 955 590 31 11/6/2001 3015

Table 2. TPE System Performance and Analytical Results - Soil Vapor Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, California

Date	Hour Meter Readings (hrs)	System Uptime (per interval) (%)	System Inlet Temp. (degree F)	System Flow Rate (after dilution) (cfm)	System Influent HC Conc. (ppmv) TPHg	нсс	Effluent Conc. ¹ mv) Benz	HC Removal Rate ² (lbs/day) TPHg	F.	ission ate ² s/day) Benz	TPHg Destruction Efficiency (%)	Gasoline Cumulative Removal ³ (lbs)
11/14/2001	3184	88%	860	69	810	<10	<0.15	17.9	<0.22	<0.003	*	3855
12/6/2001	3710	96%	806	53	50	<10	<0.15	0.9	<0.17	<0.002	*	4248
1/7/2002	4472	99%	841	42	120	<10	<0.15	1.6	<0.13	<0.002	*	4275
2/4/2002	4938	69%	817	78	<5	<10	<0.15	0.1	<0.25	<0.003	*	4306
3/5/2002	5396	66%	665	26	170	<10	<0.15	1.4	<0.08	<0.001	*	4309
4/2/2002	6068	100%	670	32	260	<10	<0.15	2.6	<0.10	<0.001	*	4348
5/6/2002	6886	100%	667	76	500	<10	<0.15	12.2	<0.24	<0.003	*	4438
6/5/2002	7608	100%	751	72	73	<10	<0.15	1.7	<0.23	<0.003	*	4805
7/2/2002	8253	100%	736	80				-			-	4850

Notes and Abbreviations:

TPHg = Total petroleum hydrocarbons as gasoline

Benz = Benzene

HC Conc. = Hydrocarbon Concentrations

ppmv = Parts per million by volume. Analytical lab results converted from micrograms per liter (µg/l) to ppmv assumes the molecular weight of gasoline to be equal to that of hexane. at 1 atmosphere of pressure and 20 degrees Celsius.

¹ TPHg and benzene concentrations based on lab results by Modified EPA Methods 8015 and 8020.

² 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 (sofm) x 1 lb-mole/386x10⁶ft³ x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene) x 1440 min/day.

³ 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

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)	Per Period (lbs)	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		
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			au.					
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 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)
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

				- 455					·			
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	TPHg (μg/L)	Benzene (µg/L)	Toluene (μg/L)	Ethylbenzene (µg/L)	Total Xylenes (μg/L)	Per Period (lbs)	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	366,560	361,717	0.7							0.009	1.534
	2012			Sewer	Effluent Disch	narge Limits: (µg/L)	5.0	5.0	5.0	5.0		

Notes:

TPHg = Total Petroleum Hydrocarbons as Gasoline

BTEX = Benzene, Toluene, Ethylbenzene, Total Xylenes

MTBE = Methyl tertiary butyl ether

μg/L = micrograms per liter

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

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 H ₂ O)	Well Annulus Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
MW-1	11/6/01	200	80		*		28
141 44 -1	11/12/01	open	125	-			28
	11/14/01	open	85		*		28
	11/21/01	open	95	_	*		28
	12/6/01	open open	115		*		28
	12/19/01	open	110		*		25
	1/17/02	open	130		*		25
	2/4/02	open	105		*		28
	2/14/02	closed	103		*		
	3/5/02	closed			*		_
	3/11/02	closed	 		*		
	3/25/02		130		*		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	49	*		22
	5/21/02	open	105	49	*		23.5
	6/19/02	open	90	42	*		24
	6/28/02	open	95 95	42 47	*	-	25
	7/10/02	open open	97	41	*		25
		-					
MW-2	11/6/01	open	80		*		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		*		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			*		
	6/19/02	closed			*		
	6/28/02	open	95	52	*		22
	7/10/02	open	97	51	*	MA.JA	22

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 H ₂ O)	Well Annulus Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
MW-3	11/6/01	onar.	80		*		25
14), 44°-5	11/12/01	open	125		*		25
	11/14/01	open	85		*		25
	11/21/01	open open	95		*		25
	12/6/01	open	115		*		25
	12/19/01	орел	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	<u></u>	-	*	<u></u>	
	4/5/02	closed			*		
	4/19/02	closed	•-	_	*		
	5/6/02	ореп	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
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		-	*		•
	7/10/02	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 H ₂ O)	Well Annulus Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-5	5/24/00		80		*		11.64
IVW-J	10/6/00		100		*		11.64
	11/29/00		>100		*	4320	
	3/29/01	open	54		*	650	**
	4/14/01	open	100		~ *		
	4/26/01	open	85		*		15
	5/3/01	open		••	*		
	5/23/01	open	80	**	•		15
		open	10		*	**	15
	6/4/01	open	50		*		15
	6/21/01	open	65 55		*		15
	7/2/01	орел	55		*		15
	7/16/01	open	45 25		*		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	H+		*		
	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			*		
	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	open	95	48	*		20
	7/10/02	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 H ₂ O)	Well Annulus Vacuum (inches of ${ m H_2O}$)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-6	5/24/00		80		*		11.78
ICW-0	10/6/00			-	*		_
	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	F7		*		
	6/4/01	open	50		*	••	15
	6/21/01	open	65		*		15
	7/2/01	open	55		*	N-4-	15
	7/16/01	open	45		*		16
	8/2/01	open	35		*		
	8/10/01	орел	20	<u>-</u> -	*		
	8/15/01	open	20		*		
	8/27/01	орел	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	_		*	+=	
	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	closed		•	*		
	3/5/02	closed	<u></u>	_	*		
	3/11/02	open	130	_	*		16
	3/25/02	open	130		*		16
	4/2/02	ореп	12		*		16
	4/5/02	open	135	85	*		16
	4/19/02	open	130	75	*		18
	5/6/02	closed		-	*		_
	5/21/02	closed			*		
	6/19/02	closed		-	*		
	6/28/02	closed	w		*		
	7/10/02	open	97	54	*		20
	17 10/02	Open	~ *	٥.			

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 H ₂ O)	Well Annulus Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-7	5/24/00	_	80		*		12.5
2017	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		*	40	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	ореп	65	_	•		
	9/7/01	closed		~	* .		••
	9/14/01	closed		**	*		
	10/3/01	closed		_	*		
	10/8/01	closed	4-		*		_
	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			*		
	2/4/02	closed		_	*		
	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	closed			*		
	5/21/02	closed			*		•~
	6/19/02	closed		-	*		
	6/28/02	closed			*		
	7/10/02	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 H ₂ O)	Well Annulus Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-8	5/24/00	-			*		
	10/6/00		_		*		
	11/29/00	open	>100		*	44	
	3/29/01	open	54		*	60	
	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		*	**	**
	7/2/01	open	55		*		
	7/16/01	open	45 25		*	-	
	8/2/01	open	35		*		
	8/10/01	open	20		*	-	
	8/15/01	open	20		*	-	
	8/27/01	open	65		*	_	
	9/7/01	closed			*	*-	4*
	9/14/01	closed			*	••	
	10/3/01	closed			*		
	10/8/01	closed			*		
	10/22/01	closed			*		
	10/29/01	closed			*		
	11/6/01	closed			*		
	H1/12/01	closed	77		*		
	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	closed			*		-
	3/5/02	closed			*		10
	3/11/02 3/25/02	open			*		18
	4/2/02	closed			*		
	4/5/02	closed			nic .	*-	<u></u>
	4/19/02	closed closed		-	**		-
	5/6/02	closed			ske		
	5/21/02				**		
		closed			*		
	6/19/02 6/28/02	closed			*		- -
		closed			*		
	7/10/02	closed			Ψ.		_

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 H ₂ O)	Well Annulus Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
DW 0	E/24/00				*		12.5
RW-9	5/24/00				*		12.5
	10/6/00				*		**
	11/29/00		>100		*	43 90	
	3/29/01 4/14/01	open	54 100		*		
	4/26/01	open	85		*		
	5/3/01	open	80	••	*		
	5/23/01	open		-	*		
	6/4/01	ореп	10 50				
		open		-			-
	6/21/01	ореп	65 55		*		
	7/2/01	open		_	*		
	7/16/01 8/2/01	open	45 35		*		-
		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			*		
	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		44	*	-	
	2/14/02	open	125		*		20
	3/5/02	open	115	-		-	20
	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	38	*		20
	5/21/02	open	105	56	*		20
	6/19/02	open	90	47	*		20
	6/28/02	closed	••		*		
	7/10/02	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 H ₂ O)	Well Annulus Vacuum (inches of H₂O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
DIII 40	T 10 + 10 0						
RW-10	5/24/00				*		
	10/6/00	_	-		*		
	11/29/00	-	>100		*	>10,000	
	3/29/01	open	54	-	*	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		*		==
	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	-		*		
	10/8/01	closed		••	*	_	
	10/22/01	closed			*		
	10/29/01	closed			*	_	
	11/6/01	closed	_		*	++	
	11/12/01	closed			*		
	11/14/01	closed	<u></u>		*		
	11/21/01	closed	<u></u>		*		
	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	_			*		20
	3/25/02	open closed	**		*		20
			-		*	-	**
	4/2/02	closed		-	**	**	
	4/5/02	closed	-			-	
	4/19/02	closed	100		~ .s	-	
	5/6/02	open	100	31	# .u.	_	20
	5/21/02	open	105	70	*		20
	6/19/02	open	90	56 .	*	-	20
	6/28/02	closed	-		*		
	7/10/02	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 H ₂ O)	Well Annulus Vacuum (inches of H₂O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-11	5/24/00		80		*		11.65
K 44-11	10/6/00				*	 	
	11/29/00	-	>100		*	2280	
	3/29/01		54	 	*	784	
	4/14/01	open	100		*	70 4	
	4/26/01	open	85		*		15
	5/3/01	open	80	***	*	_	15
		open			*		15
	5/23/01	open	10		*	_	20
	6/4/01	open	50		**		15
	6/21/01	open	65		*		
	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			*	-	•
	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	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			*		**
				-	Ne.		
	5/6/02	closed		-	*		
	5/21/02	closed			*	**	-
	6/19/02	closed			*	**	- -
	6/28/02	closed			т -		
	7/10/02	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 H ₂ O)	Well Annulus Vacuum (inches of H₂O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-12	5/24/00	_			*		
	10/6/00				*		
	11/29/00	open	>100		*	24	
	3/29/01	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			*		_
	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	closed			*		
	3/5/02	closed	**		*		-
	3/11/02	closed			*		
	3/25/02	open	130		*		16
	4/2/02	open	130		*	-	16
	4/5/02	open	135	97	*	-	16
	4/19/02	open	130	75	*	-	18
	5/6/02	closed		***	*		
	5/21/02	closed	**	-	*		
	6/19/02	closed			*		
	6/28/02	open	95	16	*		20
	7/10/02	open	97	5	*		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 H ₂ O)	Well Annulus Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-13	5/24/00		80		*		12.59
KW-13	10/6/00				*		
	11/29/00		>100		*	77	-
	3/29/01	open	54		*	124	
	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	=	65		*		
	7/2/01	open	55		*		
	7/16/01	open	45		*		
	8/2/01	open	35		*		
	8/10/01	open	20	 	*	<u></u>	-
	8/15/01	open	20		*		
	8/27/01	open	65		*		
	9/7/01	open closed			*		
	9/14/01	closed			*		
	10/3/01	closed			*		
	10/8/01	closed		-	*		
					*	3	
	10/22/01	closed			*		
	10/29/01	closed		-	*	**	
	11/6/01	closed			•		-
	11/12/01	closed			- T		-
	11/14/01	closed			*	3-	
	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	*-		*	-	
	5/6/02	closed			*		
	5/21/02	closed			*	_	
	6/19/02	closed			*		
	6/28/02	closed			s ú	-	
	7/10/02	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 H ₂ O)	Well Annulus Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-14	5/24/00		80		*		12.33
	10/6/00		100	 	*		
	11/29/00		>100		*	5830	
	3/29/01	open	54		*	120	<u></u>
	4/14/01	open	100		*		
	4/26/01	open	85	<u></u>	*		
	5/3/01	open	80		*		_
	5/23/01	open	10		*		<u>.</u>
	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			*		
	9/14/01	closed			*		_
	10/3/01	closed			*		
	10/8/01	closed	75		*		-
	10/22/01	closed			*		_
	10/29/01	closed	4-		*		
	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			*	**	
	2/4/02	closed			*		
	2/14/02	open	125		*		20
	3/5/02	open	115		*		20
	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			*		

Notes

^{* =} Parameter could not be accurately measured due to the presence of water or water vapor.

^{-- =} Data not available or not collected



APPENDIX A

Groundwater Monitoring Field Data Sheets

CAMBR_.

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments Stineers at
MW-1	5:15		24.10			22.50 23.50 Stinger in well but a 22.00 21.00
MW-2	5:20		18.59			stinger in well but a
MW-3	5: 25		22.94			22.00
MW-4	5:30 #200		22.30			21.00
	8					
				·		
				21		

Project Name:_Worthington_	Project Number: 130-0105
Measured By:	Date:06/1002

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MW-3
Project Number: 130-0105	Date: 6-10-02	Well Yield:
Site Address: 3055 5th SI	Sampling Method:	Well Diameter: 2 pvc
Cakland, Ca	disposable baile,	Technician(s): 56
Initial Depth to Water: 2294	Total Well Depth:	Water Column Height:
Volume/ft:	1 Casing Volume:	3 Casing Volumes:
Purging Device: System	Did Well Dewater?:	Total Gallons Purged:
Start Purge Time:	Stop Purge Time:	Total Time:

 Well Diam.
 Volume/ft (gallons)

 1 Casing Volume ≈ Water column height x Volume/ft.
 2° 0.16

 4° 0.65
 6° 1.47

Time	Casing Volume	Temp. (°C)	pН	Cond. (uS)	Comments
	•	pursed	for 35 m	NIMS	

Fe = Sample ID	m	g/L	ORP =	m\	DO =	mg/L	
	Date	Time	Container Type	Preservative	Analytes	Analytic Method	
MW-3	6-10-02	7:30	l Ambei	Mec	TPHO STEI MIBE		
8	,						

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MUZ	
Project Number: 130- b10 5	Date: 6-10-02	Well Yield:	
Site Address: 5th St	Sampling Method:	Well Diameter: 4 1 pvc	
Oakland, Ca	disposable bailer	Technician(s):	
Initial Depth to Water: 18.54	Total Well Depth:	Water Column Height:	
Volume/ft:	1 Casing Volume:	3 Casing Volumes:	
Purging Device: 57516m	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
	connected	hose to	system for	F purging	

Fe = Sample ID	n	ng/L	ORP = Container Type	mV DO =		mg/L
	Date	Time		Preservative	Analytes	Analytic Method
MW-'Z	610-02	6: 30	Lives 1 Amber	Hel	THY BIEX MIBE	
·	,		•			

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MW-1	
Project Number: 130-0105	Date: 6-10-0 2	Well Yield:	
Site Address:	Sampling Method:	Well Diameter: 4 🛘 pvc	
akland, Ca	disposable bailes	Technician(s): \$4	
Initial Depth to Water: 24.10	Total Well Depth:	Water Column Height:	
Volume/ft:	1 Casing Volume:	3 Casing Volumes:	
Purging Device: 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
	purged	704	20 min s		

Fe =	m	g/L	ORP =	mV	DO =	mg/L
Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
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Project Name: Worthing for	Cambria Mgr: RAS	Well ID: MW &
Project Number: /30-010 5	Date: 6-10-02	Well Yield:
Site Address: 3055 S4h St	Sampling Method:	Well Diameter: 20 pvc
Oakland, Ca	CAT SPOSA OF BATTER	Technician(s):
Initial Depth to Water: 22.30	Total Well Depth:	Water Column Height:
Volume/ft:	1 Casing Volume:	3 Casing Volumes:
Purging Device: 545+ cm	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
		pursed	900	35 mins	

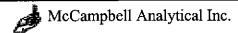
Fe =	mş	g/L	ORP =	m ^v	V DO =	mg/L
Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
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APPENDIX B

Analytical Results for Quarterly Groundwater Sampling



Cambria Env. Technology	Client Project ID: 130-0105-340;	Date Sampled: 06/10/02
6262 Hollis St.	Worthington	Date Received: 06/12/02
Emanyilla CA 04609	Client Contact: Ron Scheele	Date Reported: 06/18/02
Emeryville, CA 94608	Client P.O.:	Date Completed: 06/18/02

June 18, 2002

Dear Ron:

Enclosed are:

- 1). the results of 4 samples from your 130-0105-340; 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		Date Sampled: 06/10/02
6262 Hollis St.	Worthington	Date Received: 06/12/02
Eilla CA 04600	Client Contact: Ron Scheele	Date Extracted: 06/16/02-06/18/02
Emeryville, CA 94608	Client P.O.:	Date Analyzed: 06/16/02-06/18/02

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

Extraction m	ethod: SW5030B	ne mange	(C6-C12) Vol	-	nethods: SW802				Work Orde	er: 0206198
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Веплеепе	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MWI	w	4200,a	ND<100	830	170	110	460	10	101
002A	MW-2	w	14,000,a	ND<800	2600	710	150	2000	50	101
003A	MW-3	w	9000,a	ND<300	1800	1300	96	1000	20	103
004A	MW-4	w	9400,a	ND<200	1400	50	ND<5.0	690	10	113
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	Limit for DF =1; s not detected at or	W	50	5.0	0.5	0.5	0.5	0.5		ig/L
	reporting limit	S	1.0	0.05	0.005	0.005	0.005	0.005	l m	g/Kg

^{*}water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, wipe samples in ug/wipe, and TCLP extracts in ug/L.

DF = dilution factor.

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); 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) no recognizable pattern; k) TPH pattern that does not appear to be derived from gasoline (aviation gas).



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 II	D: 130-0105-340;	Date Sampled: 06/10/02	Date Sampled: 06/10/02						
6262 Hollis St			Worthington	Date Received: 06/12/02	?						
	. 04600	Client Contact:	Ron Scheele	Date Extracted: 06/12/02	2						
Emeryville, C.	A 94008	Client P.O.:		Date Analyzed: 06/13/02	-06/15/0	02					
-,:	Die	esel Range (C10-C2	23) Extractable Hydroc	carbons as Diesel*							
Extraction method: S	W3510C		Analytical methods: SW8015C		ork Order:	0206198					
Lab ID	Client ID	Matrix	T	PH(d)	DF	% SS					
001B	MW1	w	90	00,d,g	1	114					
002B	MW-2	w	2	000,d	1	112					
003B	MW-3	w	99	90,d,g	1	71.0					
004B	MW-4	W	3	400,d	20	107					
					+						

			 -
Reporting Limit for DF =1;	W	50	μg/L
ND means not detected at or above the reporting limit	S	NA	NA

^{*} water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP / STLC / SPLP extracts in

⁺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.



[#] 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

BatchID: 2428

Matrix: W

WorkOrder: 0206198

EPA Method: SW802	1B/8015Cm E	xtraction:	SW5030E	3	Ext. Date:	6/12/02	s	piked Sampl	e ID: 02062	209-011A
Commound	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	99	100	1.49	97.1	100	15	80	120
MTBE	ND	10	99.7	105	4.80	106	100	11	80	120
Benzene	0.5332	10	107	94.6	1.34	111	106	4.6	80	120
Toluene	0.5529	10	110	94.6	0.354	117	112	3.8	80	120
Ethylbenzene	ND	10	108	104	4.93	114	110	5.0	80	120
Xylenes	ND	30	103	108	6.25	113	110	3.1	80	120
%SS	105	10	105	106	0.509	104	105	2.0	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, or analyte concentration in sample exceeds spike amount.

% 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 their RPDs near 0% if: a) the sample is inhomogeneous AND contains significant concentrations of analyze relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560

 $\label{eq:continuity} Telephone: 925-798-1620 \quad Fax: 925-798-1622 \\ \text{http://www.mccampbell.com} \quad E\text{-mail}: main@mccampbell.com}$

QC SUMMARY REPORT FOR SW8015C

BatchID: 2417

Matrix: W

WorkOrder: 0206198

EPA Method: SW8015C	E	xtraction:	SW35100	3	Ext. Date:	6/12/02	s	piked Sampl	le ID: N/A	
Compound	Sample	Spiked	MŞ*	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	89.1	90	1.0	70	130
%SS1	N/A	2500	N/A	N/A	N/A	111	113	1.4	70	130

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, or analyte concentration in sample exceeds spike amount.

% 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.

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

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 0206198

Client:

Cambria Env. Technology

110 Second Avenue South, #D7 Pacheco, CA 94553-5560

6262 Hollis St.

(925) 798-1620

Emeryville, CA 94608

TEL:

(510) 450-1983

FAX: ProjectNo:

(510) 450-8295 130-0105-340; W

PO:

12-Jun-02

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						1 - 10-11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		Requested Tests					
Sample ID	ClientSampID	Matrix	Collection Date	Bottle	~>	SW8015C	8021B/801	5	FIZ FORMULE SPECE.	·	. E-SANSSEY	. Saleston	
Campic ib	onomounipre.	***************************************											
						and the state of t							<u>-</u>
0206198-001	MW1	Water	6/10/02 6:00:00 PM		_ В	В	A						
0206198-002	MW-2	Water	6/10/02 6:30:00 PM			В	A						
0206198-003	MW-3	Water	6/10/02 7:30:00 PM]		В	A						
0206198-004	MW-4	Water	6/10/02 8:00:00 PM	<u></u>		В	A						

Comments

		Date/Time	Date/Time
Relinquished by:	manufacture that does not be a second to the		Received by:
Relinquished by:	- Company of the Comp		Received by:
Relinquished by:			Received by:

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

Cambria Environmental Technology	Client Project ID: #130-0105-343;	Date Sampled: 04/02/02
6262 Hollis Street	Worthington	Date Received: 04/03/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Extracted: 04/03/02
	Client P.O:	Date Analyzed: 04/03/02

04/10/02

Dear Ron:

Enclosed are:

- 1). the results of 2 samples from your #130-0105-343; 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.

Edward Hamilton, Lab Director

Cambria En	ivironmenta	al Technol	logy			D: # 1 30-010	05-343;	Date Samp	oled: 04/02	2/02
6262 Hollis	Street			Worth	nington			Date Rece	ived: 04/03	3/02
Emeryville,	, CA 94608			Client	Contact: I	Ron Scheel	e	Date Extra	icted: 04/0	4/02
				Client	P.O:		-	Date Anal	yzed: 04/0	4/02
Gasoline I	Range (C6-	C12) Vol	atile	Hydrod	earbons as	Gasoline*	, with Me	thyl tert-Bu	ıtyl Ether	* & BTEX*
Lab ID	Client ID	Matrix		H(g) ⁺	MTBE			Ethylben-		% Recovery
0204060-	- CHERT ID	IVIALITA	11	п(g) ———	MIBE	Benzene	Toluene	zene	Xylenes	Surrogate
001	INF	Air	20	60,a	ND<3	6.2	5.0	0.77	3.0	#
0204060- 002	EFF	Air	1	ND	ND	ND	ND	ND	ND	108
	-									
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	<u> </u>									
ppm (ı	mg/L) to ppm	v (uL/L) con	versio	n for TPF	ł(g) assumes	the molecular	weight of ga	asoline to be ec	qual to that of	f hexane.
										· · · · · ·
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Reporting Lin	ated; ND	Air	10 ı	uL/L	1.5	0.15	0.15	0.15	0.25	
means not dete		S	1.0 n	ng/kg	0.05	0.005	0.005	0.005	0.005	

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 (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.



^{*} water and air samples are reported in uL/L(ppmv), wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

f cluttered chromatogram; sample peak coelutes with surrogate peak

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

QC REPORT

EPA 8015m + 8020

Date:	04/04/02
	ひていしていひと

Extraction: EPA 5030

Matrix: Air

Date: 04/04/02	Extraction	: EPA:	5030		Matrix:	Air	
		%Rec					
Compound	Sample	MS	MSD	Amount Spiked	MS	MSD	RPD
SampleID: 40402					Instrumer	<u>ıt</u> GC	-12
Surrogate1	ND	97.0	93.0	100.00	97	93	4.2
Xylenes	ND	32.5	32.6	30.00	108	109	0.3
Ethylbenzene	ND	10.6	10.5	10.00	106	105	0.9
Toluene	ND	10.4	10.3	10.00	104	103	1.0
Benzene	ND	10.5	10.3	10.00	105	103	1.9
MTBE	ND	10.2	10.2	10.00	102	102	0.0
TPH (gas)	ND	93.2	93.7	100.00	93	94	0.6

% Re covery =
$$\frac{(MS-Sample)}{AmountSpiked}$$
 · 100

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2400$$

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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: 0204060

Cliant.			
	^	. *	
		He.	

Cambria Env. Technology 6262 Hollis St.

TEL: FAX:

Emeryville, CA 94608

ProjectNo: #130-0105-343;

PO:

03-Apr-02

			····			 Requested	Tests		
Sample ID	ClientSampID	Matrix	Collection Date	Bottle	8021B/8015			:	
0204060-001	INF	Air	4/2/02		Α				
0204060-002	EFF	Air	4/2/02		Α				

Comments: Report in ppmv; 10 ppmv limit 20 ml injection volume

Date/Time	Date/Time
Relinquished by:	Received by:
Relinquished by:	Received by:
Relinquished by:	Received by:

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.

Cambria Env. Technology	Client Project ID: #130-0105-343;	Date Sampled: 04/02/02
6262 Hollis St.	Worthington	Date Received: 04/04/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Reported: 04/10/02
	Client P.O.:	Date Completed: 04/10/02

April 10, 2002

Dear Ron:

Enclosed are:

- 1). the results of 3 samples from your #130-0105-343; 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

Cambria Env. Technology	Client Project ID: #130-0105-343;	Date Sampled: 04/02/02
6262 Hollis St.	Worthington	Date Received: 04/04/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Extracted: 04/06/02-04/08/02
Emery vine, or 54000	Client P.O.:	Date Analyzed: 04/06/02-04/08/02

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

xtraction me	thod: SW5030B			Analytical r	methods: SW802	IB/8015Cm		V	Vork Orde	r: 02040
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	w	160,a	9,9	15	17	3.3	20	1	102
002A	EFF-1	w	ND	ND	ND	ND	ND	ND	l	104
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	eporting limit	S	1	0.05	0.005	0.005	0.005	0.005	mg	/Kg

^{*}water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, wipe samples in ug/wipe, and TCLP extracts in ug/L.

DF = dilution factor.

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); 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) no recognizable pattern.



Benzene

TPH (gas)

MTBE

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

QC REPORT

EPA 8015m + 8020

Date: 04/06/02	Extraction	: EPA:	5030		Matrix:	Water	
_		Concen	tration:	ug/L	%Rec	очегу	
Compound	Sample	MS	MSD	Amount Spiked	MS	MSD	RPD
SampleID: 40602				-	Instrumer	t GC	·12
Surrogate1	ND	92.0	94.0	100.00	92	94	2.2
Xylenes	ND	32.7	33.5	30.00	109	112	2.4
Ethylbenzene	ND	10.7	11.2	10.00	107	112	4.6
Toluene	ND	10.6	10.9	10.00	106	109	2.8

10.6

10.6

96.5

11.0

11.3

94.1

10.00

10.00

100.00

106

106

96

110

113

94

3.7

6.4

2.5

ND

ND

ND

% Re covery =
$$\frac{(MS-Sample)}{AmountSpiked} \cdot 100$$

RPD= $\frac{(MS-MSD)}{(MS+MSD)} \cdot 2\cdot 100$

RPD means Relative Percent Deviation

0204084 2016

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Telephone: (925) 7	9 35 3 30 30		·> -\(\frac{1}{2}\)	F	ax: (925)	798-	162	2							1.5				``			RU	SH		24 F	ЮU	R	48 H	JOL	JR :	5 DA	١Y
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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: 0204084

Client:

Cambria Env. Technology

TEL:

(510) 450-1983

6262 Hollis St.

FAX:

(510) 450-8295

Emeryville, CA 94608

ProjectNo: #130-0105-343;

PO:

04-Apr-02

							Requeste	d Tests		
Sample ID	ClientSamplD	Matrix	Collection Date	Bottle	8021B/8015			į		
						•				
0204084-001	INF	Water	4/2/02 11:00:00 AM		Α			i		
0204084-002	EFF-1	Water	4/2/02 11:00:00 AM		A			A		
0204084-003	EFF-2	Water	4/2/02 11:00:00 AM]	Α					

Comments:

Only analyze EFF-2 if HC's detected in EFF-1

Date/Time	Date/Time
Relinquished by:	Received by:
Relinquished by:	Received by:
Relinquished by:	Received by:

NOTICE: Solid samples are discarded after 60 days and Non-Solid samples are discarded after 30 days unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

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: #130-0105-343;	Date Sampled: 05/06/02
6262 Hollis St.	Worthington	Date Received: 05/07/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Reported: 05/13/02
	Client P.O.:	Date Completed: 05/13/02

May 13, 2002

Dear Ron:

Enclosed are:

- 1). the results of 2 samples from your #130-0105-343; 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

Cambria I	Environmenta	1 Technolog	gy Cli	ient	Project ID): #130-010)5-343;	Date Samp	oled: 05/06	/02							
6262 Holl	is Street		W	orth	ington			Date Rece	ived: 05/07	7/02							
Emeryvill	e, CA 94608		Cli	ient	Contact: I	Ron Scheele	e	Date Extra	cted: 05/0	7/02							
			Cl	ient	P.O:			Date Analyzed: 05/07/02									
	Range (C6- ls 5030, modifie	-	_					•	•	* & BTEX*							
Lab ID	Client ID	Matrix	TPH(g)		MTBE	Benzene	Toluene	Ethylben- zene	Xylenes	% Recovery Surrogate							
0205085 -001	INF	Air	500,a		ND<5.0	10	7.3	0.96	4.2	#							
0205085 -002	EFF	Air	ND		ND	ND	ND	ND	ND	110							
% ppr	n (mg/L) to ppm	v (uL/L) conv	ersion for	r TPI	H(g) assumes	the molecula	ır weight of g	gasoline to be e	qual to that o	of hexane.							
										-							
Reporting	Limit unless	Air	10 uL/	L	1.5	0.15	0.15	0.15	0.25	1							

0.005

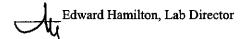
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0.005

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1.0 mg/kg

^{&#}x27;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 (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.



0.005

0.005

otherwise stated; ND means not detected above

the reporting limit

^{*} water and air samples are reported in uL/L(ppmv), wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

^{*} cluttered chromatogram; sample peak coelutes with surrogate peak

QC REPORT

EPA 8015m + 8020

Date: 05/07/02

Extraction: EPA 5030

Matrix: Water/Air

		Concentration: ug/L										
Compound	Sample	MS	MSD	Amount Spiked	MS	MSD	RPD					
SampleID: 50702	·				Instrumer	<u>ıt</u> GC	-12					
Surrogate1	ND	102.0	101.0	100.00	102	101	1.0					
Xylenes	ND	29.9	30.0	30.00	100	100	0.3					
Ethylbenzene	ND	11.0	10.0	10.00	110	100	9.5					
Toluene	ND	10.0	10.0	10.00	100	100	0.0					
Benzene	ND	10.0	10.0	10.00	100	100	0.0					
MTBE	ND	9.0	9.1	10.00	90	91	1.1					
TPH (gas)	ND	95.3	97.2	100.00	95	97	2.0					

% Re covery =
$$\frac{(MS-Sample)}{AmountSpiked} \cdot 100$$

$$RPD = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2 \cdot 100$$

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

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

WorkOrder: 0205085

Client:

Cambria Env. Technology

TEL: FAX: (510) 450-1983

6262 Hollis St.

ProjectNo:

(510) 450-8295 #130-0105-343;

Emeryville, CA 94608

PO:

07-May-02

	· · · · · · · · · · · · · · · · · · ·						 Requested Tes	its	
Sample ID	ClientSamplD	Matrix	Collection Date	Bottle	8021B/8015				
					<u></u>	- MARCON /	 		
0205085-001	INF	Air	5/6/02 12:00:00 PM		Α				
0205085-002	EFF	Air	5/6/02 12:00:00 PM		Α				

Comments:

Date/Time	Date/Time
Relinquished by:	Received by:
Relinquished by:	Received by:
Relinquished by:	Received by:

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.

0205055

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Report To: Ron Sc	ne: (925) 798	-1620				ax (925)	798-	162	2			,					5.	: 1	\			RU	SH	2	4 F	ЮU	R	48 I	OL	JR			
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Tele: (510) 450-19		/0.		<u></u>	103	160.0	20.5		 -			4	9	3] _							8			V			i .						
Project #: 130	-0105-	212	t	ax: ('	No	13U-8	293 \				-	-	8015y Metde	100	99							0 / 8			İ									
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Cambria Env. Technology	Client Project ID: #130-0105-343;	Date Sampled: 05/06/02
6262 Hollis St.	Worthington	Date Received: 05/07/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Reported: 05/14/02
	Client P.O.:	Date Completed: 05/14/02

May 14, 2002

Dear Ron:

Enclosed are:

- 1). the results of 3 samples from your #130-0105-343; 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@

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Cambria Env. Technology	Client Project ID: #130-0105-343; Worthington	Date Sampled: 05/06/02
6262 Hollis St.	w ordington	Date Received: 05/07/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Extracted: 05/08/02-05/11/02
	Client P.O.:	Date Analyzed: 05/08/02-05/11/02

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

Extraction method: SW5020D

	ethod: SW5030B			Analytical:	methods: SW802	1B/8015Cm		,	Work Orde	r. 02051
Lab ID	Client ID	Matrix	TPH(g)	МТВЕ	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% S
001A	INF	w	100,a	5.5	3.5	1.7	1.0	4.0	1	10:
002A	EFF-1	w	ND	ND	ND	ND	ND	ND	1	104
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eporting l	Limit for DF =1; not detected at or	w	50	5.0	0.5	0.5	0.5	0.5	ug/	L
bove the	reporting limit	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/l	

^{*}water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, wipe samples in ug/wipe, and TCLP extracts in ug/L.

DF = dilution factor.

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); 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) no recognizable pattern.

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 SW8021B/8015Cm

BatchID: 1713

Matrix: W

WorkOrder: 0205087

EPA Method: SW802	21B/8015Cm E	xtraction:	SW5030E	3	Ext. Date:	5/07/02	s	piked Sampl	e ID: N/A	· · · · · ·
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
PH(gas)	N/A	60	N/A	N/A	N/A	107	111	4.1	80	120
МТВЕ	N/A	10	N/A	N/A	N/A	85.1	88.7	4.1	80	120
Benzene	N/A	10	N/A	N/A	N/A	91.1	97.6	6.9	80	120
Toluene	N/A	10	N/A	N/A	N/A	94.3	101	6.5	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	94.5	102	7.2	80	120
Xylenes	N/A	30	N/A	N/A	N/A	94.3	103	9.1	80	120
%SS	N/A	10	N/A	N/A	N/A	102	103	1.0	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, or analyte concentration in sample exceeds spike amount.

% 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 their RPDs near 0% if: a) the sample is inhomogeneous AND contains significant concentrations of analyze 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: 0205087

Client:

Cambria Env. Technology

TEL:

(510) 450-1983

6262 Hollis St.

FAX:

(510) 450-8295

Emeryville, CA 94608

ProjectNo: #130-0105-343;

PO:

07-May-02

						Req	uested Tests	
Sample ID	ClientSamplD	Matrix	Collection Date	Bottle	8021B/8015			
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0205087-001	INF	Water	5/6/02 11:30:00 AM		Α			
0205087-002	EFF-1	Water	5/6/02 11:30:00 AM		Α			
0205087-003	EFF-2	Water	5/6/02 11:30:00 AM		Α	ļ		

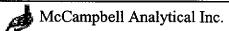
Comments:

Date/Time	Date/Time
Relinquished by:	Received by:
Relinquished by:	Received by:
Relinquished by:	Received by:

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.

0205087

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Report To: Ron So				3jil T) <u> </u>	ΔM	F			. ·								An	aly	şis l	(eq.	est							Ot				D.M.C		**
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	oins Smeet ille, CA 9460	1 0				<u> </u>			*	·		- ·			E&F/B&F)						. `					·		i					× 1		ļ
Tele: (510) 450-19	rene, Cal 9400 Dri	70					205			•	-		Neg.		ESE	_		'				- 22	5		,			·		.					
Project #: 120	0105	742		ax.	t Mary	7V.	293		L N V	<u> </u>		1	88 ES y		220	118							è				. ;								
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Cambria Env. Technology	Client Project ID: #130-0105-343;	Date Sampled: 06/05/02
6262 Hollis St.	Worthington	Date Received: 06/06/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Reported: 06/13/02
Biliciyvine, CA 94000	Client P.O.:	Date Completed: 06/13/02

June 13, 2002

Dear Ron:

Enclosed are:

- 1). the results of 2 samples from your #130-0105-343; 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

Cambria I	Environmenta	l Technolo	ogy	Client	Project ID): #130-010	5-343;	Date Sampl	ed: 06/05/0	02
6262 Holl				Worth			<u> </u>	Date Receiv	red: 06/06/	02
Emeryvill	e, CA 94608			Client	Contact: I	Ron Scheele	e	Date Extrac	ted: 06/06	-06/07/02
				Client	P.O:			Date Analyz	zed: 06/06	-06/07/02
ł.	Range (C6-	-		_			·	*	*	* & BTEX*
EPA method	ls 5030, modified	18015, and 8	020 ог	602, Ca	lifornia RW(QCB (SF Bay	Region) met	hod GCFID(50:	30)	
Lab ID	Client ID	Matrix	TPH	H(g) ⁺	МТВЕ	Benzene	Toluene	Ethylben- zene	Xylenes	% Recovery Surrogate
0206082 -001	INF	Air	7 3	3,a	ND	2.3	1.0	ND	0.98	#
0206082 -002	EFF	Air	N	ID	ND	ND	ND	ND	ND	108
				•						

									i,	
** pp	m (mg/L) to ppn	ıv (uL/L) con	iversio	n for TP	H(g) assumes	s the molecula	r weight of s	zasoline to be ed	qual to that of	f hexane.
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	,									
	Limit unless	Air	10 ι	uL/L	1.5	0.15	0.15	0.15	0.25	
means not	e stated; ND detected above orting limit	S	1.0 n	ng/kg	0.05	0.005	0.005	0.005	0.005	

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 (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.



^{*} water and air samples are reported in uL/L(ppmv), wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

^{*} cluttered chromatogram; sample peak coelutes with surrogate peak

QC SUMMARY REPORT FOR SW8021B/8015Cm

BatchID: 2314

Matrix: A

WorkOrder: 0206082

EPA Method: SW8021B	3/8015Cm E	xtraction:	SW5030B		Ext. Date:	6/06/02	S	piked Sampl	e ID: N/A	
EFA Medica: 54455212	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
Сотроили	uL/L	uL/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
ГРН(gas)	N/A	60	N/A	N/A	N/A	115	109	5.0	80	120
MTBE	N/A	10	N/A	N/A	N/A	110	91.3	18	80	120
Benzene	N/A	10	N/A	N/A	N/A	95.4	96.8	1.5	80	120
Toluene	N/A	10	N/A	N/A	N/A	98.2	101	2.3	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	99.2	101	1.5	80	120
Xylenes	N/A	30	N/A	N/A	N/A	100	103	3.3	80	120
%SS	N/A	10	N/A	N/A	N/A	100	100	0.15	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, or analyte concentration in sample exceeds spike amount.

% 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 their RPDs near 0% if: a) the sample is inhomogeneous AND contains significant concentrations of analyze 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: 0206082

Client:

Cambria Env. Technology

TEL:

(510) 450-1983

6262 Hollis St.

FAX:

(510) 450-8295

Emeryville, CA 94608

ProjectNo: #130-0105-343;

PO:

06-Jun-02

							Requested Te	sts		
Sample ID	ClientSampID	Matrix	Collection Date	Bottle	8021B/8015					
0206082-001	INF	Air	6/5/02 4:00:00 PM		Α	Ī			i	
0206082-002	EFF	Air	6/5/02 4:00:00 PM		Α					

Comments:

	Date/Time		Date/Time
Relinquished by:		Received by:	
Relinquished by:		Received by:	
Relinquished by:		Received by:	

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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Report To: Ron Se	one: (925) 798 cheele	8 -1620			F	Fax:	(925	<u>.) 7</u> 9)8-tr	522									17	. T. W.	- \ \	<u> </u>		R	USI	$H^{\frac{2n}{n}}$	24	HO	UR	48	HO	JED UR 5 DA	V.
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Tele: (510) 450-19	983		, 4 4 4 7	Fax: 1	(510) 4	450	8295	5	<u></u>	<u> </u>	1.1.1			ROLSY NATED	E		$\cdot $		1.				33.0			i. Na			İ				
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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: 130-0105-343; Worthington	Date Sampled: 06/05/02
6262 Hollis St.		Date Received: 06/06/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Reported: 06/13/02
	Client P.O.:	Date Completed: 06/13/02

June 13, 2002

Dear Ron:

Enclosed are:

- 1). the results of 3 samples from your 130-0105-343; 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

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	,	Date Sampled: 06/05/02
6262 Hollis St.	Worthington	Date Received: 06/06/02
Emeryville, CA 94608	Client Contact: Ron Scheele	Date Extracted: 06/09/02-06/10/02
Emeryvine, CA 94000	Client P.O.:	Date Analyzed: 06/09/02-06/10/02

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

Extraction me	ethod: SW5030B			Analytical r	nethods: SW802	iB/8015Cm		,	Work Orde	r: 0206086
(1 VD)	OU . ID	137.1		1 14757	1 5				T 55	0/ 00
I Lab II) I	Client ID	i Matrix I	TPH(g)	I MTBE	I Benzene	l Toluene	IEthylbenzene i	Xvlenes	DF	1 % SS 1

Extraction fielded: 5475050B				Anatyucari	HCHIOUS. 3W 602	ID/0015Citi			TOIR OIGE	1. 0200000
Lab ID Client ID		Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	w	ND	8.4	2.8	1.4	ND	2.5	1	103
002A	EFF-1	w	ND	ND	ND	ND	ND	ND	1	102
						<u></u>				
	M. M. Com									
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			***************************************						·	
Reportin	g Limit for DF =1;	w	50	5.0	0.5	0.5	0.5	0.5	111	g/L
ND mear	is not detected at or he reporting limit	S	1.0	0.05	0.005	0.005	0.005	0.005		g/Kg

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

DF = dilution factor.

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); 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) no recognizable pattern; k) TPH pattern that does not appear to be derived from gasoline (aviation gas).



QC SUMMARY REPORT FOR SW8021B/8015Cm

BatchID: 2314

Matrix: W

WorkOrder: 0206086

/8015Cm F	xtraction:	SW5030E		Ext. Date:	6/06/02	SI	oiked Sample	e ID: N/A	
		MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
			% Pec	% RPD	% Rec.	% Rec.	% RPD	Low	High
µg/L		<u> </u>	ļ	79		109	5.0	80	120
N/A	60	N/A	N/A		<u> </u>	ļ	ļ		120
N/A	10	N/A	N/A	N/A	110 	 	<u> </u>		120
N/A	10	N/A	N/A	N/A	95.4	96.8	1.5		·
N/A	10	N/A	N/A	N/A	98.2	101	2.3	80	120
N/A	10	N/A	N/A	N/A	99.2	101	1.5	80	120
	30	N/A	N/A	N/A	100	103	3,3	80	120
	<u> </u>		N/A		100	100	0.15	80	120
	Sample µg/L N/A N/A N/A	Sample Spiked μg/L μg/L N/A 60 N/A 10 N/A 10 N/A 10 N/A 30	Sample Spiked MS* μg/L μg/L % Rec. N/A 60 N/A N/A 10 N/A N/A 10 N/A N/A 10 N/A N/A 10 N/A N/A 10 N/A N/A 30 N/A	Sample Spiked MS* MSD*	Sample Spiked MS* MSD* MS-MSD* μg/L μg/L % Rec. % Rec. % RPD N/A 60 N/A N/A N/A N/A 10 N/A N/A N/A N/A 10 N/A N/A N/A N/A 10 N/A N/A N/A N/A 10 N/A N/A N/A N/A 10 N/A N/A N/A N/A 30 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Sample Spiked MS* MSD* MS-MSD* LCS μg/L μg/L % Rec. % Rec. % RPD % Rec. N/A 60 N/A N/A N/A 115 N/A 10 N/A N/A N/A 95.4 N/A 10 N/A N/A N/A 98.2 N/A 10 N/A N/A N/A 99.2 N/A 30 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A 100 N/A N/A N/A 100 N/A N/A N/A N/A N/A 100 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N	Sample Spiked MS* MSD* MS-MSD* LCS LCSD	Sample Spiked MS* MSD* MS-MSD* LCS LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD LCS-LCSD MS-MSD* LCS LCSD LCS-LCSD LCS-LCSD MS-MSD* LCS LCSD LCS-LCSD LCS-LCSD MS-MSD* LCS MS-MSD* LCS LCSD LCS-LCSD LC	Sample Spiked MS* MSD* MS-MSD* LCS LCSD LCS-LCSD Acceptance

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, or analyte concentration in sample exceeds spike amount.

% 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 their RPDs near 0% if: a) the sample is inhomogeneous AND contains significant concentrations of analyze relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

McCampbell Analytical Inc.

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

WorkOrder: 0206086

Client:

Cambria Env. Technology

6262 Hollis St.

Emeryville, CA 94608

TEL:

(510) 450-1983

FAX:

(510) 450-8295

ProjectNo:

130-0105-343; W

PO:

06-Jun-02

Cample ID	011				The street of the street streets	Requested Tests
Sample ID	ClientSampID	Matrix	Collection Date	Bottle	8021B/8015	A PROPERTY OF THE PROPERTY OF
0206086-001	INF	Water	6/5/02 3:30:00 PM	<u></u>		
0206086-002	EFF-1	Water	6/5/02 3:30:00 PM	1	Α	
0206086-003	EFF-2	Water	6/5/02 3:30:00 PM	Ì	Α	

Comments.				
	Date/Time			Date/Time
Relinquished by:		Received by:		
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Relinquished by:		Received by:		

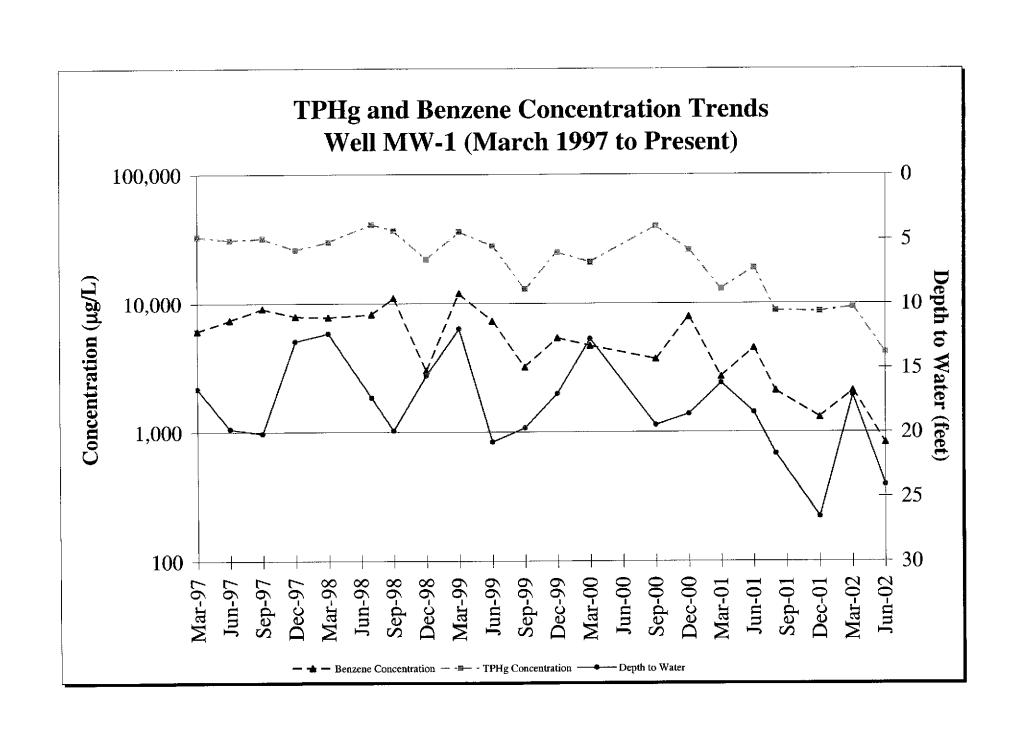
NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

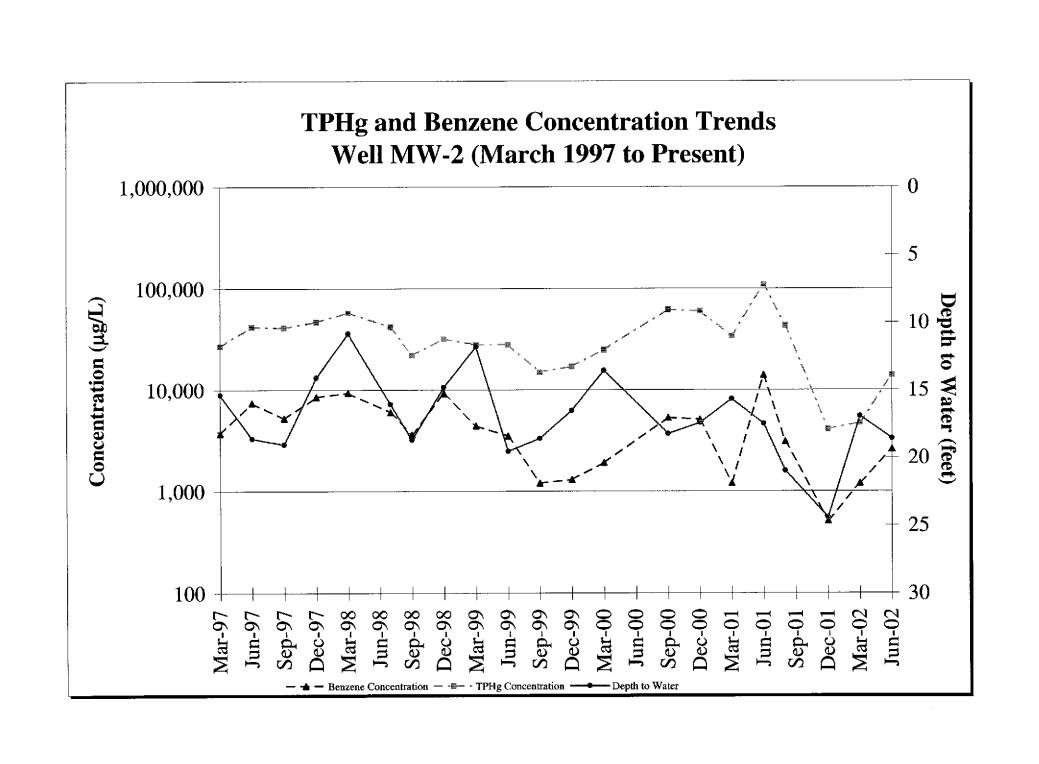
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Tele: (510) 450-19	ille, CA 9460)8 .	. tu in in in in in in in in in in in in in			_ ;	12 1 12 12 12 12 12 12 12 12 12 12 12 12 12		1	<u> </u>	3.7		1		4			1				-	2		į.								*
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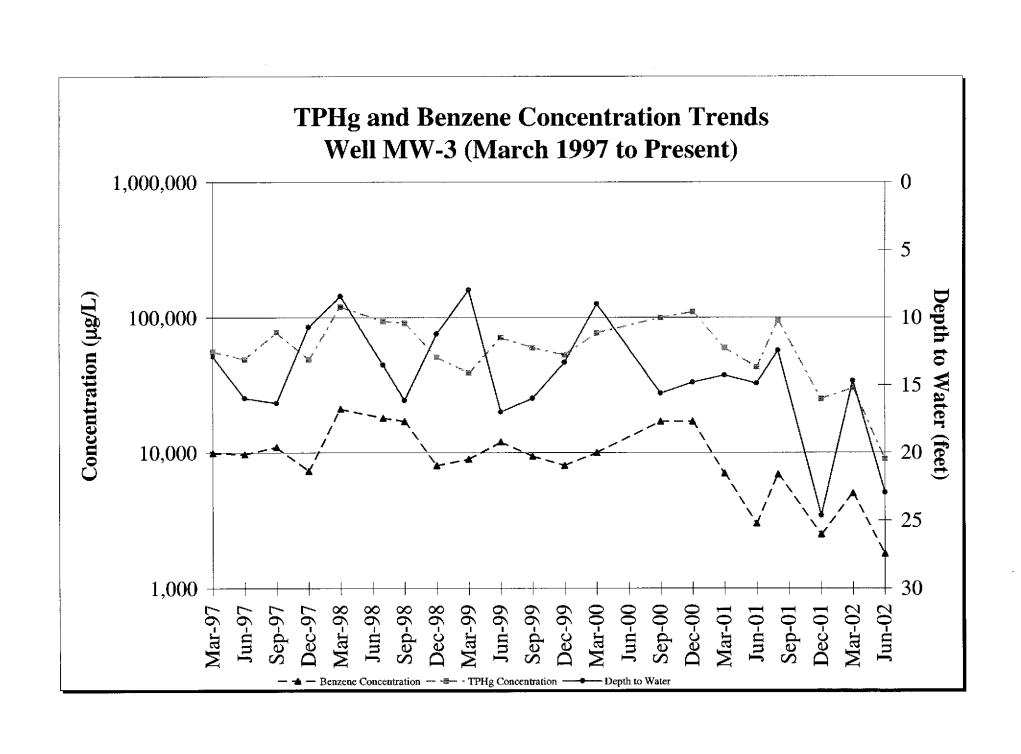


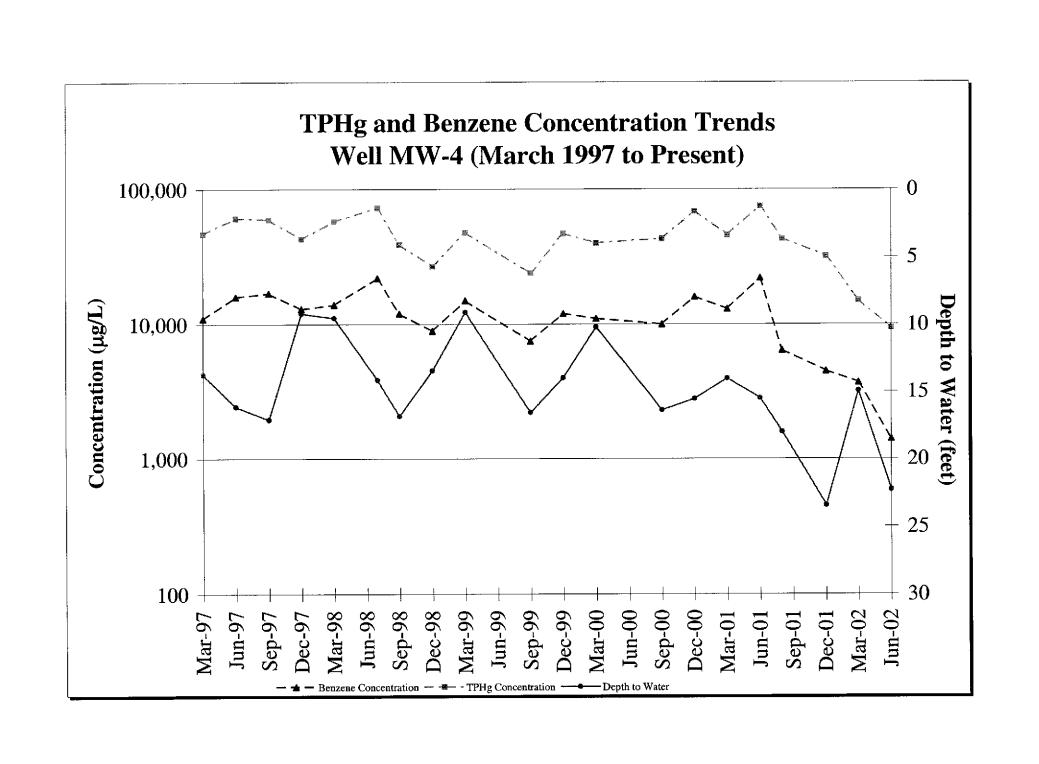
APPENDIX D

TPHg and Benzene Concentration Trend Graphs











APPENDIX E

Electronic Delivery Confirmations

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

Your EDF file has been successfully uploaded!

Confirmation Number: 9374192893

Date/Time of Submittal: 8/1/2002 1:32:40 PM

Facility Global ID: T0600100538

Facility Name: EXXON

Submittal Title: Worthington, 2nd Qtr 2002, GW Analytical Data

Submittal Type: GW Monitoring Report

Logged in as CAMBRIA-EM (AUTH_RP)

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:

Worthington 2nd Qtr 2002, GW

Depths

Submittal Date/Time: 8/1/2002 1:36:24 PM

Confirmation

4957340836

Number:

Back to Main Menu

Logged in as CAMBRIA-EM (AUTH_RP)

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

UPLOADING A GEO_Z FILE

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

Submittal Title:

Worthington Well Elevation

Data

Submittal Date/Time: 8/1/2002 1:46:16 PM

Confirmation

1013641178

Number:

Back to Main Menu

Logged in as CAMBRIA-EM (AUTH_RP)

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

Submittal Report For EXXON: page 1 of												
<u>Title</u>	Туре	Submitted	Submittal Status	Confirmation #								
GEO_MAP	GEO_MAP	6/7/2002	AWAITING APPROVAL	2839451432	<u>Delete</u> Submittal							
Worthington, 2nd Qtr 2002, GW Analytical Data	GWM_R	8/1/2002	AWAITING APPROVAL	9374192893	<u>Delete</u> Submittal							
Worthington 2nd Qtr 2002, GW Depths	GEO_WELL	8/1/2002	AWAITING APPROVAL	4957340836	<u>Delete</u> <u>Submittal</u>							
Worthington Well Elevation Data	GEO_Z	8/1/2002	AWAITING APPROVAL	1013641178	<u>Delete</u> Submittal							

Logged in as CAMBRIA-EM (AUTH_RP)