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1626 Vallejo Street
San Francisco, CA 94123-5116

May 6, 2003

Mr. Thomas Peacock
Supervising HMS, LOP
ACHCSA
1131 Harbor Bay Parkway
Alameda, CA 94501
(510) 567-6700 / FAX 337-9335
tpeacock@co.alameda.ca.us

SUBJECT: IQ03 Monitoring/SVE System Progress Report
1432 Harrison Street, Oakland, CA 94612
SITE ID 498

Dear Mr. Peacock:

Attached is the IQ03 Groundwater Monitoring/SVE Systems Progress Report for the above site. If you have a question, please contact me.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Mark Borsuk', with a horizontal line extending to the right.

Mark Borsuk

May 2, 2003

Mr. Mark Borsuk
1626 Vallejo St.
San Francisco, CA 94123-5116



Re: **Groundwater Monitoring and System Progress Report
First Quarter 2003**
1432 Harrison Street
Oakland, California
Cambria Project #540-0188

Dear Mr. Borsuk:

As you requested, Cambria Environmental Technology, Inc. (Cambria) is submitting this groundwater monitoring and system progress report for the above-referenced site. Presented in the report are the first quarter 2003 activities and results and the anticipated second quarter 2003 activities. Attached are two additional copies for submittal to the Alameda County Health Care Service Agency (ACHCSA) and the Bay Area Air Quality Management District (BAAQMD) regulatory agencies.

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

Sincerely,

Cambria Environmental Technology, Inc.

Ron Scheele, R.G.
Associate

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

**Cambria
Environmental
Technology, Inc.**

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

C A M B R I A

GROUNDWATER MONITORING AND SYSTEM PROGRESS REPORT

FIRST QUARTER 2003

1432 Harrison Street
Oakland, California
Cambria Project #540-0188



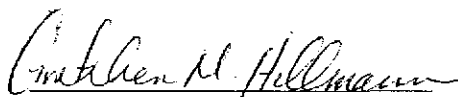
May 2, 2003

Prepared for:

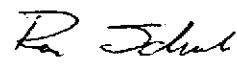
Mr. Mark Borsuk
1626 Vallejo St.
San Francisco, CA 94123-5116

Prepared by:

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


Gretchen M. Hellmann
Project Engineer




Ron Scheele, R.G.
Associate

GROUNDWATER MONITORING AND SYSTEM PROGRESS REPORT

FIRST QUARTER 2003

1432 Harrison Street
Oakland, California
Cambria Project #540-0188-038

May 2, 2003



INTRODUCTION

On behalf of Mr. Mark Borsuk, Cambria Environmental Technology, Inc. (Cambria) has prepared this groundwater monitoring and system progress report for the above-referenced site (see Figure 1). Presented in this report are the first quarter 2003 groundwater monitoring and remediation activities and the anticipated second quarter 2003 activities.

FIRST QUARTER 2003 ACTIVITIES AND RESULTS

Monitoring Activities

Field Activities: On January 23, 2003, Cambria conducted quarterly monitoring activities. Cambria gauged and inspected for separate-phase hydrocarbons (SPH) in wells MW-1 through MW-6 (see Figure 1). Groundwater samples were collected from wells MW-1, MW-2, MW-4, MW-5, and MW-6. Wells MW-1, MW-2, MW-4, and MW-5 are sampled quarterly and wells MW-3 and MW-6 are sampled on an annual basis, occurring during the first quarter sampling event. Field Data Sheets are presented as Appendix A. Groundwater elevations are shown on Figure 1 and Table 1. The groundwater monitoring results have been submitted to the State's Geotracker Database. The electronic delivery confirmations are presented in Appendix D.

Sample Analyses: Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) and MTBE by EPA Method 8021B by McCampbell Analytical, Inc. of Pacheco, California. Groundwater samples from wells MW-1 and MW-4 were also analyzed by EPA Method 8260. The laboratory analytical report for the first quarter 2003 is included as Appendix B. Hydrocarbon concentrations are shown on Figure 1 and Table 1. Analytical results have been submitted to the State's Geotracker Database and electronic delivery confirmations are presented in Appendix D.

Monitoring Results

Groundwater Flow Direction: Based on depth-to-water measurements collected during Cambria's January 23, 2003 site visit, groundwater generally flows beneath the site toward the northeast at a gradient of 0.01 feet/foot (Figure 1). A slight mounding of the groundwater table occurs near well MW-1 and may be related air sparging activities in the immediate vicinity. See Appendix D for the electronic delivery confirmations of groundwater monitoring data.



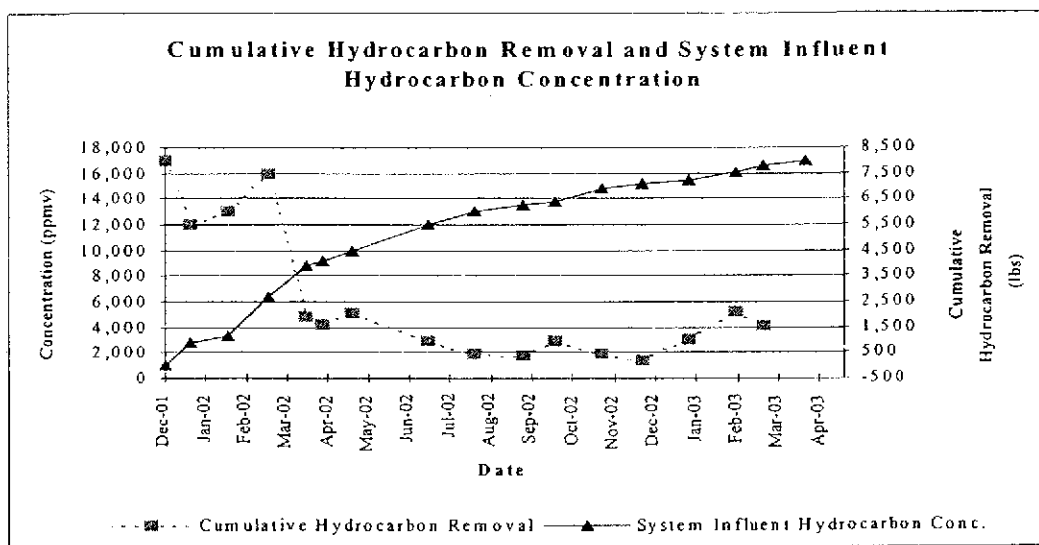
Hydrocarbon Distribution in Groundwater: Hydrocarbon concentrations have decreased or have remained at similar levels relative to previous quarters. The maximum TPHg concentration was detected in well MW-1 at 130,000 micrograms per liter ($\mu\text{g/L}$). The maximum benzene concentration was detected in well MW-4 at 18,000 $\mu\text{g/L}$. MTBE was not detected in any of the wells.

Corrective Action Activities

System Design: The soil vapor extraction (SVE) and air sparging (AS) remediation system consists of a trailer mounted, all-electric catalytic oxidizer with heat exchanger, a 10-horsepower positive-displacement blower, an oil-less air sparge blower, and an auto dialer connected to a phone line to provide remote notification of system operations. Four coaxial remediation wells (VES-1/AS-1, VES-2/AS-2, VES-3/AS-3, VES-4/AS-4) are individually connected to a central manifold in the remediation system enclosure. See Figure 2 for the location of remediation enclosure and wells.

SVE System Operations and Maintenance Activities: During the first quarter, Cambria performed system operation and maintenance (O&M) on the SVE system approximately twice per month. Individual well flow, vacuum, and hydrocarbon concentration measurements were collected from all SVE wells and from the catalytic oxidizer/blower (see Tables 2 and 3). 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 District (BAAQMD) permit, a catalytic oxidizer operating temperature greater than 600 degrees Fahrenheit was maintained, and system operation parameters were continuously measured using a chart recorder. System influent and effluent vapor samples were collected and submitted for laboratory analysis on January 8, February 12, and March 4, 2003. Vapor sample lab results indicated that the catalytic oxidizer was achieving proper destruction efficiency and was operating within permit requirements. Table 2 summarizes soil vapor extraction system operations and analytical results. The analytical laboratory reports from system vapor sampling are included as Attachment C.

SVE System Performance: The SVE system operated continuously throughout the first quarter. Influent vapor concentrations ranged from 3,100 to 5,200 parts per million volume (ppmv) and were higher than the previous quarter likely due to air sparging activities (see Table 2). Air flow rates decreased during the quarter likely due to seasonal rains and a higher water table. Hydrocarbon removal rates ranged from approximately 7.3 to 12.6 pounds per day and fluctuated during the quarter. Overall, influent vapor concentrations remained elevated and hydrocarbon removal rates continued to exhibit an increasing trend. To date, an approximate total of 8,018 pounds of hydrocarbons have been destroyed by soil vapor extraction activities (see graph below and Table 2).



AS System Performance: Air sparging (AS) operations were performed throughout the first quarter. The AS system is setup to cycle on and off every 30 minutes and to operate only between the hours of 7 am to 6 pm to reduce system noise from the air sparge blower during the evening and early morning hours. Air pressures ranged from 4 to 10 pounds per square inch (psi) and injection flow rates ranged from 0.5 to 3 cubic feet per minute (cfm). Air flow rates were maintained at or below 1 cfm in well AS-3 to minimize the potential for SPH accumulation in well MW-1.

ANTICIPATED SECOND QUARTER 2003 ACTIVITIES

Groundwater Sampling: Cambria will gauge all wells, check all wells for SPH, and collect groundwater samples from wells MW-1, MW-2, MW-4, and MW-5. As per the annual sampling schedule, wells MW-3 and MW-6 will be sampled again during the first quarter 2004. Groundwater samples will be analyzed for TPHg by Modified EPA Method 8015 and BTEX and MTBE by EPA Method 8021B. MTBE detected in samples from wells MW-1, MW-4, and MW-5 will be confirmed

by EPA Method 8260. Groundwater monitoring and sampling results will be submitted to the State's Geotracker Database.

Remediation System: Cambria will continue to perform operation and maintenance of the SVE/AS system twice per month during the second quarter of 2003. Optimization activities may include vacuum and flow adjustments to soil vapor extraction wells and pressure and flow adjustments to air sparging wells as hydrocarbon concentrations change in the individual wells. System influent and effluent samples will be collected on a monthly basis along with Horiba gas analyzer readings from the individual wells. System operation records will be kept for a period of two years for possible future BAAQMD inspection.

Cambria will evaluate the performance of the remediation system and combine the results in a quarterly Groundwater Monitoring and System Progress Report. Included in the report will be tables summarizing the concentration, flow, and vacuum of system and individual wells, along with the analytical results.

APPENDIXES

Figure 1 - Groundwater Elevation and Analytical Summary

Figure 2 - Soil Vapor Extraction/Air Sparging System

Table 1 - Groundwater Elevations and Analytical Data

Table 2 - SVE System Performance and Soil Vapor Analytical Results

Table 3 - SVE System Parameters

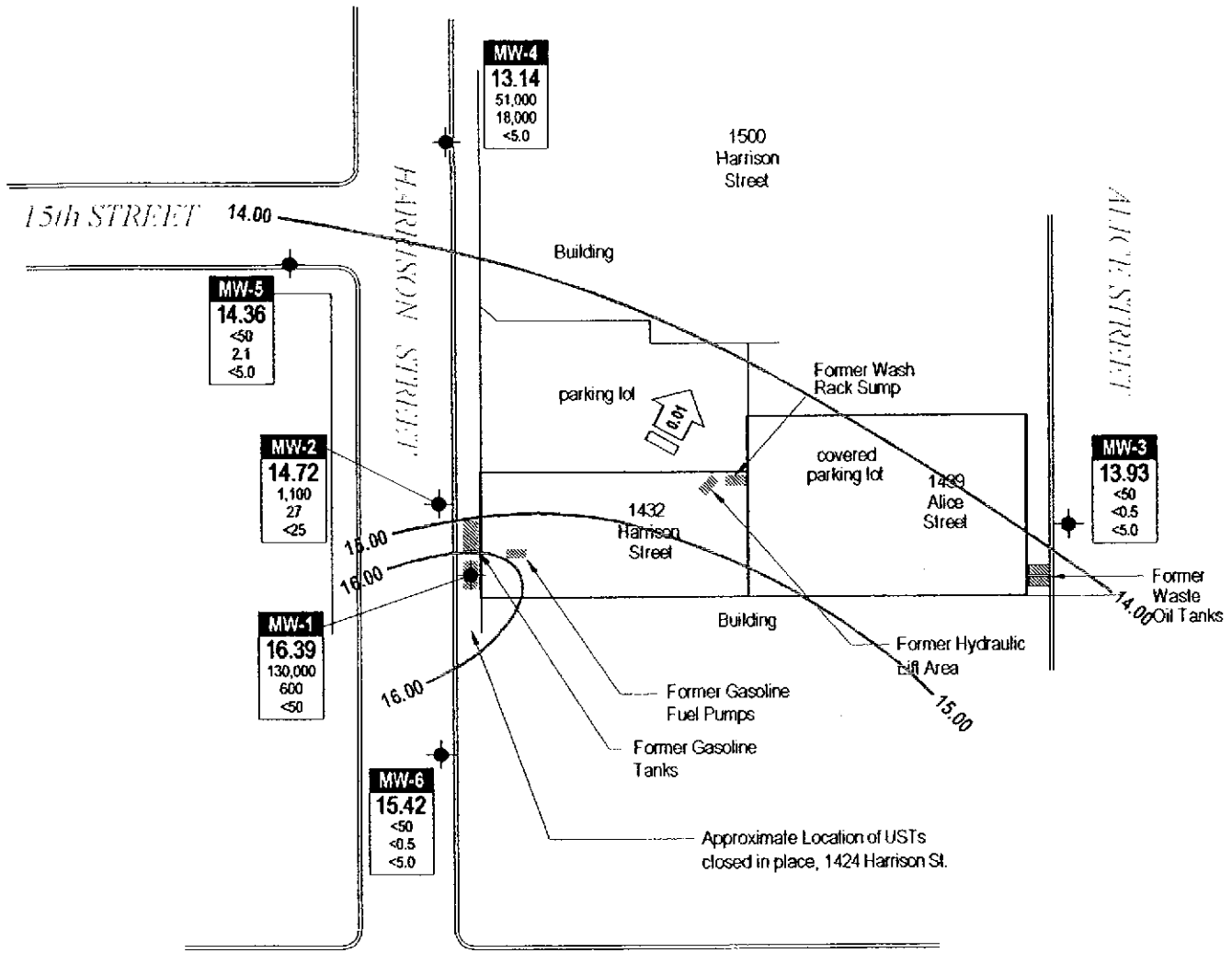
Appendix A - Groundwater Monitoring Field Data Sheets

Appendix B - Analytical Results for Quarterly Groundwater Sampling

Appendix C - Analytical Results for SVE System Operation

Appendix D - Electronic Delivery Confirmation

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EXPLANATION

- Groundwater monitoring well
- Groundwater elevation contour, in feet above mean sea level (msl)
- Groundwater flow direction and gradient

Well ID	ELEV	TPHg	Benzene	MTBE

- Well designation
- Groundwater elevation, in feet above mean sea level (msl)
- Hydrocarbons in groundwater, in micrograms per liter (µg/L)

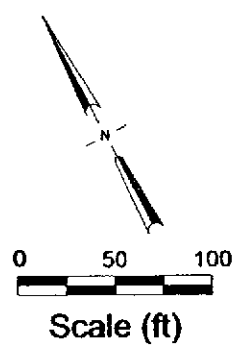


FIGURE 1

1432 Harrison Street
Oakland, California



Groundwater Elevation and Analytical Summary
January 23, 2003

CAMBRIA

Table 1. Groundwater Elevations and Analytical Data - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID	Date	Top of Casing	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes	
		Elevation	Groundwater	Elevation								
TOC (ft)		(ft)	(ft)	(ft)	←----- (µg/L) -----→							
MW-1	8/1/94	--	--	--	170,000	35,000	51,000	2,400	13,000	--	--	
	12/21/94	34.95	19.53	15.42	180,000	41,000	64,000	3,100	100,000	--	--	
	3/13/95	34.95	18.66	16.29	150,000	31,000	45,000	2,500	17,000	--	--	
	6/27/95	34.95	18.20	16.75	71,000	17,000	18,000	1,600	7,700	--	--	
	7/7/95	34.95	18.35	16.60	71,000	17,000	18,000	1,600	7,700	--	--	
	9/28/95	34.95	18.20	16.75	110,000	27,000	34,000	1,700	14,000	--	--	
	12/20/95	34.95	19.96	14.99	120,000	33,000	43,000	2,300	15,000	--	--	
	3/26/96	34.95	19.27	15.68	140,000	29,000	36,000	1,900	13,000	<200*	d	
	6/20/96	34.95	18.64	16.31	110,000	30,000	38,000	2,200	13,000	<200*	--	
	9/26/96	34.95	19.35	15.60	170,000	28,000	40,000	2,200	15,000	ND**	--	
	10/28/96	34.95	19.58	15.37	--	--	--	--	--	--	--	
	12/12/96	34.95	19.68	15.27	110,000	36,000	47,000	2,500	16,000	ND*	--	
	3/31/97	34.95	18.80	16.15	160,000	24,000	39,000	1,900	13,000	ND*	--	
	6/27/97	34.95	19.26	15.69	130,000	25,000	36,000	2,000	14,000	ND*	--	
	9/9/97	34.95	19.70	15.25	99,000	22,000	27,000	1,600	13,000	270*	--	
	12/18/97	34.95	19.25	15.70	160,000	30,000	44,000	2,200	15,000	ND***	--	
	3/12/98	34.95	17.52	17.43	190,000	20,000	49,000	2,500	18,000	ND***	--	
	6/22/98	34.95	18.63	16.32	90,000	19,000	40,000	2,100	16,000	--	--	
	9/18/98	34.95	18.60	16.35	190,000	29,000	48,000	2,400	17,000	--	--	
	12/23/98	34.95	19.18	15.77	140,000	24,000	44,000	2,000	8,200	--	--	
	3/29/99	34.95	18.52	16.43	181,000	22,200	40,100	1,844	12,200	--	--	
	6/23/99	34.95	18.60	16.35	80,000	20,000	33,000	1,600	11,000	--	--	
	9/24/99	34.95	19.05	15.90	117,000	15,100	20,700	1,550	11,800	--	--	
	12/23/99	34.95	19.95	15.00	186,000	25,900	39,000	1,990	12,400	--	--	
	3/21/00	34.95	18.48	16.47	210,000	35,000	42,000	2,200	13,000	<3,000	a	
	7/3/00	34.95	18.95	16.00	200,000	33,000	46,000	2,200	15,000	<200*	a	
	9/7/00	34.95	19.45	15.50	Free Product present (Sheen). No sample taken.							
	12/5/00	34.95	19.90	15.05	220,000	42,000	57,000	2,700	17,000	<200	a	
	3/6/01	34.95	18.20	16.75	180,000	27,000	39,000	2,000	13,000	<1200 (<20)	a,l	
	6/8/01	34.95	20.14	14.81	170,000	28,000	40,000	1,900	13,000	<200	a	
	8/27/01	34.95	21.19	13.76	130,000	24,000	33,000	1,600	11,000	<350	a	
	10/25/01	34.95	21.74	13.21	160,000	22,000	28,000	1,500	10,000	<350	a	
	3/1/02	34.95	21.39	13.85x	Free Product present (thickness of 0.41 ft). No sample taken.							
	6/10/02	34.95	22.30	12.66x	210,000	30,000	51,000	3,100	22,000	<1,000*	a	
	9/3/02	34.96	21.40	13.56	2,500,000	31,000	170,000	29,000	170,000	2,500,000	a	
	12/22/02	34.96	20.50	14.46	89,000	2,600	9,300	530	28,000	<1,700	a,m	
	1/23/03	34.96	18.57	16.39	130,000	600	1,600	<100	41,000	<50***	a,b,l	

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Table 1. Groundwater Elevations and Analytical Data - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes
TOC (ft)	(ft)	(ft)	(ft)	(ft)	← (µg/L) →						
MW-2	8/1/94	--	--	--	130,000	28,000	35,000	3,000	12,000	--	--
	12/21/94	35.18	19.91	15.27	200	140,000	200,000	3,500	22,000	--	--
	3/13/95	35.18	19.15	16.03	500	9,200	23,000	7,000	36,000	--	--
	6/27/95	35.18	18.74	16.44	120,000	23,000	30,000	2,700	13,000	--	--
	7/7/95	35.18	18.80	16.38	120,000	23,000	30,000	2,700	13,000	--	--
	9/28/95	35.18	19.30	15.88	110,000	23,000	29,000	2,500	11,000	--	--
	12/20/95	35.18	20.24	14.94	83,000	980	1,800	2,200	10,000	--	--
	3/26/96	35.18	19.69	15.49	150,000	23,000	32,000	2,800	12,000	<200*	d
	6/20/96	35.18	19.20	15.98	94,000	15,000	23,000	2,400	12,000	<200*	--
	9/26/96	35.18	19.80	15.38	150,000	20,000	29,000	2,800	12,000	ND**	--
	10/28/96	35.18	20.18	15.00	--	--	--	--	--	--	--
	12/12/96	35.18	20.17	15.01	58,000	3,100	11,000	1,700	8,100	220*	--
	3/31/97	35.18	19.67	15.51	38,000	6,000	7,900	690	3,300	ND*	--
	6/27/97	35.18	19.68	15.50	62,000	13,000	16,000	1,300	6,000	ND*	--
	9/9/97	35.18	20.20	14.98	81,000	16,000	18,000	1,800	8,600	ND***	--
	12/18/97	35.18	19.80	15.38	110,000	18,000	26,000	2,200	9,500	ND***	--
	3/12/98	35.18	18.07	17.11	120,000	16,000	26,000	2,200	9,400	ND***	--
	6/22/98	35.18	18.29	16.89	38,000	9,800	9,500	1,500	6,000	--	--
	9/18/98	35.18	19.09	16.09	68,000	12,000	16,000	1,400	5,900	--	--
	12/23/98	35.18	19.67	15.51	180,000	16,000	22,000	2,200	8,300	--	--
	3/29/99	35.18	18.97	16.21	16,600	1,380	1,920	373	1,840	--	--
	6/23/99	35.18	18.25	16.93	41,000	10,000	9,400	1,100	5,000	--	--
	9/24/99	35.18	19.60	15.58	40,600	4,880	3,490	1,090	4,560	--	--
	12/23/99	35.18	20.21	14.97	61,900	6,710	9,320	1,150	5,360	--	--
	3/21/00	35.18	18.93	16.25	98,000	14,000	21,000	1,600	6,900	<1600	a
	7/3/00	35.18	19.38	15.80	140,000	18,000	33,000	2,600	11,000	<200*	a
	9/7/00	35.18	19.83	15.35	110,000	17,000	21,000	2,200	9,700	<100***	a,l
	12/5/00	35.18	20.30	14.88	130,000	19,000	28,000	2,500	11,000	<200	a
	3/6/01	35.18	19.57	15.61	32,000	3,400	3,400	580	2,500	<200	a
	6/8/01	35.18	20.59	14.59	72,000	9,400	9,200	1,300	5,800	<200	a
	8/27/01	35.18	21.79	13.39	110,000	17,000	28,000	2,600	11,000	<950	a
	10/25/01	35.18	22.05	13.13	110,000	15,000	18,000	2,000	8,700	<350	a
	3/1/02	35.18	21.80	13.38	3,100	370	180	62	330	<5.0*	a
	6/10/02	35.18	22.83	12.35	7,800	2,000	1,100	76	570	<100*	a
	9/3/02	35.21	22.03	13.18	21,000	2,400	2,900	320	1,400	<500	a
	12/22/02	35.21	22.70	12.51	630	48	56	19	82	<5.0	a
	1/23/03	35.21	20.49	14.72	1,100	27	32	19	150	<25	a

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Table 1. Groundwater Elevations and Analytical Data - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID	Date	Top of Casing Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPHg ←	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE →	Notes
MW-4	10/28/96	33.75	19.32	14.43	10,000	3,900	420	400	360	<200*	n
	12/12/96	33.75	19.42	14.33	11,000	4,200	410	420	260	32*	--
	3/31/97	33.75	18.67	15.08	ND	ND	ND	ND	ND	ND*	--
	6/27/97	33.75	19.08	14.67	160	49	1.2	ND	5.9	ND*	--
	9/9/97	33.75	19.33	14.42	7,400	5,000	410	230	470	33*	--
	12/18/97	33.75	19.17	14.58	710	170	8.0	ND	39	ND***	--
	3/12/98	33.75	17.68	16.07	1,300	410	21	ND	57	ND***	--
	6/22/98	33.75	17.63	16.12	ND	ND	ND	ND	ND	--	--
	9/18/98	33.75	18.58	15.17	ND	42	1.6	ND	4.8	--	--
	12/23/98	33.75	19.01	14.74	1,900	1,000	76	50	120	--	--
	3/29/99	33.75	18.35	15.40	ND	ND	ND	ND	ND	--	--
	6/23/99	33.75	17.58	16.17	ND	ND	ND	ND	ND	--	--
	9/24/99	33.75	19.05	14.70	9,150	3,270	131	34	537	--	--
	12/23/99	33.75	19.41	14.34	12,200	5,360	275	424	592	--	--
	3/21/00	33.75	18.42	15.33	45,000	16,000	1,100	1,400	1,900	1400* (<35)***	a,l
	7/3/00	33.75	18.82	14.93	33,000	10,000	720	840	1,800	<200*	a
	9/7/00	33.75	19.21	14.54	26,000	8,800	800	740	1,500	<50***	a,c,l
	12/5/00	33.75	19.60	14.15	41,000	11,000	840	930	1,900	<200	a
	3/6/01	33.75	18.24	15.51	1,100	400	5.7	<0.5	20	<5.0	a
	6/8/01	33.75	20.91	12.84	92	19	<0.5	<0.5	1	<5.0	a
	8/27/01	33.75	21.63	12.12	49,000	17,000	1700	1,700	3,200	<260	a
	10/25/01	33.75	21.70	12.05	57,000	16,000	1,500	1,600	2,600	<300	a
	3/1/02	33.75	21.53	12.22	400	140	2.3	<0.5	12	<5.0*	a
	6/10/02	33.75	22.23	11.52	<50	2.5	<0.5	<0.5	<0.5	<5.0*	--
	9/3/02	33.75	21.85	11.90	31,000	9,700	300	650	1,100	<1,000	a
	12/22/02	33.75	22.39	11.36	35,000	13,000	310	1,100	1,800	<1,500	a
	1/23/03	33.75	20.61	13.14	51,000	18,000	430	1,500	2,200	<5.0***	a,l

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Table 1. Groundwater Elevations and Analytical Data - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID <i>TOC (ft)</i>	Date	Top of Casing	Depth to	Groundwater	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes
		Elevation	Groundwater	Elevation							
		(ft)	(ft)	(ft)	← (µg/L) →						
MW-5	10/28/96	34.63	19.88	11.73	90	4.0	0.6	<0.50	<0.50	16*	n
	12/12/96	34.63	20.09	14.54	230	5.6	0.9	ND	0.9	3.6*	--
	3/31/97	34.63	19.24	15.39	90	3.1	ND	ND	ND	ND*	--
	6/27/97	34.63	19.16	15.47	ND	ND	ND	ND	ND	ND*	--
	9/9/97	34.63	19.93	14.70	ND	ND	ND	ND	ND	ND*	--
	12/18/97	34.63	19.77	14.86	ND	ND	ND	ND	ND	ND***	--
	3/12/98	34.63	19.77	14.86	79	2.3	ND	0.8	ND	ND*	--
	6/22/98	34.63	18.08	16.55	ND	ND	ND	ND	ND	--	--
	9/18/98	34.63	19.12	15.51	ND	ND	ND	ND	ND	--	--
	12/23/98	34.63	19.60	15.03	ND	0.8	0.9	ND	ND	--	--
	3/29/99	34.63	18.88	15.75	ND	ND	ND	ND	ND	--	--
	6/23/99	34.63	18.05	16.58	ND	ND	ND	ND	ND	--	--
	9/24/99	34.63	19.61	15.02	ND	ND	ND	ND	ND	--	--
	12/23/99	34.63	20.01	14.62	ND	ND	ND	ND	ND	--	--
	3/21/00	34.63	19.05	15.58	140	<0.5	<0.5	<0.5	<0.5	<5.0	k
	7/3/00	34.63	19.40	15.23	85	8.1	3.1	1.6	7.8	<5.0*	a
	9/7/00	34.63	19.62	15.01	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	--
	12/5/00	34.63	20.25	14.38	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	3/6/01	34.63	19.07	15.56	91	5.5	<0.5	<0.5	<0.5	<5.0	--
	6/8/01	34.63	20.77	13.86	290	22.0	0.8	<0.5	<0.5	<5.0	a
	8/27/01	34.63	21.33	13.30	660	24.0	2.2	1.3	4.0	<25	a
	10/25/01	34.63	21.62	13.01	55	3.5	<0.5	<0.5	<0.5	<5.0	a
	3/1/02	34.63	21.49	13.14	200	1.9	0.69	<0.5	<0.5	<5.0*	a
	6/10/02	34.63	22.15	12.48	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	--
	9/3/02	34.63	21.50	13.13	60	1.9	<0.5	<0.5	0.77	<5.0	a
	12/22/02	34.63	22.19	12.44	82	0.57	<0.5	0.68	<0.5	<5.0	a
	1/23/03	34.63	20.27	14.36	<50	2.1	<0.5	<0.5	<0.5	<5.0	--

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Table 1. Groundwater Elevations and Analytical Data - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID <i>TOC (ft)</i>	Date	Top of Casing Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	TPHg ←	Benzene	Toluene (µg/L)	Ethylbenzene	Xylenes	MTBE	Notes
MW-6	10/28/96	35.89	20.02	12.87	<50	<0.50	<0.50	<0.50	<0.50	<2.0*	n
	12/12/96	35.89	20.18	15.71	ND	ND	ND	ND	ND	ND*	--
	3/31/97	35.89	19.81	16.08	--	--	--	--	--	--	--
	6/27/97	35.89	19.76	16.13	--	--	--	--	--	--	--
	9/9/97	35.89	20.06	15.83	ND	ND	ND	ND	ND	ND*	--
	12/18/97	35.89	19.90	15.99	ND	ND	ND	ND	ND	--	--
	3/12/98	35.89	18.00	17.89	ND	ND	ND	ND	ND	ND*	--
	6/22/98	35.89	18.43	17.46	ND	ND	ND	ND	ND	--	--
	9/18/98	35.89	19.10	16.79	ND	ND	ND	ND	ND	--	--
	12/23/98	35.89	19.61	16.28	ND	ND	ND	ND	ND	--	--
	3/29/99	35.89	18.92	16.97	ND	ND	ND	ND	ND	--	--
	6/23/99	35.89	18.41	17.48	ND	ND	ND	ND	ND	--	--
	9/24/99	35.89	19.61	16.28	ND	ND	ND	ND	ND	--	--
	12/23/99	35.89	20.30	15.59	ND	ND	ND	ND	ND	--	--
	3/21/00	35.89	18.97	16.92	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	7/3/00	35.89	19.46	16.43	59	5.1	2.3	1.1	5.3	<5.0*	a
	9/7/00	35.89	19.95	15.94	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	--
	12/5/00	35.89	20.50	15.39	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	3/6/01	35.89	19.54	16.35	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	6/8/01	35.89	20.92	14.97	<50	<0.5	<0.5	<0.5	<0.5	<5.1	--
	8/27/01	35.89	21.37	14.52	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	10/25/01	35.89	21.59	14.30	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	3/1/02	35.89	21.33	14.56	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	--
	6/10/02	35.89	21.97	13.92	<50	<0.5	<0.5	<0.5	<0.5	<5.0*	--
	9/3/02	35.89	21.55	14.34	--	--	--	--	--	--	--
	12/22/02	35.89	22.25	13.64	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	1/23/03	35.89	20.47	15.42	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
Trip Blank	3/21/00	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	9/7/00	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--

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Table 1. Groundwater Elevations and Analytical Data - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID	Date	Top of Casing Elevation	Depth to Groundwater	Groundwater Elevation	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes
<i>TOC (ft)</i>		(ft)	(ft)	(ft)	← (µg/L) →						

Abbreviations

TPHg = Total petroleum hydrocarbons as gasoline by EPA method Modified 8015.
 Benzene, toluene, ethylbenzene, xylenes by EPA method 8020.
 -- = Not Sampled/Not Analyzed
 <n = Not detected in sample above n µg/L.
 ND = Not detected at minimum quantitation limit. See laboratory reports.
 µg/L = micrograms per liter
 MTBE = Methyl tert-butyl ether
 * = MTBE by EPA Method 8020
 ** = MTBE by EPA Method 8240
 *** = MTBE by EPA Method 8260
 VOCs = volatile organic compounds

 x = Groundwater elevation adjusted for free product by the relation:
 Groundwater Elevation = Well Elevation - Depth to Water + (0.7 x free product thickness)

Notes

a = Unmodified or weakly modified gasoline is significant.
 b = Lighter than water immiscible sheen is present.
 c = Liquid sample that contains greater than ~5 vol. % sediment.
 d = MTBE result confirmed by secondary column or GC/MS analysis.
 e = Sample analyzed for purgeable hydrocarbons by EPA method 8010, no purgeable hydrocarbons were detected.
 f = Sample analyzed for VOCs by EPA method 8240, no non-BTEX compounds were detected.
 g = Sample analyzed for Total Petroleum Hydrocarbons as motor oil (TPHmo) by EPA method Modified 8015, no TPHmo was detected.
 h = Analytic sampling discontinued. Approved by Alameda County Department of Environmental Health.
 i = Lighter than gasoline range compounds are significant.
 j = Gasoline range compounds having broad chromatographic peaks are significant.
 k = No recognizable pattern.
 l = Sample diluted due to high organic content.
 m = Liquid sample that contains greater than ~2 vol. % sediment.
 n = TOC well elevation was increased by 3 ft based on a benchmark discrepancy discovered during a well survey performed on September 11, 2002

Table 2. SVE System - Performance and Soil Vapor Analytical Results: Borsuk Site, 1432 Harrison Street, Oakland, California

Date	Hour Meter Readings (hrs)	System Uptime (%)	System Vacuum (H2O)	Total Well Flow Rate (prior to dilution) (scfm)	Total Well HC Conc. (ppmv)	System Inlet Temp. (degrees F)	System Flow Rate (after dilution) (scfm)	System Influent HC Conc. ¹ (ppmv)		Effluent HC Conc. ¹ (ppmv)		HC Removal Rate ² (lbs/day)	Emission Rate ² (lbs/day)		TPHg Destruction Efficiency ³ (%)	Gasoline Cumulative Removal ⁴ (lbs)
					TPHg			TPHg	TPHg	Benz	TPHg		Benz			
12/20/01	13.0	--		--	17,000	825	170	920	<10	<0.15	50.18	<0.545	<0.007	-- ³	0	
1/7/02	443.8	100%		--	12,000	1017	105	1,400	<10	<0.15	47.16	<0.337	<0.005	-- ³	901	
2/4/02	576.2	20%		--	13,000	916	150	1,100	<10	<0.15	52.94	<0.481	<0.007	-- ³	1161	
3/5/02	1268.2	99%		--	16,000	1020	135	1,000	<10	<0.15	43.31	<0.433	<0.006	-- ³	2687	
4/2/02	1939.9	100%		--	4,800	715	114	390	<10	<0.15	14.26	<0.366	<0.005	-- ³	3899	
4/15/02	2253.2	100%	136	18.3	4,200	709	*	*	28	<0.15	24.67	0.16	<0.001	99.3	4086	
5/6/02	2655.2	80%	77	10.1	5,100	735	*	*	14	<0.15	16.58	0.05	<0.000	99.7	4499	
6/5/02	3373.2	100%	80	15.1	3,800	652	*	*	14	<0.15	18.41	0.07	<0.001	99.6	4995	
7/2/02	4024.9	101%	80	16.3	3,000	672	*	*	<15	0.16	15.70	0.08	<0.001	99.5	5495	
8/5/02	4838.8	100%	80	11.6	1,900	667	*	*	<10	<0.15	7.10	0.04	<0.001	-- ³	6027	
9/10/02	5700.9	100%	80	10.5	1,800	609	*	*	<10	<0.15	6.08	0.03	<0.000	-- ³	6282	
10/2/02	6229.7	100%	81	14.0	2,900	801	*	*	<10	<0.15	13.04	0.04	<0.001	-- ³	6416	
11/6/02	7073.8	100%	82	12.1	1,900	848	*	*	<10	<0.15	7.40	0.04	<0.001	-- ³	6875	
12/5/02	7771.5	100%	90	8.4	1,400	840	*	*	<10	<0.15	3.78	0.03	<0.000	-- ³	7090	
1/8/03	8580.5	99%	91	9.5	3,100	813	*	*	<10	<0.15	9.42	0.03	<0.000	-- ³	7217	

Table 2. SVE System - Performance and Soil Vapor Analytical Results: Borsuk Site, 1432 Harrison Street, Oakland, California

Date	Hour Meter Readings (hrs)	System Uptime (%)	System Vacuum (H ₂ O)	Total Well Flow Rate (prior to dilution) (scfm)	Total Well HC Conc. (ppmv)	System Inlet Temp. (degrees F)	System Flow Rate (after dilution) (scfm)	System Inlet HC Conc. ¹ (ppmv)		Effluent HC Conc. ¹ (ppmv)		HC Removal Rate ² (lbs/day)	Emission Rate ² (lbs/day)		TPHg Destruction Efficiency ³ (%)	Gasoline Cumulative Removal ⁴ (lbs)
					TPHg			TPHg	Benz	TPHg	TPHg		Benz			
2/12/2003	9424.0	100%	93	7.6	5,200	801	*	*	<10	<0.15	12.61	0.02	<0.000	.. ³	7548	
3/4/2003	9902.8	100%	90	5.5	4,100	798	*	*	<10	<0.15	7.27	0.02	<0.000	.. ³	7800	
4/3/2003	10623.3	100%	..	..	..	..	*	*	..	..	..	..	..	..	8018

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 (ug/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.

scfm = standard cubic feet per minute

¹ TPHg and benzene concentrations based on Horiba gas analyzer measurements and/or lab results by Modified EPA Methods 8015 and 8020.

Laboratory analytic results for TPHg and benzene are converted from ug/l to ppmv using conversion rates of 0.28 for TPHg and 0.308 for benzene.

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 (cfm) 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 As per BAAQMD Permit, destruction efficiency requirements are waived if system TPHg effluent concentration is <10.

⁴ 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 analytic results and/or field measurements.

* = Flow Rate and Hydrocarbon Concentrations are now measured from the well manifold because there is no longer any dilution air affecting the calculation of the hydrocarbon removal rate.

IR:\SB-2004\Oak-188-Borsuk\O&M\SVE System Table

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Table 3. SVE System Parameters - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID	Date	Well Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Status (open/closed)	
VES-1	12/13/2001	--	--	36,000	open	
	12/20/2001	25	6.5	43,000	open	
	12/27/2001	48	12.4	41,000	open	
	1/7/2002	100	20.5	>10,000	open	
	2/8/2002	140	27.0	>10,000	open	
	3/5/2002	34	6.3	>10,000	open	
	4/2/2002	83	13.5	10070	open	
	4/15/2002	101	28.2	10070	open	
	5/22/2002	80	22.5	9980	open	
	5/27/2002	81	4.5	27000	open	
	6/5/2002	77	22.1	11110	open	
	6/21/2002	81	H2O	7810	open	
	7/2/2002	82	25	10400	open	
	7/26/2002	81	22.5	5210	open	
	8/5/2002	80	5.5	6020	open	
	9/10/2002	80	5.2	9180	open	
	10/2/2002	80	10.5	11070	open	
	11/6/2002	82	9.0	4850	open	
	12/5/2002	90	8.5	4000	open	
	1/8/2003	92	5.1	2340	open	
	1/24/2003	95	4.0	2350	open	
	3/4/2003	90	3.6	1750	open	
	3/17/2003	93	7.5	1360	open	
	VES-2	12/13/2001	--	--	40,000	open
		12/20/2001	25	6.0	42,500	open
12/27/2001		48	12.1	35,000	open	
1/7/2002		100	21.5	>10,000	open	
2/8/2002		140	25.1	>10,000	open	
3/5/2002		34	7.6	>10,000	open	
4/2/2002		83	13.2	--	open	
4/15/2002		102	24.1	1347	open	
5/22/2002		81	26.1	1888	open	
5/27/2002		81	9.5	4710	open	
6/5/2002		79	20.7	2090	open	
6/21/2002		82	47	1820	open	
7/2/2002		81	28.9	5210	open	
7/26/2002		81	13.1	1515	open	
8/5/2002		80	10.5	1925	open	
9/10/2002		80	8.9	1850	open	
10/2/2002		80	8.5	3370	open	
11/6/2002		82	9.0	2180	open	
12/5/2002		90	--	1870	open	
1/8/2003		92	--	6210	open	

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Table 3. SVE System Parameters - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID	Date	Well Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor	Status (open/closed)
				Concentration (ppmv)	
-->VES-2	1/24/2003	95	4	9630	open
	3/4/2003	90	2.5	5790	open
	3/17/2003	93	--	2020	open
VES-3	12/13/2001	--	--	38,000	open
	12/20/2001	25	7.0	41,500	open
	12/27/2001	48	12.0	61,000	open
	1/7/2002	100	22.5	>10,000	open
	2/8/2002	140	26.5	>10,000	open
	3/5/2002	47	7.5	>10,000	open
	4/2/2002	84	11.1	--	open
	4/15/2002	102	24.8	4260	open
	5/22/2002	85	16.5	7090	open
	5/27/2002	81	6.7	7010	open
	6/5/2002	85	14.7	5290	open
	6/21/2002	80	25.5	3450	open
	7/2/2002	82	32.2	4820	open
	7/26/2002	81	9.3	3400	open
	8/5/2002	80	4.5	3380	open
	9/10/2002	80	7.1	3150	open
	10/2/2002	80	4.0	2140	open
	11/6/2002	82	5.5	1215	open
	12/5/2002	90	4.5	1015	open
	1/8/2003	92	5.5	3840	open
	1/24/2003	95	3.0	6040	open
3/4/2003	90	3.5	3430	open	
3/17/2003	93	1.3	1980	open	
VES-4	12/13/2001	--	--	35,000	open
	12/20/2001	25	4.9	46,500	open
	12/27/2001	48	12.2	53,000	open
	1/7/2002	100	23.0	>10,000	open
	2/8/2002	140	28.1	>10,000	open
	3/5/2002	47	9.3	>10,000	open
	4/2/2002	84	11.5	--	open
	4/15/2002	102	22.5	5350	open
	5/22/2002	80	21.7	570	open
	5/27/2002	81	6.3	10460	open
	6/5/2002	80	18	4490	open
	6/21/2002	81	41.5	2580	open
	7/2/2002	81	38	9690	open
	7/26/2002	81	2.3	2230	open
	8/5/2002	80	4.4	6160	open
	9/10/2002	80	5.5	2410	open
	10/2/2002	80	3.5	1777	open

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Table 3. SVE System Parameters - Borsuk Site, 1432 Harrison Street, Oakland, California

Well ID	Date	Well Vacuum (inches of H ₂ O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Status (open/closed)
-->VES-4	11/6/2002	82	4.5	920	open
	12/5/2002	90	7.0	420	open
	1/8/2003	92	4.0	1805	open
	1/24/2003	95	5.0	2720	open
	3/4/2003	90	4.0	1390	open
	3/17/2003	93	1.0	1300	open

Notes:

Hydrocarbon concentrations are measured using a Horiba MEXA-554 gas analyzer. Concentration readings above 10,000 ppmv are above the instrument calibration and are not reliable.

-- = Data not available or not collected

H2O = unable to get reading due to the presence of water

C A M B R I A



APPENDIX A

Groundwater Monitoring Field Data Sheets

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments
MW-1	6:18		18.57		25.05	
MW-2	6:07		20.49		25.40	
MW-3	6:00		20.08		23.90	
MW-4	6:10		20.61		24.50	
MW-5	6:13		20.27		28.34	
MW-6	6:05		20.47		28.00	

Project Name: Borsink

Project Number: 540-0188

Measured By: J. Hill

Date: 1-23-03

WELL SAMPLING FORM

Project Name: Borsuk	Cambria Mgr: RAS	Well ID: MW-1
Project Number: 540-0188	Date: 1-23-03	Well Yield:
Site Address: 1432 Harrison St. Oakland, Ca	Sampling Method: disposable bailer	Well Diameter: 4" pvc
		Technician(s): SB
Initial Depth to Water: 18.57	Total Well Depth: 25.05	Water Column Height: 6.93
Volume/ft: 0.65	1 Casing Volume: 4.50	3 Casing Volumes: 13.51
Purging Device: 4" pvc bailer	Did Well Dewater?: no	Total Gallons Purged: 13
Start Purge Time: 7:00	Stop Purge Time: 7:14	Total Time: 14 mins

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)	pH	Cond. (uS)	Comments
7:05	5	18.9	7.10	629	
7:10	10	18.8	7.13	840	
7:15	13	18.8	7.17	972	

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

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-	1-23-03	7:20	300a	MC1	TPH₅ BTEX MTBE	8015/8020 3260

WELL SAMPLING FORM

Project Name: Borsuk	Cambria Mgr: RAS	Well ID: MW-2
Project Number: 540-0188	Date: 1-23-03	Well Yield:
Site Address: 1482 Harrison St. Oakland, Ca	Sampling Method: disposable bailer	Well Diameter: 2" pvc
		Technician(s): SK
Initial Depth to Water: 20.49	Total Well Depth: 25.40	Water Column Height: 4.91
Volume/ft: 0.16	1 Casing Volume: 0.78	3 Casing Volumes: 2.35
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 2
Start Purge Time: 7:30	Stop Purge Time: 7:44	Total Time: 14 mins

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)	pH	Cond. (uS)	Comments
7:35	1	18.9	7.18	374	
7:40	1.5	18.9	7.22	720	
7:45	2	18.9	7.25	740	

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

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	1-23-03	7:50	300a	MC1	TPH₅ BTEX MTBE	8015/8020 8260

WELL SAMPLING FORM

Project Name: BORSUK	Cambria Mgr: RAS	Well ID: MW-3
Project Number: 540-0138	Date: 1-23-03	Well Yield:
Site Address: 1432 Harrison St. Oakland, Ca	Sampling Method: disposable bailer	Well Diameter: 2" pvc
		Technician(s): SL
Initial Depth to Water: 20.08	Total Well Depth: 23.90	Water Column Height: 3.82
Volume/ft: 0.16	1 Casing Volume: 0.61	3 Casing Volumes: 1.83
Purging Device: disposable bailer	Did Well Dewater?: NO	Total Gallons Purged: 2
Start Purge Time: 6:30	Stop Purge Time: 6:44	Total Time: 14 mins

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)	pH	Cond. (uS)	Comments
6:35	1	18.3	7.22	3339	
6:40	1.5	18.5	7.29	3339	
6:45	2	18.6	7.28	3339	

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

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-3	1-23-03	6:50	300a	MC1	TPH₅ BTEX MTBE	8015/8020 3260

WELL SAMPLING FORM

Project Name: Borsuk	Cambria Mgr: RAS	Well ID: MW-4
Project Number: 540-0188	Date: 1-23-03	Well Yield:
Site Address: 1432 Harrison St. Oakland, Ca	Sampling Method: disposable bailer	Well Diameter: 2" pvc
		Technician(s): Sh
Initial Depth to Water: 20.61	Total Well Depth: 24.50	Water Column Height: 3.89
Volume/ft: 0.16	1 Casing Volume: 0.62	3 Casing Volumes: 1.86
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 2
Start Purge Time: 8:10	Stop Purge Time: 8:24	Total Time: 14 mins

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)	pH	Cond. (uS)	Comments
8:15	1	18.9	7.14	1143	
8:20	1.5	18.9	7.18	1015	
8:25	2	19.2	7.20	970	

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

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-4	1-23-03	8:30	300a	MC1	TAM, BTEX, MTBE	8015/8020 3260

WELL SAMPLING FORM

Project Name: Borsuk	Cambria Mgr: RAS	Well ID: MW-5
Project Number: 540-0188	Date: 1-23-03	Well Yield:
Site Address: 1432 Harrison St. Oakland, Ca	Sampling Method: disposable bailer	Well Diameter: 2" pvc
		Technician(s): sh
Initial Depth to Water: 20.27	Total Well Depth: 28.34	Water Column Height: 8.07
Volume/ft: 0.16	1 Casing Volume: 1.29	3 Casing Volumes: 3.87
Purging Device: disposable bailer	Did Well Dewater?: no	Total Gallons Purged: 4
Start Purge Time: 8:45	Stop Purge Time: 8:59	Total Time: 14 mins

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)	pH	Cond. (uS)	Comments
8:50	1.5	19.3	7.08	975	
8:55	3	19.1	7.11	620	
9:00	4	18.9	7.11	742	

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

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-5	1-23-03	9:05	3Voa	MC1	TPH₃ BTEX MTBE	8015/8020 3260

WELL SAMPLING FORM

Project Name: Borsuk	Cambria Mgr: RAS	Well ID: MW-6
Project Number: 540-0188	Date: 1-23-03	Well Yield:
Site Address: 1432 Harrison St. Oakland, Ca	Sampling Method: disposable bailer	Well Diameter: 2" pvc
		Technician(s): SC
Initial Depth to Water: 20.47	Total Well Depth: 28.00	Water Column Height: 7.53
Volume/ft: 0.16	1 Casing Volume: 1.20	3 Casing Volumes: 3.60
Purging Device: disposable bailer	Did Well Dewater?: NO	Total Gallons Purged: 4
Start Purge Time: 4:15	Stop Purge Time: 4:24	Total Time: 14mins

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)	pH	Cond. (uS)	Comments
4:20	1.5	19.6	7.28	629	
4:25	3	19.2	7.13	764	
4:30	4	19.0	7.15	792	

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

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-6	1-23-03	4:35	300a	MC1	TAH₅ BTEX MTBE	8015/8020 3260

C A M B R I A



APPENDIX B

Analytical Results for Quarterly Groundwater Sampling



McC Campbell Analytical Inc.

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

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #540-0188; Borsuk	Date Sampled: 01/23/03
		Date Received: 01/24/03
	Client Contact: Ron Scheele	Date Reported: 01/29/03
	Client P.O.:	Date Completed: 01/29/03

WorkOrder: 0301313

January 29, 2003

Dear Ron:

Enclosed are:

- 1). the results of 6 analyzed samples from your #540-0188; Borsuk 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. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Angela Rydelius, Lab Manager



QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0301313

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 5715			Spiked Sample ID: 0301312-001A			
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
TPH(gas)	ND	60	107	110	2.63	111	111	0.303	80	120
MTBE	ND	10	106	103	2.61	94.7	96	1.33	80	120
Benzene	ND	10	111	112	1.37	110	110	0.375	80	120
Toluene	ND	10	107	109	1.81	110	109	0.430	80	120
Ethylbenzene	ND	10	104	107	2.21	108	107	0.733	80	120
Xylenes	ND	30	100	107	6.45	110	110	0	80	120
%SS:	97.2	100	94	94.8	0.897	94.5	95.8	1.39	80	120

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

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

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

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

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

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



QC SUMMARY REPORT FOR SW8260B

Matrix: W

WorkOrder: 0301313

EPA Method: SW8260B		Extraction: SW5030B			BatchID: 5701		Spiked Sample ID: 0301288-004C			
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
Methyl-t-butyl ether (MTBE)	ND	10	95.3	102	6.58	81.4	76.9	5.78	70	130
%SS1:	106	100	97.3	98.3	1.00	110	105	4.84	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 and matrix spike duplicate.

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

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

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

McCampbell Analytical Inc.

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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0301313

Client:
 Cambria Env. Technology
 6262 Hollis St.
 Emeryville, CA 94608

TEL: (510) 450-1983
 FAX: (510) 450-8295
 ProjectNo: #540-0188; Borsuk
 PO:

Date Received: 1/24/03
 Date Printed: 1/24/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests		
					<>	8021B/8015	SW8260B
0301313-001	MW-1	Water	1/23/03 7:20:00 AM		A	A	B
0301313-002	MW-2	Water	1/23/03 7:50:00 AM			A	
0301313-003	MW-3	Water	1/23/03 6:50:00 AM			A	
0301313-004	MW-4	Water	1/23/03 8:30:00 AM			A	B
0301313-005	MW-5	Water	1/23/03 9:05:00 AM			A	
0301313-006	MW-6	Water	1/23/03 4:35:00 PM			A	

Prepared by: Maria Venegas

Comments:

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

C A M B R I A



APPENDIX C

Analytical Results for SVE System Operation



McC Campbell Analytical Inc.

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

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #540-0188; Borsuk	Date Sampled: 01/08/03
		Date Received: 01/10/03
	Client Contact: Ron Scheele	Date Reported: 01/17/03
	Client P.O.:	Date Completed: 01/17/03

WorkOrder: 0301111

January 17, 2003

Dear Ron:

Enclosed are:

- 1). the results of 2 analyzed samples from your #540-0188; Borsuk 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. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Your truly,

Angela Rydelius, Lab Manager



QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: A

WorkOrder: 0301111

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 5600			Spiked Sample ID: 0301107-001A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	uL/L	uL/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	104	107	3.73	100	96.7	3.33	80	120
MTBE	ND	10	103	92.7	10.6	90.5	94.3	4.09	80	120
Benzene	0.5772	10	100	98	2.02	97.1	103	5.99	80	120
Toluene	ND	10	101	101	0.0441	99.7	106	5.92	80	120
Ethylbenzene	0.93	10	91.7	93.3	1.57	95.4	98.4	3.17	80	120
Xylenes	ND	30	96.7	96.7	0	99.3	103	3.95	80	120
%SS:	115	100	102	103	1.16	91.6	97.9	6.61	80	120

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

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

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

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

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

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

CEC

030111



MCCAMPBELL ANALYTICAL INC.

110 2ND AVENUE SOUTH, #107
PACIFIC, CA 94353

Telephone: (925) 798-1620

Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD
TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Report To: Ron Scheele Bill To: **SAME**
Company: Cambria Environmental Technology
6262 Hollis Street
Emeryville, CA 94608
Tele: (510) 450-1983 Fax: (510) 450-8295
Project # **540-0188** Project Name: **BORSUK**
Project Location: **1437 HARRISON ST OAKLAND CA**
Sampler Signature: *[Signature]*

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED		Analysis Request	Other	Comments	
		Date	Time			Water	Soil	Air	Sludge	Other	Icc	HCl				HNO ₃	Other
INF	Oakland	1/8/03	10:30	1	Bag			X								
EFF	↓	↓	↓	1	Bag			X								

BTEX & TPH as Gas (602/8020 - 8015) METDE	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 E&F/R&F)	
Total Petroleum Hydrocarbons (418.1)	
EPA 601/8010	
RTEX ONLY (EPA 602/8020)	
EPA 608/8080	
EPA 608/8080 PCB's ONLY	
EPA 624/8240/8260	
EPA 625/8270	
PAH's / PNA's by EPA 625/8270/8310	
CAM-17 Metals	
LUFT 5 Metals	
Lead (7240/7421/739 2/6010)	
RCI	

Relinquished By: *[Signature]* Date: 1/8/03 Time: 7:00
 Relinquished By: *[Signature]* Date: 1/8/03 Time: 12:35
 Relinquished By: *[Signature]* Date: 1/10 Time: 2:40

Received By: *[Signature]*
 Received By: *[Signature]*
 Received By: *[Signature]*

Remarks:
 Report in ppmv; 10 ppmv limit
 20 ml injection volume
 PLEASE FAX RESULTS

RECEIVED
 PRESERVATION
 CONTAINERS
 PRESERVED TO LAB

McC Campbell Analytical Inc.



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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0301111

Client:

Cambria Env. Technology
6262 Hollis St.
Emeryville, CA 94608

TEL: (510) 450-1983
FAX: (510) 450-8295
ProjectNo: #540-0188; Borsuk
PO:

Date Received: 1/10/03
Date Printed: 1/10/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	8021B/8015	Requested Tests
0301111-001	INF	Air	1/8/03 10:30:00 AM		A	
0301111-002	EFF	Air	1/8/03 10:30:00 AM		A	

Prepared by: Elisa Venegas

Comments:

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



McC Campbell Analytical Inc.

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

Cambria Env. Technology 5900 Hollis Street, Suite A Emeryville, CA 94608	Client Project ID: #540-0188-55; Borsuk	Date Sampled: 02/12/03
		Date Received: 02/12/03
	Client Contact: Gretchen Hellmann	Date Reported: 02/19/03
	Client P.O.:	Date Completed: 02/19/03

WorkOrder: 0302159

February 19, 2003

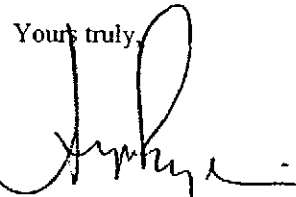
Dear Gretchen:

Enclosed are:

- 1). the results of 2 analyzed samples from your #540-0188-55; Borsuk 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. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Your truly,


Angela Rydelius, Lab Manager



QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: A

WorkOrder: 0302159

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 5892			Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	uL/L	uL/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	N/A	60	N/A	N/A	N/A	108	117	7.26	70	130
MTBE	N/A	10	N/A	N/A	N/A	91.3	117	24.7	70	130
Benzene	N/A	10	N/A	N/A	N/A	103	103	0.696	70	130
Toluene	N/A	10	N/A	N/A	N/A	96.5	95.9	0.687	70	130
Ethylbenzene	N/A	10	N/A	N/A	N/A	104	103	0.269	70	130
Xylenes	N/A	30	N/A	N/A	N/A	100	100	0	70	130
%SS:	N/A	100	N/A	N/A	N/A	98.5	94.8	3.87	80	120

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

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


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

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

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

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

McC Campbell Analytical Inc.

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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0302159

Client:

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

TEL: (510) 450-1983
FAX: (510) 450-8295
ProjectNo: #540-0188-55; Borsuk
PO:

Date Received: 2/12/03
Date Printed: 2/12/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	8021B/8015	Requested Tests
0302159-001	INF	Air	2/12/03 4:00:00 PM		A	
0302159-002	EFF	Air	2/12/03 4:00:00 PM		A	

Prepared by: Melissa Valles

Comments:

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



McC Campbell 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 5900 Hollis St, Suite A Emeryville, CA 94608	Client Project ID: #540-0188-55; Borsuk	Date Sampled: 03/04/03
		Date Received: 03/05/03
	Client Contact: Gretchen Hellmann	Date Reported: 03/10/03
	Client P.O.:	Date Completed: 03/10/03

WorkOrder: 0303047

March 10, 2003

Dear Gretchen:

Enclosed are:

- 1). the results of 2 analyzed samples from your **#540-0188-55; Borsuk 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. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Angela Rydelius, Lab Manager



QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: A

WorkOrder: 0303047

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 6069			Spiked Sample ID: 0303041-004A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	uL/L	uL/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	115	105	9.86	99.2	109	9.08	80	120
MTBE	ND	10	81.2	91	11.4	103	87.5	15.9	80	120
Benzene	ND	10	115	116	1.30	88.9	93	4.49	80	120
Toluene	ND	10	110	111	0.320	82.5	88.3	6.76	80	120
Ethylbenzene	ND	10	115	119	3.76	89.6	95.3	6.20	80	120
Xylenes	ND	30	120	120	0	87.3	92.7	5.93	80	120
%SS:	110	100	111	112	0.625	101	97.4	3.37	80	120

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

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

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

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

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

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

McC Campbell Analytical Inc.



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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0303047

Client:

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

TEL: (510) 450-1983
FAX: (510) 450-8295
ProjectNo: #540-0188-55; Borsuk
PO:

Date Received: 3/5/03
Date Printed: 3/5/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	8021B/8015	Requested Tests
0303047-001	INF	Air	3/4/03 1:30:00 PM		A	
0303047-002	EFF	Air	3/4/03 1:30:00 PM		A	

Prepared by: Melissa Valles

Comments:

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

McC Campbell Analytical Inc.



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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0303047

Client:

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

TEL: (510) 450-1983
FAX: (510) 450-8295
ProjectNo: #540-0188-55; Borsuk
PO:

Date Received: 3/5/03
Date Printed: 3/5/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	8021B/8015	Requested Tests
0303047-001	INF	Air	3/4/03 1:30:00 PM		A	
0303047-002	EFF	Air	3/4/03 1:30:00 PM		A	

Prepared by: Melissa Valles

Comments:

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

C A M B R I A



APPENDIX D

Electronic Delivery Confirmation

AB2886 Electronic Delivery

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

Your EDF file has been successfully uploaded!

Confirmation Number: 4544445335

Date/Time of Submittal: 5/2/2003 2:53:20 PM

Facility Global ID: T0600100682

Facility Name: A BACHARACH TR & B BORSUK

Submittal Title: 1QM03

Submittal Type: GW Monitoring Report

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AB2886 Electronic Delivery

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Submittal Title: 1QM03 geo_well
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