CAMBRIA

ENVIRONMENTAL PROTECTION

00 FEB 15 PM 4:38

February 3, 2000

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

Re: **Fourth Quarter 1999 Monitoring Report**
Former Exxon Service Station
3055 35th Avenue
Oakland, California
Cambria Project #130-0105-109

Dear Mr. Chan:

On behalf of Mr. Lynn Worthington of Golden Empire Properties, Cambria Environmental Technology, Inc., (Cambria) has prepared this fourth quarter 1999 groundwater monitoring report for the site referenced above. Presented below are the fourth quarter 1999 activities and results, and anticipated future activities.

FOURTH QUARTER 1999 ACTIVITIES

Groundwater Monitoring

On December 10, 1999, Cambria gauged, inspected for separate-phase hydrocarbons (SPH), and collected groundwater samples from monitoring wells MW-1, MW-2, MW-3 and MW-4 (Figure 1). The samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), benzene, toluene, ethylbenzene and xylenes (BTEX), and methyl tert-butyl ether (MTBE). Cambria also measured dissolved oxygen (DO) concentrations in the wells. The groundwater analytical data are summarized in Table 1. The analytical report is included in Attachment A.

Groundwater Analytic Results

No SPH were detected in any of the wells. TPHg concentrations in the sampled monitoring wells ranged from 17,000 parts per billion (ppb) in MW-2 to 53,000 ppb in MW-3. TPHd concentrations ranged from 2,500 ppb in MW-2 to 5,300 ppb in MW-3. Benzene concentrations ranged from 1,200 ppb in MW-2 to 12,000 ppb in MW-4. MTBE concentrations were below detection limits in all sampled wells. These analytical results are consistent with historical results.

Oakland, CA
Sonoma, CA
Portland, OR
Seattle, WA

Cambria Environmental Technology, Inc.

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

Groundwater Flow Direction

Depth-to-water measurements collected on December 10, 1999, indicated a groundwater gradient of 0.006 ft/ft toward the southwest (Figure 1). Since 1994, the primary groundwater flow direction has been toward the northwest with a change toward the southwest usually occurring during the fourth quarter. Groundwater elevation data are presented in Table 1.

Remedial System Installation

During the fourth quarter 1999, Cambria obtained City of Oakland planning and building department permits, trenched and installed underground piping from 10 wells to the remediation system, installed aboveground extraction and treatment equipment, and constructed a fence around the remediation system. Electrical service from PG&E was arranged and an electrical power pole was installed. All that remained was hookup of power to the temporary power pole and installation of aboveground PVC piping between the remediation equipment.

ANTICIPATED FUTURE ACTIVITIES

Groundwater Monitoring: Cambria will gauge the site wells, measure DO concentrations, check the wells for SPH, and collect groundwater samples from the wells on a quarterly basis. Cambria will tabulate the data and incorporate the results into a groundwater monitoring report.

Remediation System Installation and Operation: Cambria's plans to begin system startup and operation. System startup has been delayed due to air permitting issues related to the nearby school. System startup and source testing will begin soon after air permit approval from the Bay Area Air Quality District.

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Barney Chan
February 3, 2000

CLOSING

If you have any questions or comments regarding this report or anticipated site activities, please call Ron Scheele at (510) 420-3318 or Bob Clark-Riddell at (510) 420-3303.

Sincerely,
Cambria Environmental Technology, Inc.

Mark Erickson
Staff Engineer

Bob Clark-Riddell, P.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
ROBERT G. CLARK-RIDDELL
No. C 049629
Exp. Sept 2000
CIVIL
STATE OF CALIFORNIA

H:\SB-2004\Oakl-002 - Lynn\Qm\Qm-4-99.wpd

Attachments:

Figure 1- Groundwater Elevation Contours
Table 1 - Groundwater Elevation and Analytical Data
Attachment A - Analytical Report and Field Data Sheets

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

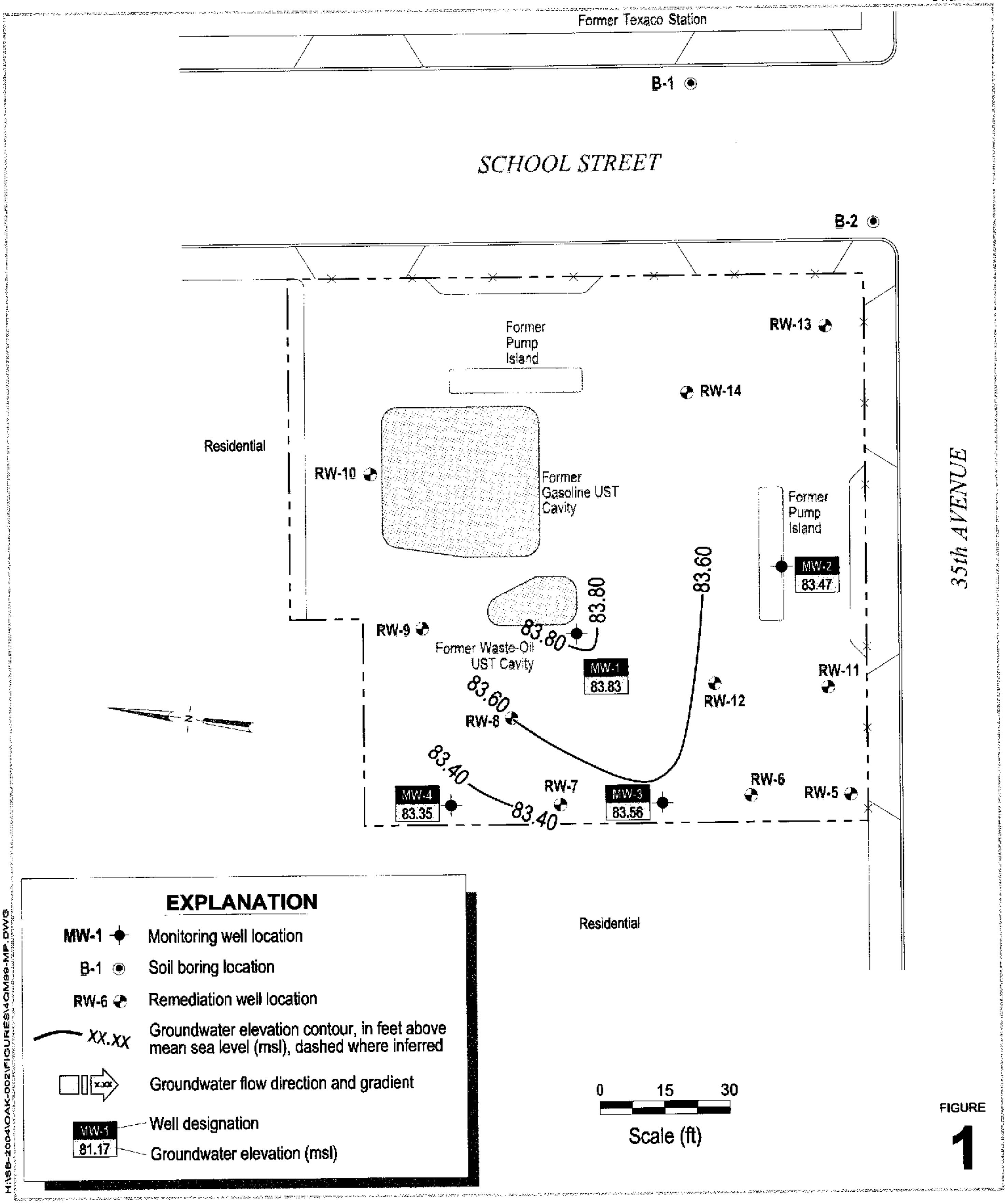

FIGURE
1

Former Exxon Station

3055 35th Avenue

Oakland, California

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Groundwater Elevation Contour Map

December 10, 1999

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

Well ID *(TOC)*	Date	GW Depth (ft)	SPH (ft)	GW Elev. (ft)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO (mg/L)
						<---------------------- Concentrations in parts per billion (µg/L)					--------------------------->		
MW-1	05/25/94	16.79	Sheen	84.06	120,000	25,000	<50,000	22,000	17,000	2,800	16,000	---	---
100.85	07/19/94	20.77	---	80.08	---	---	---	---	---	---	---	---	---
	08/18/94	21.04	Sheen	79.81	925,000	---	---	16,500	6,200	1,000	9,400	---	---
	11/11/94	15.80	---	85.05	57,000	---	---	14,000	4,400	1,400	6,400	---	---
	02/27/95	15.53	---	85.32	45,000	---	---	2,900	2,500	760	4,100	---	---
	05/23/95	15.29	---	85.56	22,000	---	---	9,900	990	790	2,000	---	---
	08/22/95	20.90	---	79.95	23,000	---	---	6,900	340	1,200	1,900	---	---
	11/29/95	22.19	---	78.66	37,000	---	---	9,900	530	1,600	2,900	---	---
	02/21/96	11.69	---	89.16	33,000	4,300	---	10,000	480	1,000	1,800	3,300	---
	05/21/96	14.62	---	86.23	36,000	8,500	---	8,500	1,400	1,300	2,800	1,900	---
	08/22/96	22.30	---	78.55	41,000	6,200	---	8,600	1,300	1,500	2,900	<200	8.0
	11/27/96	17.24	Sheen	83.61	38,000	6,100	---	9,600	950	1,600	3,100	<400	5.6
	03/20/97	16.65	---	84.20	33,000	10,000	---	6,100	560	970	2,200	<400	8.5
	06/25/97	19.77	---	81.08	31,000	7,400[a]	---	7,400	440	890	1,800	<400	3.7
	09/17/97	20.12	---	80.73	32,000[d]	3,500[e]	---	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[e,f]	---	7,800	820	840	2,000	<1,100	1.3
	07/14/98	17.34	---	83.51	41,000[d]	8,900[e,f]	---	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[e]	---	12,000	750	1,300	2,400	950	0.50
	06/29/99	20.77	---	80.08	28,000[d]	3,500[e]	---	7,300	420	810	1,700	<1,300	0.10
	09/28/99	19.68	---	81.17	13,000[d]	3,600[e,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**
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	---	---

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

Well ID *(TOC)*	Date	GW Depth (ft)	SPH (ft)	GW Elev. (ft)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO (mg/L)
						<---------------------- Concentrations in parts per billion (µg/L) ------------------------->							
	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[e]	---	5,200	3,400	1,300	5,900	<700	1.2
	12/22/97	14.09	---	85.91	47,000[d]	6,100[e]	---	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[e,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[e]	---	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**
MW-3	05/25/94	13.93	Sheen	82.94	56,000	14,000	<50,000	14,000	14,000	1,300	11,000	---	---
96.87	07/19/94	17.04	---	79.83	---	---	---	---	---	---	---	---	---
	08/18/94	17.75	---	79.12	116,000	---	---	28,300	26,000	2,400	15,000	---	---
	11/11/94	17.80	---	79.07	89,000	---	---	1,600	1,900	1,900	14,000	---	---
	02/27/95	11.86	Sheen	85.01	250,000	---	---	22,000	26,000	7,800	21,000	---	---
	05/23/95	11.60	Sheen	85.27	310,000	---	---	18,000	17,000	4,500	2,800	---	---
	08/22/95	17.10	---	79.77	74,000	---	---	14,000	13,000	1,900	11,000	---	---
	11/29/95	16.34	---	80.53	220,000	---	---	25,000	25,000	3,500	19,000	---	---

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

Well ID (TOC)	Date	GW Depth (ft)	SPH (ft)	GW Elev. (ft)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO (mg/L)
						<------------------------ Concentrations in parts per billion (µg/L) -------------------------->							
	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[e]	---	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[e]	---	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[e,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[e,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[e]	---	8,900	4,400	940	4,500	810	0.56
	06/29/99	16.98	---	79.89	71,000[d]	6,900[e]	---	12,000	7,300	1,400	8,400	<1,700	0.19
	09/28/99	15.99	---	80.88	60,000[d]	7,800[e]	---	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**
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[c]	1.4
	09/17/97	17.10	---	80.24	60,000[d]	4,400[e]	---	17,000	4,900	1,500	5,700	<1,500	1.5
	12/22/97	9.21	---	88.13	43,000[d]	3,100[e]	---	13,000	3,900	1,100	4,200	<960	3.7
	03/18/98	9.54	---	87.80	58,000[d]	5,500[e,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[e,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[e,f]	---	7,500	1,200	190	2,200	210	14.29[#]
	12/10/99	**13.99**	**---**	**83.35**	**47,000[d]**	**3,100[e,f]**	**---**	**12,000**	**1,800**	**1,000**	**4,400**	**<100**	**0.62**

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

Well ID *(TOC)*	Date	GW Depth (ft)	SPH (ft)	GW Elev. (ft)	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO (mg/L)
					<--- Concentrations in parts per billion (μg/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	---

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
μg/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
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

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ATTACHMENT A

Analytical Report and Field Data Sheets

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 Environmental Technology 1144 65th Street, Suite C Oakland, CA 94608	Client Project ID: #130-0105	Date Sampled: 12/10/99
		Date Received: 12/13/99
	Client Contact: Mark Erickson	Date Extracted: 12/16-12/17/99
	Client P.O:	Date Analyzed: 12/16-12/17/99

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	% Recovery Surrogate
27265	MW-1	W	25,000,a	ND<1000	5400	130	620	1400	105
27266	MW-2	W	17,000,a	ND<40	1300	780	420	2700	117
27267	MW-3	W	53,000,a	ND<200	8000	6400	1100	8100	104
27268	MW-4	W	47,000,a	ND<100	12,000	1800	1000	4400	102
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, 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

+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.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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 Environmental Technology 1144 65th Street, Suite C Oakland, CA 94608	Client Project ID: #130-0105	Date Sampled: 12/10/99
		Date Received: 12/13/99
	Client Contact: Mark Erickson	Date Extracted: 12/14/99
	Client P.O:	Date Analyzed: 12/14/99

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
27265	MW-1	W	2900,d,b	103
27266	MW-2	W	2500,d,b	103
27267	MW-3	W	5300,d,b	108
27268	MW-4	W	3100,d,b	99
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W	50 ug/L	
	S	1.0 mg/kg	

* 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 ug/L

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.

+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) medium boiling point pattern that does not match diesel (?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
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

Date: 12/14/99 Matrix: Water

Extraction: N/A

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 26128				Instrument: GC-3			
Xylenes	0.000	325.0	317.0	300.00	108	106	2.5
Ethyl Benzene	0.000	108.0	106.0	100.00	108	106	1.9
Toluene	0.000	108.0	105.0	100.00	108	105	2.8
Benzene	0.000	108.0	106.0	100.00	108	106	1.9
MTBE	0.000	116.0	107.0	100.00	116	107	8.1
GAS	0.000	1619.0	1595.0	1000.00	162	160	1.5
SampleID: 121499				Instrument: GC-2 B			
TPH (diesel)	0.000	286.0	276.0	300.00	95	92	3.6
SampleID: 121499				Instrument: IR-1			
TRPH	0.000	27.4	26.5	23.70	116	112	3.3

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

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

RPD means Relative Percent Deviation

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QC REPORT

Date: 12/16/99 Matrix: Water

Extraction: N/A

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 25438				Instrument: GC-7			
Xylenes	0.000	309.0	325.0	300.00	103	108	5.0
Ethyl Benzene	0.000	99.0	104.0	100.00	99	104	4.9
Toluene	0.000	99.0	104.0	100.00	99	104	4.9
Benzene	0.000	97.0	107.0	100.00	97	107	9.8
MTBE	0.000	94.0	97.0	100.00	94	97	3.1
GAS	0.000	1001.3	1023.3	1000.00	100	102	2.2
SampleID: 121699				Instrument: GC-11 B			
TPH (diesel)	0.000	276.0	281.0	300.00	92	94	1.8

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

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

RPD means Relative Percent Deviation

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McCAMPBELL ANALYTICAL INC.
110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553
Telephone: (925) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY

Report To: MARK ERICKSON Bill To: CAMBRIA ENV. TECH
Company: Cambria Environmental Technology
1144 65th Street, Suite C
Oakland, CA 94608
Tele: (510) 420-0700 Fax: (510) 420-9170
Project #: 130-0105 Project Name:
Project Location:
Sampler Signature: [signature]

SAMPLE ID	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED Ice	METHOD PRESERVED HCl	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602/8020 + 8015)/ MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX 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 (7240/7421/239.2/6010)	RCI	Other	Other	Other	Other	Comments
mw-1		12/10/99	1:10	5	X	X					X	X			X	X																		27265
mw-2		↓	1:20	5	X	X					X	X			X	X																		27266
mw-3		↓	1:35	5	X	X					X	X			X	X																		27267
mw-4		↓	1:48	5	X	X					X	X			X	X																		27268

Relinquished By:	Date:	Time:	Received By:
[signature]	12/1/99	11:40	B. Butts
B. Butts	12/13	12:25	

Remarks:
4 - VOAS W/ HCl } PER WELL
1 - 1 l AMBER } PER WELL

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CAMBRIA

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments
MW-1	10:06		17.02'		27.26'	31.75" ABOVE GROUND SURFACE
MW-2	10:08		16.53'		27.40'	ODOROUS 27.25" ABOVE GROUND SURFACE
MW-4	10:10		13.99'		30.28'	
MW-3	10:14		13.31'		24.96'	

Project Name: WORTHINGTON

Project Number: 130-0105

Measured By: ME

Date: 12/10/99

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WELL SAMPLING FORM

Project Name: **Worthington**	Cambria Mgr: **RAS**	Well ID: MW-1
Project Number: **130-0105**	Date: **12/10/99**	Well Yield: ——
Site Address: 7[illegible] Boulevard [illegible], CA	Sampling Method: **Disposable bailer**	Well Diameter: 4 " pvc Technician(s): **ME**
Initial Depth to Water: 17.02'	Total Well Depth: 27.26'	Water Column Height: 10.24'
Volume/ft: 0.65	1 Casing Volume: 6.656 gal	3 Casing Volumes: ~20 GALS
Purging Device: SUB-PUMP	Did Well Dewater?: YES	Total Gallons Purged: 15 GALS
Start Purge Time: 11:11	Stop Purge Time: 11:24	Total Time: 13 min

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

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

PRE-PURGE DO: 1.03 mg/L @ 19.8°C

Time	Casing Volume	Temp. °C	pH	Cond. µS.	Comments
11:13	1	19.4	7.5	689	ODOROUS
11:16	2	18.2	6.8	736	BROWN-SILTY
11:20	2	18.9	6.7	855	
11:22	3	18.5	6.6	1064	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-1	12/10/99	1:10	4 voa's	HCL	**TPHg, BTEX, MTBE**	**8020** **8015**
MW-1	12/10/99	1:10	1-1L	NONE	**TPHd**	8015

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WELL SAMPLING FORM

Project Name: **Worthington**	Cambria Mgr: **RAS**	Well ID: MW-2
Project Number: **130-0105**	Date: **12/10/99**	Well Yield: —
Site Address: ...mont, CA	Sampling Method: **Disposable bailer**	Well Diameter: 4 **" pvc**
		Technician(s): **ME**
Initial Depth to Water: 16.53'	Total Well Depth: 27.40'	Water Column Height: 10.87'
Volume/ft: 0.65	1 Casing Volume: 7.1 gal	3 Casing Volumes: 21.2 gal
Purging Device: ~~SUB. PUMP~~	Did Well Dewater?: NO.	Total Gallons Purged: 21.5 gal
Start Purge Time: 11:39	Stop Purge Time: 11:56	Total Time: 17 min

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

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

PRE-PURGE DO: 0.17 mg/L @ 18.5°C

Time	Casing Volume	Temp. °C	pH	Cond. µS	Comments
11:41	1	19.4	7.1	326	
11:44	2	19.8	7.0	695	
11:49	3	19.2	6.9	632	
11:51	3	19.3	6.8	1105	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	12/10/99	1:20	4 voa's	HCL	TPHg, BTEX, MTBE	8020 8015
MW-2	12/10/99	1:20	1-1 l	NONE	TPHd	8015

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WELL SAMPLING FORM

Project Name: **Worthington**	Cambria Mgr: **RAS**	Well ID: MW - 3
Project Number: **130-0105**	Date: **12/10/99**	Well Yield:
Site Address:	Sampling Method: **Disposable bailer**	Well Diameter: 2 " pvc
		Technician(s): **ME**
Initial Depth to Water: 13.31'	Total Well Depth: 24.96'	Water Column Height: 11.65'
Volume/ft: 0.16	1 Casing Volume: 1.864 gal	3 Casing Volumes: 5.6 gal
Purging Device: **disposable bailer**	Did Well Dewater?: NO	Total Gallons Purged: 5.75 gal
Start Purge Time: 12:10	Stop Purge Time: 12:27	Total Time: 17 min

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

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

PRE-PURGE DO: 19.48 °C 0.48 mg/L

Time	Casing Volume	Temp. °C	pH	Cond. µS.	Comments
12:14	1	18.4	7.1	1123	ODOROUS
12:18	2	18.0	7.1	967	SHEEN PRESENT
12:22	3	17.1	7.0	1059	
12:23	3	18.4	6.8	1066	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-3	12/10/99	1:35	4 voa's	HCL	**TPHg, BTEX, MTBE**	**8020 8015**
MW-3	12/10/99	1:35	1 - 1 l	NONE	**TPHd**	8015

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WELL SAMPLING FORM

Project Name: **Worthington**	Cambria Mgr: **RAS**	Well ID: MW-4
Project Number: **130-0105**	Date: **12/10/99**	Well Yield: —
Site Address:	Sampling Method: **Disposable bailer**	Well Diameter: 2 **" pvc**
		Technician(s): **ME**
Initial Depth to Water: 13.99'	Total Well Depth: 30.28'	Water Column Height: 16.29'
Volume/ft: 0.16	1 Casing Volume: 2.6 gal	3 Casing Volumes: 7.81 gal.
Purging Device: **disposable bailer**	Did Well Dewater?: NO.	Total Gallons Purged: 8 gal
Start Purge Time: 12:33	Stop Purge Time: 12:53	Total Time: 20 min

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

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

PRE-PURGE DO: 0.62 mg/L @ 16.3°C

Time	Casing Volume	Temp. °C	pH	Cond. µS.	Comments
12:40	1	17.4	6.8	941	ODOROUS
12:48	2	16.3	7.0	399	
12:53	3	16.6	6.9	640	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-4	[redacted] 12/10/99	1:45	4 voa's	HCL	TPHg, BTEX, MTBE	8020 8015
MW-4	12/10/99	1:45	1-1 l	NONE	TPHd	8015

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