



PORT OF OAKLAND

June 4, 2003

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Alameda County
JUN 09 2003
Environmental Health

**Subject: Request for No Further Action (Fuel Leak Case RO0002445)
Gray & Reynolds Development Site
1275 Embarcadero, Oakland**

Dear Barney:

Please find enclosed for your review the "*Groundwater Monitoring and Sampling Report, Gray & Reynolds Development Site, dated May 30, 2003.*" The soil and groundwater investigation has been conducted in accordance with the work plan prepared by Baseline Environmental Consultants in the report "*Soil and Groundwater Investigation and Workplan*" dated August 13, 2001, and by Iris-Cambria's "*Monitoring Well Installation, Groundwater Monitoring, and Soil Excavation Workplan, dated October 25, 2002.*" As requested in your letter of April 11, 2003, we have included in the report cross-sectional diagrams showing utilities, borings, wells and groundwater elevations.

The report represents one year of sampling at the site, and pollutants have showed stable or declining concentrations in all wells over this period. Furthermore, all concentrations of pollutants are well below the San Francisco Bay Regional Water Quality Control Boards' (RWQCB) Risk Based Screening Levels for the protection of human health and the environment. Therefore, we respectfully request the Alameda County Department of Environmental Health in cooperation with the RWQCB issue a "No Further Action" letter for the site.

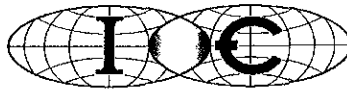
If you have any questions, please do not hesitate contact me at (510) 627-1184.

Sincerely,

Douglas P. Herman
Associate Port Environmental Scientist

Cc: w/encl: Stephen Hill, RWQCB
Thomas Bender, Gray & Reynolds
Barbara Szudy, Port of Oakland CRE

Cc: w/o encl: Chris Alger, Iris
Robert Marinai, Cambria



Iris - Cambria
Environmental, JV

Alameda County
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Environmental Health

GROUNDWATER MONITORING AND SAMPLING REPORT

**Gray & Reynolds Development Site
Embarcadero Cove
1275 Embarcadero
Oakland, California**

May 30, 2003

Prepared for:

Port of Oakland
EH&SC Department
530 Water Street
Oakland, California 94607

Prepared by:

Iris-Cambria Environmental, J.V.

1615 Broadway, Suite 1003
Oakland, California 94612

5900 Hollis Street, Suite A
Emeryville, California 94608

Robert Marinai, R.G.
Senior Project Geologist

Christopher S. Alger, C.E.G., C.Hg
Principal Engineering Geologist

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INTRODUCTION

Iris–Cambria Environmental, J.V. (Iris–Cambria), has prepared this *Groundwater Monitoring and Sampling Report* for the property located at 1275 Embarcadero, Oakland, California (Site) on behalf of the Port of Oakland (Port) to facilitate redevelopment of the property by Gray & Reynolds Properties, Inc. (Gray & Reynolds) for commercial use. This document describes the groundwater monitoring activities and presents results of groundwater sampling that occurred during February 2003.

SITE DESCRIPTION

The Site is located at 1275 Embarcadero, Oakland, California (Figure 1). Current Site surface features include a parking lot and a vacant former restaurant (Figure 2). The Port owns the Site, and Gray & Reynolds is proposing it for commercial redevelopment.

Past investigations at the Site are described in the following documents: *Draft Review of Existing Site Conditions and Environmental Risk Evaluation* (Henshaw Associates, Inc., 2001 a), *Soil and Groundwater Sampling and Analysis Workplan* (Henshaw Associates, Inc., 2001 b), *Soil and Groundwater Investigation and Workplan* (Baseline Environmental Consulting, August 13, 2001), *Site Investigation and Screening-Level Risk Assessment Report* (Iris-Cambria, 2002a), and *Monitoring Well Installation, Groundwater Monitoring, and Soil Excavation Report* (Iris-Cambria, 2002b).

GROUNDWATER MONITORING

Groundwater monitoring of monitoring wells MW-4a and MW-5 was conducted on May 14, 2003. Cambria's *Standard Field Procedures for Monitoring Wells* is included in Appendix A. Well sampling forms are presented in Appendix B. The results of the field investigation are presented below.

Groundwater Analytical Results

Groundwater was sampled from wells MW-4a and MW-5 on May 14, 2003. Samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline (TPHg), as diesel (TPHd), and as motor oil (TPHmo); benzene, toluene, ethylbenzene, and total xylenes (BTEX); methyl tertiary butyl ether (MTBE); and polynuclear aromatic hydrocarbons (PAHs). Analytical results are presented in Figure 3 and summarized in Tables 1 and 2. The laboratory analytical reports are presented in Appendix C.

Benzene, TPHd, and pyrene were detected in the groundwater sample collected from well MW-4a at concentrations of 0.58 micrograms per liter ($\mu\text{g/L}$), $59\mu\text{g/L}$ and $0.23\mu\text{g/L}$, respectively. Pyrene was the only analyte detected in MW-5 at a concentration of $0.32\mu\text{g/L}$.

Site Hydrogeology

During the May 14, 2003 monitoring event, groundwater at the Site was encountered at depths ranging from 6.31 to 5.92 ft bgs. Due to the limited number of monitoring points (two), a groundwater gradient could not be calculated from the data. A cross section was prepared that shows the relationship of groundwater levels as registered in MW-4a and MW-5 with the bottom storm sewer and sanitary sewers utility trenches. As shown on Figure 4, groundwater was below the bottom of the utility corridor trench on May 14, 2003.

CONCLUSIONS AND RECOMMENDATIONS

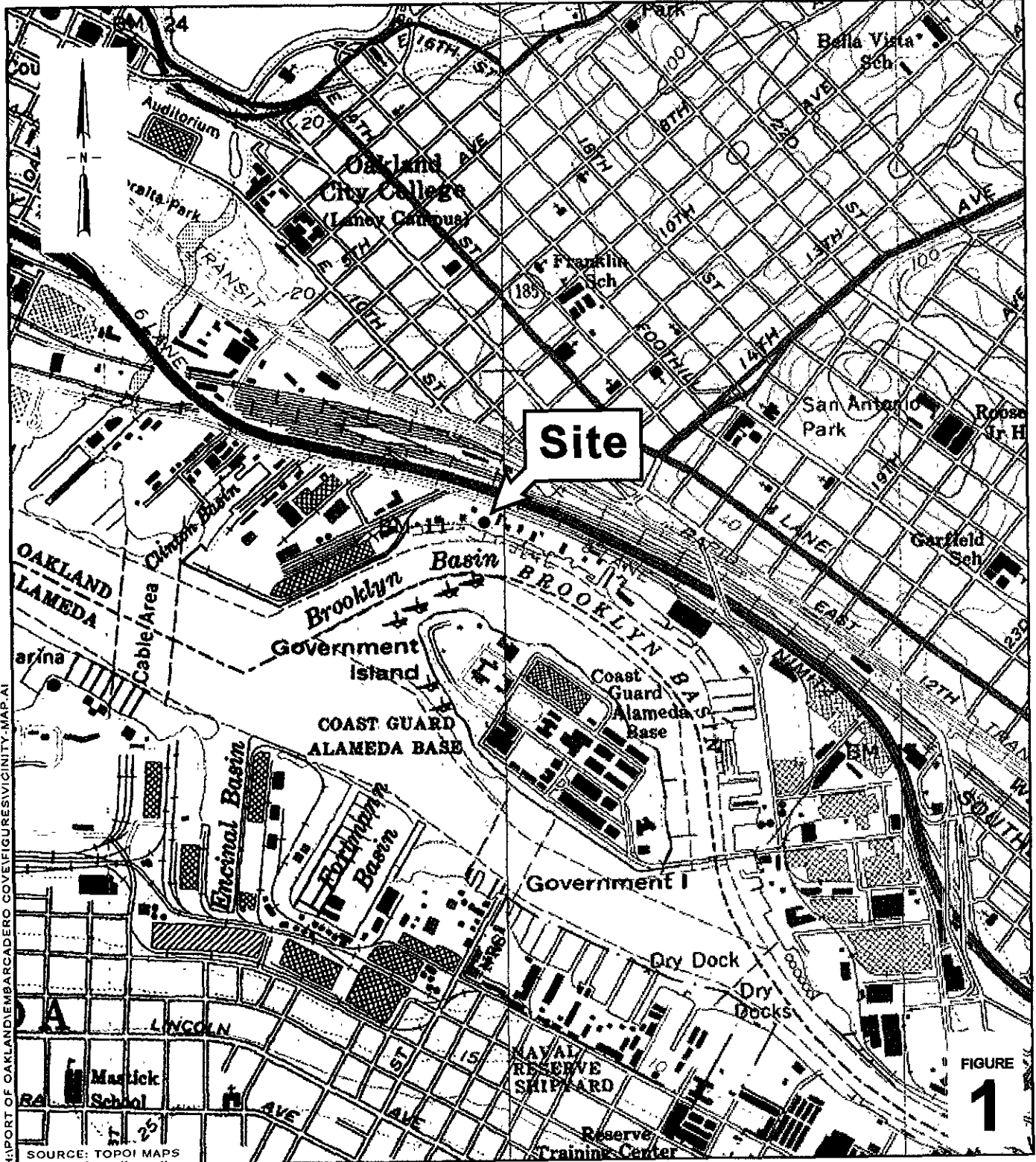
Groundwater chemistry observed in the two Site boundary wells, MW-4a and MW-5, increasingly demonstrate that Site groundwater is approaching local background conditions. In addition, benzene concentrations in groundwater at well MW-4a continue to decrease since well installation three quarters ago, suggesting that the source area remediation conducted at former well MW-1 has been effective.

After three rounds of sampling, the decreasing levels of benzene concentrations observed in offsite well MW-4a have remained well below the San Francisco Bay Regional Water Quality Control Board's (SFRWQCB) Risk Based Screening Levels (RBSLs) of $46\mu\text{g/L}$ for non-drinking water resources. Additionally, concentrations of TPHd and pyrene detected in site monitoring wells are also well below the RBSLs of $100\mu\text{g/L}$ and $.040\mu\text{g/L}$, respectively. Similarly, site groundwater chemical concentrations are also below the RBSL for protection of Aquatic Life set at $46\mu\text{g/L}$ for benzene, $0.40\mu\text{g/L}$ for pyrene, and $640\mu\text{g/L}$ for TPHd.

Detection of low levels of TPHd and pyrene is not unexpected and is consistent with the findings reported in the *Monitoring Well Destruction, Monitoring Well Installation, Groundwater Monitoring, and Utility Trench Sampling Report (Iris-Cambria, 2002)*. Data presented in that report show that elevated levels of TPHd and TPHmo were detected in groundwater from TW-1, which is located in the utility corridor at the upgradient boundary of the site. Similar levels of TPHd and TPHmo were also detected in groundwater from the downgradient test well, TW-3, also located in the utility corridor. Therefore, it is concluded that the slightly elevated levels of TPHd and pyrene represent background conditions and are related to the TPH compounds known to exist in the utility corridor.

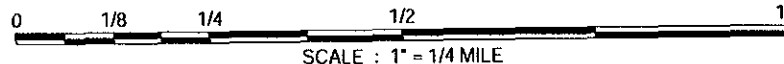
We believe it is appropriate to consider the shallow groundwater emanating from the Site to be classified as a non-drinking water resource since the water has a high total dissolved solids content due to the Site proximity to the Bay. In addition, the Site is located in a commercial area with major sewer and storm water conveyance piping buried within a few feet of the monitoring wells. The likelihood is very low that shallow groundwater in this area will ever be used as a drinking water source.

Based on these conditions, and the developing trend of decreasing and low concentrations of benzene in groundwater at the Site boundary, we respectfully request that the County now consider issuance of a no-further-action letter for the Site.

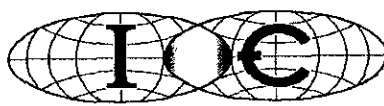


H:\PORT OF OAKLAND\EMBARCADERO COVE\FIGURES\VICINITY_MAP.A1

SOURCE: TOPOI MAPS



Port of Oakland
 1275 Embarcadero
 Embarcadero Cove Project
 Oakland, California



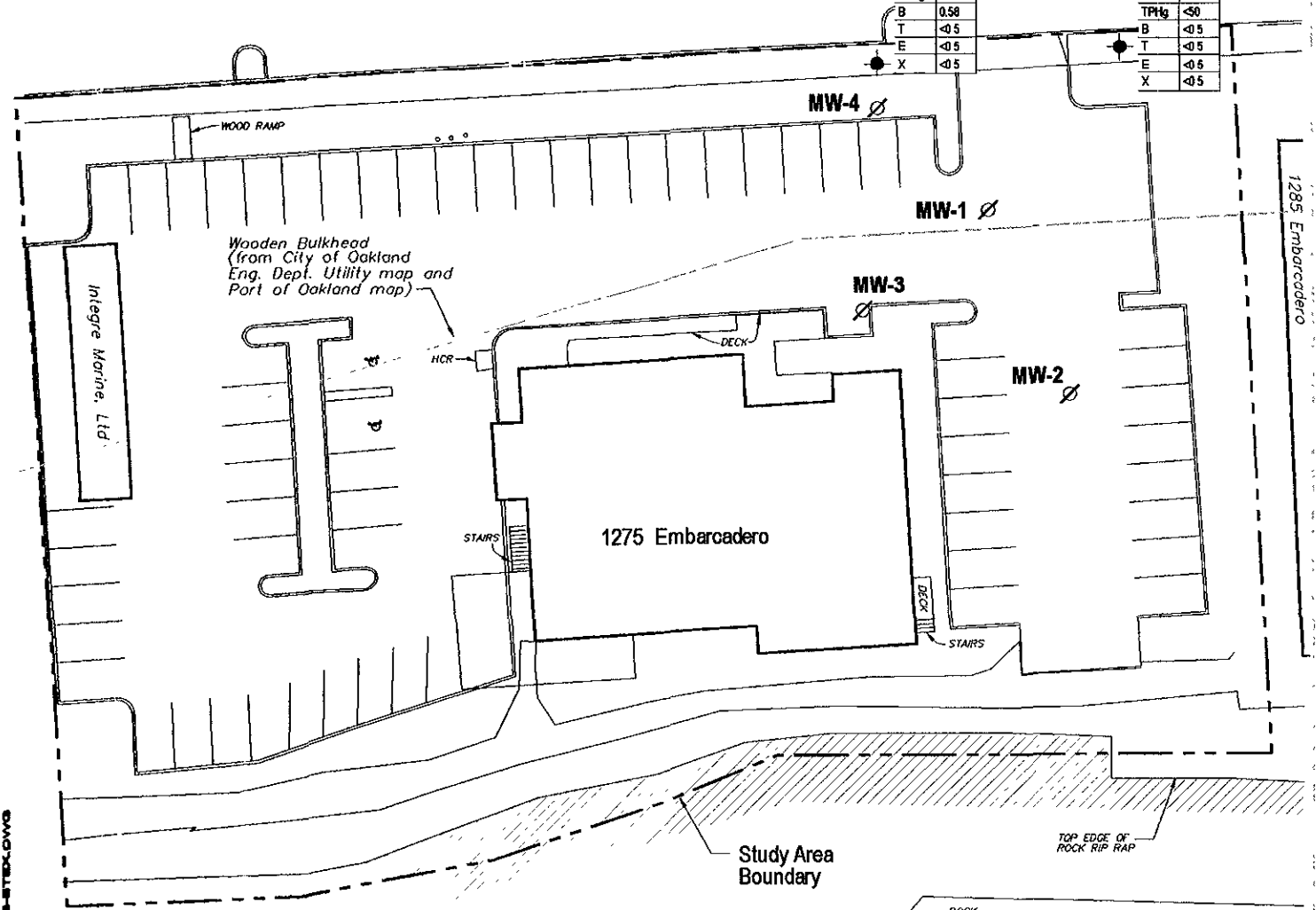
**Iris - Cambria
 Environmental, JV**

Vicinity Map

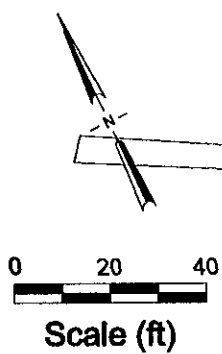
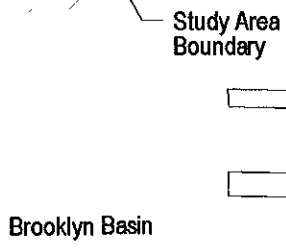
THE EMBARCADERO

MW-4a	
TPHmo	<250
TPHd	59
TPHg	<50
B	0.58
T	<0.5
E	<0.5
X	<0.5

MW-5	
TPHmo	<250
TPHd	<50
TPHg	<50
B	<0.5
T	<0.5
E	<0.5
X	<0.5



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EXPLANATION

MW-4a ● Monitoring well location

MW-1 ∅ Destroyed well location

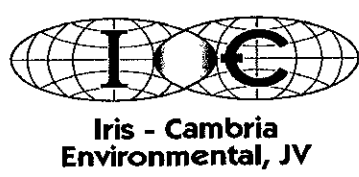
MW-1	Monitoring well designation
TPHmo	XXXX
TPHd	XXXX
TPHg	XXXX
B	XXXX
T	XXXX
E	XXXX
X	XXXX

concentration (µg/L) in groundwater

TPHmo
 TPHd
 TPHg
 Benzene
 Toluene
 Ethylbenzene
 Xylene

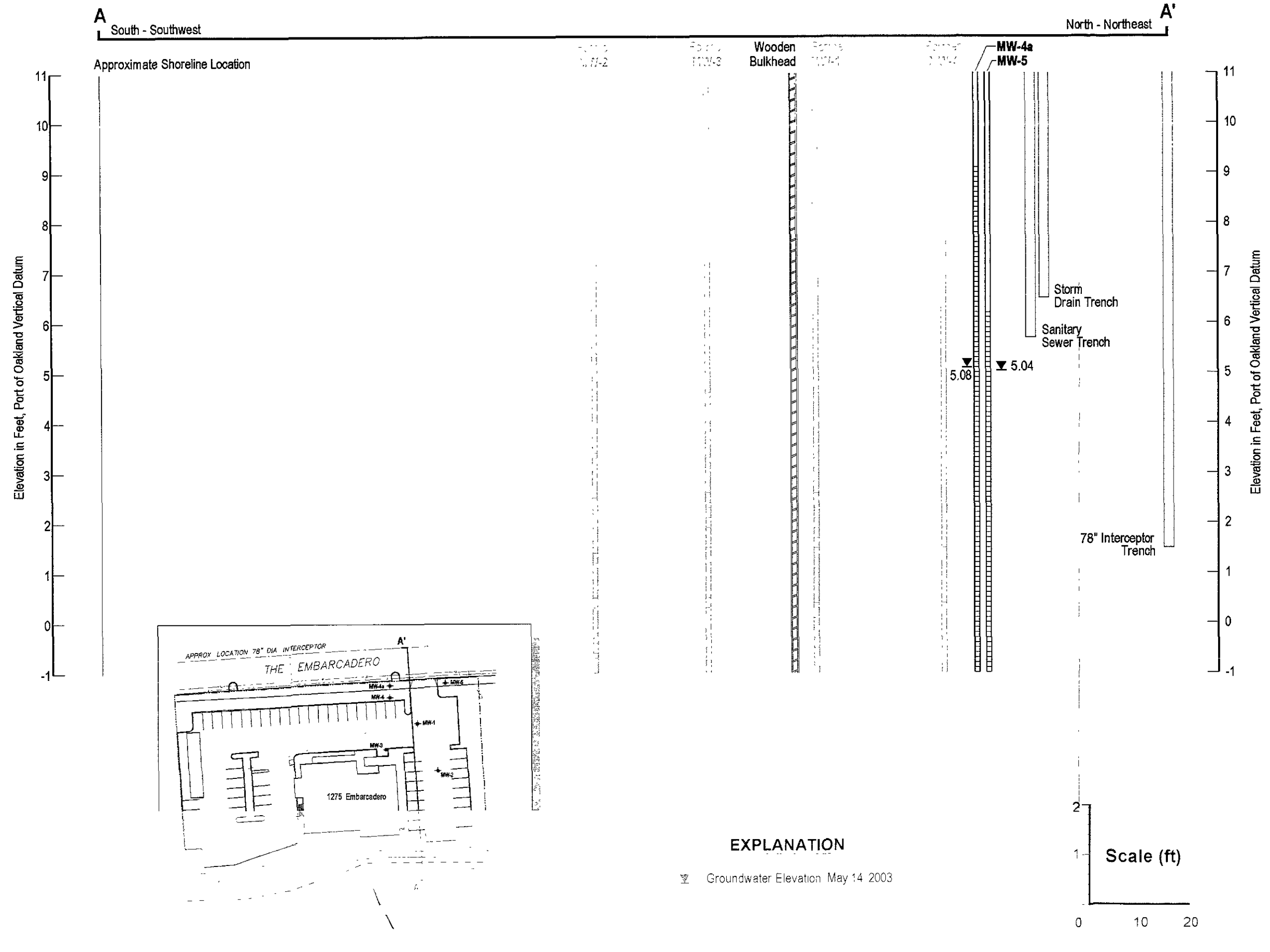
FIGURE 3

Port of Oakland
 1275 Embarcadero
 Embarcadero Cove Project
 Oakland, California



Hydrocarbon Concentrations in Groundwater

May 14, 2003



EXPLANATION
 ▽ Groundwater Elevation May 14 2003

Scale (ft)
 0 10 20

FIGURE
4

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Table 1: Groundwater Analytical Data - Light-Range Petroleum Hydrocarbons and MTBE - 1275 Embarcadero, Oakland, CA

Sample ID	Date Sampled	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
		←----- μg/L -----→					
TW-1	11/22/02	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
TW-2	11/22/02	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
TW-3	11/22/02	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
TW-4	11/22/02	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
MW-2	06/10/02	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
MW-3	06/10/02	220	< 0.5	1	< 0.5	< 0.5	< 5.0
MW-4	06/10/02	28,000	1,700	230	930	2,100	<500
MW-4a	12/03/02	< 50	5.7	< 1.0	< 0.5	0.58	< 0.5
	02/20/03	< 50	1.6	< 0.5	< 0.5	< 0.5	< 5.0
	05/14/03	< 50	0.58	< 0.5	< 0.5	< 0.5	< 5.0
MW-5	06/10/02	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
	12/03/02	< 50	< 0.5	< 1.0	< 0.5	< 0.5	< 0.5
	02/20/03	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
	05/14/03	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0

Abbreviations and Methods:

NOTE: 12/03/02 benzene, toluene, ethylbenzene, xylenes, and methyl tertiary butyl ether by EPA Method 8260

All other benzene, toluene, ethylbenzene, xylenes, and methyl tertiary butyl ether by EPA Method 8020

TPHg = total petroleum hydrocarbons as gasoline by EPA Methods modified 8015, 5030, and 8020 or 602

μg/L = micrograms per liter

CAMBRIA

**Table 2: Groundwater Analytical Data - Heavy-Range Petroleum Hydrocarbons and PAHs
1275 Embarcadero, Oakland, CA**

Sample ID	Date Sampled	µg/L								
		TPHd	TPHmo	Acenaphthalene	Fluoranthene	1-methyl-naphthalene	2-methyl-naphthalene	Naphthalene	Phenanthrene	Pyrene
TW-1	11/22/02	78	470	--	--	--	--	--	--	--
TW-2	11/22/02	< 50	< 250	--	--	--	--	--	--	--
TW-3	11/22/02	120	350	--	--	--	--	--	--	--
TW-4	11/22/02	< 50	< 250	--	--	--	--	--	--	--
MW-2	06/10/02	220	370	<10*	<10*	--	--	<10*	<50*	<10*
MW-3	06/10/02	390	470	<10*	<10*	--	--	<10*	<50*	<10*
MW-4	06/10/02	4,500	<250	<50*	<50*	--	--	250*	<250*	0.12*
MW-4a	12/03/02	<50	<250	<0.5*	<0.062*	<1.0*	<1.0*	<0.2*	<0.05*	<50*
	02/20/03	<50	<250	<10*	<10*	<10*	<10*	<10*	<10*	<10*
	05/14/03	59	<250	<10*	<10*	<10*	<10*	<10*	<10*	0.23*
MW-5	06/10/02	110	330	<10*	<10*	--	--	<10*	<50*	<10*
	12/03/02	<50	<250	<0.5*	0.24*	<1.0*	<1.0*	<0.2*	<0.05*	1.0*
	02/20/03	<50	<250	<10*	<10*	<10*	<10*	<10*	<10*	<10*
	05/14/03	<50	<250	<10*	<10*	<10*	<10*	<10*	<10*	0.32*

Abbreviations and Methods:

ft = feet

µg/L = micrograms per liter

-- = not available, not analyzed, or does not apply

TPHd = total petroleum hydrocarbons as diesel by EPA method 8015, and 3550 or 3510

TPHmo = total petroleum hydrocarbons as motor oil by EPA method 8015

PAH = polynuclear aromatic hydrocarbon analyses performed by EPA Method 8270D

Notes:

* PAH analysis

ATTACHMENT A

Standard Field Procedures for Monitoring Wells

CAMBRIA

STANDARD FIELD PROCEDURES FOR MONITORING WELLS

This document describes Cambria Environmental Technology's standard field methods for drilling, installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Well Construction and Surveying

Groundwater monitoring wells are installed in soil borings to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security. The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

ATTACHMENT B

Well Sampling Forms

WELL SAMPLING FORM

Project Name: <i>Embascadero Cove</i>	Cambria Mgr: <i>SO</i>	Well ID: <i>MW-4a</i>
Project Number: <i>458-1808</i>	Date: <i>5-15-03</i>	Well Yield:
Site Address: <i>1275 Embascadero Cove Oakland, Ca</i>	Sampling Method: <i>disposable bailer</i>	Well Diameter: <i>2" pvc</i>
		Technician(s): <i>SG</i>
Initial Depth to Water: <i>6.31</i>	Total Well Depth: <i>12.35</i>	Water Column Height: <i>6.04</i>
Volume/ft: <i>0.16</i>	1 Casing Volume: <i>0.96</i>	3 Casing Volumes: <i>2.89</i>
Purging Device: <i>disposable bailer</i>	Did Well Dewater?: <i>yes</i>	Total Gallons Purged: <i>2</i>
Start Purge Time: <i>4:55</i>	Stop Purge Time: <i>5:04</i>	Total Time: <i>9 mins</i>

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
<i>5:00</i>	<i>1</i>	<i>18.9</i>	<i>7.51</i>	<i>3999</i>	
<i>5:05</i>	<i>2</i>	<i>19.0</i>	<i>7.58</i>	<i>3999</i>	
<i>5:07</i>	<i>well</i>	<i>dewatered</i>			

Fe = mg/L ORP = *121* mV DO = *0.96* mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
<i>MW-4a</i>	<i>5-14-03</i>	<i>5:30</i>	<i>2 Amb 3 Lda</i>	<i>HCl</i>		

WELL SAMPLING FORM

Project Name: <i>Embascadero Cove</i>	Cambria Mgr: <i>SO</i>	Well ID: <i>MW-5</i>
Project Number: <i>458-1808</i>	Date: <i>5-15-03</i>	Well Yield:
Site Address: <i>1275 Embascadero Cove Oakland, Ca</i>	Sampling Method: <i>disposable bailer</i>	Well Diameter: <i>2" pvc</i>
		Technician(s): <i>SG</i>
Initial Depth to Water: <i>5.92</i>	Total Well Depth: <i>12.00</i>	Water Column Height: <i>6.08</i>
Volume/ft: <i>0.16</i>	1 Casing Volume: <i>0.97</i>	3 Casing Volumes: <i>2.91</i>
Purging Device: <i>disposable bailer</i>	Did Well Dewater?: <i>YES</i>	Total Gallons Purged: <i>2</i>
Start Purge Time: <i>4:25</i>	Stop Purge Time: <i>4:34</i>	Total Time: <i>9 mins</i>

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
<i>4:30</i>	<i>1</i>	<i>18.4</i>	<i>7.47</i>	<i>399</i>	
<i>4:35</i>	<i>2</i>	<i>18.7</i>	<i>7.58</i>	<i>399</i>	
<i>4:37</i>	<i>well dewatered</i>				

Fe = mg/L ORP = *140* mV DO = *1.61* mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
<i>MW-5</i>	<i>5-15-03</i>	<i>5:50</i>	<i>2 Amb 3 Lda</i>	<i>MCI</i>		

ATTACHMENT C

Laboratory Analytical Reports

Cambria Env. Technology 5900 Hollis St, Suite A Emeryville, CA 94608	Client Project ID: #458-1808-007; Embarcadero Cove	Date Sampled: 05/14/03
	Client Contact: Jason Olson	Date Received: 05/16/03
	Client P.O.:	Date Extracted: 05/16/03
		Date Analyzed: 05/22/03

Polynuclear Aromatic Hydrocarbons (PAHs / PNAs) by HPLC*

Extraction Method: SW3510C Analytical Method: SW8310 Work Order: 0305274

Lab ID	0305274-001C	0305274-002C	Reporting Limit for DF = 1	
Client ID	MW-4a	MW-5		
Matrix	W	W		
DF	1	1		

Compound	Concentration			ug/kg	µg/L
Acenaphthene	ND	ND		NA	0.5
Acenaphthylene	ND	ND		NA	0.2
Anthracene	ND	ND		NA	2.0
Benzo (a) anthracene	ND	ND		NA	1.0
Benzo (a) pyrene	ND	ND		NA	0.1
Benzo (b) fluoranthene	ND	ND		NA	10
Benzo (g,h,i) perylene	ND	ND		NA	0.1
Benzo (k) fluoranthene	ND	ND		NA	2.0
Chrysene	ND	ND		NA	5.0
Dibenzo (a,h) anthracene	ND	ND		NA	0.1
Fluoranthene	ND	ND		NA	0.05
Fluorene	ND	ND		NA	0.1
Indeno (1,2,3) pyrene	ND	ND		NA	0.05
1-Methylnaphthalene	ND	ND		NA	1.0
2-Methylnaphthalene	ND	ND		NA	1.0
Naphthalene	ND	ND		NA	0.2
Phenanthrene	ND	ND		NA	0.05
Pyrene	0.23	0.32		NA	0.05

Surrogate Recoveries (%)

%SS1	116	109		
%SS2	114	115		

Comments

* water and vapor samples and all TCLP & SPLP extracts are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

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

surrogate diluted out of range.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) sample diluted due to high organic content.



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

QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0305274

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 6935		Spiked Sample ID: 0305262-007A				
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(btex) [£]	ND	60	96.1	95.6	0.522	97.7	96.9	0.824	70	130
MTBE	ND	10	96.9	101	4.11	91.9	94.1	2.42	70	130
Benzene	ND	10	91.9	93.6	1.78	92.7	91.5	1.35	70	130
Toluene	ND	10	97	97.3	0.285	96.4	95.9	0.598	70	130
Ethylbenzene	ND	10	96.2	97.6	1.38	98.3	95.7	2.66	70	130
Xylenes	ND	30	100	100	0	103	100	3.28	70	130
%SS:	100	100	98.7	99.6	0.854	98.1	97.6	0.599	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.

% 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.

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

cluttered chromatogram; sample peak coelutes with surrogate peak.

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

NR = 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.



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

QC SUMMARY REPORT FOR SW8015C

Matrix: W

WorkOrder: 0305274

EPA Method: SW8015C		Extraction: SW3510C			BatchID: 6945			Spiked Sample 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
TPH(d)	N/A	7500	N/A	N/A	N/A	98.5	98.9	0.317	70	130
%SS:	N/A	100	N/A	N/A	N/A	106	106	0	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.

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

* 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.

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.



QC SUMMARY REPORT FOR SW8310

Matrix: W

WorkOrder: 0305274

EPA Method: SW8310		Extraction: SW3510C		BatchID: 6957		Spiked Sample 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
Benzo (a) pyrene	N/A	0.75	N/A	N/A	N/A	97.2	97	0.198	80	130
Chrysene	N/A	0.75	N/A	N/A	N/A	96	89.2	7.35	80	130
1-Methylnaphthalene	N/A	0.75	N/A	N/A	N/A	113	112	1.33	80	130
2-Methylnaphthalene	N/A	0.75	N/A	N/A	N/A	96.1	95.5	0.585	80	130
Phenanthrene	N/A	0.75	N/A	N/A	N/A	93.3	92.2	1.12	80	130
Pyrene	N/A	0.75	N/A	N/A	N/A	114	114	0	80	130
%SS1:	N/A	100	N/A	N/A	N/A	88.4	94.5	6.65	80	130
%SS2:	N/A	100	N/A	N/A	N/A	96.5	106	9.30	80	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.

% 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.

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

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

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

McCAMPBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553-5560

Telephone: (925) 798-1620

Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME:
RUSH 24 HOUR 48 HOUR 5 DAY

EDF Required? Yes No

Report To: Jason Olson Bill To: Cambria Env. Tech

Company: Cambria Environmental Technology Inc.

5700 Hollis Street STE-A

Emeryville, CA 94608

E-mail:

Tele: 510-420-0700

Fax: 510-420-9170

Project #: 458-1808-007

Project Name: Embarcadero Cave

Project Location: 1215 Embarcadero Oakland, Ca

Sampler Signature: [Signature]

Analysis Request

Other

Comments

- BTEX & TPH as Gas (602/8020 + 8015) MTBE
- TPH as Diesel (8015) with silica gel clean up
- 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

TPH mo by 8015 with silica
confirmation of MTBE by 8260
PAH's by 8310

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other					
MW-4a		5-14-03	5:30	5	VOA Amb	X					X	X							
MW-S		5-14-03	5:50	5	VOA Amb	X					X	X							

Relinquished By: <u>[Signature]</u>	Date: <u>5/16/03</u>	Time: <u>8:30</u>	Received By: <u>secure location</u>
Relinquished By:	Date: <u>5/16/03</u>	Time: <u>3:45</u>	Received By: <u>[Signature]</u>
Relinquished By:	Date:	Time:	Received By:

Remarks:

ICEM GOOD CONNECTION PRESERVED VOA's O&G METALS OTHER

HEAD SPACE ASSENT CONTAINERS RECLAIMED IN LAB. PRESERVED IN LAB.

[Signature]

0805274

CEX

McC Campbell Analytical Inc.



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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0305274

Client:

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

TEL: (510) 450-1983
 FAX: (510) 450-8295
 ProjectNo: #458-1808-007; Embarcadero Cove
 PO:

Date Received: 5/16/03

Date Printed: 5/16/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests			
					<>	SW8015C	V8021B/8015C	SW8310
0305274-001	MW-4a	Water	5/14/03 5:30:00 PM	<input type="checkbox"/>	A	B	A	C
0305274-002	MW-5	Water	5/14/03 5:50:00 PM	<input type="checkbox"/>		B	A	C

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.