CAMBRIA

October 17, 2000

Mr. Robert Cave
Bay Area Air Quality Management District
PERMIT SERVICES DIVISION
939 Ellis Street
San Francisco, California 94109

#515

Re: **System Startup Report**
Golden Empire Properties - Worthington
3055 35th ~~Street~~ Ave
Oakland, California
Plant No. 12241, Permit No. 27721

Dear Mr. Cave:

On behalf of Olympian Oil Company, Cambria Environmental Technology, Inc. (Cambria), is submitting this system startup report for the remediation system located at the above referenced site. Described below are the system installation, equipment, startup and performance, and proposed system reporting.

SYSTEM INSTALLATION

In late 1999, Cambria installed the underground remediation piping, sewer piping, well vaults, and a well manifold as part of a dual phase extraction (DPE) system. Cambria also supervised the installation of a temporary power pole and electrical panel provided by Sustainable Technologies of San Francisco, California. Ten wells were connected to the remediation system (RW-5 through RW-13). See Figure 1 for the location of remediation wells.

In spring 2000, Cambria installed an all-electric catalytic oxidizer provided by Onion Enterprises of Naples, Florida. Power consisting of 230 volt, 3-phase, 200 ampere was connected to the system. The location of the remediation enclosure is shown on Figure 1.

Oakland, CA
San Ramon, CA
Sonoma, CA
Portland, OR

Cambria Environmental Technology, Inc.

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

SYSTEM EQUIPMENT

The current remediation system consists of the following soil vapor extraction equipment:

- A skid mounted all-electric catalytic oxidizer (MMC 6AE) manufacturer by King Buck of San Diego, California,
- A skid mounted 15 hp positive-displacement blower capable of generating air flow of 200 cfm at 20 inches of mercury,
- A skid mounted 150-gallon moisture knockout with automatic float controls, and,
- A 1 hp centrifugal transfer pump.

SYSTEM STARTUP AND PERFORMANCE

From May 24 through June 1, 2000, Cambria attempted startup of the dual phase extraction system. Problems were encountered with the heater and electrical controls. Repairs were made to the system and on September 28, 2000, system influent and effluent vapor samples were collected and submitted for laboratory analysis to McCampbell Analytical of Pacheco, California. Vapor sample results indicated destruction efficiency below system specifications. The catalytic oxidizer temperature was increased and subsequent vapor samples collected on October 12, 2000, indicated system destruction efficiency within permit requirements. As per the Bay Area Air Quality Management (BAAQMD) permit, a catalytic oxidizer operating temperature greater than 600 degrees Fahrenheit was maintained and system operation parameters were continuously measured using a chart recorder. During site visits, system operation parameters were also recorded in specialized field forms for future system optimization and agency inspection. See Table 1 for a summary of system operations and analytical results. As shown below, system operations meet all requirements described in the BAAQMD air permit .

Precursor Organics (TPHg) System Destruction Efficiency

Total System Flow: 88 scfm (10/12/00)
System Influent TPHg Concentration: 360 ppmv (10/12/00)
System Effluent TPHg Concentration: ND<10 ppmv (10/12/00)

As per BAAQMD permit requirements, the system destruction efficiency does not need to be calculated when the system effluent TPHg concentration is below 10 ppmv.

Benzene Vapor Emission Rate

Total System Flow: 88 scfm (10/12/00)
System Effluent Benzene Concentration: ND<0.15 ppmv (10/12/00)

0.15 ppmv * 88 ft^3/min * 1440 min/day * $1x10^{-6}$ * 78 g/mole * 1 lb-mole/386 ft^3 = **0.004 lbs/day**

As shown above, the benzene vapor emission rate was calculated to be below the BAAQMD permit requirement of 0.290 lbs/day.

SYSTEM REPORTING

Soil vapor samples will be collected on a monthly basis and system performance will be evaluated and submitted to the BAAQMD on a quarterly basis. Records will kept for a period of two years for possible future BAAQMD inspection.

CLOSING

4/5a1983

Please contact me at (510) ~~450-1983~~, if you have any questions regarding this report.

Sincerely,
Cambria Environmental Technology, Inc.

Ron Scheele RG
Senior Geologist

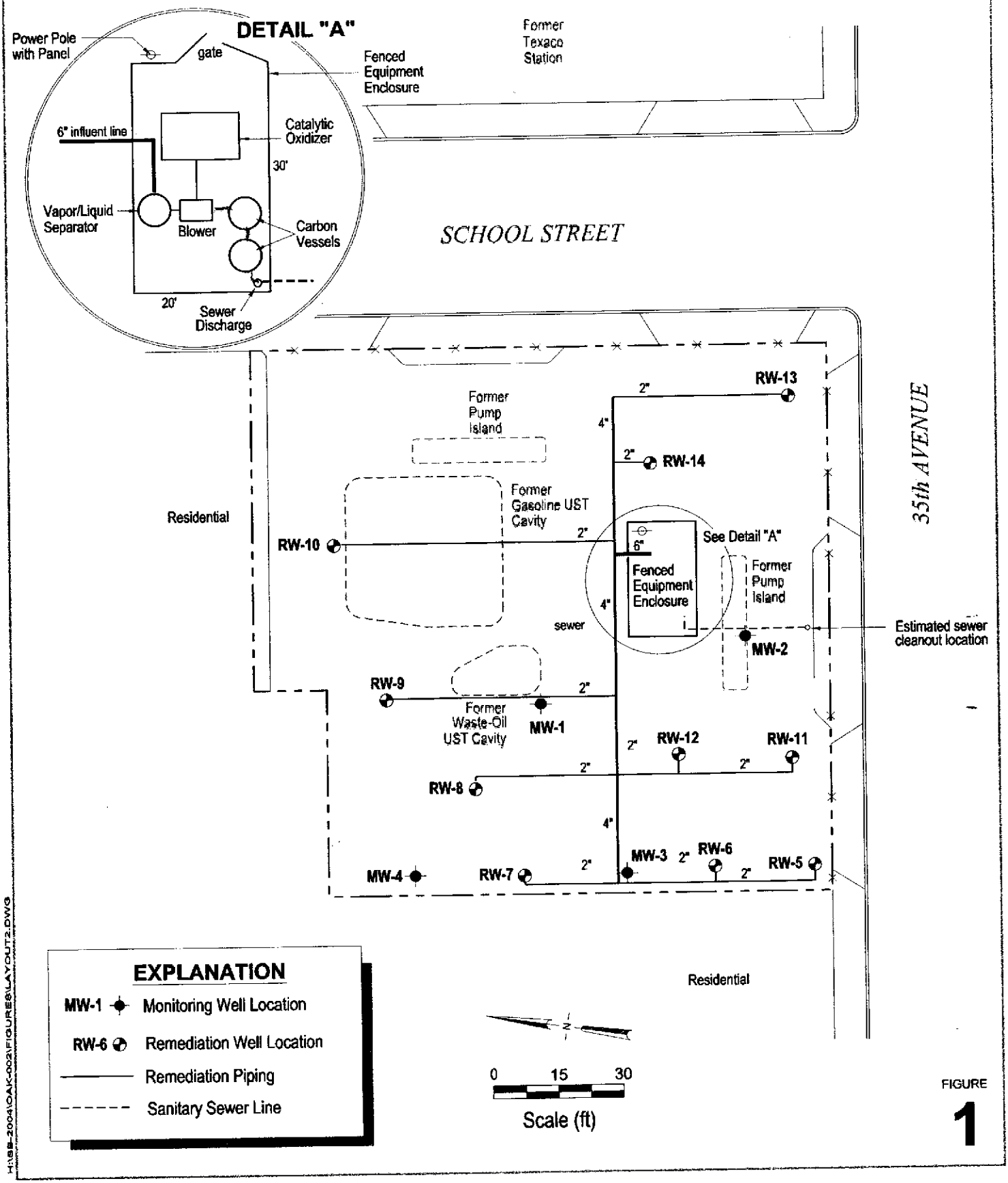
REGISTERED GEOLOGIST
RONALD A. SCHEELE
No. 6842
STATE OF CALIFORNIA

Figure 1 Site Plan
Table 1 DPE System Performance and Analytical Results

Attachments: A - Laboratory Reports

cc: **Mr. Barney Chan, ACHCSA, 1131 Harbor Bay Parkway, Suite 250, Alameda, California 94502**
Mr. Lynn Worthington, Golden Empire Properties, Inc., 5942 MacArthur Blvd., Suite B, Oakland, CA 94605

H:\Sb-2004 (UST Fund)\Oakl-002 - Lynn\O&M\VES startup.wpd



H:\98-2004\OAK-002\FIGURES\LAYOUT2.DWG

FIGURE
1

Former Exxon Station
3055 35th Avenue
Oakland, California

CAMBRIA

Remediation System Layout

Table 1. DPE System Performance and Analytical Results - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, California

Date	Hour Meter Readings (hrs)	System Uptime (per interval) (%)	Total Well Flow Rate (prior to dilution) (scfm)	Total Well HC Conc. (ppmv)	System Inlet Temp. (degree F)	System Flow Rate (after dilution) (scfm)	System Influent HC Conc. [1] (ppmv)	System Effluent HC Conc. [2] (ppmv)		HC Removal Rate [3] (lbs/day)	Emission Rate (lbs/day)		TPHg Destruction Efficiency (%)	Gasoline Cumulative Removal (lbs)
							TPHg	TPHg	Benz	TPHg	TPHg	Benz		
6/24/00	0	--	--	--	--	--	--	--	--	--	--	--	--	0
9/28/00	454	20%	175	420	789	175	420	22	0.24	23.6	1.24	0.012	95	0
10/12/00	696	72%	88	360	950	88	360	<10	<0.15	10.2	< 0.28	< 0.004	*	238

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.

[1] TPHg and benzene concentrations based on lab results by Modified EPA Methods 8015 and 8020.
[2] The hydrocarbon removal/emission rate is based on the Bay Area Air Quality Management's District's (BAAQMD) Procedures for Soil Vapor Extraction where Rate = concentration (ppmv) x flow rate (scfm) x 1 lb-mole/386x10^6ft^3 x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene) x 1440 min/day.
[3] Gasoline Removal = The previous removal rates multiplied by the interval days of operation plus the previous total removal amount. The total TPHg removal is based on lab analytical results.
* As per BAAQMD permit conditions, system destruction efficiency need not be calculated for effluent TPHg concentrations less than 10 ppmv

ATTACHMENT A

Laboratory Reports

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; Worthington	Date Sampled: 09/28/00
		Date Received: 09/28/00
	Client Contact: Ron Scheele	Date Extracted: 09/29/00
	Client P.O:	Date Analyzed: 09/29/00

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	Ethylben-zene	Xylenes	% Recovery Surrogate
48919	Influent	Air	420,c,a	---	9.9	5.2	0.86	3.0	---#
48920	Effluent	Air	22,a	---	0.24	ND	ND	ND	---#
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		Air	10 uL/L	1.5	0.15	0.15	0.15	0.25	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

+ ppm (mg/L) to ppmv (uL/L) conversion for TPH(g) assumes the molecular weight of gasoline to be equal to that of hexane.

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

cluttered chromatogram; sample peak coelutes with surrogate peak

'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

22220 EC 216

McCAMPBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #107
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: Ron Scheele Bill To: RON SCHEELE
Company: Cambria Environmental Technology
6262 Hollis Street
Emeryville, CA 94608
Tele: (510) 450-1983 Fax: (510) 450-8295
Project #: 130-0105 Project Name: Worthington
Project Location: Oakland
Sampler 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
Influent		9/28/00	14:37	1	BAG			X						
Effluent		9/28/00	14:39	1	BAG			X						

Analysis Request

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
X														
X														

Other: 48919, 48920

Comments:

Relinquished By:	Date:	Time:	Received By:
Ron Scheele	9/28/00	1600	SCOTT #283 / ULTRA-EX
SCOTT #283	9/28	1745	
Relinquished By:	Date:	Time:	Received By:

Remarks:

LOG#

Sent By: McCampbell Analytical; 925 798 4612; Oct-2-00 5:18PM; Page 2/4

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: #130-0105-336; Worthington	Date Sampled: 10/12/00
		Date Received: 10/13/00
	Client Contact: Ron Scheele	Date Extracted: 10/13/00
	Client P.O:	Date Analyzed: 10/13/00

10/20/00

Dear Ron:

Enclosed are:

1). the results of **2** samples from **your #130-0105-336; Worthington** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

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: #130-0105-336; Worthington	Date Sampled: 10/12/00
		Date Received: 10/13/00
	Client Contact: Ron Scheele	Date Extracted: 10/13-10/14/00
	Client P.O:	Date Analyzed: 10/13-10/14/00

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	Ethylben-zene	Xylenes	% Recovery Surrogate
50340	IN	Air	360,c,a	ND<10	10	6.3	0.64	3.6	---#
50341	EF	Air	ND	ND	ND	0.19	ND	0.32	100
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		Air	10 uL/L	1.5	0.15	0.15	0.15	0.25	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

% ppm (mg/L) to ppmv (uL/L) conversion for TPH(g) assumes the molecular weight of gasoline to be equal to that of hexane.

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

cluttered chromatogram; sample peak coelutes with surrogate peak

+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 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

Hydrocarbons Analysis

Date: 10/13/00 Matrix: Water/Air

Extraction: N/A

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 47830					Instrument: GC-12		
Surrogate1	0.000	96.0	94.0	100.00	96	94	2.1
Xylenes	0.000	314.0	304.0	300.00	105	101	3.2
Ethyl Benzene	0.000	104.0	102.0	100.00	104	102	1.9
Toluene	0.000	101.0	98.0	100.00	101	98	3.0
Benzene	0.000	103.0	101.0	100.00	103	101	2.0
MTBE	0.000	97.0	98.0	100.00	97	98	1.0
GAS	0.000	966.8	958.2	1000.00	97	96	0.9

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

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

RPD means Relative Percent Deviation

22479 ZC 232

RUSH

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: Ron Scheele
Bill To: Same
Company: Cambria Environmental Technology
6262 Hollis Street
Emeryville, CA 94608
Tele: (510) 450-1983 Fax: (510) 450-8295
Project #: 130-0105-336 Project Name: Worthington
Project Location: Worthington
Sampler Signature:

SAMPLE ID	LOCATION	Sampling Date	Sampling Time	# Containers	Type Containers	Matrix: Water	Soil	Air	Sludge	Other	Method Preserved: Ice	HCl	HNO_3	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	Comments
IN	Worth.	10-12	6:00P	1	BAG			X							X																50340
EF	Worth.	10-12	6:00P	1	BAG			X							X																50341

ICE/t° ____ PRESERVATION ____ VOAS | O&G | METALS | OTHER
GOOD CONDITION ____ APPROPRIATE
HEAD SPACE ABSENT ____ CONTAINERS ____

Relinquished By:	Date:	Time:	Received By:
Greg Bentley	10-13	11:45	[signature] #239
[signature] #239	10-13	16:36	[signature]

Remarks: Report in ppmv. Fax results ASAP
Reporting limit for TPHg of 10ppmv.
(20 mL injection)