

C A M B R I A

R271

March 4, 2003

Alameda County  
MAR 07 2003  
Environmental Health

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

Re: **Groundwater Monitoring and System Progress Report  
Fourth Quarter 2002**

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

94619



Dear Mr. Chan:

On behalf of Mr. Lynn Worthington of Golden Empire Properties, Cambria Environmental Technology, Inc. (Cambria) has prepared this groundwater monitoring and system progress report for the above-referenced site. Presented in the report are the fourth quarter 2002 activities and the anticipated first quarter 2003 activities.

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

Sincerely,  
**Cambria Environmental Technology, Inc.**

Ron Scheele, R.G.  
Senior Geologist

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

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

**Cambria  
Environmental  
Technology, Inc.**

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Suite A  
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C A M B R I A

GROUNDWATER MONITORING AND SYSTEM PROGRESS REPORT

FOURTH QUARTER 2002

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

March 4, 2003

Alameda County  
MAR 07 2003  
Environmental Health

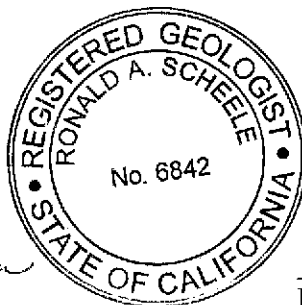



*Prepared for:*


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

*Prepared by:*

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



  
Gretchen M. Hellmann  
Project Engineer

  
Ron Scheele, R.G.  
Senior Geologist

# C A M B R I A

## GROUNDWATER MONITORING AND SYSTEM PROGRESS REPORT

FOURTH QUARTER 2002

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

March 4, 2003



### INTRODUCTION

On behalf of Mr. Lynn Worthington of Golden Empire Properties, Cambria Environmental Technology, Inc. (Cambria) has prepared this groundwater monitoring and system progress report for the above-referenced site (see Figure 1). Presented in the report are the fourth quarter 2002 groundwater monitoring and corrective action activities and the anticipated first quarter 2003 activities.

### FOURTH QUARTER 2002 ACTIVITIES

#### Monitoring Activities

*Field Activities:* On November 21, 2002, Cambria conducted quarterly monitoring activities. Cambria gauged and inspected for separate-phase hydrocarbons (SPH) in monitoring wells MW-1, MW-2, MW-3 and MW-4 (Figure 1). Groundwater samples were collected from all scheduled wells. Field data sheets are presented in Appendix A.

*Sample Analyses:* Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and total petroleum hydrocarbons as diesel (TPHd) with silica gel clean-up by modified EPA Method 8015, and benzene, toluene, ethylbenzene and xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8021B. The groundwater analytical results are summarized in Table 1. The laboratory analytical report is presented as Appendix B.

## Monitoring Results

**Groundwater Flow Direction:** Depth-to-water measurements were collected during Cambria's November 21, 2002 site visit (Figure 1). The groundwater gradient was affected by a two-phase extraction (TPE) remediation system with groundwater extraction from remediation wells MW-1, MW-2, MW-3, MW-4, RW-5, and RW-11. Since 1994, the primary groundwater flow direction has been towards the northwest with a change towards the southwest usually occurring during the fourth and/or second quarters. Groundwater monitoring data is presented in Table 1.



**Hydrocarbon Distribution in Groundwater:** Hydrocarbon concentrations have decreased or remained similar in wells MW-3 and MW-4 and increased in wells MW-1 and MW-2 as compared with the previous sampling event. SPH were detected in well MW-3 at a thickness of 0.05 feet. The detection of SPH in well MW-3 and increase of concentrations in wells MW-1 and MW-2 is significant, and may be related to increased remediation operations. It is expected that hydrocarbon concentrations will likely decrease next quarter as remediation activities continue. Since the start of TPE remediation (June 2000), monitoring wells MW-3 and MW-4 have exhibited an overall decreasing hydrocarbon concentration trend (See Appendix D for individual well concentration trend graphs). The maximum TPHg, TPHd, and benzene concentrations were detected in well MW-2 at 210,000, 350,000, and 14,000 micrograms per liter ( $\mu\text{g/L}$ ), respectively. MTBE concentrations were below laboratory detection limits in all sampled wells except well MW-4, which had a concentration of 550  $\mu\text{g/L}$ . Analytical results are summarized in Table 1. See Appendix E for confirmation of groundwater data submittal to the State's Geotracker Database.

## Corrective Action Activities

**System Design and Modifications:** The TPE remediation system consists of a trailer mounted all-electric catalytic oxidizer, a 20-hp liquid-ring pump, a 150-gallon moisture knockout with automatic float controls, a one horsepower centrifugal transfer pump, particulate filter canister, and two 1000-pound carbon vessels, connected in series. Remediation wells (RW-5 through RW-14) are connected to the system via an underground 4-inch diameter PVC trunk line and 1-inch diameter PVC branch lines. See Figure 1 for the location of remediation enclosure and wells. Fourteen wells (RW-5 through RW-14, and MW-1 through MW-4), are connected with 1-inch diameter flexible suction hose stingers. Stingers are sealed at the wellhead to allow simultaneous extraction of soil vapor and groundwater from the well.

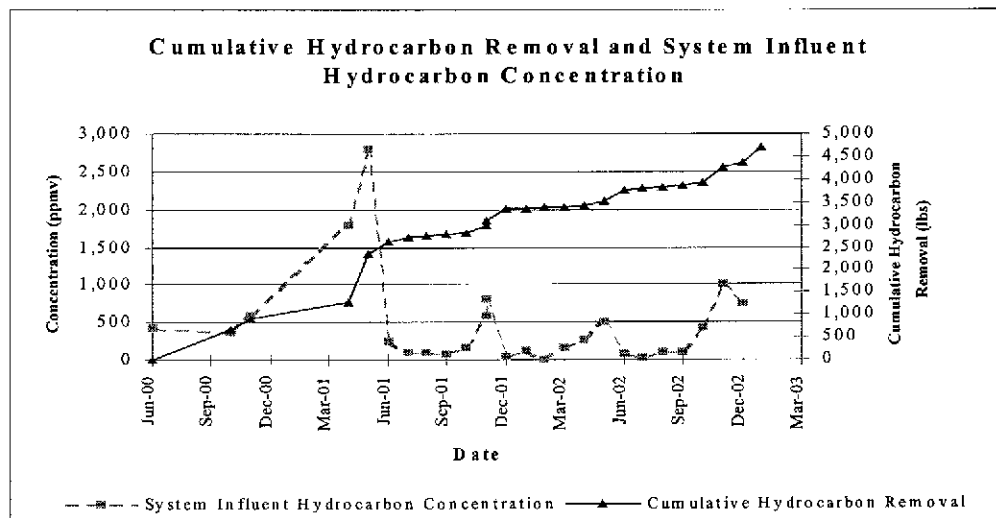
**Remediation System Operations and Maintenance Activities:** During the fourth quarter, Cambria performed TPE system operation and maintenance activities approximately three times per month. During operation and maintenance site visits, system parameters were recorded in specialized field



forms for future system optimization and agency inspection (See Tables 2, 3, and 4). System influent and effluent vapor samples were collected and submitted for laboratory analysis on a monthly basis. 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. A BAAQMD inspection by Ms. Marie Moore on October 2, 2002 confirmed compliance with all permit conditions. Groundwater treatment system influent and effluent samples were collected on a monthly basis. Table 2 summarizes soil vapor extraction system operations and analytical results. Table 3 summarizes groundwater extraction system parameters and analytical results. Table 4 summarizes the individual extraction well parameters. The system analytical laboratory reports are included as Attachment C.

**Remediation System Performance:** From October 2, 2002 through January 8, 2003, the TPE system operated approximately 84% of the time during the quarter. Down-time was related to a faulty air pressure alarm switch. Also, the system hour meter did not operate properly during the fourth quarter. As a result, system up-time was calculated based on the operational status of the system upon arrival to the site. The hour meter and pressure switch will be replaced during the first quarter 2003.

On October 16, 2002, individual well flow, vacuum, and hydrocarbon concentration measurements were collected as part of Cambria's effort to optimize system performance. These readings were used to increase overall hydrocarbon mass removal. Select remediation wells were opened and closed, and well stinger depths were adjusted to account for seasonal changes in the groundwater table (see Table 4). System influent and effluent vapor samples were collected and submitted for laboratory analysis on October 2, November 6, and December 5, 2002. System influent TPHg vapor concentrations increased significantly and ranged from 430 to 1000 parts per million by volume (ppmv). Hydrocarbon



removal rates for soil vapor also increased significantly during the quarter and ranged from 12.3 to 18.5 pounds per day (lbs/day). This large increase in vapor concentrations and hydrocarbon removal rates is likely due to seasonally low groundwater levels exposing a smear zone, and the upgraded remediation system's ability to operate at a higher vacuum. System effluent vapor concentrations were below laboratory detection limits indicating that the catalytic oxidizer was achieving proper destruction efficiency and was operating within permit requirements. To date, a total of 4,688 pounds of hydrocarbons have been destroyed by vapor extraction (see inserted graph above and Table 2).



From October 2, 2002 to January 8, 2003, approximately 73,250 gallons of groundwater were extracted and treated onsite using granular activated carbon. The groundwater extraction rate ranged from 0.3 to 1.4 gallons per minute. The groundwater extraction rates were low in October and increased towards the end of the year as seasonal rains infiltrated the unpaved site. Groundwater treatment system influent and effluent samples were collected on October 2, November 6, and December 5, 2002. System effluent groundwater concentrations for TPHg and BTEX were below laboratory detection limits indicating that no hydrocarbons were discharged to the sanitary sewer system and that the groundwater extraction portion of the TPE system was operating within permit requirements. An inspection was conducted by Mr. Rodney Temples of the East Bay Municipal Utility District (EBMUD) on October 2, 2002. Mr. Temples confirmed that the TPE system was in full compliance with its wastewater discharge permit. Groundwater extraction and treatment operations have removed a total of 5.75 pounds of hydrocarbons to date.

## **ANTICIPATED FIRST QUARTER 2003 ACTIVITIES**

### **Monitoring Activities**

Cambria will gauge the site wells, check the wells for SPH, and collect groundwater samples from all wells not containing SPH. Groundwater samples will be analyzed for TPHg and TPHd with silica gel clean-up by Modified EPA Method 8015 and BTEX and MTBE by EPA Method 8021B. Cambria will prepare a groundwater monitoring report summarizing the monitoring activities and results. Cambria will submit groundwater monitoring and analytical data to the State's Geotracker database.

### **Corrective Action Activities**

Cambria will continue to perform TPE operation and maintenance activities approximately twice per month during the first quarter of 2003. The system vacuum and depth of extraction stingers will be adjusted in an effort to maximize hydrocarbon removal and TPE operations may vary between select wells to optimize site cleanup. System influent and effluent vapor and groundwater samples will be

collected on a monthly basis, and system operation and performance will be evaluated and optimized. Records will be kept for a period of two years for possible future BAAQMD inspection.

## ATTACHMENTS

Figure 1 – Groundwater Elevation and Analytical Summary Map



Table 1 – Groundwater Elevations and Analytical Data

Table 2 – TPE System Performance and Analytical Results - Soil Vapor Extraction

Table 3 – TPE System Performance and Analytical Results - Groundwater Extraction

Table 4 – TPE Well Parameters

Appendix A – Groundwater Monitoring Field Data Sheets

Appendix B – Analytical Results for Quarterly Groundwater Sampling

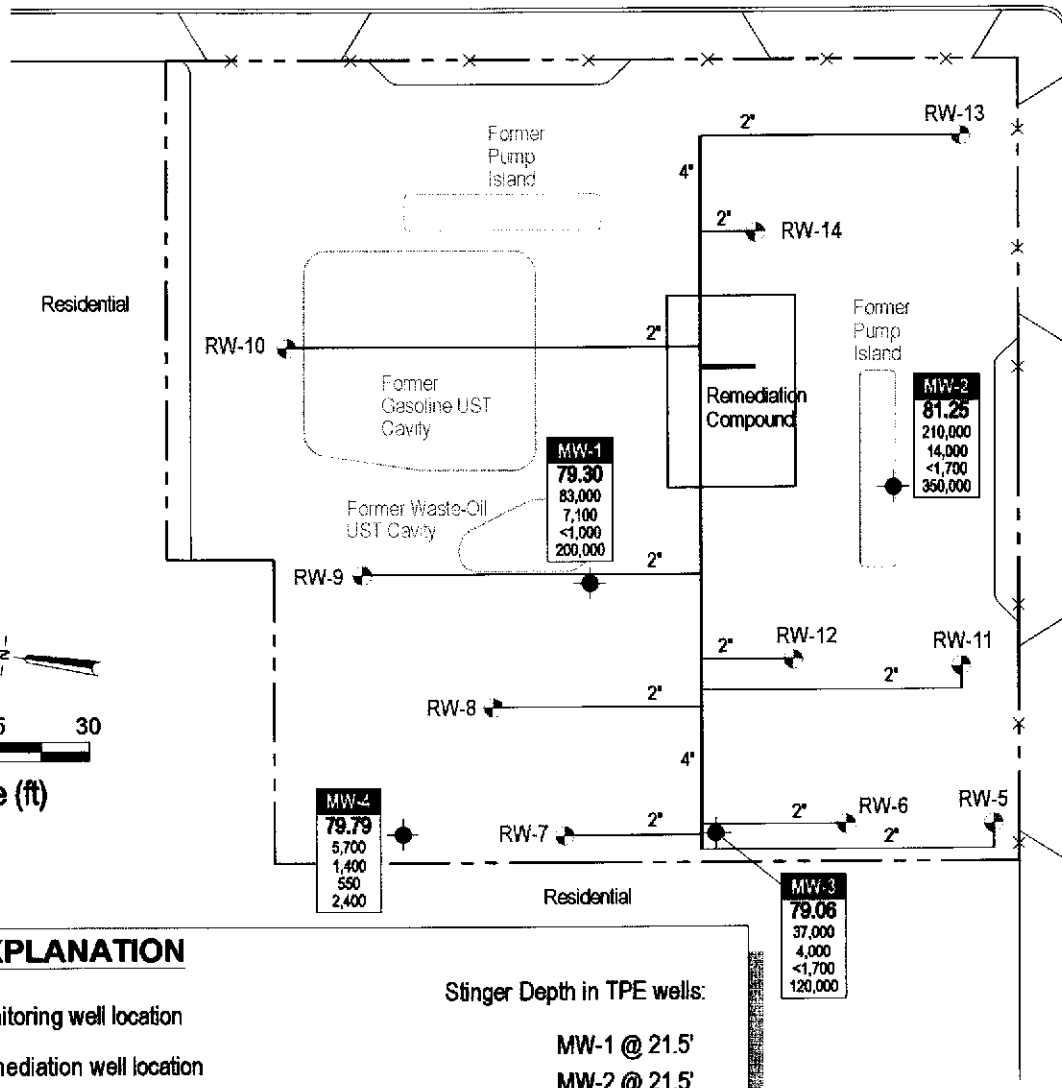
Appendix C – Analytical Results for TPE System Operation

Appendix D – TPHg and Benzene Concentration Trend Graphs

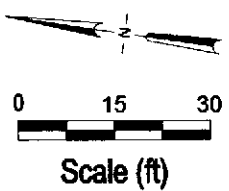
Appendix E – Electronic Delivery Confirmations

Former Texaco Station

SCHOOL STREET



35th AVENUE



**EXPLANATION**

- MW-1 Monitoring well location
- RW-6 Remediation well location
- |         |
|---------|
| Well ID |
| ELEV    |
| TPHg    |
| Benzene |
| MTBE    |
| TPHd    |

 Well designation
- |         |
|---------|
| ELEV    |
| TPHg    |
| Benzene |
| MTBE    |
| TPHd    |

 Groundwater elevation (msl)
- |         |
|---------|
| ELEV    |
| TPHg    |
| Benzene |
| MTBE    |
| TPHd    |

 Hydrocarbon concentrations in groundwater, in micrograms per liter (µg/L)
- Extraction Piping

Stinger Depth in TPE wells:

- MW-1 @ 21.5'
- MW-2 @ 21.5'
- MW-3 @ 19.0'
- MW-4 @ 19.0'
- RW-5 @ 19.0'
- RW-11 @ 19.0'

Note: Groundwater elevations are affected by TPE remediation system.

FIGURE 1

**Former Exxon Station**  
 3055 35th Avenue  
 Oakland, California



C A M B R I A

**Groundwater Elevation and Analytical Summary Map**  
 November 21, 2002

H:\88-2004\04K-002\FIGURES\42M02-MP.DWG



# CAMBRIA

**Table 1. Groundwater Elevations 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 <sup>a</sup>	---	7,400	440	890	1,800	<400	3.7
	09/17/97	20.12	---	80.73	32,000 <sup>d</sup>	3,500 <sup>c</sup>	---	9,100	550	1,000	2,000	<1,000	2.1
	12/22/97	12.95	---	87.90	26,000 <sup>d</sup>	5,800 <sup>e</sup>	---	7,900	370	920	1,500	<790	0.7
	03/18/98	12.34	Sheen	88.51	30,000 <sup>d</sup>	4,200 <sup>e,f</sup>	---	7,800	820	840	2,000	<1,100	1.3
	07/14/98	17.34	---	83.51	41,000 <sup>d</sup>	8,900 <sup>c,f</sup>	---	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 <sup>d</sup>	6,800 <sup>e</sup>	---	12,000	750	1,300	2,400	950	0.50
	06/29/99	20.77	---	80.08	28,000 <sup>d</sup>	3,500 <sup>e</sup>	---	7,300	420	810	1,700	<1,300	0.10
	09/28/99	19.68	---	81.17	13,000 <sup>d</sup>	3,600 <sup>e,f</sup>	---	3,200	130	320	1,100	<210	0.55
	12/10/99	17.02	---	83.83	25,000 <sup>d</sup>	2,900 <sup>e,f</sup>	---	5,400	130	620	1,400	<1,000	1.03
	03/23/00	12.76	---	88.09	21,000 <sup>d</sup>	3,300 <sup>e</sup>	---	4,700	140	470	1,100	<350	---
	09/07/00	19.45	---	81.40	40,000 <sup>d,g</sup>	12,000 <sup>e,h</sup>	---	3,700	1,400	910	4,900	<50	0.17
	12/05/00	18.60	---	82.25	26,000 <sup>a</sup>	3,400 <sup>e</sup>	---	7,900	150	580	810	<300	0.35
	03/07/01	16.19	---	84.66	13,000	2,400	---	2,700	43	69	300	<100	0.49
	06/06/01	18.47	---	82.38	19,000	4,000	---	4,500	130	270	430	<400	0.39
	08/30/01	21.70	---	79.15	8,800 <sup>a</sup>	1,400 <sup>d</sup>	---	2,100	45	91	240	<130	0.27
	12/07/01	26.55	---	74.30	8,700 <sup>d</sup>	1,900 <sup>e,f</sup>	---	1,300	160	38	730	<20	0.59
	03/11/02	17.13	---	83.72	9,400 <sup>d</sup>	1,400 <sup>e</sup>	---	2,100	200	74	470	<20	0.39
	06/10/02	24.10	---	76.75	4,200 <sup>d</sup>	900 <sup>e,k</sup>	---	830	170	110	460	<100	---
	09/26/02	20.30	---	80.55	7,000 <sup>d</sup>	1,300 <sup>e,lk</sup>	---	1,300	190	200	760	<100	0.70
	11/21/02	21.55	---	79.30	83,000 <sup>d,m</sup>	200,000 <sup>e,n</sup>	---	7,100	1,700	3,000	13,000	<1,000	0.49

# CAMBRIA

**Table 1. Groundwater Elevations 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	TPHno	Concentrations in parts per billion (µg/L)					MTBE	DO (mg/L)
								Benzene	Toluene	Ethylbenzene	Xylenes			
MW-2	05/25/94	15.65	---	84.35	61,000	6,900	<5,000	9,900	7,400	960	4,600	---	---	
100.00	07/19/94	19.81	---	80.19	---	---	---	---	---	---	---	---	---	
	08/18/94	20.37	---	79.63	88,000	---	---	10,750	10,500	1,850	9,600	---	---	
	11/11/94	15.52	---	84.48	54,000	---	---	5,900	6,700	1,300	7,500	---	---	
	02/27/95	14.46	Sheen	85.54	44,000	---	---	5,100	5,300	930	6,400	---	---	
	05/23/95	14.17	---	85.83	33,000	---	---	8,200	5,600	900	6,600	---	---	
	08/22/95	19.80	---	80.20	38,000	---	---	6,400	5,000	1,100	5,600	---	---	
	11/29/95	21.05	---	78.95	46,000	---	---	7,100	5,300	1,300	6,000	---	---	
	02/21/96	10.53	---	89.47	59,000	---	---	8,000	6,000	1,800	8,900	4,500	---	
	05/21/96	13.47	---	86.53	51,000	3,400	---	8,200	5,200	1,300	6,600	2,400	---	
	08/22/96	19.12	---	80.88	37,000	5,700	---	5,100	3,500	960	4,500	<200	3.0	
	11/27/96	16.61	Sheen	83.39	54,000	10,000	---	9,800	7,000	1,800	7,900	<2,000	3.1	
	03/20/97	15.39	---	84.61	27,000	6,100	---	3,700	2,300	580	2,800	<400	8.1	
	06/25/97	18.62	---	81.38	42,000	7,800 <sup>b</sup>	---	7,400	3,800	1,200	5,700	<200	0.9	
	09/17/97	19.05	Sheen	80.95	41,000 <sup>d</sup>	8,900 <sup>e</sup>	---	5,200	3,400	1,300	5,900	<700	1.2	
	12/22/97	14.09	---	85.91	47,000 <sup>d</sup>	6,100 <sup>e</sup>	---	8,500	4,600	1,800	8,400	<1,200	1.2	
	03/18/98	10.83	Sheen	89.17	58,000 <sup>d</sup>	7,000 <sup>e,f</sup>	---	9,300	6,100	1,800	8,200	<1,100	1.1	
	07/14/98	16.07	---	83.93	42,000 <sup>d</sup>	5,300 <sup>e,f</sup>	---	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 <sup>d</sup>	7,500 <sup>e,f</sup>	---	4,400	1,600	950	4,100	410	1.86	
	06/29/99	19.54	---	80.46	28,000 <sup>d</sup>	3,300 <sup>e</sup>	---	3,500	1,100	690	3,100	<1,000	0.41	
	09/28/99	18.61	---	81.39	15,000 <sup>d</sup>	3,400 <sup>e,f</sup>	---	1,200	540	230	2,300	<36	1.18	
	12/10/99	16.53	---	83.47	17,000 <sup>d</sup>	2,500 <sup>e,f</sup>	---	1,300	780	420	2,700	<40	0.17	
	03/23/00	13.56	---	86.44	25,000 <sup>d</sup>	3,100 <sup>i</sup>	---	1,900	1,100	660	3,700	<500	---	
	09/07/00	18.25	---	81.75	62,000 <sup>d,g</sup>	32,000 <sup>e,h</sup>	---	5,300	2,300	1,500	8,400	<100	0.39	
	12/05/00	17.45	---	82.55	60,000 <sup>d,g</sup>	87,000 <sup>e,f,g</sup>	---	5,100	2,200	1,600	9,000	<200	0.31	
	03/07/01	15.68	---	84.32	34,000	3,900	---	1,200	770	620	4,300	<200	0.44	
	06/06/01	17.51	---	82.49	110,000	48,000	---	14,000	9,000	1,900	12,000	<950	0.24	
	08/30/01	21.00	---	79.00	43,000 <sup>a,h</sup>	15,000 <sup>d,h</sup>	---	3,100	720	980	5,500	<200	---	
	12/07/01	24.45	---	75.55	4,100 <sup>d</sup>	750 <sup>e,f</sup>	---	510	88	8.2	580	<20	0.47	
	03/11/02	16.95	---	83.05	4,700 <sup>d</sup>	590 <sup>e</sup>	---	1,200	150	30	310	<50	0.24	
	06/10/02	18.59	---	81.41	14,000 <sup>d</sup>	2,000 <sup>e</sup>	---	2,600	710	150	2,000	<800	---	
	09/26/02	20.39	---	79.61	4,800 <sup>d</sup>	660 <sup>e</sup>	---	770	200	140	740	<50	0.29	
	11/21/02	18.75	---	81.25	210,000 <sup>d,e</sup>	350,000 <sup>e,g</sup>	---	14,000	23,000	4,400	28,000	<1,700	0.43	

# CAMBRIA

**Table 1. Groundwater Elevations 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	Concentrations in parts per billion (µg/L)					DO (mg/L)
								Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	
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	---	---
	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 <sup>b</sup>	---	9,700	7,100	1,300	7,000	220	5.8
	09/17/97	16.34	Sheen	80.53	78,000 <sup>d</sup>	15,000 <sup>e</sup>	---	11,000	9,900	1,800	10,000	<1,200	0.7
	12/22/97	10.71	Sheen	86.16	49,000 <sup>d</sup>	14,000 <sup>e</sup>	---	7,300	5,300	1,400	7,500	<1,100	3.1
	03/18/98	8.41	Sheen	88.46	120,000 <sup>d</sup>	20,000 <sup>e,f</sup>	---	21,000	19,000	2,600	15,000	<1,600	1.6
	07/14/98	13.51	---	83.36	94,000 <sup>d,g</sup>	65,000 <sup>e,f,g</sup>	---	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	<1,300	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 <sup>d</sup>	4,600 <sup>e</sup>	---	8,900	4,400	940	4,500	810	0.56
	06/29/99	16.98	---	79.89	71,000 <sup>d</sup>	6,900 <sup>e</sup>	---	12,000	7,300	1,400	8,400	<1,700	0.19
	09/28/99	15.99	---	80.88	60,000 <sup>d</sup>	7,800 <sup>e</sup>	---	9,400	9,200	1,000	9,900	200	0.53
	12/10/99	13.31	---	83.56	53,000 <sup>d</sup>	5,300 <sup>e,f</sup>	---	8,000	6,400	1,100	8,100	<200	0.48
	03/23/00	8.98	---	87.89	77,000 <sup>d,g</sup>	11,000 <sup>h,i</sup>	---	10,000	9,400	1,600	11,000	<430	---
	09/07/00	15.61	---	81.26	100,000 <sup>d,g</sup>	19,000 <sup>e,f,g</sup>	---	17,000	12,000	1,600	11,000	<500	---
	12/05/00	14.80	---	82.07	110,000 <sup>d,g</sup>	17,000 <sup>e,g</sup>	---	17,000	11,000	1,900	12,000	<750	0.37
	03/07/01	14.27	---	82.60	60,000	13,000	---	7,000	4,600	900	7,100	<350	0.49
	06/06/01	14.88	---	81.99	43,000	12,000	---	3,000	1,000	770	5,200	<400	1.71
	08/30/01	12.43	---	84.44	95,000 <sup>a,h</sup>	190,000 <sup>d,h</sup>	---	6,900	10,000	2,700	15,000	<250	0.24
	12/07/01	24.65	---	72.22	25,000 <sup>d</sup>	3,900 <sup>e,f</sup>	---	2,500	1,700	64	2,200	<200	0.19
	03/11/02	14.69	---	82.18	30,000 <sup>d</sup>	2,800 <sup>e,k</sup>	---	5,000	2,400	190	1,800	<1,300	0.30
	06/10/02	22.94	---	73.93	9,000 <sup>d</sup>	990 <sup>e,k</sup>	---	1,800	1,300	96	1,000	<300	---
	09/26/02	18.85	---	78.02	50,000 <sup>d,a</sup>	130,000 <sup>a,b</sup>	---	3,900	5,400	820	6,600	<500	0.19
	11/21/02	17.85	0.05	79.06	37,000 <sup>d,g</sup>	120,000 <sup>d,g</sup>	---	4,000	660	1,200	5,100	<1,700	0.28

# CAMBRIA

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

Well ID (TOC)	Date	GW	SPH	GW	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DO
		Depth (ft)	(ft)	Elev. (ft)	Concentrations in parts per billion (µg/L)								
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 <sup>b</sup>	---	16,000	6,100	1,500	5,900	780 <sup>c</sup>	1.4
	09/17/97	17.10	---	80.24	60,000 <sup>d</sup>	4,400 <sup>e</sup>	---	17,000	4,900	1,500	5,700	<1,500	1.5
	12/22/97	9.21	---	88.13	43,000 <sup>d</sup>	3,100 <sup>e</sup>	---	13,000	3,900	1,100	4,200	<960	3.7
	03/18/98	9.54	---	87.80	58,000 <sup>d</sup>	5,500 <sup>e,f</sup>	---	14,000	4,700	1,400	5,700	<1,200	0.8
	07/14/98	14.15	---	83.19	73,000 <sup>d</sup>	2,900 <sup>e,f</sup>	---	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 <sup>d</sup>	2,400 <sup>e,h</sup>	---	15,000	3,000	1,300	5,000	1,300	1.32
	06/29/99*	---	---	---	---	---	---	---	---	---	---	---	---
	09/28/99	16.58	---	80.76	24,000 <sup>d</sup>	3,200 <sup>e,f</sup>	---	7,500	1,200	190	2,200	210	14.29 <sup>d</sup>
	12/10/99	13.99	---	83.35	47,000 <sup>d</sup>	3,100 <sup>e,f</sup>	---	12,000	1,800	1,000	4,400	<100	0.62
	03/23/00	10.22	---	87.12	40,000 <sup>d</sup>	3,100 <sup>e,f</sup>	---	11,000	1,600	910	3,100	690	---
	09/07/00	16.40	---	80.94	43,000 <sup>d</sup>	5,900 <sup>e</sup>	---	10,000	1,100	1,100	3,400	<450	1.04
	12/05/00	15.55	---	81.79	69,000 <sup>d,g</sup>	2,600 <sup>e,g</sup>	---	16,000	1,300	1,300	3,400	<200	0.35
	03/20/01	14.03	---	83.31	46,000	---	---	13,000	1,000	900	2,800	<350	0.39
	06/06/01	15.49	---	81.85	75,000	5,400	---	22,000	1,800	1,900	6,400	<1,200	2.22
	08/30/01	18.00	---	79.34	43,000 <sup>a</sup>	3,200 <sup>d</sup>	---	6,400	630	510	2,600	<200	0.32
	12/07/01	23.45	---	73.89	32,000 <sup>d,k</sup>	11,000 <sup>e,l,g</sup>	---	4,500	740	310	2,300	<200	0.21
	03/11/02	14.95	---	82.39	15,000 <sup>d</sup>	1,600 <sup>e,l,k</sup>	---	3,700	500	92	790	<500	0.30
	06/10/02	22.30	---	75.04	9,400 <sup>d</sup>	3,400 <sup>e</sup>	---	1,400	50	<5.0	690	<200	---
	09/26/02	17.93	---	79.41	21,000 <sup>d</sup>	800 <sup>e</sup>	---	3,300	1,300	450	2,900	<500	0.24
	11/21/02	17.55	---	79.79	5,700 <sup>d</sup>	2,400 <sup>e,k</sup>	---	1,400	290	63	640	550	---

# CAMBRIA

**Table 1. Groundwater Elevations 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	---
	03/23/00	---	---	---	<50	---	---	<0.5	<0.5	<0.5	<0.5	<5.0	---
	09/07/00	---	---	---	<50	---	---	<0.5	1.1	<0.5	1.1	<5.0	---

**Abbreviations:**

TOC = Top of casing elevation relative to an arbitrary 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

i = medium boiling point pattern does not match diesel (stoddard solvent)

j = aged diesel is significant

k = oil range compounds are significant

TOC Elevation of Well MW-4 surveyed relative to an arbitrary site datum by David Hop,

Licensed Surveyor on April 19, 1997

# = abnormally high reading due to added hydrogen peroxide

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

Date	Hour Meter Readings (hrs)	System Uptime (per interval) (%)	System Inlet Temp. (degree F)	System Vacuum ("Hg)	System Flow Rate (scfm)	System Influent HC Conc. <sup>1</sup>		System Effluent HC Conc. <sup>1</sup>		HC Removal Rate <sup>2</sup> (lbs/day)	Emission Rate <sup>2</sup> (lbs/day)		TPHg Destruction Efficiency (%)	Gasoline Cumulative Removal <sup>3</sup> (lbs)
						TPHg (ppmv)	TPHg (ppmv)	Benz (ppmv)	TPHg (lbs/day)		TPHg (lbs/day)	Benz (lbs/day)		
6/24/2000	0	--	--	--	--	--	--	--	--	--	--	--	--	0
9/28/2000	454	20%	789	--	175	420	22	0.24	23.6	1.24	0.012	95	446	
10/12/2000	696	72%	950	--	88	360	<10	<0.15	10.1	<0.28	<0.004	*	684	
11/9/2000	1251	83%	820	--	55	590	<10	<0.15	10.5	<0.18	<0.002	*	918	
1/23/2001	1313	3%	--	--	--	--	--	--	--	--	--	--	945	
3/28/2001	0	--	--	--	--	--	--	--	--	--	--	--	945	
4/5/2001	194	101%	908	6.0	68	1,800	34	0.52	39.2	0.74	0.010	98	1261	
5/3/2001	863	100%	1000	14	29	2,800	<10	<0.15	25.8	<0.09	<0.001	*	2355	
6/4/2001	1114	33%	820	6.5	79	240	<10	<0.15	6.1	<0.25	<0.003	*	2625	
7/2/2001	1429	47%	804	10.0	73	92	26	0.34	2.1	<0.61	<0.007	72	2705	
7/10/2001	1621	100%	900	8.0	110	92	<10	<0.15	3.2	<0.35	<0.005	*	2722	
8/2/2001	1759	25%	940	5.0	65	110	<10	<0.15	2.3	<0.21	<0.003	*	2740	
9/7/2001	2301	63%	854	12.0	84	81	34	0.52	2.2	<0.92	<0.013	58	2793	
10/3/2001	2470	27%	854	9.0	161	160	<10	0.31	8.3	<0.52	<0.015	*	2808	
11/6/2001	3015	67%	955	8.5	69	590	31	0.43	13.1	<0.69	<0.009	95	2995	

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

Date	Hour Meter Readings (hrs)	System Uptime (per interval) (%)	System Inlet Temp. (degree F)	System Vacuum ("Hg)	System Flow Rate (scfm)	System Influent HC Conc. <sup>1</sup> (ppmv)		System Effluent HC Conc. <sup>1</sup> (ppmv)		HC Removal Rate <sup>2</sup> (lbs/day)	Emission Rate <sup>2</sup> (lbs/day)		TPHg Destruction Efficiency (%)	Gasoline Cumulative Removal <sup>3</sup> (lbs)
						TPHg	TPHg	Benz	TPHg		TPHg	Benz		
11/14/2001	3184	88%	860	10.0	46	810	<10	<0.15	11.9	<0.15	<0.002	*	3087	
12/5/2001	3710	100%	806	11.0	33	50	<10	<0.15	0.5	<0.11	<0.001	*	3349	
1/7/2002	4472	99%	841	10.5	27	120	<10	<0.15	1.0	<0.09	<0.001	*	3366	
2/4/2002	4938	69%	817	10.5	51	<5	<10	<0.15	0.1	<0.16	<0.002	*	3386	
3/5/2002	5396	66%	665	10.5	17	170	<10	<0.15	0.9	<0.05	<0.001	*	3388	
4/2/2002	6068	100%	670	12.5	39	260	<10	<0.15	3.3	<0.13	<0.002	*	3413	
5/6/2002	6886	100%	667	10.0	50	500	<10	<0.15	8.1	<0.16	<0.002	*	3524	
6/5/2002	7608	100%	751	8.5	51	73	<10	<0.15	1.2	<0.16	<0.002	*	3767	
7/2/2002	8253	100%	736	9.0	56	26	<15	<0.15	0.5	<0.27	<0.002	*	3799	
8/6/2002 **	7	100%	739	13.0	79	97	<10	<0.15	2.5	<0.25	<0.003	*	3815	
9/10/2002 ***	528	76%	723	11.5	92	103	<10	<0.15	3.0	<0.30	<0.004	*	3869	
10/2/2002 ***	938	100%	723	8.5	89	430	<10	<0.15	12.3	<0.29	<0.004	*	3921	
11/6/2002 ***	1614	100%	658	13.5	58	1000	<10	<0.15	18.5	<0.18	<0.003	*	4269	
12/5/2002 ***	1720	65%	675	14.0	61	740	<10	<0.15	14.5	<0.20	<0.003	*	4350	
1/8/2003 ***	2279	85%	675	16.0	14	--	--	--	--	--	--	--	4688	

**Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA**

Date	Hour Meter Readings (hrs)	Water Meter Readings (gallons)	Total Groundwater Extracted (gallons)	System Flow Rate Per Period (gpm)	Sample ID	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	HCs Removed Per Period (lbs)	Total HCs Removed (lbs)
10/20/00	878	0	0	NC	Inf Eff	-- --	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	--	--
10/30/00	1004	--	50	NC	Inf Eff	-- --	170 <0.5	140 <0.5	16 <0.5	200 <0.5	--	--
11/9/00	1,251	--	50	NC	Inf Eff	760 <50	120 <0.5	86 <0.5	4.2 <0.5	84 <0.5	NC	NC
12/15/00	1,267	760a	50	NC	--	--	--	--	--	--	--	--
1/23/01	1,313	3,790	3,080	1.1	In Mid Eff	3,000 <50 <50	440 <0.5 <0.5	360 <0.5 <0.5	57 <0.5 <0.5	350 <0.5 <0.5	0.019	0.019
3/28/01	0	3,970	3,210	NC	Replacement Catox System Startup			--	--	--	0.005	0.024
4/13/01	378	17,366	16,606	0.6	IN EF-1	360 <50	45 <0.5	39 <0.5	5.1 <0.5	43 <0.5	0.335	0.359
6/4/01	1,114	36,058	35,298	0.4	IN Mid EF	54 <50 <50	<0.5 <0.5 <0.5	0.69 <0.5 <0.5	<0.5 <0.5 <0.5	3.1 <0.5 <0.5	0.056	0.415



**Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA**

Date	Hour Meter Readings (hrs)	Water Meter Readings (gallons)	Total Groundwater Extracted (gallons)	System Flow Rate Per Period (gpm)	Sample ID	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	HCs Removed Per Period (lbs)	Total HCs Removed (lbs)
7/2/01	1,429	39,433	38,673	0.2	IN Mid EF	<50 <50 <50	2.5 <0.5 <0.5	1 <0.5 <0.5	<0.5 <0.5 <0.5	5 <0.5 <0.5	0.002	0.417
9/7/01	2,301	48,566	47,806	0.2	INF EFF-1 EFF-2	4,600 <50 --	24 <0.5 --	57 <0.5 --	15 <0.5 --	140 <0.5 --	0.004	0.421
11/16/01	3,184	61,892	61,132	0.3	INF EFF-1 EFF-2	1100 <50 --	57 <0.5 --	42 <0.5 --	6.5 <0.5 --	110 <0.5 --	0.512	0.932
12/6/01	3,710	80,094	79,334	0.6	INF EFF-1 EFF-2	410 <50 --	31 <0.5 --	14 <0.5 --	3.2 <0.5 --	48 <0.5 --	0.167	1.099
1/7/02	4,472	132,337	131,577	1.1	INF EFF-1 EFF-2	120 <50 --	17 <0.5 --	7.7 <0.5 --	1.5 <0.5 --	13 <0.5 --	0.179	1.278
2/4/02	4,938	164,774	164,014	1.2	INF EFF-1 EFF-2	140 <50 --	18 <0.5 --	5.1 <0.5 --	0.86 <0.5 --	12 <0.5 --	0.032	1.310

**Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA**

Date	Hour Meter Readings (hrs)	Water Meter Readings (gallons)	Total Groundwater Extracted (gallons)	System Flow Rate Per Period (gpm)	Sample ID	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	HCs Removed Per Period (lbs)	Total HCs Removed (lbs)
3/5/02	5,396	208,997	208,237	1.6	INF EFF-1 EFF-2	170 <50 --	22 <0.5 --	12 <0.5 --	1.8 <0.5 --	24 <0.5 --	0.052	1.362
4/2/02	6,068	263,563	262,803	1.4	INF EFF-1 EFF-2	160 <50 --	15 <0.5 --	17 <0.5 --	3.3 <0.5 --	20 <0.5 --	0.077	1.439
5/6/02	6,886	306,765	306,005	0.9	INF EFF-1 EFF-2	100 <50 --	3.5 <0.5 --	1.7 <0.5 --	1.0 <0.5 --	4.0 <0.5 --	0.058	1.497
6/5/02	7,608	340,020	339,260	0.8	INF EFF-1 EFF-2	<50 <50 --	2.8 <0.5 --	1.4 <0.5 --	<0.5 <0.5 --	2.5 <0.5 --	0.028	1.525
7/2/02	8,253	361,717	360,957	0.6	INF EFF-1 EFF-2	<50 <50 --	1.5 <0.5 --	<0.5 <0.5 --	<0.5 <0.5 --	0.94 <0.5 --	0.009	1.534
8/6/2002*	7	383,750	382,990	0.4	INF EFF-1 EFF-2	<50 <50 --	1.8 <0.5 --	0.92 <0.5 --	<0.5 <0.5 --	2.0 <0.5 --	0.009	1.543
9/10/02	528	392,405	391,645	0.3	INF EFF-1 EFF-2	570 <50 --	15 <0.5 --	17 <0.5 --	2.9 <0.5 --	30 <0.5 --	0.004	1.547

**Table 3. TPE System Performance and Analytical Results - Groundwater Extraction - Golden Empire Properties (Worthington), 3055 35th Street, Oakland, CA**

Date	Hour Meter Readings (hrs)	Water Meter Readings (gallons)	Total Groundwater Extracted (gallons)	System Flow Rate Per Period (gpm)	Sample ID	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	HCs Removed Per Period (lbs)	Total HCs Removed (lbs)
10/2/2002	938	400,145	399,385	0.3	INF EFF-1 EFF-2	2,300 <50 --	230 <0.5 --	190 <0.5 --	38 <0.5 --	280 <0.5 --	0.037	1.584
11/6/2002	1,614	419,850	419,090	0.5	INF EFF-1 EFF-2	4,400 <50 --	120 <0.5 --	150 <0.5 --	27 <0.5 --	380 <0.5 --	0.378	1.962
12/5/2002	1,720	424,899	424,139	0.8	INF EFF-1 EFF-2	8,900 <50 --	140 <0.5 --	200 <0.5 --	33 <0.5 --	470 <0.5 --	0.185	2.147
1/8/2003	2,279	473,395	472,635	1.4	INF	--	--	--	--	--	3.602	5.749
<b>Sewer Effluent Discharge Limits:</b> (µg/L)							5.0	5.0	5.0	5.0		

**Notes:**

TPHg = Total Petroleum Hydrocarbons as Gasoline  
 BTEX = Benzene, Toluene, Ethylbenzene, Total Xylenes  
 MTBE = Methyl tertiary butyl ether  
 µg/L = micrograms per liter  
 a = Malfunctioning totalizer replaced 12/15/00 (initial reading at 760 gallons)  
 \* = TPE system upgrade. Previous system hour meter = 9089

ND = non detect  
 <n = below noted practical laboratory quantitation limits  
 Inf = Influent Sample  
 Eff = Effluent Sample  
 NC = Not calculated, insufficient data

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

Date	Hour Meter Readings (hrs)	System Uptime (per interval) (%)	System Inlet Temp. (degree F)	System Vacuum ("Hg)	System Flow Rate (scfm)	System Influent HC Conc. <sup>1</sup>		System Effluent HC Conc. <sup>1</sup>		HC Removal Rate <sup>2</sup> (lbs/day)	Emission Rate <sup>3</sup> (lbs/day)		TPHg Destruction Efficiency (%)	Gasoline Cumulative Removal <sup>3</sup> (lbs)
						TPHg	TPHg	Benz	TPHg		TPHg	Benz		

**Notes and Abbreviations:**

TPHg = Total petroleum hydrocarbons as gasoline

Benz = Benzene

HC Conc. = Hydrocarbon Concentrations

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

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

<sup>2</sup> 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<sup>6</sup>ft<sup>3</sup> x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene) x 1440 min/day.

<sup>3</sup> Gasoline Cumulative Removal = The previous removal rates multiplied by the interval days of operation plus the previous total removal amount. The total TPHg removal is based on lab analytical results.

\* As per BAAQMD permit conditions, system destruction efficiency need not be calculated for effluent TPHg concentrations less than 10 ppmv

\*\* The TPE system was modified on August 6, 2002, and the PD blower was replaced with a liquid-ring blower. The previous system hour meter was also replaced at a total reading of 9089 hours. In addition, all previous flow rate measurements were converted from acfm to scfm adjusting the Hydrocarbon Removal Rates and Gasoline Cumulative Removal.

\*\*\* The hour meter was not operating properly. System uptime is calculated based on the operational status upon arrival.

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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
MW-1	11/6/2001	open	80	--	*	--	28
	11/12/2001	open	125	--	*	--	28
	11/14/2001	open	85	--	*	--	28
	11/21/2001	open	95	--	*	--	28
	12/6/2001	open	115	--	*	--	28
	12/19/2001	open	110	--	*	--	25
	1/17/2002	open	130	--	*	--	25
	2/4/2002	open	105	--	*	--	28
	2/14/2002	closed	--	--	*	--	--
	3/5/2002	closed	--	--	*	--	--
	3/11/2002	closed	--	--	*	--	--
	3/25/2002	open	130	--	*	--	21
	4/2/2002	open	130	--	*	--	21
	4/5/2002	open	135	50	*	--	21
	4/19/2002	open	130	49	*	--	22
	5/6/2002	open	100	42	*	--	22
	5/21/2002	open	105	49	*	--	23.5
	6/19/2002	open	90	42	*	--	24
	6/28/2002	open	95	47	*	--	25
	7/10/2002	open	97	41	*	--	25
	7/26/2002	closed	--	--	*	--	--
	8/6/2002	open	--	--	*	--	21.5
	8/26/2002	open	95	47	*	--	21.5
	9/16/2002	open	105	--	*	--	21.5
	9/20/2002	open	85	40	*	--	21.5
	10/2/2002	open	75	22	*	--	21.5
	10/11/2002	open	110	32	*	--	21.5
	10/16/2002	open	125	103	5	1475	21.5
	10/31/2002	open	150	70	*	--	21.5
	11/6/2002	open	155	101	*	--	21.5
11/22/2002	open	145-160	115	*	--	21.5	
12/5/2002	open	140	91	*	--	21.5	
12/20/2002	open	>150	--	*	--	19.5	
1/8/2003	open	>150	135	*	--	19.5	
MW-2	11/6/2001	open	80	--	*	--	27
	11/12/2001	open	125	--	*	--	27
	11/14/2001	open	85	--	*	--	27
	11/21/2001	open	95	--	*	--	27
	12/6/2001	open	115	--	*	--	28
	12/19/2001	closed	--	--	*	--	--
	1/17/2002	closed	--	--	*	--	--
	2/4/2002	open	105	--	*	--	28
	2/14/2002	closed	--	--	*	--	--
	3/5/2002	closed	--	--	*	--	--
	3/11/2002	closed	--	--	*	--	--
	3/25/2002	open	130	--	*	--	21
	4/2/2002	open	130	--	*	--	21
	4/5/2002	open	135	70	*	--	21
	4/19/2002	open	130	55	*	--	22

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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
-> MW-2	5/6/2002	closed	--	--	*	--	--
	5/21/2002	closed	--	--	*	--	--
	6/19/2002	closed	--	--	*	--	--
	6/28/2002	open	95	52	*	--	22
	7/10/2002	open	97	51	*	--	22
	7/26/2002	open	92	19	*	--	25.5
	8/6/2002	open	--	--	*	--	21.5
	8/26/2002	open	95	35	*	--	21.5
	9/16/2002	open	105	--	*	--	21.5
	9/20/2002	open	85	30	*	--	21.5
	10/2/2002	open	75	72	*	--	21.5
	10/11/2002	open	110	60	*	--	21.5
	10/16/2002	open	125	108	8.5	2030	21.5
	10/31/2002	open	150	65	*	--	21.5
	11/6/2002	open	155	95	*	--	21.5
	11/22/2002	closed	--	--	*	--	--
	12/5/2002	closed	--	--	*	--	--
	12/20/2002	closed	--	--	*	--	--
	1/8/2003	closed	--	--	*	--	--
	MW-3	11/6/2001	open	80	--	*	--
11/12/2001		open	125	--	*	--	25
11/14/2001		open	85	--	*	--	25
11/21/2001		open	95	--	*	--	25
12/6/2001		open	115	--	*	--	25
12/19/2001		open	110	--	*	--	25
1/17/2002		open	130	--	*	--	25
2/4/2002		open	105	--	*	--	25
2/14/2002		closed	--	--	*	--	--
3/5/2002		closed	--	--	*	--	--
3/11/2002		closed	--	--	*	--	--
3/25/2002		closed	--	--	*	--	--
4/2/2002		closed	--	--	*	--	--
4/5/2002		closed	--	--	*	--	--
4/19/2002		closed	--	--	*	--	--
5/6/2002		open	100	28	*	--	20
5/21/2002		open	105	7	*	--	22
6/19/2002		open	90	10	*	--	24
6/28/2002		open	95	11	*	--	24
7/10/2002		open	97	6	*	--	23
7/26/2002		open	92	7	*	--	23
8/6/2002		open	--	--	*	--	19
8/26/2002		open	95	44	*	--	19
9/16/2002		open	105	--	*	--	19
9/20/2002		open	85	50	*	--	19
10/2/2002		open	75	29	*	--	19
10/11/2002		open	110	25	*	--	19
10/16/2002	open	125	115	17	1286	19	
10/31/2002	open	150	70	*	--	19	
11/6/2002	open	155	89	*	--	19	
11/22/2002	open	145-160	92	*	--	19	
12/5/2002	open	140	86	*	--	19.5	
12/20/2002	open	>150	--	*	--	18	
1/8/2003	open	>150	145	*	--	18	

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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
MW-4	11/6/2001	open	80	--	*	--	25
	11/12/2001	open	125	--	*	--	25
	11/14/2001	open	85	--	*	--	25
	11/21/2001	open	95	--	*	--	25
	12/6/2001	open	115	--	*	--	25
	12/19/2001	open	110	--	*	--	25
	1/17/2002	open	130	--	*	--	25
	2/4/2002	open	105	--	*	--	25
	2/14/2002	closed	--	--	*	--	--
	3/5/2002	closed	--	--	*	--	--
	3/11/2002	closed	--	--	*	--	--
	3/25/2002	closed	--	--	*	--	--
	4/2/2002	closed	--	--	*	--	--
	4/5/2002	closed	--	--	*	--	--
	4/19/2002	closed	--	--	*	--	--
	5/6/2002	open	100	26	*	--	20
	5/21/2002	open	105	31	*	--	21
	6/19/2002	open	90	26	*	--	21
	6/28/2002	closed	--	--	*	--	--
	7/10/2002	closed	--	--	*	--	--
	7/26/2002	open	92	14	*	--	24.5
	8/6/2002	open	--	--	*	--	19
	8/26/2002	open	95	39	*	--	19
	9/16/2002	open	105	--	*	--	19
	9/20/2002	open	85	35	*	--	19
	10/2/2002	open	75	34	*	--	19
	10/11/2002	open	110	31	*	--	19
	10/16/2002	open	125	100	4.7	1780	19
	10/31/2002	open	150	60	*	--	19
	11/6/2002	open	155	82	*	--	19
11/22/2002	open	145-160	82	*	--	19	
12/5/2002	open	140	77	*	--	19.5	
12/20/2002	open	>150	--	*	--	18	
1/8/2003	open	>150	130	*	--	18	
RW-5	5/24/2000	--	80	--	*	--	11.64
	10/6/2000	--	100	--	*	--	--
	11/29/2000	open	>100	--	*	4320	--
	3/29/2001	open	54	--	*	650	--
	4/14/2001	open	100	--	*	--	--
	4/26/2001	open	85	--	*	--	15
	5/3/2001	open	80	--	*	--	15
	5/23/2001	open	10	--	*	--	15
	6/4/2001	open	50	--	*	--	15
	6/21/2001	open	65	--	*	--	15
	7/2/2001	open	55	--	*	--	15
	7/16/2001	open	45	--	*	--	16
	8/2/2001	open	35	--	*	--	--
	8/10/2001	open	20	--	*	--	--
	8/15/2001	open	20	--	*	--	--
	8/27/2001	open	65	--	*	--	--
	9/7/2001	closed	--	--	*	--	--
	9/14/2001	closed	--	--	*	--	--
	10/3/2001	closed	--	--	*	--	--
	10/8/2001	closed	--	--	*	--	--
	10/22/2001	closed	--	--	*	--	--
	10/29/2001	closed	--	--	*	--	--
	11/6/2001	closed	--	--	*	--	--
	11/12/2001	closed	--	--	*	--	--
	11/14/2001	closed	--	--	*	--	--

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**Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California**

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
-->RW-5	11/21/2001	closed	--	--	*	--	--
	12/6/2001	closed	--	--	*	--	--
	12/19/2001	open	110	--	*	--	20
	1/17/2002	open	130	--	*	--	20
	2/4/2002	closed	--	--	*	--	--
	2/14/2002	closed	--	--	*	--	--
	3/5/2002	closed	--	--	*	--	--
	3/11/2002	closed	--	--	*	--	--
	3/25/2002	open	130	--	*	--	16
	4/2/2002	open	130	--	*	--	16
	4/5/2002	open	135	90	*	--	16
	4/19/2002	open	130	72	*	--	18
	5/6/2002	open	100	43	*	--	18
	5/21/2002	open	105	55	*	--	19
	6/19/2002	open	90	33	*	--	19.5
	6/28/2002	open	95	48	*	--	20
	7/10/2002	closed	--	--	*	--	--
	7/26/2002	closed	--	--	*	--	--
	8/6/2002	open	--	--	*	--	19
	8/26/2002	open	95	27	*	--	19
	9/16/2002	open	105	--	*	--	19
	9/20/2002	open	85	22	*	--	19
	10/2/2002	open	75	32	*	--	19
	10/11/2002	open	110	28	*	--	19
	10/16/2002	open	125	38	62	240	19
	10/31/2002	open	150	44	*	--	19
	11/6/2002	open	155	50	*	--	19
	11/22/2002	open	145-160	26	*	--	20
	12/5/2002	open	140	26	*	--	20
	12/20/2002	open	>150	--	*	--	18
	1/8/2003	open	>150	130	*	--	18
RW-6	5/24/2000	--	80	--	*	--	11.78
	10/6/2000	--	--	--	*	--	--
	11/29/2000	open	>100	--	*	260	--
	3/29/2001	open	54	--	*	2050	--
	4/14/2001	open	100	--	*	--	20
	4/26/2001	closed	--	--	*	--	--
	5/3/2001	closed	--	--	*	--	--
	5/23/2001	closed	--	--	*	--	--
	6/4/2001	open	50	--	*	--	15
	6/21/2001	open	65	--	*	--	15
	7/2/2001	open	55	--	*	--	15
	7/16/2001	open	45	--	*	--	16
	8/2/2001	open	35	--	*	--	--
	8/10/2001	open	20	--	*	--	--
	8/15/2001	open	20	--	*	--	--
	8/27/2001	open	65	--	*	--	--
	9/7/2001	closed	--	--	*	--	--
	9/14/2001	closed	--	--	*	--	--
	10/3/2001	closed	--	--	*	--	--
	10/8/2001	closed	--	--	*	--	--
	10/22/2001	closed	--	--	*	--	--
	10/29/2001	closed	--	--	*	--	--
	11/6/2001	closed	--	--	*	--	--
	11/12/2001	closed	--	--	*	--	--
	11/14/2001	closed	--	--	*	--	--
	11/21/2001	closed	--	--	*	--	--
	12/6/2001	closed	--	--	*	--	--
	12/19/2001	closed	--	--	*	--	--
	1/17/2002	closed	--	--	*	--	--



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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)	
-->RW-6	2/4/2002	closed	--	--	*	--	--	
	2/14/2002	closed	--	--	*	--	--	
	3/5/2002	closed	--	--	*	--	--	
	3/11/2002	open	130	--	*	--	16	
	3/25/2002	open	130	--	*	--	16	
	4/2/2002	open	12	--	*	--	16	
	4/5/2002	open	135	85	*	--	16	
	4/19/2002	open	130	75	*	--	18	
	5/6/2002	closed	--	--	*	--	--	
	5/21/2002	closed	--	--	*	--	--	
	6/19/2002	closed	--	--	*	--	--	
	6/28/2002	closed	--	--	*	--	--	
	7/10/2002	open	97	54	*	--	20	
	7/26/2002	open	92	39	*	--	20	
	8/6/2002	open	--	--	*	--	19	
	8/26/2002	open	95	34	*	--	19	
	9/16/2002	open	105	--	*	--	19	
	9/20/2002	open	85	45	*	--	19	
	10/2/2002	open	75	30	*	--	19	
	10/11/2002	open	110	--	*	--	19	
	10/16/2002	open	125	54	34	644	19	
	10/31/2002	closed	--	--	*	--	--	
	11/6/2002	closed	--	--	*	--	--	
	11/22/2002	open	145-160	70	*	--	19.5	
	12/5/2002	open	140	69	*	--	19.5	
	12/20/2002	open	>150	--	*	--	18	
	1/8/2003	open	>150	135	*	--	18	
	RW-7	5/24/2000	--	80	--	*	--	12.5
		10/6/2000	--	--	--	*	--	--
		11/29/2000	open	>100	--	*	0	--
3/29/2001		open	54	--	*	52	--	
4/14/2001		open	100	--	*	--	20	
4/26/2001		open	85	--	*	--	15	
5/3/2001		open	80	--	*	--	15	
5/23/2001		open	10	--	*	--	15	
6/4/2001		open	50	--	*	--	15	
6/21/2001		open	65	--	*	--	15	
7/2/2001		open	55	--	*	--	15	
7/16/2001		open	45	--	*	--	16	
8/2/2001		open	35	--	*	--	--	
8/10/2001		open	20	--	*	--	--	
8/15/2001		open	20	--	*	--	--	
8/27/2001		open	65	--	*	--	--	
9/7/2001		closed	--	--	*	--	--	
9/14/2001		closed	--	--	*	--	--	
10/3/2001		closed	--	--	*	--	--	
10/8/2001		closed	--	--	*	--	--	
10/22/2001		closed	--	--	*	--	--	
10/29/2001		closed	--	--	*	--	--	
11/6/2001		closed	--	--	*	--	--	
11/12/2001		closed	--	--	*	--	--	
11/14/2001		closed	--	--	*	--	--	
11/21/2001		closed	--	--	*	--	--	
12/6/2001		closed	--	--	*	--	--	
12/19/2001		closed	--	--	*	--	--	
1/17/2002		closed	--	--	*	--	--	
2/4/2002		closed	--	--	*	--	--	
2/14/2002	closed	--	--	*	--	--		
3/5/2002	closed	--	--	*	--	--		
3/11/2002	closed	--	--	*	--	--		

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**Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California**

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)	
-->RW-7	3/25/2002	closed	--	--	*	--	--	
	4/2/2002	closed	--	--	*	--	--	
	4/5/2002	closed	--	--	*	--	--	
	4/19/2002	closed	--	--	*	--	--	
	5/6/2002	closed	--	--	*	--	--	
	5/21/2002	closed	--	--	*	--	--	
	6/19/2002	closed	--	--	*	--	--	
	6/28/2002	closed	--	--	*	--	--	
	7/10/2002	closed	--	--	*	--	--	
	7/26/2002	closed	--	--	*	--	--	
	8/6/2002	closed	--	--	*	--	--	
	8/26/2002	closed	--	--	*	--	--	
	9/16/2002	closed	--	--	*	--	--	
	9/20/2002	closed	--	--	*	--	--	
	10/2/2002	closed	--	--	*	--	--	
	10/11/2002	closed	--	--	*	--	--	
	10/16/2002	closed	--	125	19	35	36	19
	10/31/2002	closed	--	--	--	*	--	--
	11/6/2002	closed	--	--	--	*	--	--
	11/22/2002	closed	--	--	--	*	--	--
	12/5/2002	closed	--	--	--	*	--	--
	12/20/2002	closed	--	--	--	*	--	--
	1/8/2003	closed	--	--	--	*	--	--
	RW-8	5/24/2000	--	--	--	*	--	--
		10/6/2000	--	--	--	*	--	--
11/29/2000		open	>100	--	*	44	--	
3/29/2001		open	54	--	*	60	--	
4/14/2001		open	100	--	*	--	20	
4/26/2001		open	85	--	*	--	15	
5/3/2001		open	80	--	*	--	15	
5/23/2001		open	10	--	*	--	15	
6/4/2001		open	50	--	*	--	15	
6/21/2001		open	65	--	*	--	--	
7/2/2001		open	55	--	*	--	--	
7/16/2001		open	45	--	*	--	--	
8/2/2001		open	35	--	*	--	--	
8/10/2001		open	20	--	*	--	--	
8/15/2001		open	20	--	*	--	--	
8/27/2001		open	65	--	*	--	--	
9/7/2001		closed	--	--	*	--	--	
9/14/2001		closed	--	--	*	--	--	
10/3/2001		closed	--	--	*	--	--	
10/8/2001		closed	--	--	*	--	--	
10/22/2001		closed	--	--	*	--	--	
10/29/2001		closed	--	--	*	--	--	
11/6/2001		closed	--	--	*	--	--	
11/12/2001		closed	--	--	*	--	--	
11/14/2001		closed	--	--	*	--	--	
11/21/2001		closed	--	--	*	--	--	
12/6/2001		closed	--	--	*	--	--	
12/19/2001		closed	--	--	*	--	--	
1/17/2002		closed	--	--	*	--	--	
2/4/2002		closed	--	--	*	--	--	
2/14/2002	closed	--	--	*	--	--		
3/5/2002	closed	--	--	*	--	--		
3/11/2002	closed	--	--	*	--	18		
3/25/2002	closed	--	--	*	--	--		
4/2/2002	closed	--	--	*	--	--		
4/5/2002	closed	--	--	*	--	--		
4/19/2002	closed	--	--	*	--	--		

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**Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California**

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
-->RW-8	5/6/2002	closed	--	--	*	--	--
	5/21/2002	closed	--	--	*	--	--
	6/19/2002	closed	--	--	*	--	--
	6/28/2002	closed	--	--	*	--	--
	7/10/2002	closed	--	--	*	--	--
	7/26/2002	closed	--	--	*	--	--
	8/6/2002	closed	--	--	*	--	--
	8/26/2002	closed	--	--	*	--	--
	9/16/2002	closed	--	--	*	--	--
	9/20/2002	closed	--	--	*	--	--
	10/2/2002	closed	--	--	*	--	--
	10/11/2002	closed	--	--	*	--	--
	10/16/2002	open	125	33	29	15	19
	10/31/2002	closed	--	--	*	--	--
	11/6/2002	closed	--	--	*	--	--
	11/22/2002	closed	--	--	*	--	--
	12/5/2002	closed	--	--	*	--	--
	12/20/2002	closed	--	--	*	--	--
	1/8/2003	closed	--	--	*	--	--
	RW-9	5/24/2000	--	--	--	*	--
10/6/2000		--	--	--	*	--	--
11/29/2000		--	>100	--	*	43	--
3/29/2001		open	54	--	*	90	--
4/14/2001		open	100	--	*	--	--
4/26/2001		open	85	--	*	--	--
5/3/2001		open	80	--	*	--	--
5/23/2001		open	10	--	*	--	--
6/4/2001		open	50	--	*	--	--
6/21/2001		open	65	--	*	--	--
7/2/2001		open	55	--	*	--	--
7/16/2001		open	45	--	*	--	--
8/2/2001		open	35	--	*	--	--
8/10/2001		open	20	--	*	--	--
8/15/2001		open	20	--	*	--	--
8/27/2001		open	65	--	*	--	--
9/7/2001		closed	--	--	*	--	--
9/14/2001		closed	--	--	*	--	--
10/3/2001		closed	--	--	*	--	--
10/8/2001		closed	--	--	*	--	--
10/22/2001		closed	--	--	*	--	--
10/29/2001		closed	--	--	*	--	--
11/6/2001		closed	--	--	*	--	--
11/12/2001		closed	--	--	*	--	--
11/14/2001		closed	--	--	*	--	--
11/21/2001		closed	--	--	*	--	--
12/6/2001		closed	--	--	*	--	--
12/19/2001		closed	--	--	*	--	--
1/17/2002		closed	--	--	*	--	--
2/4/2002		closed	--	--	*	--	--
2/14/2002	open	125	--	*	--	20	
3/5/2002	open	115	--	*	--	20	
3/11/2002	closed	--	--	*	--	--	
3/25/2002	closed	--	--	*	--	--	
4/2/2002	closed	--	--	*	--	--	
4/5/2002	closed	--	--	*	--	--	
4/19/2002	closed	--	--	*	--	--	
5/6/2002	open	100	38	*	--	20	
5/21/2002	open	105	56	*	--	20	
6/19/2002	open	90	47	*	--	20	
6/28/2002	closed	--	--	*	--	--	

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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
-->RW-9	7/10/2002	closed	--	--	*	--	--
	7/26/2002	closed	--	--	*	--	--
	8/6/2002	open	--	--	*	--	19
	8/26/2002	open	95	15	*	--	19
	9/16/2002	closed	--	--	*	--	--
	9/20/2002	closed	--	--	*	--	--
	10/2/2002	closed	--	--	*	--	--
	10/11/2002	closed	--	--	*	--	--
	10/16/2002	closed	125	12	56	12	19
	10/31/2002	closed	--	--	*	--	--
	11/6/2002	closed	--	--	*	--	--
	11/22/2002	closed	--	--	*	--	--
	12/5/2002	closed	--	--	*	--	--
	12/20/2002	closed	--	--	*	--	--
	1/8/2003	open	>150	120	*	--	16
RW-10	5/24/2000	--	--	--	*	--	--
	10/6/2000	--	--	--	*	--	--
	11/29/2000	--	>100	--	*	>10,000	--
	3/29/2001	open	54	--	*	850	--
	4/14/2001	open	100	--	*	--	--
	4/26/2001	open	85	--	*	--	--
	5/3/2001	open	80	--	*	--	--
	5/23/2001	open	10	--	*	--	--
	6/4/2001	open	50	--	*	--	--
	6/21/2001	open	65	--	*	--	--
	7/2/2001	open	55	--	*	--	--
	7/16/2001	open	45	--	*	--	--
	8/2/2001	open	35	--	*	--	--
	8/10/2001	open	20	--	*	--	--
	8/15/2001	open	20	--	*	--	--
	8/27/2001	open	65	--	*	--	--
	9/7/2001	closed	--	--	*	--	--
	9/14/2001	closed	--	--	*	--	--
	10/3/2001	closed	--	--	*	--	--
	10/8/2001	closed	--	--	*	--	--
	10/22/2001	closed	--	--	*	--	--
	10/29/2001	closed	--	--	*	--	--
	11/6/2001	closed	--	--	*	--	--
	11/12/2001	closed	--	--	*	--	--
	11/14/2001	closed	--	--	*	--	--
	11/21/2001	closed	--	--	*	--	--
	12/6/2001	closed	--	--	*	--	--
	12/19/2001	closed	--	--	*	--	--
	1/17/2002	closed	--	--	*	--	--
	2/4/2002	closed	--	--	*	--	--
	2/14/2002	open	125	--	*	--	20
	3/5/2002	open	115	--	*	--	20
	3/11/2002	open	--	--	*	--	20
	3/25/2002	closed	--	--	*	--	--
	4/2/2002	closed	--	--	*	--	--
	4/5/2002	closed	--	--	*	--	--
	4/19/2002	closed	--	--	*	--	--
	5/6/2002	open	100	31	*	--	20
	5/21/2002	open	105	70	*	--	20
	6/19/2002	open	90	56	*	--	20
	6/28/2002	closed	--	--	*	--	--
	7/10/2002	closed	--	--	*	--	--
	7/26/2002	closed	--	--	*	--	--
	8/6/2002	open	--	--	*	--	19
	8/26/2002	closed	--	--	*	--	--

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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)	
-->RW-10	9/16/2002	closed	--	--	*	--	--	
	9/20/2002	closed	--	--	*	--	--	
	10/2/2002	closed	--	--	*	--	--	
	10/11/2002	closed	--	--	*	--	--	
	10/16/2002	closed	125	38	48	18	19	
	10/31/2002	closed	--	--	*	--	--	
	11/6/2002	closed	--	--	*	--	--	
	11/22/2002	closed	--	--	*	--	--	
	12/5/2002	closed	--	--	*	--	--	
	12/20/2002	closed	--	--	*	--	--	
	1/8/2003	closed	--	--	*	--	--	
	RW-11	5/24/2000	--	80	--	*	--	11.65
		10/6/2000	--	--	--	*	--	--
11/29/2000		--	>100	--	*	2280	--	
3/29/2001		open	54	--	*	784	--	
4/14/2001		open	100	--	*	--	--	
4/26/2001		open	85	--	*	--	15	
5/3/2001		open	80	--	*	--	15	
5/23/2001		open	10	--	*	--	15	
6/4/2001		open	50	--	*	--	20	
6/21/2001		open	65	--	*	--	15	
7/2/2001		open	55	--	*	--	15	
7/16/2001		open	45	--	*	--	16	
8/2/2001		open	35	--	*	--	--	
8/10/2001		open	20	--	*	--	--	
8/15/2001		open	20	--	*	--	--	
8/27/2001		open	65	--	*	--	--	
9/7/2001		closed	--	--	*	--	--	
9/14/2001		closed	--	--	*	--	--	
10/3/2001		closed	--	--	*	--	--	
10/8/2001		closed	--	--	*	--	--	
10/22/2001		closed	--	--	*	--	--	
10/29/2001		closed	--	--	*	--	--	
11/6/2001		closed	--	--	*	--	--	
11/12/2001		closed	--	--	*	--	--	
11/14/2001		closed	--	--	*	--	--	
11/21/2001		closed	--	--	*	--	--	
12/6/2001		closed	--	--	*	--	--	
12/19/2001		closed	--	--	*	--	--	
1/17/2002		closed	--	--	*	--	--	
2/4/2002		closed	--	--	*	--	--	
2/14/2002		closed	--	--	*	--	--	
3/5/2002		closed	--	--	*	--	--	
3/11/2002		open	--	--	*	--	18	
3/25/2002		closed	--	--	*	--	--	
4/2/2002		closed	--	--	*	--	--	
4/5/2002		closed	--	--	*	--	--	
4/19/2002		closed	--	--	*	--	--	
5/6/2002		closed	--	--	*	--	--	
5/21/2002		closed	--	--	*	--	--	
6/19/2002	closed	--	--	*	--	--		
6/28/2002	closed	--	--	*	--	--		
7/10/2002	closed	--	--	*	--	--		
7/26/2002	closed	--	--	*	--	--		
8/6/2002	closed	--	--	*	--	--		
8/26/2002	closed	--	--	*	--	--		
9/16/2002	closed	--	--	*	--	--		
9/20/2002	closed	--	--	*	--	--		
10/2/2002	closed	--	--	*	--	--		
10/11/2002	closed	--	--	*	--	--		

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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
-->RW-11	10/16/2002	closed	125	86	24	255	19
	10/31/2002	open	150	62	*	--	19
	11/6/2002	open	155	45	*	--	19
	11/22/2002	open	145-160	77	*	--	19.5
	12/5/2002	open	140	65	*	--	19.5
	12/20/2002	open	>150	--	*	--	18
	1/8/2003	open	>150	110	*	--	18
	RW-12	5/24/2000	--	--	--	*	--
	10/6/2000	--	--	--	*	--	--
	11/29/2000	open	>100	--	*	24	--
	3/29/2001	open	54	--	*	72	--
	4/14/2001	open	100	--	*	--	--
	4/26/2001	open	85	--	*	--	15
	5/3/2001	open	80	--	*	--	15
	5/23/2001	open	10	--	*	--	15
	6/4/2001	open	50	--	*	--	15
	6/21/2001	open	65	--	*	--	15
	7/2/2001	open	55	--	*	--	15
	7/16/2001	open	45	--	*	--	16
	8/2/2001	open	35	--	*	--	--
	8/10/2001	open	20	--	*	--	--
	8/15/2001	open	20	--	*	--	--
	8/27/2001	open	65	--	*	--	--
	9/7/2001	closed	--	--	*	--	--
	9/14/2001	closed	--	--	*	--	--
	10/3/2001	closed	--	--	*	--	--
	10/8/2001	closed	--	--	*	--	--
	10/22/2001	closed	--	--	*	--	--
	10/29/2001	closed	--	--	*	--	--
	11/6/2001	closed	--	--	*	--	--
	11/12/2001	closed	--	--	*	--	--
	11/14/2001	closed	--	--	*	--	--
	11/21/2001	closed	--	--	*	--	--
	12/6/2001	closed	--	--	*	--	--
	12/19/2001	closed	--	--	*	--	--
	1/17/2002	closed	--	--	*	--	--
	2/4/2002	closed	--	--	*	--	--
	2/14/2002	closed	--	--	*	--	--
	3/5/2002	closed	--	--	*	--	--
	3/11/2002	closed	--	--	*	--	--
	3/25/2002	open	130	--	*	--	16
	4/2/2002	open	130	--	*	--	16
	4/5/2002	open	135	97	*	--	16
	4/19/2002	open	130	75	*	--	18
	5/6/2002	closed	--	--	*	--	--
	5/21/2002	closed	--	--	*	--	--
	6/19/2002	closed	--	--	*	--	--
	6/28/2002	open	95	16	*	--	20
	7/10/2002	open	97	5	*	--	20
	7/26/2002	open	92	5	*	--	20
	8/6/2002	open	--	--	*	--	19
	8/26/2002	open	95	6	*	--	19
	9/16/2002	open	105	--	*	--	19
	9/20/2002	open	85	6	*	--	19
	10/2/2002	open	75	4	*	--	19
	10/11/2002	open	110	4	*	--	19
	10/16/2002	closed	125	1	20	75	19
	10/31/2002	closed	--	--	*	--	--
	11/6/2002	closed	--	--	*	--	--
	11/22/2002	closed	--	--	*	--	--

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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
-->RW-12	12/5/2002	closed	--	--	*	--	--
	12/20/2002	closed	--	--	*	--	--
	1/8/2003	closed	--	--	*	--	--
RW-13	5/24/2000	--	80	--	*	--	12.59
	10/6/2000	--	--	--	*	--	--
	11/29/2000	--	>100	--	*	77	--
	3/29/2001	open	54	--	*	124	--
	4/14/2001	open	100	--	*	--	--
	4/26/2001	open	85	--	*	--	--
	5/3/2001	open	80	--	*	--	--
	5/23/2001	open	10	--	*	--	--
	6/4/2001	open	50	--	*	--	--
	6/21/2001	open	65	--	*	--	--
	7/2/2001	open	55	--	*	--	--
	7/16/2001	open	45	--	*	--	--
	8/2/2001	open	35	--	*	--	--
	8/10/2001	open	20	--	*	--	--
	8/15/2001	open	20	--	*	--	--
	8/27/2001	open	65	--	*	--	--
	9/7/2001	closed	--	--	*	--	--
	9/14/2001	closed	--	--	*	--	--
	10/3/2001	closed	--	--	*	--	--
	10/8/2001	closed	--	--	*	--	--
	10/22/2001	closed	--	--	*	--	--
	10/29/2001	closed	--	--	*	--	--
	11/6/2001	closed	--	--	*	--	--
	11/12/2001	closed	--	--	*	--	--
	11/14/2001	closed	--	--	*	--	--
	11/21/2001	closed	--	--	*	--	--
	12/6/2001	closed	--	--	*	--	--
	12/19/2001	closed	--	--	*	--	--
	1/17/2002	closed	--	--	*	--	--
	2/4/2002	closed	--	--	*	--	--
	2/14/2002	open	125	--	*	--	20
	3/5/2002	open	115	--	*	--	20
	3/11/2002	open	--	--	*	--	16
	3/25/2002	closed	--	--	*	--	--
	4/2/2002	closed	--	--	*	--	--
	4/5/2002	closed	--	--	*	--	--
	4/19/2002	closed	--	--	*	--	--
	5/6/2002	closed	--	--	*	--	--
	5/21/2002	closed	--	--	*	--	--
	6/19/2002	closed	--	--	*	--	--
	6/28/2002	closed	--	--	*	--	--
	7/10/2002	closed	--	--	*	--	--
	7/26/2002	closed	--	--	*	--	--
	8/6/2002	closed	--	--	*	--	--
	8/26/2002	closed	--	--	*	--	--
	9/16/2002	closed	--	--	*	--	--
	9/20/2002	closed	--	--	*	--	--
10/2/2002	closed	--	--	*	--	--	
10/11/2002	closed	--	--	*	--	--	
10/16/2002	closed	125	29	41	7	21.5	
10/31/2002	closed	--	--	*	--	--	
11/6/2002	closed	--	--	*	--	--	
11/22/2002	closed	--	--	*	--	--	
12/5/2002	closed	--	--	*	--	--	
12/20/2002	closed	--	--	*	--	--	
1/8/2003	closed	--	--	*	--	--	

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Table 4. TPE Well Parameters - Former Exxon Service Station, 3055 35th Avenue, Oakland, California

Well ID	Date	Well Status (open/closed)	System/Stinger Vacuum (inches of H <sub>2</sub> O)	Well Annulus Vacuum (inches of H <sub>2</sub> O)	Flow Rate (cfm)	Hydrocarbon Vapor Concentration (ppmv)	Stinger Depth (ft below TOC)
RW-14	5/24/2000	--	80	--	*	--	12.33
	10/6/2000	--	100	--	*	--	--
	11/29/2000	--	>100	--	*	5830	--
	3/29/2001	open	54	--	*	120	--
	4/14/2001	open	100	--	*	--	--
	4/26/2001	open	85	--	*	--	--
	5/3/2001	open	80	--	*	--	--
	5/23/2001	open	10	--	*	--	--
	6/4/2001	open	50	--	*	--	--
	6/21/2001	open	65	--	*	--	--
	7/2/2001	open	55	--	*	--	--
	7/16/2001	open	45	--	*	--	--
	8/2/2001	open	35	--	*	--	--
	8/10/2001	open	20	--	*	--	--
	8/15/2001	open	20	--	*	--	--
	8/27/2001	open	65	--	*	--	--
	9/7/2001	closed	--	--	*	--	--
	9/14/2001	closed	--	--	*	--	--
	10/3/2001	closed	--	--	*	--	--
	10/8/2001	closed	--	--	*	--	--
	10/22/2001	closed	--	--	*	--	--
	10/29/2001	closed	--	--	*	--	--
	11/6/2001	closed	--	--	*	--	--
	11/12/2001	closed	--	--	*	--	--
	11/14/2001	closed	--	--	*	--	--
	11/21/2001	closed	--	--	*	--	--
	12/6/2001	closed	--	--	*	--	--
	12/19/2001	closed	--	--	*	--	--
	1/17/2002	closed	--	--	*	--	--
	2/4/2002	closed	--	--	*	--	--
	2/14/2002	open	125	--	*	--	20
	3/5/2002	open	115	--	*	--	20
	3/11/2002	closed	--	--	*	--	--
	3/25/2002	closed	--	--	*	--	--
	4/2/2002	closed	--	--	*	--	--
	4/5/2002	closed	--	--	*	--	--
	4/19/2002	closed	--	--	*	--	--
	5/6/2002	closed	--	--	*	--	--
	5/21/2002	closed	--	--	*	--	--
	6/19/2002	closed	--	--	*	--	--
	6/28/2002	closed	--	--	*	--	--
	7/10/2002	closed	--	--	*	--	--
	7/26/2002	closed	--	--	*	--	--
	8/6/2002	closed	--	--	*	--	--
	8/26/2002	closed	--	--	*	--	--
	9/16/2002	closed	--	--	*	--	--
	9/20/2002	closed	--	--	*	--	--
	10/2/2002	closed	--	--	*	--	--
	10/11/2002	closed	--	--	*	--	--
	10/16/2002	open	125	80	14	535	19
	10/31/2002	open	150	18	*	--	19
	11/6/2002	closed	--	--	*	--	--
	11/22/2002	closed	--	--	*	--	--
	12/5/2002	closed	--	--	*	--	--
	12/20/2002	closed	--	--	*	--	--
	1/8/2003	open	>150	140	*	--	14

**Notes:**

- \* = Parameter could not be accurately measured due to the presence of water or water vapor.
- = Data not available or not collected



C A M B R I A



**APPENDIX A**

Groundwater Monitoring Field Data Sheets

### Groundwater Monitoring Field Sheet

Well ID	Time	DTP	DTW	Product Thickness	Amount of Product Removed	Casing Diam.	Comment
MW-1	11:30		21.55				
MW-2	11:35		18.75				
MW-3	11:45		17.85	0.05			SPH at 17.80
MW-4	11:40		17.55				

Project Name: Northington

Project Number/Task: 130-0105/342

Measured By: J. Hill

Date: 11-21-02

WELL SAMPLING FORM

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MW-1
Project Number: 130-0105	Date: 11/21 /02	Well Yield:
Site Address: 3055 35 <sup>th</sup> St Oakland, Ca	Sampling Method:	Well Diameter: 4" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 21.55	Total Well Depth: 27.13	Water Column Height: 5.58
Volume/ft: 0.65	1 Casing Volume: 3.62	3 Casing Volumes: 10.88
Purging Device: disposable bailer (4" PVC bailer)	Did Well Dewater?: NO	Total Gallons Purged: 11
Start Purge Time: 12:30	Stop Purge Time: 12:49	Total Time: 19mins

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

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

Time	Casing Volume	Temp.	pH	Cond.	Comments
12:40	4	20.7	7.47	3999	
12:45	8	21.3	7.59	3999	
12:50	11	21.5	7.40	3999	
					DO = 0.49 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-1	11/21/02	12:55	4VOAs 1 Amber	HCL	TPHg BTEX MTBE TPHd	8015/8020

WELL SAMPLING FORM

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MW-2
Project Number: 130-0105	Date: 11/21 /02	Well Yield:
Site Address: 3055 35 <sup>th</sup> St Oakland, Ca	Sampling Method:	Well Diameter: 4" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 18.75	Total Well Depth: 27.45	Water Column Height: 8.70
Volume/ft: 0.65	1 Casing Volume: 5.65	3 Casing Volumes: 16.96
Purging Device: disposable bailer (4" PVC bailer)	Did Well Dewater?: 10	Total Gallons Purged: 17
Start Purge Time: 1:30	Stop Purge Time: 1:59	Total Time: 29mins

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

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

Time	Casing Volume	Temp.	pH	Cond.	Comments
1:40	6	21.4	7.30	3999	
1:50	12	20.9	7.22	3999	
2:00	17	20.9	7.18	3999	DD = 0.43 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	11/21/02	2:05	4VOAs 1 Amber	HCL	TPHg BTEX MTBE TPHd	8015/8020

WELL SAMPLING FORM

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MW-3
Project Number: 130-0105	Date: 11/21/02	Well Yield:
Site Address: 3055 35 <sup>th</sup> St Oakland, Ca	Sampling Method:	Well Diameter: 2" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 17.85	Total Well Depth: 25.00	Water Column Height: 7.15
Volume/ft: 0.16	1 Casing Volume: 1.14	3 Casing Volumes: 3.43
Purging Device: <u>disposable</u> <u>bailer</u> /4" PVC bailer	Did Well Dewater?: no	Total Gallons Purged: 4
Start Purge Time: 2:15	Stop Purge Time: 2:29	Total Time: 14 mins

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

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

Time	Casing Volume	Temp.	pH	Cond.	Comments
2:20	1.5	<del>21.0</del> 21.0	7.44	3999	
2:25	3	<del>21.3</del> 21.3	7.58	3999	
2:30	4	<del>21.2</del> 21.2	7.47	3995	
					DD = 0.28 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-3	11/21/02	2:35	4VOAs 1 Amber	HCL	TPHg BTEX MTBE TPHd	8015/8020

WELL SAMPLING FORM

Project Name: Worthington	Cambria Mgr: RAS	Well ID: MW-4
Project Number: 130-0105	Date: 11/21 /02	Well Yield:
Site Address: 3055 35 <sup>th</sup> St Oakland, Ca	Sampling Method:	Well Diameter: <b>2" pvc</b>
	<b>Disposable bailer</b>	Technician(s): SG
Initial Depth to Water: <b>17.55</b>	Total Well Depth: <b>30.10</b>	Water Column Height: <b>12.55</b>
Volume/ft: <b>0.16</b>	1 Casing Volume: <b>2.00</b>	3 Casing Volumes: <b>6.00</b>
Purging Device: <b>disposable bailer</b> 4" PVC bailer	Did Well Dewater?: <b>no</b>	Total Gallons Purged: <b>6</b>
Start Purge Time: <b>2:45</b>	Stop Purge Time: <b>2:59</b>	Total Time: <b>14 mins</b>

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

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

Time	Casing Volume	Temp.	pH	Cond.	Comments
<b>2:50</b>	<b>2</b>	<b>20.4</b>	<b>7.20</b>	<b>3999</b>	
<b>2:55</b>	<b>4</b>	<b>20.9</b>	<b>7.28</b>	<b>3990</b>	
<b>3:00</b>	<b>6</b>	<b>21.2</b>	<b>7.34</b>	<b>3999</b>	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-4	11/21/02	<b>3:05</b>	<b>4VOAs 1 Amber</b>	<b>HCL</b>	<b>TPHg BTEX MTBE TPHd</b>	<b>8015/8020</b>

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.mccampbell.com> E-mail: [main@mccampbell.com](mailto:main@mccampbell.com)

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #130-0105-342; Worthington	Date Sampled: 11/21/02
		Date Received: 11/22/02
	Client Contact: Ron Scheele	Date Reported: 12/03/02
	Client P.O.:	Date Completed: 12/03/02

**WorkOrder: 0211416**

December 03, 2002

Dear Ron:

Enclosed are:

- 1). the results of 4 analyzed samples from your #130-0105-342; **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. 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





Cambria Env. Technology  6262 Hollis St.  Emeryville, CA 94608	Client Project ID: #130-0105-342; Worthington	Date Sampled: 11/21/02
	Client Contact: Ron Scheele	Date Received: 11/22/02
	Client P.O.:	Date Extracted: 11/27/02
		Date Analyzed: 11/27/02

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Cm

Work Order: 0211416

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-1	W	83,000,a,h	ND<1000	7100	1700	3000	13,000	200	108
002A	MW-2	W	210,000,a,h	ND<1700	14,000	23,000	4400	28,000	330	118
003A	MW-3	W	37,000,a,h	ND<1700	4000	660	1200	5100	330	99.9
004A	MW-4	W	5700,a	550	1400	290	63	640	33	99.0

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	NA	1	mg/Kg

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

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

 Edward Hamilton, Lab Director



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](mailto:main@mcccampbell.com)

Cambria Env. Technology  6262 Hollis St.  Emeryville, CA 94608	Client Project ID: #130-0105-342; Worthington	Date Sampled: 11/21/02
	Client Contact: Ron Scheele	Date Received: 11/22/02
	Client P.O.:	Date Analyzed: 11/23/02-12/03/02
		Date Extracted: 11/22/02

**Diesel Range (C10-C23) Extractable Hydrocarbons with Silica Gel Clean-Up\***

Extraction method: SW3510C Analytical methods: SW8015C Work Order: 0211416

Lab ID	Client ID	Matrix	TPH(d)	DF	% SS
0211416-001B	MW-1	W	200,000,d,h	100	--#
0211416-002B	MW-2	W	350,000,d,h	100	--#
0211416-003B	MW-3	W	120,000,d,h	100	--#
0211416-004B	MW-4	W	2400,d,g	10	121

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

\* water and vapor samples are reported in µg/L, wipe samples in ug/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all TCLP / STLC / SPLP extracts in µg/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 McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) unknown medium boiling point pattern that does not appear to be derived from diesel; f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; k) kerosene/kerosene range; l) bunker oil; m) fuel oil; n) stoddard solvent / mineral spirit.



### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0211416

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 5044		Spiked Sample ID: 0211408-002A				
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	101	103	1.61	96.9	102	5.27	80	120
MTBE	ND	10	113	116	2.55	89.2	86.4	3.24	80	120
Benzene	ND	10	97.4	105	7.55	89.1	89.2	0.184	80	120
Toluene	ND	10	91.6	98.5	7.27	93.4	93.8	0.395	80	120
Ethylbenzene	ND	10	97.4	101	3.73	91.6	92.7	1.20	80	120
Xylenes	ND	30	89	93.3	4.75	95	98.7	3.79	80	120
%SS:	97.8	100	101	107	5.70	89.7	88.9	0.904	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 SW8015C

Matrix: W

WorkOrder: 0211416

EPA Method: SW8015C		Extraction: SW3510C			BatchID: 5045		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	105	106	0.961	70	130
%SS:	N/A	100	N/A	N/A	N/A	94.4	93.6	0.787	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.

note

02/14/0

McCAMPBELL ANALYTICAL INC.

110 2<sup>nd</sup> 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: Ron Scheele Bill To: Cambria Env. Tech  
 Company: Cambria Environmental Technology Inc.  
 6262 Hollis Street  
 Emeryville, CA 94608 E-mail:  
 Tele: 510-450-1983 Fax: 510-450-8295  
 Project #: 130-DIOS-342 Project Name: Northington  
 Project Location: 3055 35<sup>th</sup> St. Oakland, Ca  
 Sampler Signature: [Signature]

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED				Analysis Request											Other	Comments											
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other	BTEX & TPH as Gas (602/8020 + 8015)/MTBE	TPH as Diesel (8015) with silica gel cleanup	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								
MW-1		11-21-02	12:55	4	VOL	X					X	X	X	X																								
MW-2		11-21-02	2:05	4	VOL	X					X	X	X	X																								
MW-3		11-21-02	2:35	4	VOL	X					X	X	X	X																								
MW-4		11-21-02	3:05	4	VOL	X					X	X	X	X																								

add

Relinquished By: [Signature] Date: 11-21-02 Time: 5:00 Received By: secure location  
 Relinquished By: [Signature] Date: 11/22 Time: 14:00 Received By: Am TLC  
 Relinquished By: Am TLC Date: 11/22 Time: 18:27 Received By: [Signature]

Remarks:  
 ICE#    
 GOOD CONDITION   
 LEAD SPACE ABSENT   
 DECHLORINATED IN LAB   
 PRESERVATION APPROXIMATE CONTAINERS PRESERVED IN LAB  
 VOAS  G&G  METALS  OTHER

**McC Campbell Analytical Inc.**



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

**CHAIN-OF-CUSTODY RECORD**

WorkOrder: 0211416

**Client:**

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

TEL: (510) 450-1983  
 FAX: (510) 450-8295  
 ProjectNo: #130-0105-342; Worthington  
 PO:

Date Received: 11/22/02

Date Printed: 11/22/02

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests	
					SW8015C	8021B/8015
0211416-001	MW-1	Water	11/21/02 12:55:00 PM	<input type="checkbox"/>	B	A
0211416-002	MW-2	Water	11/21/02 2:05:00 PM	<input type="checkbox"/>	B	A
0211416-003	MW-3	Water	11/21/02 2:35:00 AM	<input type="checkbox"/>	B	A
0211416-004	MW-4	Water	11/21/02 3:05:00 PM	<input type="checkbox"/>	B	A

Prepared by: \_\_\_\_\_

**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 TPE 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.mccampbell.com> E-mail: [main@mccampbell.com](mailto:main@mccampbell.com)

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #130-0105-345; Worthington	Date Sampled: 10/02/02
		Date Received: 10/03/02
	Client Contact: Ron Scheele	Date Reported: 10/09/02
	Client P.O.:	Date Completed: 10/09/02

October 09, 2002

Dear Ron:

Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-345; 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. 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







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

**QC SUMMARY REPORT FOR SW8021B/8015Cm**

Matrix: W

WorkOrder: 0210085

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 4259		Spiked Sample ID: 0210068-001A				
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	102	105	2.78	101	103	1.68	80	120
MTBE	ND	10	97.9	84.9	14.2	87	94.2	7.86	80	120
Benzene	ND	10	98.5	109	10.2	102	94.2	7.70	80	120
Toluene	ND	10	101	108	7.14	105	97.4	7.85	80	120
Ethylbenzene	ND	10	99.8	108	8.14	105	101	4.13	80	120
Xylenes	ND	30	103	107	3.17	103	99.7	3.61	80	120
%SS:	91.3	100	92.7	97.2	4.80	95.2	88.9	6.81	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.

2010

0210085

### McCAMPBELL ANALYTICAL INC.

110 2<sup>ND</sup> 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: SMF

Company: Cambria Environmental Technology

6262 Hollis Street

Emeryville, CA 94608

Tele: (510) 450-1983

Fax: (510) 450-8295

Project #: 130-0105-2A5

Project Name: Worthington

Project Location: 3055 35<sup>TH</sup> AVE OAKLAND CA

Sampler Signature: [Signature]

#### Analysis Request

Other

Comments

HTEX & TPH as Gas (602/603) & 6015/6020

TPH as Diesel (8015)

Total Petroleum Oil & Grease (532) E&F(R&F)

Total Petroleum Hydrocarbons (418.1)

EPA 501/8010

HTEX ONLY (EPA 602/6030)

EPA 808/8090

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

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED			
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other
+ INF	Oakland	10/2/02	9:45am	3	Voa	X					X	X		X
✓ EFF-1	↓	10/2/02	9:45am	3	Voa	X					X	X		X
+ EFF-2	↓	10/2/02	9:45am	3	Voa	X					X	X		X

RECEIVED IN LAB  
 PRESERVED IN LAB  
 PRESERVED IN LAB  
 PRESERVED IN LAB

Relinquished By: <u>[Signature]</u>	Date: <u>10/2/02</u>	Time: <u>4PM</u>	Received By: <u>[Signature]</u>
Relinquished By: <u>[Signature]</u>	Date: <u>10/3/02</u>	Time: <u>1135</u>	Received By: <u>[Signature]</u>
Relinquished By: <u>[Signature]</u>	Date: <u>10/3/02</u>	Time: <u>1245</u>	Received By: <u>[Signature]</u>

Remarks:  
 ONLY ANALYZE EFF-2 IF HCl'S DETECTED IN EFF-1.  
 FAX RESULTS PLEASE.

Melissa Valler

**McC Campbell Analytical Inc.**

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

**CHAIN-OF-CUSTODY RECORD**

WorkOrder: 0210085

**Client:**

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

TEL: (510) 450-1983  
 FAX: (510) 450-8295  
 ProjectNo: #130-0105-345;  
 PO:

03-Oct-02

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests							
					V8021B/8015C							
0210085-001	INF	Water	10/2/02 9:45:00 AM	<input type="checkbox"/>	A							
0210085-002	EFF-1	Water	10/2/02 9:45:00 AM	<input type="checkbox"/>	A							
0210085-003	EFF-2	Water	10/2/02 9:45:00 AM	<input checked="" type="checkbox"/>	A							

**Comments:**

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

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

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



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](mailto:main@mcccampbell.com)

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #130-0105-345; Worthington	Date Sampled: 10/02/02
		Date Received: 10/03/02
	Client Contact: Ron Scheele	Date Reported: 10/09/02
	Client P.O.:	Date Completed: 10/09/02

October 09, 2002

Dear Ron:

Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-345; 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. 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



Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #130-0105-345; Worthington	Date Sampled: 10/02/02
	Client Contact: Ron Scheele	Date Received: 10/03/02
	Client P.O.:	Date Extracted: 10/03/02
		Date Analyzed: 10/03/02

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Cm

Work Order: 0210081

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	A	430,a	ND<15	21	14	2.4	10	4	---#
002A	EFF	A	ND	ND	ND	ND	ND	ND	1	99.7

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

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	10	1.5	0.15	0.15	0.15	0.25	1	uL/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

\*vapor samples are reported in uL/L, water samples in ug/L, soil and sludge samples in mg/kg, wipe samples in ug/wipe, and TCLP extracts in ug/L.  
 # cluttered chromatogram; sample peak coelutes with surrogate peak.  
 +The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

 Edward Hamilton, Lab Director



**QC SUMMARY REPORT FOR SW8021B/8015Cm**

Matrix: A

WorkOrder: 0210081

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 4259			Spiked Sample ID: 0210068-001A			
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	102	105	2.78	101	103	1.68	80	120
MTBE	ND	10	97.9	84.9	14.2	87	94.2	7.86	80	120
Benzene	ND	10	98.5	109	10.2	102	94.2	7.70	80	120
Toluene	ND	10	101	108	7.14	105	97.4	7.85	80	120
Ethylbenzene	ND	10	99.8	108	8.14	105	101	4.13	80	120
Xylenes	ND	30	103	107	3.17	103	99.7	3.61	80	120
%SS:	91.3	100	92.7	97.2	4.80	95.2	88.9	6.81	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: 0210081

**Client:**

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

TEL: (510) 450-1983  
FAX: (510) 450-8295  
ProjectNo: #130-0105-345;  
PO:

03-Oct-02

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					8021B/8015						
0210081-001	INF	Air	10/2/02 9:30:00 AM	<input type="checkbox"/>	A						
0210081-002	EFF	Air	10/2/02 9:30:00 AM	<input type="checkbox"/>	A						

**Comments:**

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

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

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



ETA

0210081

### McCAMPBELL ANALYTICAL INC.

110 2<sup>nd</sup> AVENUE SOUTH, #103  
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: SME

Company: Cambria Environmental Technology  
6262 Hollis Street  
Emeryville, CA 94608

Tele: (510) 450-1983 Fax: (510) 450-8295

Project #: 130-0105-345 Project Name: WORTHINGTON

Project Location: 3055 35<sup>th</sup> AVE OAKLAND

Sampler Signature: [Signature]

#### Analysis Request

#### Other

#### Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other					
INF	Oakland	10/2/02	9:30	1	Bag			X											
EFF	Oakland	10/2/02	9:30	1	Bag			X											

ETEX & TPH as Gas (602/8020, 8015X METH)	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 E&F/R&F)	
Total Petroleum Hydrocarbons (418.1)	
EPA 801 / 8010	
ETEX ONLY (EPA 602 / 8020)	
EPA 808 / 8080	
EPA 608 / 8080-PEB'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	

ICEA	GOOD CONDITION	HEAD SPACE ABSENT	DECHLORINATED IN LAB	PRESERVATION APPROPRIATE	CONTAINERS PRESERVED IN LAB	VOAS	O&G	METALS	OTHER
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Relinquished By: <u>[Signature]</u>	Date: <u>10/2/02</u>	Time: <u>4pm</u>	Received By: <u>[Signature]</u>
Relinquished By: <u>[Signature]</u>	Date: <u>10/3/02</u>	Time: <u>11:35</u>	Received By: <u>[Signature]</u>
Relinquished By: <u>[Signature]</u>	Date: <u>10/3/02</u>	Time: <u>12:45</u>	Received By: <u>[Signature]</u>

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

LISV



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](mailto:main@mcccampbell.com)

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #130-0105-345; Worthington	Date Sampled: 11/06/02
		Date Received: 11/07/02
	Client Contact: Ron Scheele	Date Reported: 11/14/02
	Client P.O.:	Date Completed: 11/14/02

WorkOrder: 0211130

November 14, 2002

Dear Ron:

Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-345; 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. 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



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: #130-0105-345; Worthington	Date Sampled: 11/06/02
		Date Received: 11/07/02
	Client Contact: Ron Scheele	Date Extracted: 11/09/02-11/12/02
	Client P.O.:	Date Analyzed: 11/09/02-11/12/02

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Cm

Work Order: 0211130

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	W	4400	ND<50	120	150	27	380	10	93.8
002A	EFF-1	W	ND	ND	ND	ND	ND	ND	1	102

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	NA	1	mg/Kg

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

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.



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

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0211130

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 4814		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(gas)	N/A	60	N/A	N/A	N/A	102	104	1.15	80	120
MTBE	N/A	10	N/A	N/A	N/A	85.1	82.4	3.28	80	120
Benzene	N/A	10	N/A	N/A	N/A	92.8	91.5	1.42	80	120
Toluene	N/A	10	N/A	N/A	N/A	96.4	95.4	1.09	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	98.6	96.4	2.25	80	120
Xylenes	N/A	30	N/A	N/A	N/A	99.3	99.3	0	80	120
%SS:	N/A	100	N/A	N/A	N/A	92.5	90.8	1.90	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.

**McCampbell Analytical Inc.**

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

**CHAIN-OF-CUSTODY RECORD**

WorkOrder: 0211130

Client:

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

TEL: (510) 450-1983  
 FAX: (510) 450-8295  
 ProjectNo: #130-0105-345;  
 PO:

07-Nov-02

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					V8021B/8015C						
0211130-001	INF	Water	11/6/02 2:00:00 PM	<input type="checkbox"/>	A						
0211130-002	EFF-1	Water	11/6/02 2:00:00 PM	<input type="checkbox"/>	A						
0211130-003	EFF-2	Water	11/6/02 2:00:00 PM	<input checked="" type="checkbox"/>	A						

Comments:

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

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

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

CEP

021130

McCAMPBELL ANALYTICAL INC.  
 110 2<sup>ND</sup> AVENUE SOUTH, #D3  
 PACHICO, 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 #: 130-0105-2A5 Project Name: WORTHINGTON  
 Project Location: 3055 35<sup>TH</sup> AVE OAKLAND CA  
 Sampler Signature: [Signature]

Analysis Request Other Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED				
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other	
INF	Oakland	11/6/02	2pm	3	Voa	X						X	X	X	
EFF-1	↓	11/6/02	2pm	3	Voa	X						X	X	X	
EFF-2	↓	11/6/02	2pm	3	Voa	X						X	X	X	

TPH as Diesel (8015)	
Total Petroleum Oil & Grease (520 E&P/R&P)	
Total Petroleum Hydrocarbons (418.1)	
EPA 801/8010	
BTEX CINEY (EPA 602/8020)	
EPA 808/8080	
EPA 808/8080 (S&C) 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	

ICRP:  GOOD CONDITION  
 HEAD SPACE ABSENT  
 DECHLORINATED IN LAB  
 PRESERVATION:  VOA's  OAG  
 APPROPRIATE CONTAINERS  
 PRESERVED IN LAB  
 METALS METROCHEM

Relinquished By: [Signature] Date: 11/6/02 Time: 6pm Received By: [Signature]  
 Relinquished By: WJEX #290 Date: 11/7 Time: 11:30 Received By: [Signature]  
 Relinquished By: WJEX #280 Date: 11/7/02 Time: 4:10 Received By: [Signature]

Remarks:  
 ONLY ANALYZE EFF-2 IF HC'S DETECTED IN EFF-1.  
 FAX RESULTS PLEASE.

4.25

Sent By: McCampbell Analytical, Inc. | 925 798 4612 | Sep-5-01 8:42AM | Page 2/2



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](mailto:main@mccampbell.com)

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #130-0105-345; Worthington	Date Sampled: 11/06/02
		Date Received: 11/07/02
	Client Contact: Ron Scheele	Date Reported: 11/12/02
	Client P.O.:	Date Completed: 11/12/02

**WorkOrder: 0211129**

November 12, 2002

Dear Ron:

Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-345; **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. 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



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

Client Project ID: #130-0105-345;  
 Worthington  
 Client Contact: Ron Scheele  
 Client P.O.:

Date Sampled: 11/06/02  
 Date Received: 11/07/02  
 Date Extracted: 11/08/02  
 Date Analyzed: 11/08/02

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Cm

Work Order: 0211129

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	A	1000,a	ND<15	23	21	5.0	24	10	---#
002A	EFF	A	ND	ND	ND	ND	ND	ND	1	98.8

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

Reporting Limit for DF=1; ND means not detected at or above the reporting limit	A	10	1.5	0.15	0.15	0.15	0.25	1	uL/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

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

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.





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](mailto:main@mcccampbell.com)

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: A

WorkOrder: 0211129

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 4814		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	102	104	1.15	80	120
MTBE	N/A	10	N/A	N/A	N/A	85.1	82.4	3.28	80	120
Benzene	N/A	10	N/A	N/A	N/A	92.8	91.5	1.42	80	120
Toluene	N/A	10	N/A	N/A	N/A	96.4	95.4	1.09	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	98.6	96.4	2.25	80	120
Xylenes	N/A	30	N/A	N/A	N/A	99.3	99.3	0	80	120
%SS:	N/A	100	N/A	N/A	N/A	92.5	90.8	1.90	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: 0211129

Client:

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

TEL: (510) 450-1983  
 FAX: (510) 450-8295  
 ProjectNo: #130-0105-345;  
 PO:

07-Nov-02

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					V8021B/8015C						
0211129-001	INF	Air	11/6/02 1:00:00 PM	<input type="checkbox"/>	A						
0211129-002	EFF	Air	11/6/02 1:00:00 PM	<input type="checkbox"/>	A						

Comments:

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

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

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

McCAMPBELL ANALYTICAL INC.

170 2<sup>ND</sup> AVENUE SOUTH, #109  
PACHECO, CA 94553

Telephone: (925) 798-1620

Fax: (925) 798-1622

Report To: Ron Scheele

Bill To: *SME*

Company: Cambria Environmental Technology

6262 Hollis Street

Emeryville, CA 94608

Tele: (510) 450-1983

Fax: (510) 450-8295

Project #: *130-0105-345*

Project Name: *WERTINGTON*

Project Location: *3055 35<sup>TH</sup> AVE OAKLAND*

Sampler Signature: *[Signature]*

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other					
INF	Oakland	11/6/02	1 PM	1	Bag			X					X						
EFF	Oakland	11/6/02	1 PM	1	Bag			X					X						

EPA 816-F-99-010 (Rev. 6/2000) EPA 816-F-99-010 (Rev. 6/2000)

- TPH as Diesel (8015)
- Total Petroleum Oil & Grease (5520 E&F/R&F)
- Total Petroleum Hydrocarbons (4134)
- EPA 8017/8010
- RTEX ONLY (EPA 602 A/B/C/D)
- EPA 8087/8080
- EPA 608/8880/8081/8082 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

ICE:  GOOD CONDITION  
 HEAD SPACE ABSENT   
 DECHLORINATED IN LAB

PRESERVATION APPROPRIATE   
 CONTAINERS PRESERVED IN LAB

YOAS O&G METALS OTHER

Relinquished By: *[Signature]* Date: *11/6/02* Time: *1:00 PM* Received By: *[Signature]*

Relinquished By: *WJ #280* Date: *11/17* Time: *11:30* Received By: *[Signature]*

Relinquished By: *#280* Date: *11/7* Time: *4:10* Received By: *[Signature]*

Remarks: Report in ppmv; 10 ppmv limit.  
 20 ml injection volume  
 PLEASE FAX RESULTS  
*4:25*

Cambria Env. Technology  6262 Hollis St.  Emeryville, CA 94608	Client Project ID: #130-0105-345; Worthington	Date Sampled: 12/05/02
		Date Received: 12/06/02
	Client Contact: Ron Scheele	Date Reported: 12/12/02
	Client P.O.:	Date Completed: 12/12/02

**WorkOrder: 0212116**

December 12, 2002

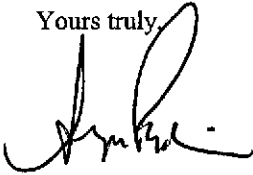
Dear Ron:

Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-345; 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. 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



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  6262 Hollis St.  Emeryville, CA 94608	Client Project ID: #130-0105-345; Worthington	Date Sampled: 12/05/02
	Client Contact: Ron Scheele	Date Received: 12/06/02
	Client P.O.:	Date Analyzed: 12/11/02
		Date Extracted: 12/11/02

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

Extraction method: SW5030B Analytical methods: SW8021B/8015Cm Work Order: 0212116

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	W	8900,a	ND<50	140	200	33	470	10	---#
002A	BFF-1	W	ND	ND	ND	ND	ND	ND	1	103

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	NA	1	mg/Kg

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

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

DHS Certification No. 1644

 Edward Hamilton, Lab Director



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: 0212116

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 5199		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(gas)	N/A	60	N/A	N/A	N/A	103	98.7	4.10	80	120
MTBE	N/A	10	N/A	N/A	N/A	84.4	85.3	1.05	80	120
Benzene	N/A	10	N/A	N/A	N/A	95.7	94.5	1.21	80	120
Toluene	N/A	10	N/A	N/A	N/A	97.5	95.7	1.88	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	94.7	93.6	1.13	80	120
Xylenes	N/A	30	N/A	N/A	N/A	99.3	99	0.336	80	120
%SS:	N/A	100	N/A	N/A	N/A	91.4	89.3	2.29	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.

0212114

**McCAMPBELL ANALYTICAL INC.**

110 2<sup>nd</sup> AVENUE SOUTH, #109  
PACHECO, CA 94553

Telephone: (925) 798-1620

Fax: (925) 798-1622

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 #: 130-0105-2A3

Project Name: WORTHINGTON

Project Location: 3055 35<sup>th</sup> AVE

OAKLAND CA

Sampler Signature: *[Signature]*

**CHAIN OF CUSTODY RECORD**

TURN AROUND TIME  RUSH  24 HOUR  48 HOUR  5 DAY

Analysis Request

Other

Comments

TPH as Diesel (8015)	
Total Petroleum Oil & Grease (520 E&F/R&F)	
Total Petroleum Hydrocarbons (418.1)	
EPA 801/8019	
HEX ONLY (EPA 602/8020)	
EPA 808/8080	
EPA 808/8080/8080 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	

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED			
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other
INF	Oakland	12/5/02	3:30p	3	Vials	X					X	X		X
EFF-1	↓	↓	↓	3	Vials	X					X	X		X
EFF-2	↓	↓	↓	3	Vials	X					X	X		X

ICEM  GOOD CONDITION  LEAD SPACE ARSENE  DECHLORINATED IN LAB  PRESERVED IN LAB

Relinquished By: <i>[Signature]</i>	Date: 12/5/02	Time: 7:20pm	Received By: Steve Dong 234
Relinquished By: <i>[Signature]</i>	Date: 12/6/02	Time: 11:55	Received By: Steve Dong 234
Relinquished By: <i>[Signature]</i>	Date: 12/6/02	Time: 10:00	Received By: Milton Vallin

Remarks: ONLY ANALYZE EFF-2 IF HCl'S DETECTED IN EFF-1.  
FAX RESULTS PLEASE.

**McC Campbell Analytical Inc.**



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

**CHAIN-OF-CUSTODY RECORD**

WorkOrder: 0212116

**Client:**

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

TEL: (510) 450-1983  
 FAX: (510) 450-8295  
 ProjectNo: #130-0105-345; Worthington  
 PO:

Date Received: 12/6/02  
 Date Printed: 12/6/02

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					8021B/8015						
0212116-001	INF	Water	12/5/02 3:30:00 PM	<input type="checkbox"/>	A						
0212116-002	EFF-1	Water	12/5/02 3:30:00 PM	<input type="checkbox"/>	A						
0212116-003	EFF-2	Water	12/5/02 3:30:00 PM	<input checked="" type="checkbox"/>	A						

Prepared by: Maria

**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](mailto:main@mccampbell.com)

Cambria Env. Technology 6262 Hollis St. Emeryville, CA 94608	Client Project ID: #130-0105-345; Worthington	Date Sampled: 12/05/02
		Date Received: 12/06/02
	Client Contact: Ron Scheele	Date Reported: 12/12/02
	Client P.O.:	Date Completed: 12/12/02

**WorkOrder: 0212113**

December 12, 2002

Dear Ron:

Enclosed are:

- 1). the results of 2 analyzed samples from your #130-0105-345; 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. 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



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: #130-0105-345; Worthington	Date Sampled: 12/05/02
	Client Contact: Ron Scheele	Date Received: 12/06/02
	Client P.O.:	Date Extracted: 12/07/02
		Date Analyzed: 12/07/02

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Cm

Work Order: 0212113

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	INF	A	740,a	ND<20	18	15	2.4	15	10	---#
002A	EFF	A	ND	ND	ND	ND	ND	ND	1	---#

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

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	10	1.5	0.15	0.15	0.15	0.25	1	uL/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

\*water and vapor samples are reported in µg/L, soil and sludge samples in mg/kg, wipe samples in µg/wipe, and TCLP extracts in µg/L.  
 # cluttered chromatogram; sample peak coelutes with surrogate peak.  
 +The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.



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: A

WorkOrder: 0212113

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 5199			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	103	98.7	4.10	80	120
MTBE	N/A	10	N/A	N/A	N/A	84.4	85.3	1.05	80	120
Benzene	N/A	10	N/A	N/A	N/A	95.7	94.5	1.21	80	120
Toluene	N/A	10	N/A	N/A	N/A	97.5	95.7	1.88	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	94.7	93.6	1.13	80	120
Xylenes	N/A	30	N/A	N/A	N/A	99.3	99	0.336	80	120
%SS:	N/A	100	N/A	N/A	N/A	91.4	89.3	2.29	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.

**McCAMPBELL ANALYTICAL INC.**

710 2<sup>ND</sup> AVENUE SOUTH, #122  
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 #: 130-0105-345

Project Name: WORTHINGTON

Project Location: 3055 35<sup>TH</sup> AVE OAKLAND

Sampler Signature: [Signature]

Analysis Request

Other

Comments

- TPH as Diesel (8015)
- Total Petroleum Oil & Grease (5320 E&F/B&F)
- Total Petroleum Hydrocarbons (418.1)
- EPA 601/8010
- HTEX ONLY (EPA 602/8020)
- EPA 308/8080
- EPA 608/3080 PCB'S ONLY
- EPA 624/8240 / 8260
- EPA 825/8270
- PAH's / PNA's by EPA 625/8270 / 8310
- C&M-17 Metals
- LUFT 5 Metals
- Lead (7240/7421/239.2/6010)
- RCI

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED									
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other						
INF	Oakland	12/5/02	4pm	1	Bag			X												
EFF	Oakland	12/5/02	4pm	1	Bag			X												

GOOD CONDITION  
 HAND LUGS ASSESS  
 DOCS GENERATED IN LAB

PRESERVATION  
 ALL SOILS  
 CONTAINERS  
 PRESERVED IN LAB

Relinquished By: <u>[Signature]</u>	Date: <u>12/5/02</u>	Time: <u>7:30pm</u>	Received By: <u>Seeseed Location</u>
Relinquished By: <u>[Signature]</u>	Date: <u>12/6/02</u>	Time: <u>11:55</u>	Received By: <u>Steve Ong 234</u>
Relinquished By: <u>[Signature]</u>	Date: <u>12/6/02</u>	Time: <u>1609</u>	Received By: <u>Melwan Voller</u>

Remarks:  
 REPORT IN PPMV ; 10 ppmv limit  
 20ml injection volume  
 PLEASE FAX RESULTS

**McC Campbell Analytical Inc.**



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

**CHAIN-OF-CUSTODY RECORD**

WorkOrder: 0212113

**Client:**

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

TEL: (510) 450-1983  
 FAX: (510) 450-8295  
 ProjectNo: #130-0105-345; Worthington  
 PO:

Date Received: 12/6/02  
 Date Printed: 12/6/02

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					8021B/8015						
0212113-001	INF	Air	12/5/02 4:00:00 PM	<input type="checkbox"/>	A						
0212113-002	EFF	Air	12/5/02 4:00:00 PM	<input type="checkbox"/>	A						

**Prepared by: Maria**

**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.

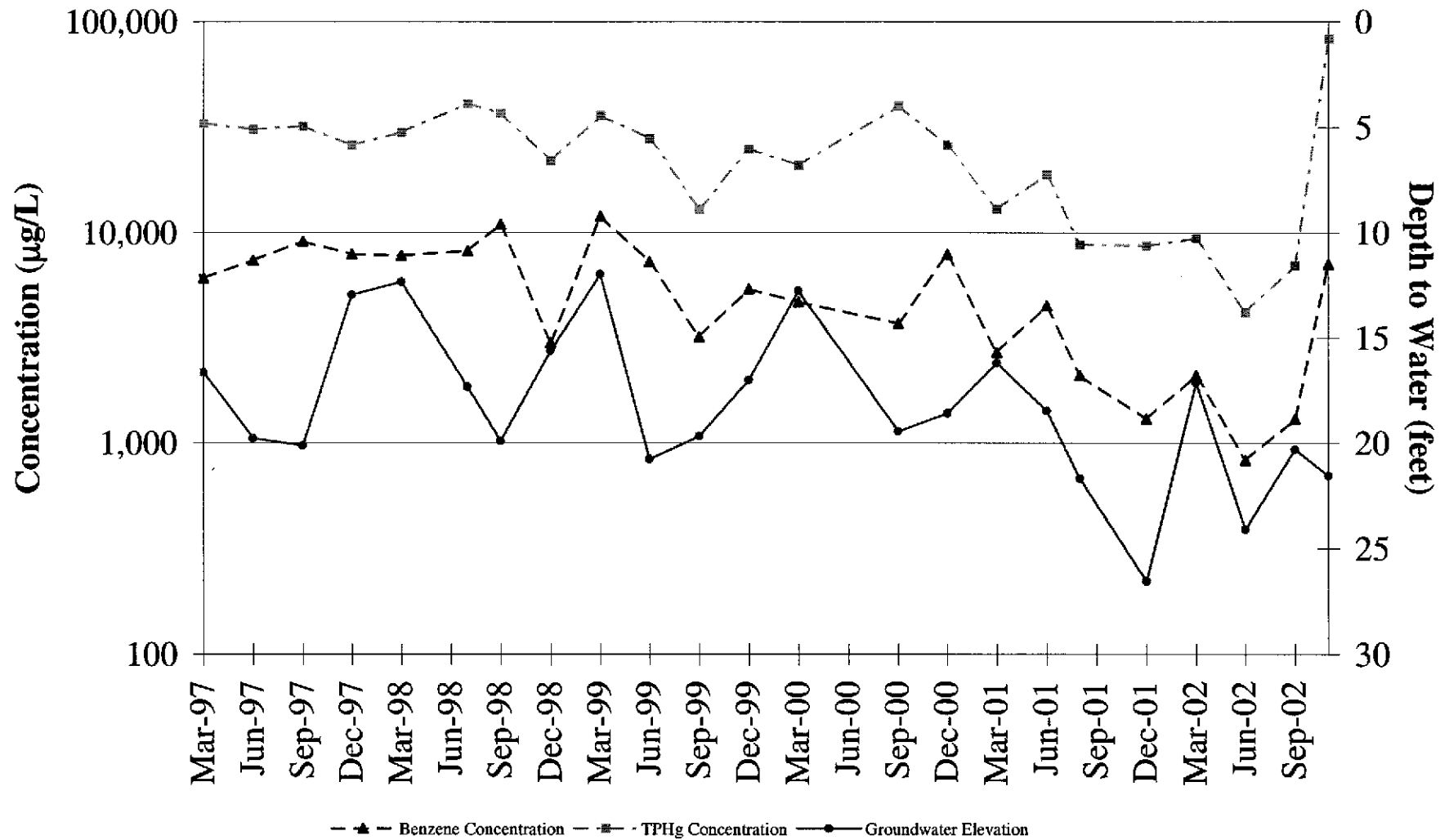
C A M B R I A



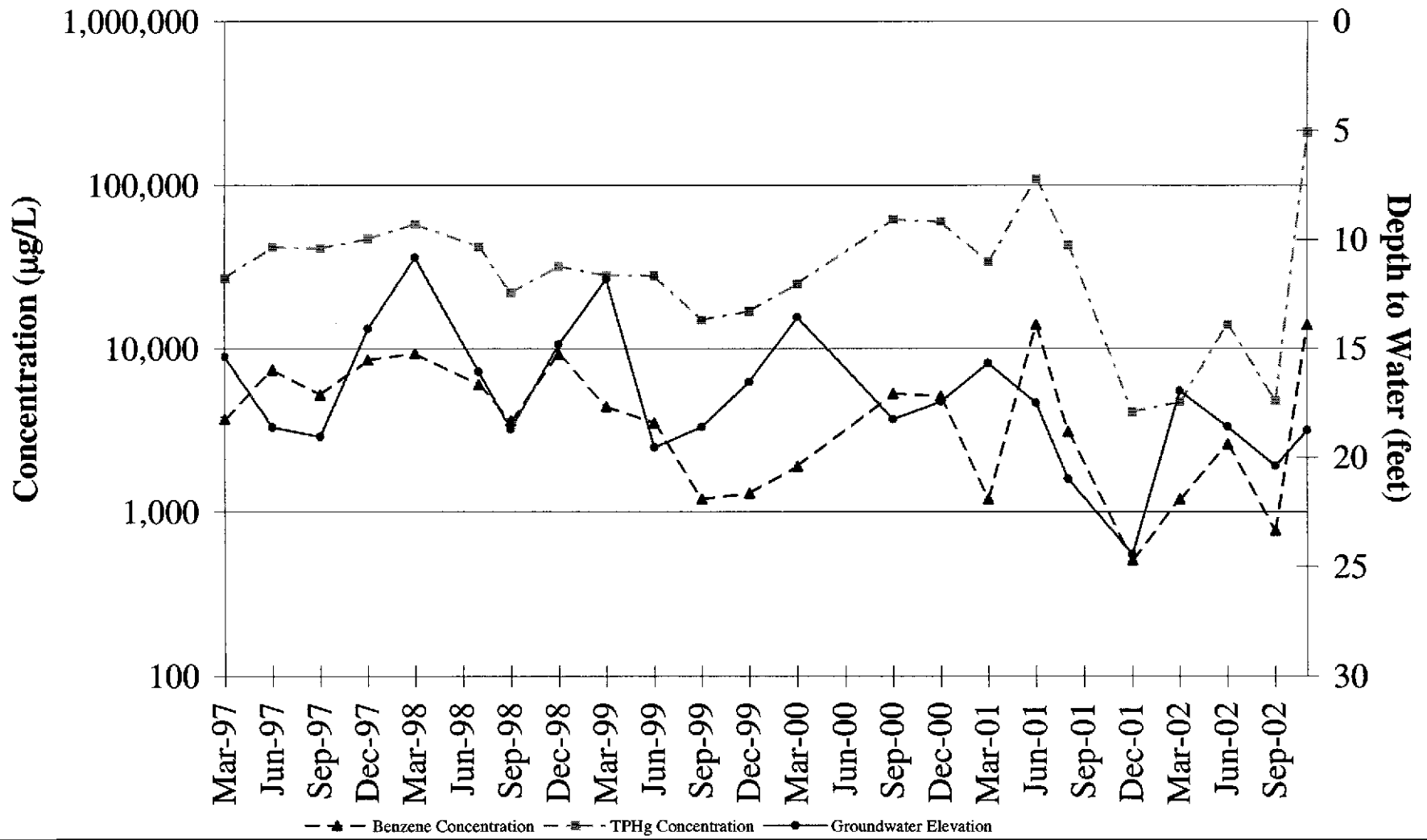
**APPENDIX D**

TPHg and Benzene Concentration Trend Graphs

## TPHg and Benzene Concentration Trends Well MW-1 (March 1997 to Present)

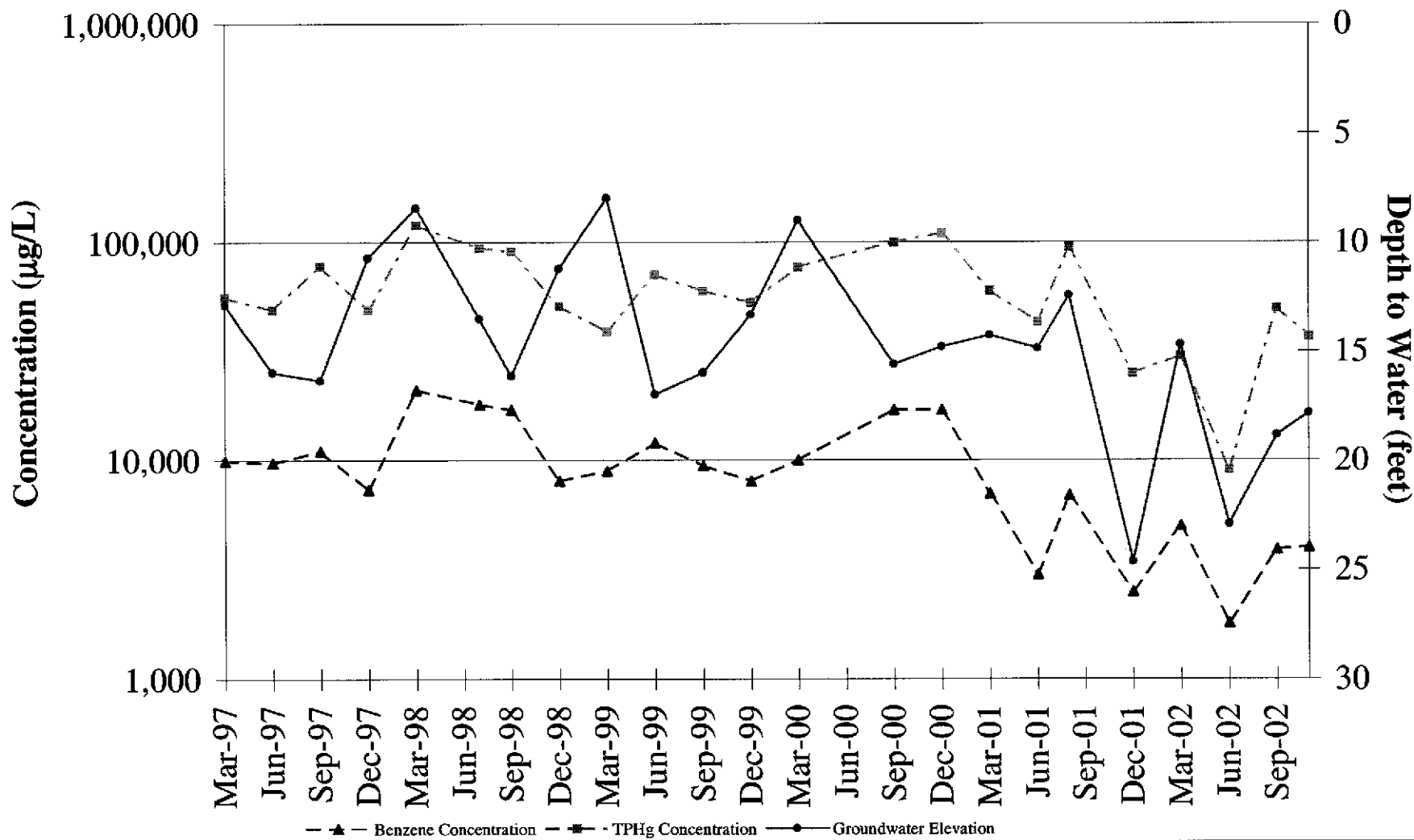


## TPHg and Benzene Concentration Trends Well MW-2 (March 1997 to Present)

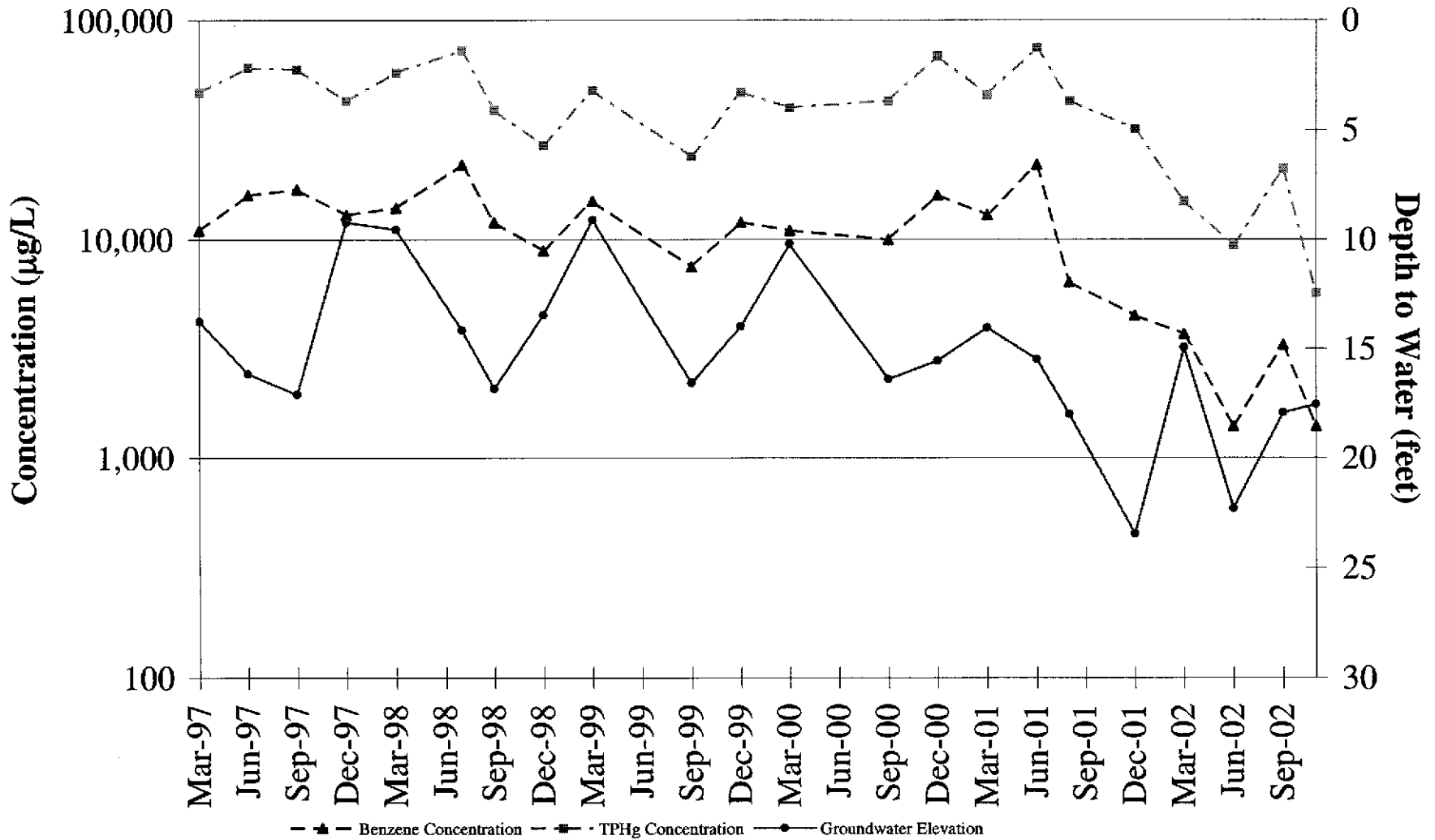




## TPHg and Benzene Concentration Trends Well MW-3 (March 1997 to Present)



## TPHg and Benzene Concentration Trends Well MW-4 (March 1997 to Present)



C A M B R I A



**APPENDIX E**

Electronic Delivery Confirmations

## AB2886 Electronic Delivery

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

Your EDF file has been successfully uploaded!

**Confirmation Number:** 3222390413

**Date/Time of Submittal:** 3/3/2003 5:27:59 PM

**Facility Global ID:** T0600100538

**Facility Name:** EXXON

**Submittal Title:** 4th Qtr 2002, Groundwater Analytical Report

**Submittal Type:** GW Monitoring Report

Logged in as CAMBRIA-EM (AUTH\_RP)

CONTACT SITE ADMINISTRATOR.

## AB2886 Electronic Delivery

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

### UPLOADING A GEO\_WELL FILE

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

**Submittal Title:** 4th Qtr 2002 Groundwater Depths for 3055 35th Street,  
Oakland

**Submittal Date/Time:** 3/3/2003 5:29:17 PM

**Confirmation  
Number:** 5199314713

[Back to Main Menu](#)

Logged in as CAMBRIA-EM (AUTH\_RP)

[CONTACT SITE ADMINISTRATOR](#)