CAMBRIA

ENVIRONMENTAL PROTECTION
99 AUG -6 PM 3:02

Approved to 8/10/99

August 4, 1999

Amir Gholami
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502

Re: **LETTER OF TRANSMITTAL – INVESTIGATION WORK PLAN**
BP Oil Site No. 11107
18591 Hesperian Boulevard
San Lorenzo, California
STID 780

Dear Mr. Gholami:

As discussed this morning, enclosed please find the May 21, 1999 *Investigation Work Plan* and the May 24, 1999 transmittal letter for the above-referenced site. We will proceed with the described scope of work upon receipt of your approval.

We look forward to working with you on this project. If you have any questions, please do not hesitate to call me at (510) 420-3320.

Sincerely,
Cambria Environmental Technology, Inc.

Khaled Rahman, R.G., C.H.G.
Senior Geologist

Enclosure: Investigation Work Plan dated May 21, 1999
BP Transmittal Letter dated May 24, 1999

Cc: Scott Hooton, BP Oil Company, Environmental Remediation Management, 295 SW 41st Street, Renton, Washington 98055-4931 (without enclosures)

H:\British Petroleum\11107-San Lorenzo\Correspondence\August 4, 1999 Transmittal.doc

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

Cambria Environmental Technology, Inc.

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

BP OIL

BP Oil Company
Environmental Remediation Management
295 SW 41st Street
Renton, Washington 98055-4931
(206) 251-0667
Fax No: (206) 251-0736

May 24, 1999

Alameda County Health Care Services Agency
Attention Mr. Amir K. Gholami
1131 Harbor Bay Parkway, STE 250
Alameda, CA 94502-6577

RE: Former BP Oil Site No. 11107
18501 Hesperian Boulevard (at Bockman)
San Lorenzo, CA
STID 780

Dear Mr. Gholami:

This transmits the *Investigation Work Plan in* response to Alameda Health Care Services Agency (AHCSA) correspondence dated 18 May 1999.

Please contact me at (425) 251-0689 if you have questions or concerns.

Sincerely,

Scott Hooton

attachment

cc: site file
Khaled Rahman - Cambria
David Camille - Tosco (w/attachment)

CAMBRIA

FILE COPY

INVESTIGATION WORK PLAN

BP Oil Site No. 11107
18501 Hesperian Boulevard
San Lorenzo, California
Cambria Project No. 852-1512-3

May 21, 1999

Prepared for:

BP Oil Company
Environmental Resources Management
295 S.W. 41st Street
Building 13, Suite N
Renton, Washington 98055

Prepared by:

Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, California 94608

Jacquelyn Jones
Staff Geologist

Khaled B. Rahman, R.G., C.H.G.
Senior Geologist

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

Cambria Environmental Technology, Inc.

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

CAMBRIA

INVESTIGATION WORK PLAN

BP Oil Site No. 11107
18501 Hesperian Boulevard
San Lorenzo, California
Cambria Project No. 852-1512-3

May 21, 1999

INTRODUCTION

Cambria Environmental Technology, Inc. (Cambria) is submitting this work plan for a subsurface investigation at the above-referenced BP Oil Company (BP) site. [redacted] indicated that total petroleum hydrocarbons as gasoline ([redacted]) and methyl tert-butyl ether ([redacted]) concentrations are present in ground water beyond the site. Our objective is to further evaluate the distribution of hydrocarbons and MTBE in ground water northwest of the site. The site background information and our proposed scope of work for this investigation are described below.

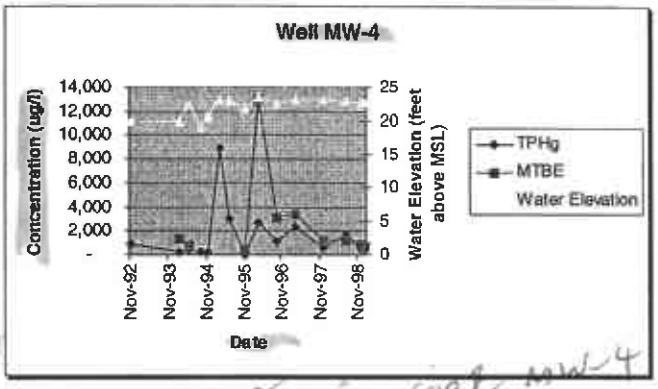
SITE BACKGROUND

Site Description: The site is an active 76-branded gasoline retail outlet located at the southwest corner of Hesperian Boulevard and Bockman Road in San Lorenzo, California (see Figure 1). BP acquired the property from Mobil Oil Corporation in 1989. [redacted] Marketing Company and has not operated the facility since that time.

The site consists of a service station building, three gasoline underground storage tanks with associated piping and dispensers, and one used oil underground storage tank. [redacted] monitoring wells exist at the site (see Figure 2).

UST still in?

Ground Water Monitoring: Based on the March 29, 1999 ground water monitoring report, site wells have been sampled since November 1992 (see Appendix A). During this period, the depth to water at the site has ranged from 15 to 21 feet below ground surface. Ground water typically flows toward the northwest. TPHg and MTBE have been detected in the wells located north of the underground storage tanks (onsite well MW-4 and MW-7 and offsite wells MW-5 and MW-6). As shown on the graph below, the TPHg and MTBE concentrations in well MW-4 show a decreasing trend over the last 2 years. Except for a few anomalies, no TPHg or MTBE have been detected in samples collected from wells MW-1, MW-2 or MW-3, which are located south of the underground storage tanks. In addition, less than 1.0 micrograms per liter of benzene, toluene, ethylbenzene and xylenes (BTEX) have been detected in the site wells over the last 4 quarters of sampling.



PROPOSED SCOPE OF WORK

To further assess the subsurface conditions, soil and ground water samples will be collected from 4 to 6 Geoprobe™ soil borings northwest of the site in the public right-of-way along Bockman Road (see Figure 2). The specific tasks to be performed are described below.

Subsurface Utility Survey: The proposed borings will be marked and Underground Service Alert will be contacted to locate of subsurface utilities. A private subsurface utility locator may be used to survey the proposed soil boring locations prior to drilling.

Site Health and Safety Plan: A comprehensive site safety plan will be prepared to protect site workers. The plan will be kept on site during field activities and signed by each site worker.

Permits: Soil boring permits will be obtained from Alameda County Department of Public Works prior to performing Geoprobe™ sampling activities. If necessary to access Bockman Road or the adjacent sidewalk, an encroachment permit will also be obtained.

Geoprobe™ Sampling: Based on the information gathered during the subsurface utility survey and the approximate northwestward ground water flow direction at the site, 4 to 6 Geoprobe™ soil borings will be located along the north side of Bockman Road between Hesperian Boulevard and Via Arriba (see Figure 2). Soil samples will be collected continuously to 5 feet below the first-encountered water table, approximately 20 to 25 feet bgs. Field screening for hydrocarbons will be conducted using a portable photoionization detector (PID). Grab ground water samples will be collected from each boring using a bailer or equivalent. Following completion of sampling activities, the borings will be sealed to the surface with bentonite-cement grout. Standard field procedures for Geoprobe™ sampling are presented in Appendix B.

Chemical Analysis: Selected soil samples and grab ground water samples from each boring will be analyzed for TPHg by modified EPA Method 8015, and BTEX and MTBE by EPA Method 8020 or 8260. In addition, selected soil samples will be analyzed for bulk density, porosity and moisture content using ASTM D854, and total organic carbon using the Walkley-Black test.

Reporting: The results of the investigation will be presented in a report. At a minimum, the report will contain:

- Descriptions of the soil and water sampling methods,
- Boring logs,
- Tabulated soil and ground water analytical results,
- Laboratory reports and chain-of-custody forms, and
- A summary of field activities including findings and conclusions.

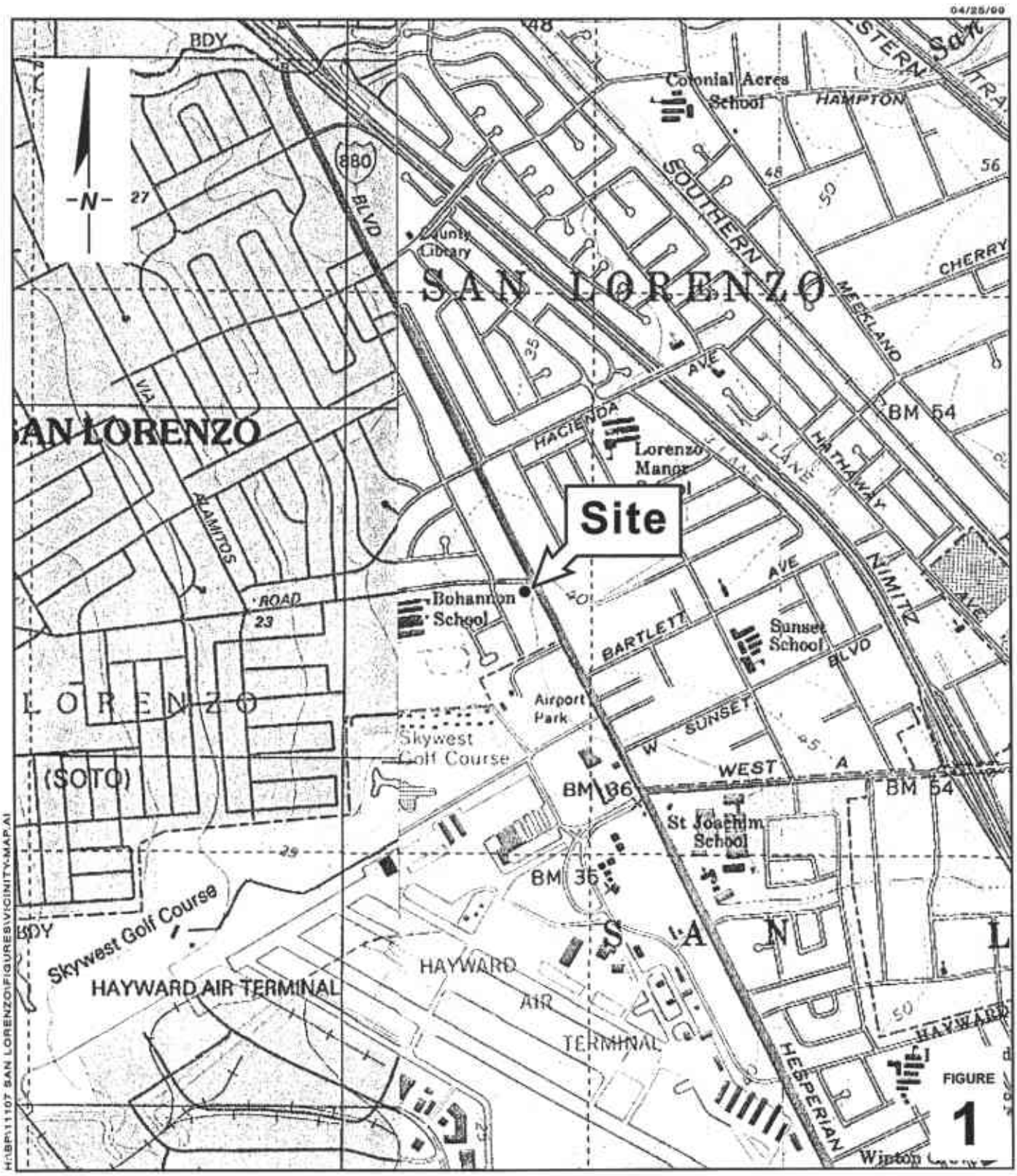
SCHEDULE

Upon receiving written work plan approval from the Alameda County Health Services Agency, the permits will be acquired and the field work will be scheduled. The investigation report will be submitted approximately six weeks after completing the field work.

ATTACHMENTS

Figure 1 – Vicinity Map
Figure 2 - Proposed Soil Boring Location Map

Appendix A – Background Data
Appendix B – Standard Field Procedures for Geoprobe™ Sampling



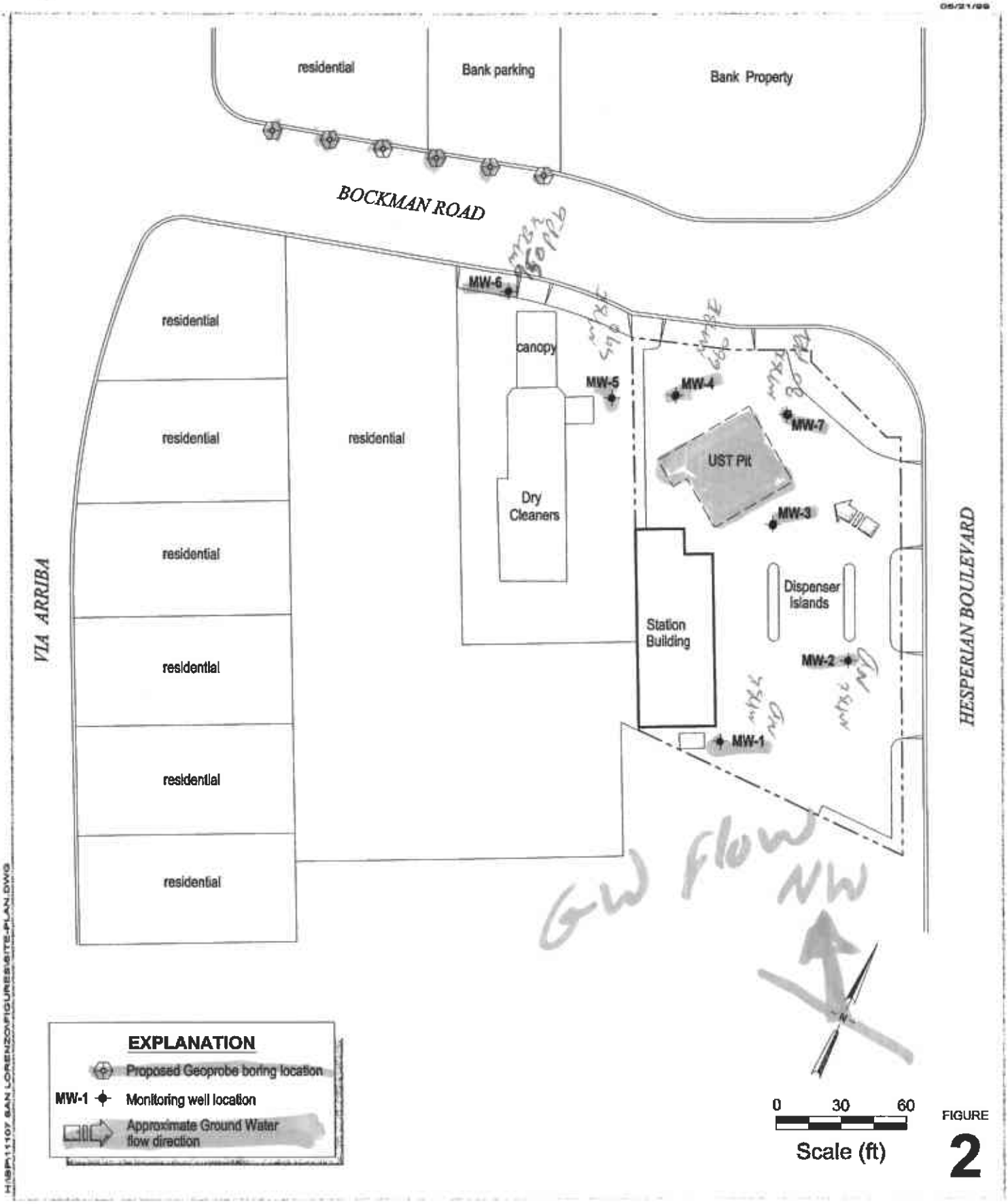
BP Service Station No. 11107

18501 Hesperian Boulevard

San Lorenzo, California

CAMBRIA

Vicinity Map



BP Service Station No. 11107

18501 Hesperian Boulevard

San Lorenzo, California

CAMBRIA

Site Plan

CAMBRIA

APPENDIX A

BACKGROUND DATA

Table 1 - Summary of Results of Groundwater Sampling

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO GROUNDWATER (b) WATER (Feet)	GROUNDWATER ELEVATION (Feet)	TPH-G (ug/l)	TPH-D (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	TOG (ug/l)	1,1,1-TCA (ug/l)	PCE (ug/l)	DO (ppm)	LAB
MW-1	11/04/92	41.07	20.78	20.29	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	ND<5000	2.8	ND	—	PACE
QC-1 (c)	11/04/92	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	PACE
MW-1	02/24/94	41.07	20.7	20.37	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	ND<5000	1.5	0.9	—	PACE
MW-1	05/12/94	41.07	18.12	22.95	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	ND<5000	1.0	ND<0.5	7	PACE
MW-1	09/09/94	41.07	21.74	19.33	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	ND<5000	ND<0.5	ND<0.5	2.3	PACE
MW-1	11/03/94	41.07	20.01	21.06	ND<50	50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	ND<5000	ND<0.5	ND<0.5	4.3	PACE
MW-1	03/01/95	41.07	17.44	23.63	ND<50	ND<500	ND<50	ND<0.50	ND<0.50	ND<1.0	—	420	0.54	0.3	2.3	ATI
MW-1	06/06/95	41.07	17.55	23.52	—	—	—	—	—	—	—	—	—	—	—	—
MW-1	09/01/95	41.07	18.19	22.88	ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	60	—	—	8.8	ATI
MW-1	11/29/95	41.07	18.84	22.23	—	—	—	—	—	—	—	—	—	—	—	—
MW-1	03/23/96	41.07	16.97	24.10	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	—	9.6	SPL
MW-1	09/05/96	41.07	17.74	23.33	110	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	—	3.6	SPL
MW-1	03/11/97	41.07	17.62	23.45	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	—	5.2	SPL
MW-1	12/08/97	41.07	16.30	24.77	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	—	—	—
MW-1	07/08/98	41.07	16.66	24.41	—	—	—	—	—	—	—	—	—	—	—	—
MW-1	12/07/98	41.07	17.80	23.27	—	—	—	—	—	—	—	—	—	—	—	—
MW-1	01/19/99	41.07	17.18	23.89	—	—	—	—	—	—	—	—	—	—	—	—
MW-2	11/04/92	40.56	20.16	20.40	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	PACE
MW-2	02/24/94	40.56	20.12	20.44	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	PACE
MW-2	05/12/94	40.56	17.49	23.07	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	7.4	PACE
MW-2	09/09/94	40.56	21.12	19.44	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	2.1	PACE
MW-2	11/03/94	40.56	19.36	21.20	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	4.2	PACE
MW-2	03/01/95	40.56	16.83	23.73	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	—	2.2	ATI
MW-2	06/06/95	40.56	16.96	23.60	—	—	—	—	—	—	—	—	—	—	—	—
MW-2	09/01/95	40.56	17.54	23.02	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	—	—	—	7.9	ATI
MW-2	11/29/95	40.56	18.19	22.37	—	—	—	—	—	—	—	—	—	—	—	—
MW-2	03/23/96	40.56	16.35	24.21	ND<50	—	ND<0.5	ND<1	ND<1	ND<1	ND<10	—	—	—	8.5	SPL
MW-2	09/05/96	40.56	17.55	23.01	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	—	3.2	SPL
MW-2	03/11/97	40.56	16.95	23.61	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	—	2.9	SPL
MW-2	12/08/97	40.56	16.01	24.55	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	—	—	—	3.0	SPL
MW-2	07/08/98	40.56	16.41	24.15	—	—	—	—	—	—	—	—	—	—	—	—
MW-2	12/07/98	40.56	17.15	23.41	—	—	—	—	—	—	—	—	—	—	—	SPL
MW-2	01/19/99	40.56	17.15	23.41	—	—	—	—	—	—	—	—	—	—	—	—

Table 1 - Summary of Results of Groundwater Sampling

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-D (ug/l)		B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)		TOG (ug/l)	1,1,1-TCA (ug/l)	PCE (ug/l)	DO (ppm)	LAB
MW-4	11/04/92	39.24	19.18	20.06	900	—		150	4.1	0.8	53	—		—	—	—	—	PACE
MW-4	02/24/94	39.24	19.22	20.02	240	—		110	3.8	1.8	11	1400	(d)	—	—	—	—	PACE
QC-1 (c)	02/24/94	—	—	—	310	—		95	5.3	2.2	17	1500	(d)	—	—	—	—	PACE
MW-4	05/12/94	39.24	16.62	22.62	ND<50	—		2.2	1.0	ND<0.5	ND<0.5	860	(d)	—	—	—	7.3	PACE
QC-1 (c)	05/12/94	—	—	—	430	—		2.6	1.3	ND<0.5	ND<0.5	780	(d)	—	—	—	—	PACE
MW-4	09/09/94	39.24	20.27	18.97	240	—		9.1	1.3	0.6	2.5	—		—	—	—	2.2	PACE
QC-1 (c)	09/09/94	—	—	—	57	—		1.7	ND<0.5	ND<0.5	0.5	—		—	—	—	—	PACE
MW-4	11/03/94	39.24	18.46	20.78	250	—		3.1	2.8	1.0	3.3	—		—	—	—	3.2	PACE
QC-1 (c)	11/03/94	—	—	—	110	—		2.4	ND<0.5	ND<0.5	ND<0.5	—		—	—	—	—	PACE
MW-4	03/01/95	39.24	16.15	23.09	8900	—		1800	26	450	400	—		—	—	—	2.0	ATI
QC-1 (c)	03/01/95	—	—	—	7600	—		1700	25	410	370	—		—	—	—	—	ATI
MW-4	06/06/95	39.24	16.28	22.96	3100	—	(e)	530	25	170	85	—		—	—	—	—	ATI
QC-1 (c)	06/06/95	—	—	—	3000	—		530	27	170	92	—		—	—	—	—	ATI
MW-4 (f)	09/01/95	39.24	—	—	—	—		—	—	—	—	—		—	—	—	—	—
MW-4	11/29/95	39.24	17.31	21.93	ND<50	—		1.8	ND<0.50	ND<0.50	ND<1.0	440		—	—	—	3.2	ATI
QC-1 (c)	11/29/95	—	—	—	ND<50	—		1.5	ND<0.50	ND<0.50	ND<1.0	490		—	—	—	—	ATI
MW-4	03/23/96	39.24	15.74	23.50	2700	—		480	ND<25	180	176	13000		—	—	—	7.8	SPL
MW-4	09/05/96	39.24	16.75	22.49	1100	—		ND<12	ND<25	ND<25	ND<25	3200		—	—	—	4.0	SPL
MW-4	03/11/97	39.24	16.10	23.14	2400	—		46	ND<10	66	106	3400		—	—	—	4.0	SPL
MW-4	12/08/97	39.24	15.96	23.28	590	—		11	ND<1.0	ND<1.0	ND<1.0	1200		—	—	—	4.4	SPL
QC-1 (c)	12/08/97	—	—	—	620	—		11	ND<1.0	ND<1.0	ND<1.0	1100		—	—	—	—	SPL
MW-4	07/08/98	39.24	16.28	22.96	1700	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	1200		—	—	—	3.9	SPL
QC-1 (c)	07/08/98	—	—	—	1600	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	1100		—	—	—	—	SPL
MW-4	12/07/98	39.24	16.47	22.77	530	—		ND<2.5	ND<5.0	ND<5.0	ND<5.0	680/910	(h)	—	—	—	—	SPL
MW-4	01/19/99	39.24	16.40	22.84	570	—		ND<1.0	ND<1.0	ND<1.0	ND<1.0	680		—	—	—	—	SPL
MW-5	06/06/95	39.07	16.16	22.91	1100	—	(e)	42	ND<2.5	15	4.0	—		—	—	—	—	ATI
MW-5	09/01/95	39.07	16.63	22.44	1600	—		55	ND<2.5	15	8.0	1200		—	—	—	7.4	ATI
QC-1 (c)	09/01/95	—	—	—	1200	—		64	ND<2.5	14	3.1	—		—	—	—	—	ATI
MW-5	11/29/95	39.07	17.19	21.88	2300	—		140	4.0	36	11	1500		—	—	—	4.1	ATI
MW-5	03/23/96	39.07	15.54	23.53	90	—		2.8	ND<1	ND<1	ND<1	1500		—	—	—	7.5	SPL
MW-5	09/05/96	39.07	16.72	22.35	2300	—		5.1	ND<1.0	ND<1.0	ND<1.0	3300		—	—	—	3.2	SPL
QC-1 (c)	09/05/96	—	—	—	2000	—		4.9	ND<1.0	ND<1.0	ND<1.0	2900		—	—	—	—	SPL
MW-5	03/11/97	39.07	16.12	22.95	470	—		ND<5.0	ND<5.0	ND<5.0	ND<5.0	580		—	—	—	3.0	SPL
QC-1 (c)	03/11/97	—	—	—	460	—		ND<5.0	ND<5.0	ND<5.0	ND<5.0	540		—	—	—	—	SPL
MW-5	12/08/97	39.07	15.85	23.22	370	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	840		—	—	—	3.0	SPL
MW-5	07/08/98	39.07	16.11	22.96	430	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	330		—	—	—	2.5	SPL
MW-5	12/07/98	39.07	16.27	22.80	220	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	290/410	(h)	—	—	—	—	SPL
MW-5	01/19/99	39.07	16.31	22.76	450	—		ND<1.0	ND<1.0	ND<1.0	ND<1.0	490/440	(h)	—	—	—	—	SPL

Table 1 - Summary of Results of Groundwater Sampling

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-D (ug/l)		B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)		TOG (ug/l)	1,1,1-TCA (ug/l)	PCE (ug/l)	DO (ppm)	LAB
MW-6	03/01/95	38.46	15.66	22.80	270	—		11	ND<0.50	ND<0.50	ND<1.0	—		—	—	—	1.6	ATI
MW-6	06/06/95	38.46	15.82	22.64	220	—	(e)	2.3	ND<0.50	ND<0.50	ND<1.0	—		—	—	—	—	ATI
MW-6	09/01/95	38.46	16.25	22.21	780	—		ND<2.5	ND<2.5	ND<2.5	ND<5.0	2800		—	—	—	7.5	ATI
MW-6	11/29/95	38.46	16.80	21.66	ND<50	—		ND<0.50	ND<0.50	ND<0.50	ND<1.0	1100		—	—	—	3.9	ATI
MW-6	03/23/96	38.46	15.27	23.19	50	—		ND<0.5	ND<1	ND<1	ND<1	910		—	—	—	8.0	SPL
MW-6	09/05/96	38.46	16.30	22.16	4400	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	7400		—	—	—	3.0	SPL
MW-6	03/11/97	38.46	15.75	22.71	1100	—		ND<5.0	ND<5.0	ND<5.0	ND<5.0	2000		—	—	—	3.1	SPL
MW-6	12/08/97	38.46	15.51	22.95	150	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	140		—	—	—	3.4	SPL
MW-6	07/08/98	38.46	15.78	22.68	370	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	250		—	—	—	3.6	SPL
MW-6	12/07/98	38.46	15.95	22.51	440	—		ND<1.0	ND<1.0	ND<1.0	ND<1.0	630/820	(h)	—	—	—	—	—
MW-6	01/19/99	38.46	15.97	22.49	950	—		ND<1.0	ND<1.0	ND<1.0	ND<1.0	950/810	(h)	—	—	—	—	SPL
MW-7	03/01/95	39.50	16.21	23.29	1400	—		14	ND<1.0	14	27	—		—	—	—	1.8	ATI
MW-7	06/06/95	39.50	16.34	23.16	540	—	(e)	5.5	ND<0.50	15	1.1	—		—	—	—	—	ATI
MW-7	09/01/95	39.50	16.74	22.76	190	—		2.8	ND<0.50	5.0	ND<1.0	10		—	—	—	7.5	ATI
MW-7	11/29/95	39.50	17.33	22.17	230	—		31	ND<0.50	3.8	1.9	ND<5.0		—	—	—	4.6	ATI
MW-7	03/23/96	39.50	15.86	23.64	ND<50	—		5.0	ND<1	ND<1	ND<1	330		—	—	—	7.2	SPL
QC-1 (c)	03/23/96	—	—	—	60	—		7.6	ND<1	ND<1	ND<1	360		—	—	—	—	SPL
MW-7	09/05/96	39.50	16.80	22.70	200	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	430		—	—	—	3.1	SPL
MW-7	03/11/97	39.50	16.32	21.18	120	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	140		—	—	—	4.7	SPL
MW-7	12/08/97	39.50	16.02	23.48	240	—		0.8	ND<1.0	ND<1.0	ND<1.0	200		—	—	—	5.2	SPL
MW-7	07/08/98	39.50	16.32	23.18	270	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	170		—	—	—	4.8	SPL
MW-7	12/07/98	39.50	16.43	23.07	100	—		ND<0.5	ND<1.0	ND<1.0	ND<1.0	120		—	—	—	—	SPL
MW-7	01/19/99	39.50	16.41	23.09	80	—		ND<1.0	ND<1.0	ND<1.0	ND<1.0	80		—	—	—	—	SPL

Table 1 - Summary of Results of Groundwater Sampling

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-D (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	TOG (ug/l)	1,1,1-TCA (ug/l)	PCE (ug/l)	DO (ppm)	LAB
QC-2 (g)	11/04/92	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	PACE
QC-2 (g)	11/04/92	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	PACE
QC-2 (g)	03/01/95	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1.0	—	—	—	—	—	PACE
QC-2 (g)	05/12/94	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	PACE
QC-2 (g)	09/09/94	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	PACE
QC-2 (g)	11/03/94	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	PACE
QC-2 (g)	06/06/95	—	—	—	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	—	—	ATI
QC-2 (g)	09/01/95	—	—	—	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	—	—	—	—	ATI
QC-2 (g)	11/29/95	—	—	—	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	—	—	—	—	ATI
QC-2 (g)	03/23/96	—	—	—	ND<50	—	ND<0.5	ND<1	ND<1	ND<1	ND<10	—	—	—	—	SPL

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
MTBE	Methyl tert butyl ether
TOG	Total oil and grease
1,1,1-TCA	1,1,1-Trichloroethane
PCE	Tetrachloroethene
DO	Dissolved oxygen
ug/l	Micrograms per liter
ppm	Parts per million
ND	Not detected above reported detection limit
—	Not measured/analyzed/applicable
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.
SPL	Southern Petroleum Laboratories

NOTES:

(a) Top of casing elevations surveyed relative to an established benchmark with an elevation of 39.95 feet above mean sea level.

(b) Groundwater elevations in feet above mean sea level.

(c) Blind duplicate.

(d) A copy of the documentation for this data is included in Appendix C of Allsto report 10-060-07-001.

(e) MTBE peak present. See documentation in Appendix C of Allsto report 10-060-07-001.

(f) Well inaccessible.

(g) Travel blank.

(h) EPA methods 8020/8260 used

CAMBRIA

APPENDIX B

STANDARD FIELD PROCEDURES FOR GEOPROBE™ SAMPLING

CAMBRIA

APPENDIX B

STANDARD FIELD PROCEDURES FOR GEOPROBE® SAMPLING

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

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate groundwater depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e., sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or separate-phase hydrocarbon saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Sampling

GeoProbe® soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. The ground surface immediately adjacent to the boring is used as a datum

to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned or washed prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon® tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable GasTech® or photoionization detector measures volatile hydrocarbon vapor concentrations in the bag's headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy and groundwater depth to select soil samples for analysis.

Grab Groundwater Sampling

Groundwater samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting groundwater using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The groundwater samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.