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October 13, 2005

Jerry Wickham
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Alameda County
OCT 21 2005
Environmental Health

Re: Site Investigation Work Plan
Shell-branded Service Station
5755 Broadway
Oakland, California
SAP Code 135699
Incident #98995756

Dear Mr. Wickham:

Attached for your review and comment is a copy of the *Site Investigation Work Plan* for the above referenced site. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

If you have any questions or concerns, please call me at (707) 865-0251.

Sincerely,

Denis L. Brown
Sr. Environmental Engineer

CAMBRIA

October 13, 2005

Jerry Wickham
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Site Investigation Work Plan**
Shell-branded Service Station
5755 Broadway
Oakland, California
Incident #98995756
ACHCSA Case # RO-0026
Cambria Project #247-0483-008

Dear Mr. Wickham:

On behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), Cambria Environmental Technology, Inc. (Cambria) prepared this work plan as proposed in Cambria's August 9, 2005 *Fuel System Upgrade Soil Sampling, Soil Excavation, and Geophysical Survey Report* addressed to Keith Matthews of the Oakland Fire Department. Cambria is proposing to conduct additional on-site investigation of two areas where the recent geophysical survey identified anomalies with features consistent with buried tanks or drums. Cambria also proposes to investigate one area where site inspection found grey soils beneath pavement, similar to the soils observed in the tank pit sidewall adjacent to the geophysical anomaly areas. The site background and proposed scope of work are presented below.

SITE BACKGROUND

Site Description: This Shell-branded service station is located on the northern corner of the Broadway and Taft Street intersection in a mixed commercial and residential area of Oakland, California (Figures 1 and 2).

1985 Soil and Groundwater Investigation: In July 1985, EMCON Associates (EMCON) conducted a subsurface investigation that consisted of advancing two on-site soil borings and converting one boring into groundwater monitoring well S-1. The maximum total petroleum hydrocarbons as gasoline (TPHg) detected in soil samples was 3 parts per million (ppm) in boring S-A at 4.0 feet below grade (fbg). Sample locations are shown on Figure 2, and soil sample results are provided in Table 1. Investigation details are presented in EMCON's August 1, 1985 report.

Cambria Environmental Technology, Inc.

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1992 Product Release and Tank Backfill Well Purging: In December, 1992, Gettler-Ryan of Hayward, California replaced a defective pipe fitting reported to have released approximately 200 gallons of unleaded gasoline.

Tank backfill well purging was conducted on a daily basis from December 24, 1992 through January 7, 1993, at which point the free product originally observed in the well was reduced to a sheen. According to Shell records, a total of approximately 40,000 gallons of water mixed with gasoline was purged from the tank backfill wells.

1993 Soil Sample and Sanitary Sewer Upgrade: Concurrent with purging free product from tank backfill wells, three trenches at the site's southeast corner were excavated to identify hydrocarbon-impacted areas near sewer piping. Soil samples were collected within the trench excavations from 4 to 12 fbg. The highest TPHg concentration from the sewer trench excavations was 1,300 ppm in sample S-J at 4 fbg (Figure 2, Table 1).

The on-site sanitary sewer piping and portions of the off-site sewer piping were replaced with piping resistant to hydrocarbon penetration. Additionally, a horizontal groundwater extraction (GWE) well was installed within the excavated sewer trench below a section of sewer piping. A grout barrier was also installed in the sewer trench to prevent further off-site migration of residual hydrocarbons. Approximately 126 cubic yards of soil were excavated during sewer upgrade activities. Details of the soil investigation, sewer replacement, grout barrier installation, and horizontal well installation are presented in Weiss Associates' June 18, 1993 report.

1998 Dispenser Upgrade: In March, 1998, Paradiso Mechanical of San Leandro, California upgraded the station's dispensers and underground storage tank (UST) turbine pumps. Soil samples, collected below each dispenser, showed field indications of hydrocarbons, including odor and soil discoloration. The maximum TPHg concentration detected in soil was 990 ppm in sample D-4 at 2 fbg. The maximum methyl tertiary butyl ether (MTBE) concentration detected in soil was of 9.8 ppm in sample D-3 at 2 fbg. The maximum benzene concentration detected in soil was 1.8 ppm in sample D-4 at 2 fbg (Figure 2, Table 1). Cambria's April 9, 1998 *Dispenser Sampling Report* presents details of the dispenser upgrade activities.

2002 Soil Borings: During August 2002, Cambria advanced 11 soil borings as proposed in our January 24, 2002 *On/Offsite Subsurface Investigation Work Plan.* MTBE was detected in grab groundwater samples collected from these borings at concentrations ranging from 30 parts per billion (ppb) to 9,100 ppb (Table 2). No MTBE was detected in groundwater samples collected from the borings drilled adjacent to utility conduits in Taft Street. Investigation results are presented in Miller Brooks' October 21, 2002 *Subsurface Investigation Report.*

2001-2003 Interim Remediation Activities: Mobile GWE using a vacuum truck was conducted periodically at the site from April to November 2000. A single dual-phase vacuum extraction (DVE) event was performed at the site on February 7, 2001, and monthly mobile DVE was

conducted at the site from May to November 2001. GWE and DVE have extracted approximately 20,038 gallons of groundwater from wells S-2, H-1, and T-2, and removed 0.46 pounds of MTBE. Cambria suspended monthly DVE from wells S-2 and H-1 due to the low influent volume of groundwater from S-2 and the low influent MTBE concentrations from H-1.

2003 Proposed GWE System: Cambria submitted an *Interim Remedial Work Plan* dated March 14, 2003 describing the proposed installation of a GWE system. Building permits were obtained from the City of Oakland and a groundwater discharge permit was obtained from East Bay Municipal Utilities District. Due to the localized nature of the groundwater impact, plans for installing a fixed GWE system were suspended, and a temporary GWE system was installed to pump from well S-2.

2003 Temporary GWE System: Temporary GWE system operation began on October 28, 2003. Groundwater is extracted from the well using a submersible pump installed in well S-2. Extracted water is stored on site in a Baker tank, and periodically removed by a vacuum truck for off-site disposal. Through November 10, 2004, the temporary GWE system has removed a total of 18,355 gallons of water, which corresponds to an average flow rate of approximately 0.03 gallons per minute. A total of 0.49 pounds of MTBE has been recovered. The system was shut down in December 2004 during fuel system upgrade activities (described below), and remained off until upgrade activities were completed. Due to a recent MTBE concentration increase in S-2, the temporary GWE system is scheduled to be restarted in the fourth quarter 2005.

2004-5 Fuel System Upgrade Activities: Fillner Construction, Inc. (Fillner) of Rocklin, California initiated fuel system upgrade activities at the site during November 2004. On November 19, 2004, a water line was apparently damaged during the construction activities. On November 20, 2004, station personnel observed that water leaking from the broken line had entered the tank backfill and caused the uncovered tanks to float in the tank excavation. Cambria and Shell personnel responded at the site and secured the tanks. Piping had been previously disconnected from the tanks. Cambria observed a small amount of fuel dripping from one of the tank sumps. Shell estimates that less than 0.1 gallon of fuel was lost. Fillner used a bucket to contain the fuel until the sump was repaired. Absorbent cloths were used to remove fuel from within the tank backfill.

On December 17, 2004, Fillner coordinated and directed the removal of three 10,000-gallon double-walled fiberglass gasoline USTs. As requested by the Oakland Fire Department, a groundwater sample was collected from the tank pit (TP-GW-1) on this day. On January 31, 2005, Cambria to collected soil samples from the northwestern, northern, and eastern UST excavation sidewalls at the soil-water interface, in the approximate locations of the former USTs. Four samples (TP-1-14, TP-2-14, TP-3-14, and TP-4-14) were collected at a depth of approximately 14 fbg. On February 9, 2005, Cambria collected soil samples from the

southeastern, southern, and southwestern UST excavation sidewalls at the soil-water interface, in the approximate locations of the former USTs. Four samples (TP-5-14, TP-6-14, TP-7-14, and TP-8-14) were collected at a depth of approximately 14 fbg (Figure 2).

On January 31, 2005, Fillner uncovered visibly hydrocarbon-impacted soil or fill material in the northeast corner of the tank pit. This was encountered while digging in the tank pit with an excavator. Based on the soil type, this material appeared to be non-native fill. As requested by Oakland Fire Department, to investigate the potential for unidentified tanks or drums which could be the source of the hydrocarbons impacting the non-native soils, Cambria directed a limited geophysical survey of the triangular region in the northeastern portion of the site. Of the four geophysical anomalies identified during the geophysical survey, two had features consistent with buried objects such as drums or USTs (Figure 2).

On February 17, 2005, Cambria collected soil samples from beneath the former dispensers (D-1-2, D-2-2, D-3-2, and D-4-2) and former piping (P-1-1, P-2-2 and P-3-2) from native soil at depths between 1 and 2 fbg (Figure 2). On February 24, 2005, Cambria directed limited over-excavation in the dispenser and piping areas. Seven confirmation samples (D-1-4', D-2'6', D-3-6', D-4-4', P-1-6', P-2-4' and P-3-6') were collected at the vertical extents of excavation (Figure 2).

Upgrade activities also included repaving the site. During a June 2005 site inspection after pavement removal northeast of the USTs, Cambria observed an area of grey-colored soil approximately 15 ft from the UST pit, near the geophysical anomaly areas (Figure 2). The grey soil appeared similar to the hydrocarbon impacted soils observed in the UST pit sidewall following UST removal.

During upgrade activities, a total of approximately 291,077 gallons of groundwater was removed from the tank pit area using pumps, on-site storage tanks, and vacuum trucks. Based on groundwater analytical data for a recent sample collected from the tank pit, an estimated 0.08 pounds of MTBE were removed during upgrade activities. Fuel system upgrade soil sampling, soil excavation, and geophysical survey activities are presented in Cambria's August 9, 2005 report.

Groundwater Depth and Flow Direction: Depth to groundwater has ranged from 0.5 to 7.4 fbg since groundwater monitoring was initiated in January of 1991. The groundwater gradient is generally to the south.

TECHNICAL RATIONALE FOR PROPOSED SCOPE OF WORK

The investigation's purpose is to investigate the two areas of geophysical anomalies that had features consistent with buried objects, such as drums or tanks, and to locate any such objects that could be a source of the hydrocarbon-impacted material observed on the northeastern UST excavation sidewall during January 2005 tank replacement activities. In addition, Cambria will investigate the area of grey-colored soil observed northeast of the USTs.

WORK TASKS

Permitting: Cambria will obtain necessary permits for soil borings from Alameda County Public Works Agency.

Site Health and Safety Plan: Pursuant to OSHA requirements, Cambria will prepare a comprehensive site safety plan to protect site workers. The plan will be kept on site during field activities, and each site worker will review and sign it.

Utility Clearance: Cambria will mark the proposed investigation area, and Underground Service Alert will clear the area before the borings are advanced. A private utility locator will be used to identify subsurface obstacles prior to drilling.

Site Investigation: Cambria will direct a shallow subsurface investigation in the areas of the previously identified geophysical anomalies and grey soil, northeast of the USTs (Figure 2). Cambria will direct three soil borings (B-12, B-13, and B-14) using hand-auger equipment and the collection of soil samples from each boring. A licensed drilling firm will advance the soil borings to a total depth of 10 fbg. Cambria will log soils for lithologic description, and will collect samples for chemical analysis at 2 fbg, 5 fbg, 8 fbg, and 10 fbg, at changes in lithology, and where field indications of hydrocarbon impact are present. Cambria's *Standard Field Procedures for Soil Borings* is included as Attachment A.

Laboratory Analyses: A State-certified laboratory will analyze all collected soil samples for TPHg, benzene, toluene, ethylbenzene, xylenes, MTBE, tert-butyl alcohol, ethyl tert-butyl ether, tert-amyl methyl ether, di-isopropyl ether, 1,2-dibromomethane, and 1,2-dichloroethane by EPA Method 8260, for total petroleum hydrocarbons as diesel by EPA Method 8015, and for oil and grease by EPA Method 1664.

Report Preparation: Within 60 days of receiving analytical results from the laboratory, Cambria will prepare a written report which will include field procedures, laboratory results, boring logs, and conclusions.

SCHEDULE

Cambria anticipates implementing this scope of work during the fourth quarter 2005 or as directed by the Alameda County Health Care Services Agency.

CLOSING

If you have any questions regarding the scope of work outlined in this work plan, please call Cynthia Vasko at (510) 420-3344.

Sincerely,
Cambria Environmental Technology, Inc.

Cynthia Vasko
Project Engineer

Matthew W. Derby, P.E.
Senior Project Engineer

Figures: 1 - Vicinity/Well Survey Map
2 - Proposed Soil Boring Location Map

Tables: 1 - Cumulative Soil Analytical Data
2 - Cumulative Groundwater Analytical Data

Attachments: A - Standard Field Procedures for Soil Borings

cc: Denis Brown, Shell Oil Products US, 20945 S. Wilmington Ave., Carson, CA 90810
Thrifty Oil Company, c/o Mr. Raymond Fredricksen, PO Box 2128, Santa Fe Springs, CA 90670 (property owner)
Keith Matthews, Oakland Fire Department, Hazardous Materials Management Program, 250 Frank H. Ogawa Plaza, Suite 3341 Oakland, California 94612

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02/13/02

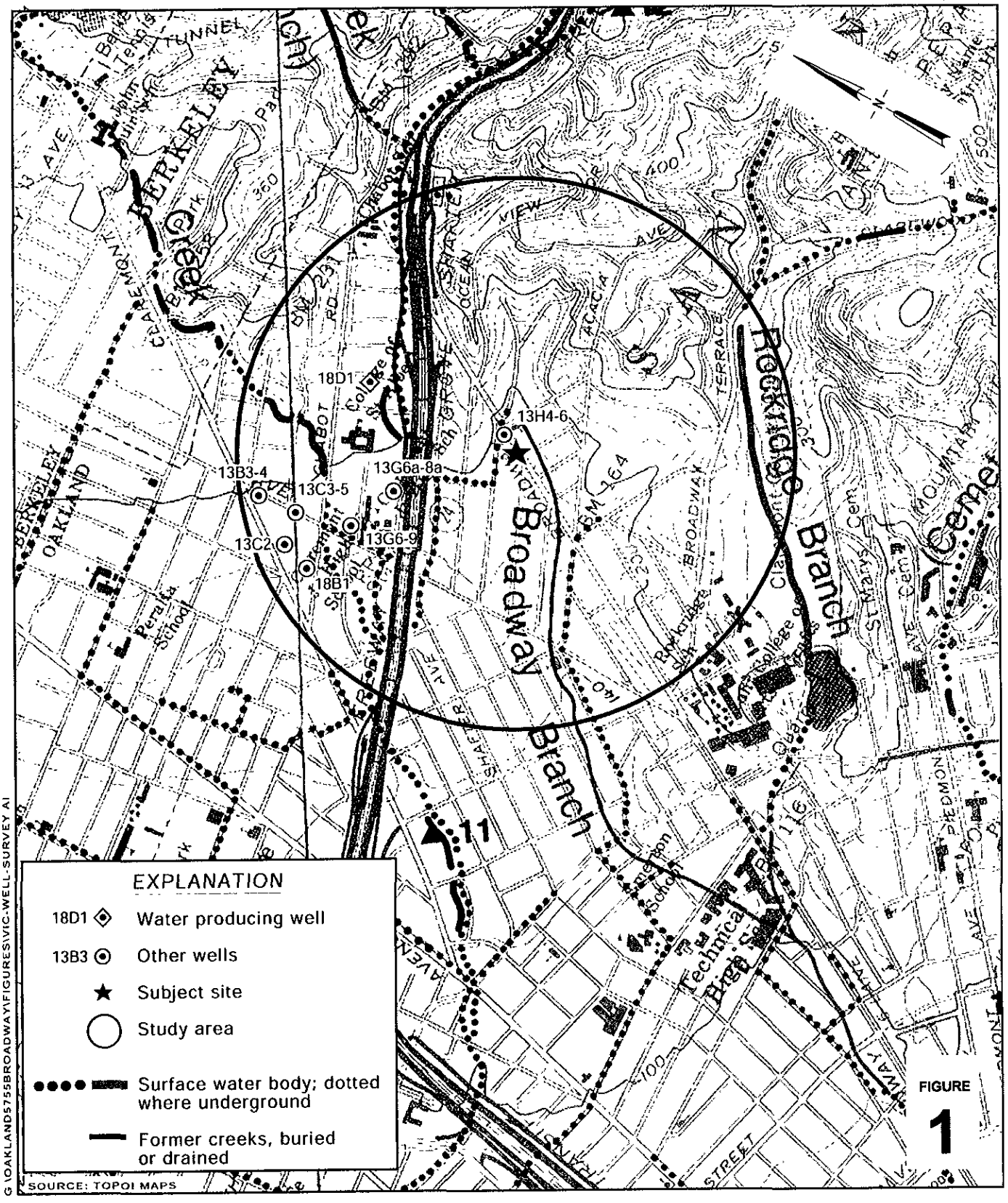

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FIGURE 1

Shell-branded Service Station

5755 Broadway

Oakland, California

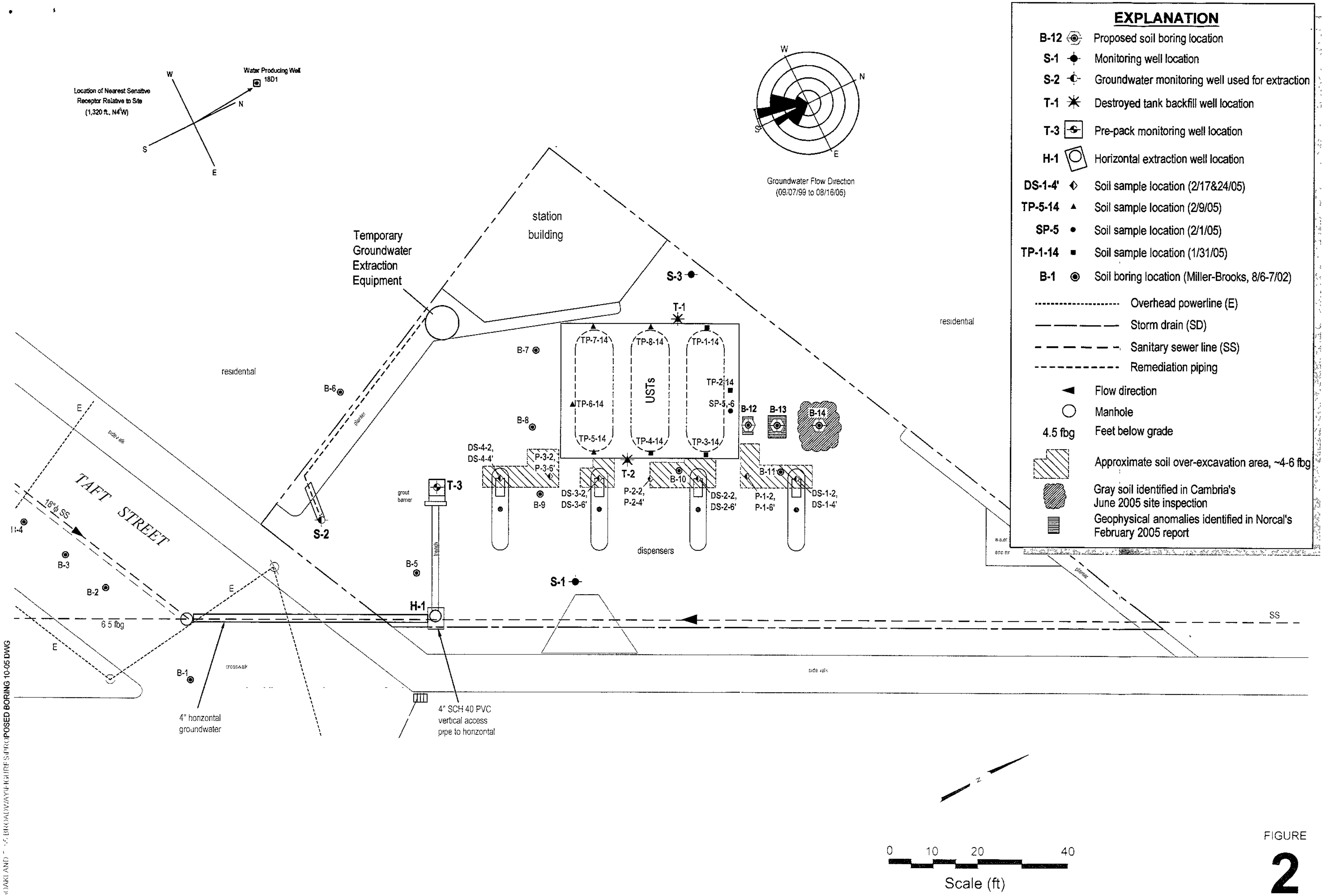
Incident #98995756

CAMBRIA

Vicinity / Well Survey Map

(1/2-Mile Radius)

10/14/05


EXPLANATION
B-12 Proposed soil boring location
S-1 Monitoring well location
S-2 Groundwater monitoring well used for extraction
T-1 Destroyed tank backfill well location
T-3 Pre-pack monitoring well location
H-1 Horizontal extraction well location
DS-1-4' Soil sample location (2/17&24/05)
TP-5-14 Soil sample location (2/9/05)
SP-5 Soil sample location (2/1/05)
TP-1-14 Soil sample location (1/31/05)
B-1 Soil boring location (Miller-Brooks, 8/6-7/02)
Overhead powerline (E)
Storm drain (SD)
Sanitary sewer line (SS)
Remediation piping
Flow direction
Manhole
4.5 fbg Feet below grade
Approximate soil over-excavation area, ~4-6 fbg
Gray soil identified in Cambria's June 2005 site inspection
Geophysical anomalies identified in Norcal's February 2005 report
Location of Nearest Sensitive Receptor Relative to Site (1,320 ft., N4°W)
Water Producing Well 18D1
Groundwater Flow Direction (09/07/99 to 08/16/05)
Temporary Groundwater Extraction Equipment
station building
residential
USTs
dispensers
TAFT STREET
18"ø SS
6.5 fbg
4" horizontal groundwater
4" SCH 40 PVC vertical access pipe to horizontal
grout barrier
trench
crosswalk
sidewalk
planter
SS
S-1
S-2
S-3
T-1
T-2
T-3
H-1
B-1
B-2
B-3
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
B-14
TP-1-14
TP-2-14
TP-3-14
TP-4-14
TP-5-14
TP-6-14
TP-7-14
TP-8-14
SP-5,-6
DS-1-2, DS-1-4'
DS-2-2, DS-2-6'
DS-3-2, DS-3-6'
DS-4-2, DS-4-4'
P-1-2, P-1-6'
P-2-2, P-2-4'
P-3-2, P-3-6'
0 10 20 40
Scale (ft)

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Proposed Soil Boring Location Map

CAMBRIA

Shell-branded Service Station
5755 Broadway
Oakland, California
Incident No 98995756

FIGURE
2

Table 1. Cumulative Soil Analytical Data - Shell-branded Service Station, 5755 Broadway, Oakland, California

Sample ID	Sample Depth (fbg)	Sample Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TBA	MTBE	DIPE	ETBE	TAME	Lead
			← parts per million →										
1985 EMCON Soil Sampling													
S-A	4	6/12/1985	*3*	--	--	--	--	--	--	--	--	--	--
S-A	8.5	6/12/1985	*2*	--	--	--	--	--	--	--	--	--	--
S-A	10	6/12/1985	*<2.0*	--	--	--	--	--	--	--	--	--	--
1993 Harding Lawson Soil Sampling								--		--	--	--	--
S-2-1	3	9/18/1993	***92***	***0.12***	***0.58***	***0.8***	***4.2***	--	--	--	--	--	--
S-3-1	3	9/18/1993	*<10*	*<0.025*	*<0.025*	***0.062***	***0.12***	--	--	--	--	--	--
1993 Weiss Associates Soil Sampling													
S-C	1.5	2/2/1993	***8***	***0.094***	***0.12***	***0.0098***	***1.1***	--	--	--	--	--	--
S-E	3.5	2/4/1993	***150***	***0.9***	***1.5***	***2.3***	***7.7***	--	--	--	--	--	--
S-F	5	2/4/1993	*<1*	***0.021***	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-G	2.5	2/4/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-H	3	2/4/1993	*<1*	***0.024***	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-H	5	2/4/1993	***290***	***0.55***	***1.8***	***1.8***	***6.5***	--	--	--	--	--	--
S-H	8	2/12/1993	***2***	***0.074***	***0.0097***	***0.0064***	***0.075***	--	--	--	--	--	--
S-H	10	2/12/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-H	11.5	2/12/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-I	5	2/4/1993	***2***	***0.074***	***0.0038***	***0.095***	***0.10***	--	--	--	--	--	--
S-I	8	2/11/1993	*<1*	***0.011***	*<0.0025*	***0.0079***	***0.013***	--	--	--	--	--	--
S-I	10	2/11/1993	*<1*	***0.021***	*<0.0025*	***0.011***	***0.021***	--	--	--	--	--	--

Table 1. **Cumulative Soil Analytical Data** - Shell-branded Service Station, 5755 Broadway, Oakland, California

Sample ID	Sample Depth (fbg)	Sample Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TBA	MTBE	DIPE	ETBE	TAME	Lead
			← parts per million →										
S-I	12	2/11/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-J	2	2/9/1993	***140***	***0.40***	***0.71***	***1.1***	***4.1***	--	--	--	--	--	--
S-J	4	2/9/1993	***1,300***	***1.1***	***8.1***	***9.5***	***44***	--	--	--	--	--	--
S-K	6.5	2/9/1993	***1***	***0.35***	***0.31***	***0.23***	***0.64***	--	--	--	--	--	--
S-L	2	2/10/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-L	4	2/10/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-L	6	2/10/1993	***320***	***0.99***	***1.5***	***2.0***	***5.2***	--	--	--	--	--	--
S-L	7.5	2/11/1993	*<1*	***0.039***	***0.0074***	***0.042***	***0.045***	--	--	--	--	--	--
S-L	10	2/11/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-L	12	2/11/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-M	2	2/10/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-M	4	2/10/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-M	7.5	2/10/1993	*<1*	***0.020***	***0.0072***	***0.028***	***0.053***	--	--	--	--	--	--
S-M	10	2/11/1993	***5.9***	***0.020***	***0.023***	***0.038***	***0.17***	--	--	--	--	--	--
S-M	12	2/11/1993	*<1*	***0.0026***	***0.0028***	***0.0069***	***0.027***	--	--	--	--	--	--
S-N	2	2/10/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-N	4	2/10/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-N	7.5	2/10/1993	***11***	***0.067***	***0.18***	***0.51***	***1.1***	--	--	--	--	--	--
S-N	10	2/10/1993	*<1*	***0.0035***	***0.0033***	***0.0061***	***0.019***	--	--	--	--	--	--
S-N	12	2/10/1993	***1.2***	*<0.0025*	*<0.0025*	*<0.0025*	***0.025***	--	--	--	--	--	--

Table 1. Cumulative Soil Analytical Data - Shell-branded Service Station, 5755 Broadway, Oakland, California

Sample ID	Sample Depth (fbg)	Sample Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TBA	MTBE	DIPE	ETBE	TAME	Lead
			← parts per million →										
S-O	7.5	2/12/1993	*<1*	***0.021***	*<0.0025*	*<0.0025*	***0.0043***	--	--	--	--	--	--
S-O	10	2/12/1993	*<1*	*<0.0025*	*<0.0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
S-O	11.5	2/12/1993	***1.3***	***0.013***	*<0.0025*	***0.0046***	***0.032***	--	--	--	--	--	--
S-O	14	2/12/1993	*<1*	*<0.0025*	*<0 0025*	*<0.0025*	*<0.0025*	--	--	--	--	--	--
1998 Cambria Upgrade Soil Sampling													
D-2	2	3/12/1998	***260***	***1.7***	*<0.50*	***3.3***	***5.4***	--	*<2.5*	--	--	--	--
D-3	2	3/12/1998	***750***	*<0.50*	***3.4***	***6.5***	***41***	--	***9.8***	--	--	--	--
D-4	2	3/12/1998	***990***	***1.8***	***2.3***	***13***	***68***	--	***25***	--	--	--	--
2002 Cambria Soil Borings													
B-1-5.0	5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.010	--	<0.5	--	--	--	--
B-1-9.0	9	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-1-15.5	15.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-2-5.0	5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.010	--	<0.5	--	--	--	--
B-2-10.0	10	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0 5	--	--	--	--
B-2-15.5	15 5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-3-5.0	5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-3-10.0	10	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-3-15.5	15 5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-4-5.0	5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0 5	--	--	--	--
B-4-10.0	10	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0 5	--	--	--	--
B-4-15.5	15.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0 5	--	--	--	--

Table 1. **Cumulative Soil Analytical Data** - Shell-branded Service Station, 5755 Broadway, Oakland, California

Sample ID	Sample Depth (fbg)	Sample Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TBA	MTBE	DIPE	ETBE	TAME	Lead
			← parts per million →										
B-5-3.5	5	8/6/2002	**260**	<0.005	<0.005	**1.6**	**6.7**	--	<0.5	--	--	--	--
B-5-10.0	10	8/6/2002	**4.5**	<0.005	<0.005	**0.018**	**0.021**	--	<0.5	--	--	--	--
B-5-15.5	15.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-6-5.0	5	8/6/2002	**110**	**0.039**	<0.025	**1.5**	**0.3**	--	<0.5	--	--	--	--
B-6-10.0	10	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-6-15.5	15.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-7-5.0	5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-7-10.5	10.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-8-5.0	5	8/6/2002	**210**	<0.025	<0.025	**2.2**	**3.8**	--	<0.5	--	--	--	--
B-8-10.5	10.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0 5	--	--	--	--
B-9-5.0	5	8/6/2002	**82**	**0.096**	**0.028**	**0.85**	**4.3**	--	**0.9**	--	--	--	--
B-9-10.5	10.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
B-10-5.0	5	8/6/2002	**29**	**0.016**	<0.005	**0.060**	**0.018**	--	<0.5	--	--	--	--
B-10-10.5	10.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	**0.014**	--	<0.5	--	--	--	--
B-11-5.0	5	8/6/2002	**1.7**	**0.0063**	<0.005	**0.019**	**0.018**	--	<0.5	--	--	--	--
B-11-10.5	10.5	8/6/2002	<1.0	<0.005	<0.005	<0.005	<0.005	--	<0.5	--	--	--	--
January 2005 UST Soil Sampling													
TP-1-14	14	1/31/2005	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.010	<0.0050	<0.0050	--
TP-2-14	14	1/31/2005	**1.5**	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0 0050	<0.010	<0.0050	<0.0050	--

Table 1. Cumulative Soil Analytical Data - Shell-branded Service Station, 5755 Broadway, Oakland, California

Sample ID	Sample Depth (fbg)	Sample Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TBA	MTBE	DIPE	ETBE	TAME	Lead
			← parts per million →										
TP-3-14	14	1/31/2005	**32**	<0.023	<0.023	<0.023	<0.023	<0.047	**0.082**	<0.047	<0.023	<0.023	--
TP-4-14	14	1/31/2005	**29**	<0.024	<0.024	<0.024	<0.024	<0.049	<0.024	<0.049	<0.024	<0.024	--
February 2005 UST Soil Sampling													
TP-5-14	14	2/9/2005	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.010	<0.0050	<0.0050	--
TP-6-14	14	2/9/2005	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.010	<0.0050	<0.0050	--
TP-7-14	14	2/9/2005	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.010	<0.0050	<0.0050	--
TP-8-14	14	2/9/2005	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.010	<0.0050	<0.0050	--
2005 Dispenser and Piping Sampling													
DS-1-2	2	2/17/2005	**190**	<0.50	<0.50	**1.1**	**1.0**	<2.5	<0.50	<1.0	<0.50	<0.50	**6.1**
DS-2-2	2	2/17/2005	**150**	<0.50	<0.50	**0.51**	**0.55**	<2.5	<0.50	<1.0	<0.50	<0.50	**6.5**
DS-3-2	2	2/17/2005	**1,100**	<0.50	**0.63**	**10**	**75**	<2.5	<0.50	<1.0	<0.50	<0.50	**6.8**
DS-4-2	2	2/17/2005	**460**	<0.50	<0.50	**1.8**	**3.5**	<2.5	<0.50	<1.0	<0.50	<0.50	**7.4**
P-1-1	1	2/17/2005	**180**	<0.50	<0.50	**0.97**	**1.4**	<2.5	<0.50	<1.0	<0.50	<0.50	**5.9**
P-2-2	2	2/17/2005	**130**	<0.50	<0.50	<0.50	<0.50	**4.1**	<0.50	<1.0	<0.50	<0.50	**7.3**
P-3-2	2	2/17/2005	**420**	<0.50	<0.50	**6.2**	**23**	<2.5	**0.84**	<1.0	<0.50	<0.50	**17**
2005 Over-Excavation Soil Sampling													
DS-1-4'	4	2/24/2005	**26**	<0.025	<0.025	<0.025	**0.034**	**0.060**	**0.035**	<0.050	<0.025	<0.025	**6.7**
DS-2-6'	6	2/24/2005	**1,000**	<0.50	<0.50	**13**	**24**	<2.5	**1.7**	<1.0	<0.50	<0.50	**6.5**
DS-3-6'	6	2/24/2005	**1.8**	<0.0050	<0.0050	**0.0073**	**0.013**	**0.13**	**0.13**	<0.010	<0.0050	<0.0050	**5.5**
DS-4-4'	4	2/24/2005	**44**	<0.025	<0.025	<0.025	**0.066**	**0.093**	<0.025	<0.050	<0.025	<0.025	**6.4**
P-1-6'	6	2/24/2005	**410**	**0.66**	<0.50	**5.2**	**8.2**	<2.5	**1.9**	<1.0	<0.50	<0.50	**5.6**
P-2-4'	4	2/24/2005	**260**	<0.50	<0.50	**1.5**	**6.0**	<2.5	<0.50	<1.0	<0.50	<0.50	**7.3**
P-3-6'	6	2/24/2005	**480**	<0.50	<0.50	**4.1**	**3.9**	<2.5	**0.61**	<1.0	<0.50	<0.50	**6.0**

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline

TBA = Tert-butyl alcohol

MTBE = Methyl tertiary butyl ether

Table 1. Cumulative Soil Analytical Data - Shell-branded Service Station, 5755 Broadway, Oakland, California

Sample ID	Sample Depth (fbg)	Sample Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TBA	MTBE	DIPE	ETBE	TAME	Lead
			← parts per million →										

DIPE = Di-isopropyl ether

ETBE = Ethyl tert butyl ether

TAME = Tert-amyl methyl ether

fbg = Feet below grade

ppm = Parts per million, equivalent to mg/kg

<n = Below laboratory reporting limit of n ppm

-- = Not analyzed

TPHg analyzed by modified EPA Method 8260B; results in italics analyzed by EPA Method 8015M

Benzene, ethylbenzene, toluene and total xylenes analyzed by EPA Method 8260B; results in italics analyzed by EPA Method 8020.

MTBE analyzed by EPA Methods 8260B; results in italics analyzed by EPA Method 8020.

TBA, DIPE, ETBE and TAME analyzed by EPA Method 8260B.

Lead analyzed by EPA Method 6010B.

Table 2. Cumulative Groundwater Analytical Data - Shell-branded Service Station, 5755 Broadway, Oakland, California

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA
			← parts per billion →						
2002 Cambria Soil Borings									
B-1-W	8/6/2002	NM	<1,000	<10	<10	<10	<10	3,500	NA
B-2-W	8/6/2002	NM	<50	<0.50	<0.50	<0.50	<0.50	<5.0	NA
B-3-W	8/6/2002	NM	<50	<0.50	<0.50	<0.50	<0.50	<5.0	NA
B-4-W	8/6/2002	NM	<50	<0.50	<0.50	<0.50	<0.50	<5.0	NA
B-5-W	8/6/2002	NM	**12,000**	**4.5**	<2.0	**350**	**340**	**380**	NA
B-6-W	8/7/2002	NM	**680**	**1.5**	<0.50	**49**	**18**	**30**	NA
B-7-W	8/7/2002	NM	**370**	<0.50	<0.50	**3.4**	**11**	**42**	NA
B-8-W	8/7/2002	NM	**66,000**	**990**	**78**	**2,600**	**12,000**	**930**	NA
B-9-W	8/7/2002	NM	**21,000**	**1,100**	**47**	**650**	**3,300**	**7,100**	NA
B-10-W	8/7/2002	NM	**31,000**	**1,800**	**66**	**1,300**	**4,200**	**9,100**	NA
B-11-W	8/8/2002	NM	**28,000**	**900**	<10	**980**	**2,500**	**1,200**	NA
2005 Fillner Fuel System Upgrades									
TP-GW-1[a]	12/17/2004	NM	**640**	**11**	**3.2**	**6.1**	**47**	**38**	**8.7**

Abbreviations and Notes:

fbg = Feet below grade

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8260B

MTBE = Methyl tertiary butyl ether by EPA Method 8260B

TBA = Tert-butyl alcohol by EPA Method 8260B

Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8260B

NM = Not measured

<n = Below laboratory reporting limit of n ppm

a = TP-GW-1 was additionally analyzed for di-isopropyl ether, ethyl tert butyl ether, and tert-amyl methyl ether, but these compounds were not detected at a reporting limit of 0.50 parts per billion.

ATTACHMENT A

Standard Field Procedures for Soil Borings

CAMBRIA

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Cambria Environmental Technology, Inc.'s standard field methods for drilling and sampling soil borings. 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 ground water 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 Professional Geologist (PG) 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 product saturation percentage,
- Observed odor and/or discoloration, and
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned 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

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch type sampler or are collected from the open borehole using bailers. The ground water 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.

Duplicates and Blanks

Blind duplicate water samples are collected usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

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.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.