Shell Oil Products US

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

Subject: Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California
SAP Code 129449

Dear Mr. Wickham:

Attached for your review and comment is a copy of the *Subsurface 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.

As always, please feel free to contact me directly at (707) 865-0251 with any questions or concerns.

Sincerely,

Shell Oil Products US

Denis L. Brown
Project Manager

20945 S. Wilmington Ave., Carson, CA 90810 Phone (707) 865-0251 Facsimile (707) 865-2542

CAMBRIA

August 31, 2006

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

Re: **Subsurface Investigation Work Plan**
Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California
SAP Code 129449
Incident No. 97093397

Dear Mr. Wickham:

Cambria Environmental Technology, Inc. (Cambria) prepared this work plan on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) to recommend additional investigative activities on and off the subject site. As recommended in Cambria's July 25, 2006 *Status Update, Report of Geophysical Survey, and Request for Agency Meeting*, a meeting between Shell, Alameda County Environmental Health (ACEH), and Cambria occurred on August 2, 2006 to discuss results of recent activities, the status of pending activities, and an agreed upon course for proposed additional activities. This work plan presents the scope of work as discussed during the above-referenced meeting. The work will be performed in accordance with ACEH and San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) guidelines.

SITE LOCATION AND DESCRIPTION

The site is a former service station located on the northwest corner of Martin Luther King Jr. Way and 27th Street in a commercial and residential area of Oakland, California (Figure 1). A Shell service station operated on the property from approximately 1959 to 1979. The site layout consisted of a service station building, two dispenser islands, three underground fuel storage tanks (USTs), associated product piping, and a waste oil UST (Figure 2). The fueling equipment associated with the former Shell service station was removed after Shell terminated operations at the site. In 1979, Acme West Ambulance Company (Acme) purchased the site and installed a 2,000-gallon UST for gasoline storage. Acme sold the property to Auto-Tech West (ATW) in 1986. According to an August 25, 1986 ACEH inspector's report, ATW reportedly never used the UST, although a 150-gallon aboveground waste oil tank, a 15-gallon carburetor cleaner tank, and a parts cleaning tank with solvent were reportedly in use. Currently, the site is occupied by

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ATW and is utilized as an automotive repair shop. The current site operator uses portions of the property and the wooden car port for storage of such things as non-operational automobiles, portable gasoline containers, tires, and drums used for waste oil collection and storage.

A detailed discussion of the project investigation history is compiled and presented in Attachment A, for reference.

TECHNICAL RATIONALE

Investigative activities were proposed in Cambria's December 16, 2005 *Plume Delineation Work* Plan. Portions of that scope have been completed. Of the previously proposed onsite work, only the installation of the proposed soil vapor probes (VP-1 through VP-6) has not been completed. Of the proposed offsite activities, only wells MW-12 and MW-14 have been successfully installed. The other offsite property owners have not provided access to their properties, and the encroachment permitting process for wells within 27th Street has been cumbersome.

In order to review and discuss some of the data accumulated at this site with the regulator and to discuss and agree upon further investigative activities both on and offsite, a meeting between Shell, ACEH, and Cambria was conducted on August 2, 2006. The scope of work presented below was developed during that meeting and will be conducted instead of the previously proposed offsite work. The objectives and technical rationale are presented below and summarized on the table that follows. The objectives of this investigation are to:

- Obtain detailed lithologic information onsite and offsite by continuous sampling using electronic logging by cone penetration testing (CPT) technique in five onsite and five offsite borings labeled CPT 1 through CPT-10 (Figure 2);
- Collect shallow soil gas samples from approximately 5 feet below grade (fbg) near monitoring well MW-14 (CPT-8);
- Obtain groundwater samples from first encountered groundwater from areas where wells have not been installed (CPT-5 through CPT-7, CPT-9, and CPT-10);
- Collect groundwater from deeper within the first aquifer at all locations from approximately 20-25 fbg depending on the CPT log results;
- Collect groundwater samples from a deeper interval at select locations for vertical groundwater profiling (CPT-4, CPT-6, CPT-8, and CPT-9);
- Install the onsite vapor probes to allow for the future collection of soil gas samples near the western property boundary;
- Collect ambient air samples from the above-ground basement area at 664 27th Street for chemical analysis.

Sampling Plan for CPT Investigation

Boring ID	Boring Location On or Offsite	Soil Gas ~ 5'	Continuous e-Log 5-40'	Sample First GW ~ 8-12'	Sample GW ~ 20-25'	Sample GW ~ 35-40'
CPT-1	On near MW-4	No	**Yes**	No (MW-4)	**Yes**	No
CPT-2	On near MW-6	No	**Yes**	No (MW-6)	**Yes**	No
CPT-3	On near MW-5	No	**Yes**	No (MW-5)	**Yes**	No
CPT-4	On near V-1	No	**Yes**	No (V-1)	**Yes**	**Yes**
CPT-5	On near B-9	No	**Yes**	**Yes**	**Yes**	No
CPT-6	Off in Street	No	**Yes**	**Yes**	**Yes**	**Yes**
CPT-7	Off in Street	No	**Yes**	**Yes**	**Yes**	No
CPT-8	Off near MW-14	**Yes**	**Yes**	No (MW-14)	**Yes**	**Yes**
CPT-9	Off @ 670 27th Street	No	**Yes**	**Yes**	**Yes**	**Yes**
CPT-10	Off to NW	No	**Yes**	**Yes**	**Yes**	No

WORK TASKS

Permits: On behalf of Shell, Cambria will obtain the appropriate drilling permits from Alameda County Public Works Department, and encroachment permits from the City of Oakland for work in 27th Street.

Access Negotiations: Shell will need to negotiate access to offsite properties for the proposed offsite work.

Site Safety Plan: Cambria will prepare a site safety plan and traffic control plan for field work.

Utility Clearance: Cambria will mark proposed drilling locations, and the locations will be cleared through Underground Service Alert prior to drilling. Additionally, a private utility locating service will be used to further assess whether subsurface utilities or structures are present at each proposed location prior to breaking ground. Because CPT-1, CPT-2, and if possible CPT-3 are proposed to be install through the vault boxes of VP-3, VP-2, and VP-1, respectively, which were previously cleared, additional clearing of the top five feet will not be needed if the CPT borings are successfully installed through those manholes. At all other locations, the top five feet will be cleared by either hand auger or by air knifing prior to extending the CPT equipment.

Site Investigation: Ten exploratory soil borings (CPT-1 through CPT-10) are proposed at the locations shown on Figure 2. The borings are placed to collect data from along the western property boundary (CPT-1 through CPT-3), the area of the former USTs onsite (CPT-4), the area of previously encountered separate phase hydrocarbons in the dispenser island (CPT-5), and at select offsite locations for plume delineation (CPT-6 through CPT-10). The scope of work anticipated for each boring is detailed in the table above. No soil samples are proposed because numerous onsite soil samples have previously been collected from this site, offsite soil impact is not anticipated, and because groundwater is relatively shallow. If, however, impacted shallow soil is observed during the hand clearing activities, a soil sample will be collected for chemical analysis. Proposed groundwater sampling intervals are shown on the table above, but may be adjusted based on the soil types identified through the electronic CPT logging.

A Cambria geologist will supervise the drilling, and encountered soils will be continuously logged using electronic CPT technology. At select locations, soil gas samples will be obtained using the CPT equipment. At CPT-8, the vapor sample will be collected under vacuum using the CPT sampling equipment. The vapor sample will be stored in a Summa canister. The sample will be labeled, entered onto a chain-of-custody record, and transported to a State of California certified laboratory for analysis. Groundwater samples will be collected with temporary casing and bailers at locations where first encountered groundwater samples are desired, and by using hydropunch® sampling or similar device for deeper intervals. Water samples will be transferred into vials containing hydrochloric acid preservative with no head space. Groundwater samples will be labeled, entered onto a chain-of-custody record, and placed into a cooler with ice for transport to a State of California certified laboratory for analyses.

Following completion of the CPT work at CPT-1, CPT-2, and CPT-3, the borings will be grouted to within 5 fbg. The soil vapor probes previously proposed for these locations, and the other on site vapor probes will be installed in accordance with the previously approved work plan.

Through negotiations with the property owner of 664 27th Street, where previous boring, wells, and soil gas probes were proposed, the owner has denied access for the performance of any intrusive type of sampling. Since the basement structure of the residence is above-ground, Shell is continuing negotiations to access the basement area for collection of ambient air samples in that area. Following completion of access negotiations with the offsite property owner at 664 27th Street, an initial site reconnaissance will be scheduled in order to develop an appropriate safety and sampling plan. The vapor sampling in the basement will be coordinated to occur at the same time as the initial sampling of the installed soil vapor probes onsite.

The proposed scope of work described will be performed under the supervision of a registered geologist or engineer.

Chemical Analyses: The soil vapor samples will be analyzed for TPH and BTEX by Method TO-15. The groundwater samples will be analyzed for TPHg and BTEX by EPA Method 8260M. A standard turn around will be requested for chemical analyses.

Report Preparation: Following the receipt of analytical results from the laboratory, Cambria will prepare a written report which will include the site history, the field procedures, tabulated laboratory results, figures showing sample locations, boring logs, findings, and conclusions. The certified laboratory reports and chain-of-custody documentation will be included with the report.

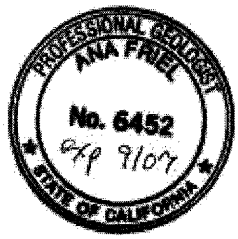
SCHEDULE

Upon receipt of agency approval of this plan, we will initiate encroachment permitting for work in 27th Street and access negotiations for offsite private properties. To minimize delays in implementation, we have scheduled the CPT work with the drilling company for the week of **October 16 – 20, 2006**. At that time, the onsite work and as much of the offsite work as possible will be performed. Installation of the soil vapor probes onsite will be scheduled for the following week (**October 23, 2006**), with vapor sample collection from the probes and from the above-ground basement at 664 27th Street scheduled for the week of **November 6, 2006** (weather permitting). Based on the proposed field schedule and two-week turn around for receipt of laboratory data, and also given the holiday schedules in November and December, we will submit the **report of findings from this investigation by January 31, 2007**.

CLOSING

If you have any questions regarding the contents of this document, please call Ana Friel at (707) 268-3812.

Sincerely,
Cambria Environmental Technology, Inc.



Ana Friel, PG
Associate Geologist

Attachments:

Figure 1. Site Vicinity/Receptor Survey Map
Figure 2. Proposed Soil Boring Location Map

Attachment A. Detailed Project History

cc: Denis Brown, Shell
Rodney & Janet Kwan, property owners of subject site
Monique Oatis, property owner at 670 27th Street in Oakland
Scott Merillat, property owner at 664 27th Street in Oakland

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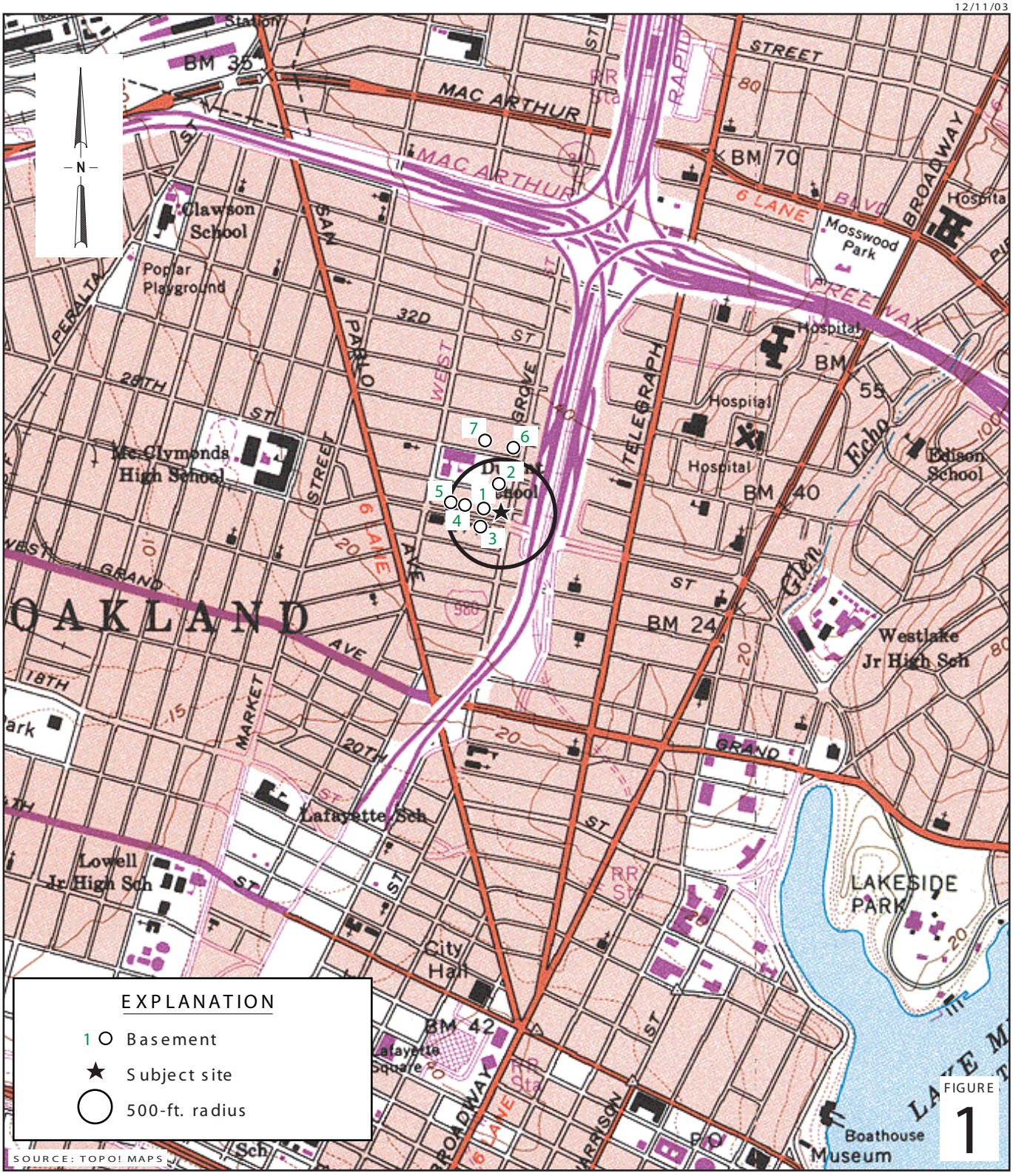

FIGURE 1

0 1/8 1/4 1/2 1

SCALE (MILES)

Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California

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Site Vicinity/Receptor Survey Map

08/29/06

Proposed Soil Boring Location Map

EXPLANATION

- CPT-1 Proposed CPT boring location
- MW-1 Monitoring well location
- V-1 Soil vapor well location
- VP-1 Vapor probe location (not installed)

28TH STREET

Residential 679 28th St.
Residential 673 28th St.
Residential 669 28th St.
Residential 663 28th St.
Vacant Lot 2727-29 Martin Luther King
Residential 665 28th St.
Residential 2719-23 Martin Luther King
Residential 670 27th St.
Residential 668 27th St.
Residential 664 27th St.
Former Shell Station 2703 Martin Luther King
BUILDING
carport
GATE
DRIVEWAY
GATE
DRIVEWAY
DRIVEWAY
median

MW-12
MW-8
VP-6
MW-7
MW-1
VP-1
VP-5
CPT-3
MW-5
VP-4
CPT-10
CPT-9
CPT-8
MW-14
VP-2
V-1
CPT-5
CPT-2
MW-6
CPT-4
MW-4
V-2
VP-3
CPT-1
MW-2
MW-3
CPT-7
CPT-6

MARTIN LUTHER KING JR. WAY

27TH STREET

0 20 40 80
Scale (ft)

FIGURE
2

Former Shell Service Station
2703 Martin Luther King Jr Way
Oakland, California

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Basemap from Virgil Chavez Land Surveying and Alameda County Assessors Parcel Map

O:\OAKLAND 2703 MARTIN LUTHER KING JR WAY\FIGURES\PROP-BOR.DWG

Attachment A

Detailed Project History

ATTACHMENT A
Detailed Site History
Former Shell Service Station
2703 Martin Luther King Jr. Drive
Oakland, CA

PREVIOUS WORK

1994 UST Removal: The 2,000-gallon UST was removed on October 11, 1994 by KTW & Associates on behalf of ATW. Two soil samples (TP-1-N and TP-2-S) were collected from beneath the tank. Chemical analysis of the soil samples identified the presence of total petroleum hydrocarbons as gasoline (TPHg) at concentrations ranging from 870 milligrams per kilogram (mg/kg) to 18,000 mg/kg. Benzene concentrations in these samples ranged from 2.9 to 100 mg/kg. The tank pit remained open until March 19, 1996 when the excavation was back-filled subsequent to over-excavation by a Shell contractor.

1995 Phase I Environmental Site Assessment (ESA): In August and September 1995, Enviros Inc. (Enviros) performed a Phase I ESA for this site. Available information collected during this ESA indicates that the subject property was occupied by residential housing prior to approximately 1959. A building permit to erect a building was obtained for Shell Oil Company in February 1959. A building permit to "close lube bays with sheet metal panels" was secured for Shell Oil Company in July 1976.

In 1979, several building permits were secured for Acme to modify existing site structures. Two building permits were secured in 1979 related to the installation of a fuel pump at the site.

During a site survey in conjunction with the Phase I ESA, an excavation was observed near the southwest corner of the service building. The excavation was covered by a blue tarp. This excavation's location is consistent with that of the 2,000-gallon UST removed in 1994 by ATW, and with a large concrete slab observed in aerial photographs taken in 1971 and 1973, and a smaller concrete slab observed in aerial photographs taken in 1981 and 1985. The larger concrete slab observed in the aerial photographs was likely covering the USTs operated by Shell, and the smaller slab was likely covering the UST operated by Acme, confirming that the same location was used for both UST complexes.

1995 Subsurface Investigation: A site assessment was performed by ACC Environmental Consultants on May 23, 1995. This included drilling nine soil borings (B-1 through B-9) using a pneumatic sampling tool in the vicinity of the excavation (which formerly housed both Shell's and Acme's USTs) and the product dispenser islands, and collecting soil and groundwater samples for chemical analysis. TPHg concentrations in soil samples ranged from <20.0 to 830 mg/kg. Benzene concentrations ranged from <1.0 to 1.8 mg/kg. Separate phase hydrocarbons (SPH) were identified in water samples collected from four of the soil borings (B-1, B-5, B-6, and B-9). TPHg concentrations in the non-SPH grab groundwater samples submitted

for chemical analysis ranged from <50 to 89,000 micrograms per liter (µg/l). Benzene concentrations in the grab groundwater samples ranged from <0.5 to 21,000 µg/l.

1996 Over-Excavation: Over-excavation and back-filling of Acme's former UST excavation were performed on March 19, 1996. The excavation, originally left open to 9 fbg, was over-excavated to approximately 11 fbg. Two soil samples (TP-3-W and TP-4-E) were collected from the bottom of the over-excavated former UST area. Soil sample TP-3-W, collected from the western end of the excavation, contained 560 mg/kg TPHg, and 3.1 mg/kg benzene. Soil sample TP-4-E, collected from the eastern end of the excavation, contained 2,700 mg/kg TPHg and <3.0 mg/kg benzene. The excavation was back-filled with clean imported fill material. Soil sampling and back-filling activities are documented in Enviros' May 10, 1996 correspondence.

1996 Subsurface Investigation: In July 1996, Enviros performed additional site assessment activities. Six exploratory borings (B-10, B-11, B-12, B-13, V-1, and V-2) were drilled and sampled on July 17 and 19, 1996 using a hollow-stem auger drill rig. Borings B-11 and B-12 were completed as groundwater monitoring wells MW-1 and MW-2, and borings V-1 and V-2 were completed as soil vapor extraction wells V-1 and V-2, respectively. Soil sampling was not performed in boring V-1 due to the fact that it was installed into the back-fill material within the former UST excavation. A soil sample from below the saturated zone in boring V-2 was submitted for physical parameter analyses (porosity, permeability, fractional organic carbon content, and dry bulk density).

TPHg and benzene were not detected in soil samples collected from MW-1 (B-11), MW-2 (B-12), and B-13. TPHg was detected in soil samples collected from B-10 and V-2 at concentrations of 1.7 and 110 mg/kg, respectively. Benzene concentrations in soil samples from B-10 and V-2 were <0.0050 and 0.29 mg/kg, respectively.

Grab groundwater samples were collected from borings B-10, B-12 (MW-2), and B-13 at the depth of first encountered groundwater (approximately 8 to 11 fbg) for chemical analysis. Boring B-11 (MW-1) did not yield sufficient groundwater for grab groundwater sample collection. Monitoring wells MW-1 and MW-2 were developed and sampled on August 2, 1999 by Blaine Tech Services (Blaine) of San Jose, CA. TPHg concentrations in the groundwater samples ranged from <50 to 290,000 µg/l. Benzene concentrations ranged from <0.50 to 34,000 µg/l.

1997 Modified Phase I ESA: In February 1997, Enviros performed a modified Phase I ESA for the subject facility. A review of aerial photographs (1952 to 1994), city directories (1967 to 1993) and Sanborn maps (1912 to 1970) did not reveal evidence of an off-site source of petroleum hydrocarbons which would have impacted groundwater onsite. The properties located north and west of the subject facility appear to have been occupied by residential houses from at least 1912 to the present. The nearest gasoline stations identified in the vicinity of the subject

facility were a former Chevron station (740 27th Street at West) approximately 450 feet to the west, a former station (26th Street and Martin Luther King, Jr. Way) approximately 300 feet to the south, and a former Mobil station (554 27th Street) approximately 950 feet to the east.

2000 Sensitive Receptor Survey: In late 2000, Cambria performed a sensitive receptor survey which attempted to identify wells and underground utility conduits. Cambria obtained utility conduit maps from the City of Oakland Engineering Department to locate and map underground utility conduits which may act as preferential pathways for contaminant migration from the site. These conduit trenches are typically back-filled with materials which are more permeable than the surrounding native soils, therefore providing a path of least resistance for petroleum hydrocarbon migration within the local groundwater. Using these maps, Cambria identified the sanitary and storm sewer systems as the only utility conduits in the site vicinity which may act as preferential pathways. All other utilities are typically buried at depths which are shallower than those of the sewer systems. Conduits identified in the area are located at depths of approximately 3.5 to 9 fbg. Therefore, the potential does exist for groundwater to flow within these conduit trenches. Groundwater depth onsite historically ranges from approximately 4.5 to 10 fbg. However, since the typical groundwater flow direction onsite has generally been to the south, it is likely that any contaminant migration within the utility conduits would be limited, since the utility conduits located to the south of the site are the shallowest of all the conduits identified adjacent to the site at depths of 3.5 to 5.5 fbg. Cambria obtained well installation and destruction records from the California Department of Water Resources (DWR) in order to identify any active water producing wells in the vicinity of the site which may be at risk to petroleum hydrocarbon impact due to contaminant migration from the subsurface of the site. DWR records did not identify any existing wells within a ½-mile radius of the site.

2000 Subsurface Investigation: In November 2000, Cambria installed three soil borings (B-17, B-18 and B-19) and three groundwater monitoring wells (MW-3, MW-4 and MW-5). Up to 2,100 mg/kg TPHg and 3.3 mg/kg benzene were reported in soil samples collected. No TPHg or benzene was detected in soil samples collected from well MW-3. Except for 0.0070 mg/kg detected in soil sample B-18-7.0, no methyl tertiary butyl ether (MTBE) was detected in any of the analyzed soil samples. Tertiary butyl alcohol (TBA) was detected in soil samples MW-4-5.0 and B-19-5.0 at concentrations of 0.0079 and 0.0059 mg/kg, respectively.

Grab groundwater samples were collected from borings B-17 through B-19 at first encountered groundwater for analyses during the investigation. TPHg concentrations in grab water samples collected from the borings ranged from 58,000 to 190,000 µg/l. Benzene concentrations ranged from 4,400 to 13,000 µg/l. MTBE was detected in groundwater at concentrations of 16 and

300 µg/l from B-19 and B-17, respectively, and TBA was detected at 240 µg/l in B-19 only. No SPH was observed during the investigation.

2001 Oxygen Releasing Compound (ORC) Installation: As approved by the (ACHCSA), Blaine installed ORCs in wells V-1 and V-2 during the second quarter monitoring event on May 2, 2001. ORCs were removed during the fourth quarter 2001 monitoring event. MTBE has not been detected in these two wells since the ORCs were installed.

2002 Site Investigation: In April 2002, Cambria installed borings B-20 through B-22. Groundwater was first encountered in the borings between 8.0 fbg (B-20) and 8.8 fbg (B-21 and B-22). The maximum TPHg and benzene concentrations detected in soil were 380 and 0.17 mg/kg, respectively, in the soil sample collected from 8.0 fbg in boring B-22, located behind the station building. No TPHg was detected in soil samples collected from boring B-21. No MTBE was detected in any of the analyzed soil samples collected from borings B-20, B-21, or B-22. Up to 160,000 µg/l TPHg and 18,000 µg/l benzene were reported in grab groundwater samples collected from borings B-20, B-21, and B-22. No MTBE was detected in grab groundwater samples collected from the borings. The complete report of findings was included in Cambria's June 21, 2002 *Site Investigation Report*. This document included recommendations for additional activities; however, a response from ACHCSA was never received.

2003 - 2005 Oxygen Releasing Compound (ORC) Installation: Although agency approval was not received, Shell proactively installed ORC in wells MW-5 and V-2 during first quarter of 2003. The ORCs were replaced on a semi-annual basis. The use of ORC was discontinued during the first quarter 2005, at Shell's request.

May 2005 Agency Meeting: Since no agency response was received to the June 2002 *Site Investigation Report* that contained recommendations for additional investigation, and since monitoring continued to indicate elevated concentrations of volatile constituents in groundwater, Shell authorized Cambria to prepare a work plan to investigate subsurface soil, groundwater, and soil vapor conditions along the property boundaries and at select locations on site. A new case worker was assigned to this project in early 2005, and following a meeting with the new case worker, technical comments and work plan approval were received in ACEH correspondence dated June 6, 2005. On August 15, 2005, Cambria submitted correspondence providing responses to the technical comments, notification of field work, and a request for extension for the report of findings. In correspondence dated August 19, 2005, ACEH granted the extension.

2005 Soil Vapor Investigation: From August 28 through 31, 2005, Cambria installed ten soil borings (GP-1 through GP-10). In soil, TPHg was detected from borings GP-1 at 10.0 fbg, GP-2 at 4.5 fbg, GP-3 at 5.0 and 8.5 fbg, GP-6 at 9.5 fbg, and GP-7 at 9.5 fbg at concentrations ranging from 1.5 to 3,300 mg/kg and benzene was detected from borings GP-2 at 4.5 fbg, and GP-3 at 5.0

and 8.5 fbg at concentrations ranging from 0.027 to 15 mg/kg. In groundwater, TPHg was detected in all four borings (GP-1, GP-3, GP-6, and GP-7) at concentrations ranging from 9,100 to 140,000 µg/l and benzene was also detected in all four groundwater samples at concentrations ranging from 320 to 17,000 µg/l. Soil vapor samples were collected from each boring and TPHg was detected in GP-1 through GP-10 at concentrations ranging from 350 to 71,000,000 micrograms per cubic meter (ug/m^3). Benzene was detected in soil samples collected from borings GP-1 through GP-3 and GP-5 through GP-10 at concentrations ranging from <4.1 to 170,000 ug/m^3. A complete discussion and presentation of these activities and findings is included in Cambria's November 15, 2005 *Site Investigation Report.* This report also included recommendations for performing a door-to-door survey within 300 feet of the site to confirm basement locations, building construction, and potential sources; preparing work plans for pilot testing and plume delineation. Cambria submitted the November 22, 2005 *Feasibility Study Work Plan* and the December 16, 2005 *Plume Delineation Work Plan*, which Alameda County Environmental Health (ACEH) staff approved in their December 29, 2005 correspondence.

December 2005 – Door-to-Door Survey: Cambria conducted a door-to-door survey within 300-feet of the subject site for wells, basements, and foundation type to identify building construction and potential vapor receptors. Questionnaires were sent to 110 properties and responses for 25 properties were received as of January 13, 2006. Tabulated data and a list of properties included in the survey, and which completed surveys were received was included in our *Door to Door Survey Report, Access Agreement Update, and Status/Schedule Update* submittal dated January 15, 2006. Of the 25 responses received, none of the properties had basements. Three properties were denoted as vacant; nine properties contained buildings constructed with slab-on-grade foundations; three contained buildings constructed with perimeter foundations. Responses for the other 10 properties were either left blank, marked as unknown, or the response was contradictory or unclear. Regarding underground storage tanks, 17 responses were negative, four responses were marked as "unknown", and four responses were left blank. With the exception of the monitoring wells at the subject site, no wells were identified through the survey activities.

January 2006 – Subsurface Investigation: On January 3 and 4, 2006, Cambria advanced three monitoring wells (MW-6 through MW-8), one soil boring (B-23), and six soil vapor probes (VP-1 through VP-6). In soil, TPHg was detected from borings MW-6 at 10.0 and 15.5 fbg, MW-7 at 11.5 and 16.5 fbg, MW-8 at 10.5 and 19 fbg, and B-23 at 10, 15.5, and 19.5 fbg at concentrations ranging from 7.1 to 3,800 mg/kg. Benzene was detected from borings MW-6 at 19.5 fbg, MW-8 at 19.5 fbg, and B-23 at 15.5 and 19.5 fbg at concentrations ranging from 0.0090 to 33 mg/kg. The vapor probes were not installed due to saturated soil conditions. A complete discussion and

presentation of these activities and findings is included in Cambria's April 14, 2006 *Site Investigation Report, and First Quarter 2006 – Groundwater Monitoring Report.*

January 2006 – DPE Pilot Test: Cambria conducted a five-day dual-phase extraction pilot test the week of January 16, 2006. The details and results were presented in Cambria's *Pilot Test Report* dated March 14, 2006. DPE was performed on wells V-1, V-2, MW-6, MW-7, MW-4, MW-5, and MW-8. On January 20, 2006, a constant vacuum DPE test was conducted on well MW-6. The report concluded **1)** the absence of vapor phase concentrations (and groundwater concentrations) from well V-1 indicates that the former UST excavation does not contain residual source material; **2)** high sustained and increasing vapor concentrations suggest source material is present in the vicinity of wells V-2, MW-5, and MW-8; **3)** variability in extraction flow rates across the site may reflect heterogeneities in subsurface soils or may suggest preferential pathways; and **4)** the extremely high effective radius of influence calculated for wells MW-5 and MW-8 during DPE testing on well MW-7 supports the presence of a preferential pathway in the vicinity of these wells. The data from the DPE pilot test suggests that DPE is feasible at this site. The groundwater table was effectively drawn down by DPE and moderate vapor extraction flow rates were yielded from some of the extraction points. Although DPE is deemed feasible, Cambria did not recommend implementing DPE at this site. The extraction points that yielded the highest vapor concentrations did not yield an effective vapor extraction flow rate. Conversely, low vapor concentrations were yielded from the extraction point that did yield an effective vapor extraction flow rate. Therefore, DPE is not considered feasible in the target areas at this site.

1996 to Present – Ongoing Groundwater Monitoring: Quarterly groundwater monitoring has been ongoing at the site since August 1996. No TPHg or benzene has been reported in groundwater samples collected from monitoring wells MW-1 and MW-2 since monitoring began. Although these wells are used for determining gradient, they have not been sampled since January 2004. Well V-1, installed within the former UST excavation, reported historical maximum concentrations of TPHg and benzene of 57,000 and 5,200 µg/l in October 1997. Concentrations in this well decreased to below the detection limits by April 1998, followed by seasonal fluctuations at low concentrations. As of January 2006, this well was below the method detection limits for all constituents, including the fuel oxygenates. Well V-2, located downgradient of the former UST excavation, has had historical maximum concentrations of 90,000 µg/l TPHg and 10,200 µg/l benzene. As of January 2006, this well contains 45,000 µg/l TPHg and 1,900 µg/l benzene. Fuel oxygenates were not detected, but the detection limits were elevated due to elevated petroleum concentrations.

Wells MW-3, MW-4, and MW-5 were added to the quarterly monitoring program in May 2001. No TPHg or benzene has been reported in well MW-3 since monitoring began and it has not been

sampled since January 2004. Historical maximum concentrations of 16,000 µg/l TPHg and 4,100 µg/l benzene have been reported in well MW-4. As of January 2006, well MW-4 reports 3,900 µg/l TPHg and 1,700 µg/l benzene. Well MW-4 also reports the fuel oxygenates di-isopropyl ether (DIPE) at 7.4 µg/l and tert butyl alcohol (TBA) at 32 µg/l. Historical maximum concentrations of 160,000 µg/l TPHg and 12,000 µg/l benzene have been reported in well MW-5. As of January 2006, well MW-5 reports 12,000 µg/l TPHg and 1,900 µg/l benzene. Well MW-5 does not report any fuel oxygenates, but the reporting limits are elevated due to elevated petroleum.

February 2006 – Install Offsite Wells MW-12 and MW-14: The December 20, 2005 *Plume Delineation Work Plan* proposed offsite activities including the installation of seven offsite monitoring wells and eight soil vapor probes. Based on responses from only two of the offsite property owners, Cambria completed a portion of the scope of work recommended. Monitoring wells MW-12 and MW-14 were installed at two offsite properties to 20 and 14.5 fbg, respectively. Groundwater was first encountered during drilling activities in borings MW-12 and MW-14 at 14.0 and 11.0 fbg, respectively. None of the soil samples from well MW-12 indicated the presence of any TPHg or BTEX. The 5-fbg sample from MW-14 also did not contain any reportable concentrations. TPHg was reported in the 10- and 14-fbg samples from MW-14 at concentrations of 32 and 970 mg/kg, respectively. Benzene was reported in the same two samples at concentrations of 0.0083 and 2.3 mg/kg, respectively. Fuel oxygenates were requested on the 10-fbg and 14-fbg soil samples from MW-14, and none were reported above the detection limits. These activities are documented in Cambria's May 25, 2006 *Subsurface Investigation Report.*

April 2006 – Survey and Site Visit: In addition to surveying the new wells, Cambria identified historical boring locations from patches on the ground surface, historical excavation edges, trenches, and other site features, and requested that they be included in the survey. Report figures since May 2006 have included the new survey data. Also, during the site visit, an inspection inside the building identified two bathrooms. A floor drain was observed in the northern-most bathroom. Standing liquid was present in the floor drain and automotive parts and cleaners were stored in this area. Thus, a sample from the floor drain was collected and submitted for analyses of volatile organic compounds (VOCs) by EPA Method 8260 and semi-volatile organic compounds (SVOCs) by EPA Method 8270. The floor drain sample was analyzed for VOCs and SVOCs. The results indicated the presence of carbon disulfide (3.69 µg/l), ethylbenzene (0.610 µg/l) and toluene (0.770 µg/l). This information was reported in Cambria's May 25, 2006 *Subsurface Investigation Report.*

May 2006 – Geophysical Survey: As recommended in Cambria's May 25, 2006 *Subsurface Investigation Report*, a geophysical study was performed on May 22, 2006. The objectives of this effort were to determine whether or not a waste oil UST was in the ground in the northwest portion of the property, and to evaluate the presence of subsurface utilities in this area that may act as preferential pathways, including the mapping of the sewer line from the floor drain found inside the northwest corner of the building during the April 19, 2006 site inspection. The results did not identify the presence of a UST on the northwest corner of the site, but did find another vent line located behind the northeast corner of the station building. A subsurface electric line was traced from the station building to the western property boundary, and an unidentified subsurface utility was traced from the northwest corner of the station building to the southwest, near MW-5 and toward MW-6. The presence of the unknown utility line in the northwest corner confirms the observations of a possible preferential pathway in this area based on the dual-phase extraction pilot test performed in January 2006. NORCAL was unable to run a line down the floor drain inside of the building due to the trap in the line, so the sewer cleanout was found on the exterior of the building. Accessing the cleanout would have resulted in damage to the cap, and the property owner would not grant permission for Cambria to open the cleanout and repair any damage. Thus, the location, direction, and depth of the sewer line in this area are still unknown. However, based on the GPR survey that was performed to try to locate a non-metallic sewer line, NORCAL concludes that the sewer line may be more than 4 feet below grade, since the GPR was unable to identify the line. This information was presented in Cambria's July 25, 2006 *Status Update, Report of Geophysical Survey, and Request for Agency Meeting*.