Shell Oil Products US

February 13, 2003

Alameda County

FEB 20 2003

Environmental Health

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

Subject: **Shell-branded Service Station**
540 Hegenberger Road
Oakland, California

RO223

Dear Mr. Chan:

Attached for your review and comment is a copy of the *Interim Remedial Action 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 (559) 645-9306 with any questions or concerns.

Sincerely,

Shell Oil Products US

Karen Petryna

Karen Petryna
Sr. Environmental Engineer

P.O. Box 7869 Burbank, CA 91510-7869 Phone (559) 645-9306 Facsimile (559) 645-5643

CAMBRIA

February 13, 2003

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

Re: **Interim Remedial Action Work Plan**
Shell-branded Service Station
540 Hegenberger Road
Oakland, California
Incident #98995752
Cambria Project #245-0414

Alameda County
FEB 20 2003
Environmental Health

Dear Mr. Chan:

On behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting this *Interim Remedial Action Work Plan* to install a groundwater extraction (GWE) system at the subject site. The proposed GWE system will be used to address elevated concentrations of dissolved methyl-tertiary-butyl ether (MTBE) in groundwater at the site. A site summary and our proposed scope of work are presented below.

SITE BACKGROUND

Location: This active Shell-branded service station is located on the southeast corner of the intersection at Hegenberger Road and Edes Avenue in Oakland, California (Figure 1). The site is surrounded by commercial property. The service station layout includes a station building, two dispenser islands, and a gasoline underground storage tank (UST) complex (Figure 2).

Subsurface Conditions: The site is underlain primarily by silty sands, sandy silts, and silty clays to a total explored depth of 25 feet below ground surface (bgs).

Groundwater Depth and Flow Direction: Since groundwater monitoring was initiated in August 1998, depth to groundwater has ranged from 5.3 to 9.6 fbg. Historically, groundwater flow direction has ranged from north to northeast.

Cambria Environmental Technology, Inc.

5900 Hollis Street
Suite A
Emeryville, CA 94608
Tel (510) 420-0700
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PREVIOUS SOIL AND GROUNDWATER INVESTIGATIONS

August 1996 Piping Repair: On August 8, 1996, Cambria collected one soil sample beneath the piping at Dispenser 1, which was being repaired. In this sample, 3,400 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons as gasoline (TPHg) were detected, 17 mg/kg of benzene were detected, and 720 mg/kg of MTBE were reported by EPA Method 8020.

1998 Station Upgrade: In January and February 1998, Paradiso Mechanical of San Leandro, California added secondary containment beneath the existing dispensers and submersible turbine pumps. Cambria collected soil samples from beneath the dispensers. The maximum concentrations of hydrocarbons reported in soil were 340 mg/kg TPHg and 3.7 mg/kg benzene beneath the western dispenser-island. During the line tightness test on February 6, 1998, a leak in the piping between the USTs and the western dispenser-island was discovered and repaired on the same day. No separate-phase hydrocarbons were observed during Cambria's February 7, 1998 site visit. Based on Cambria's February 6, 1998 telephone conversation with Barney Chan of the Alameda County Health Care Services Agency (ACHCSA), additional sampling in the area of the repaired piping was not required due to a planned soil and groundwater investigation at the site.

1998 Soil Borings: On March 6, 1998, Cambria advanced five onsite soil borings (SB-1 through SB-5). Boring depths ranged from 12 to 20 fbg. The maximum TPHg, benzene, and MTBE concentrations in soil were reported at 6 fbg in boring SB-5 at 3,400 mg/kg, 39 mg/kg, and 170 mg/kg, respectively. The maximum TPHg, benzene, and MTBE concentrations in groundwater were also reported in boring SB-5, at 200,000 micrograms per liter (µg/L), 11,000 µg/L, and 1,300,000 µg/L, respectively.

1998 Groundwater Monitoring Well Installation: On July 14 and 15, 1998, Cambria installed three groundwater monitoring wells and advanced one soil boring at the site. MW-1 was installed to 25 fbg in boring SB-A. MW-2 and MW-3 were installed to 20 fbg in borings SB-B and SB-C, respectively. SB-D was advanced to 16 fbg. The maximum concentrations of hydrocarbons reported in soil were 460 mg/kg TPHg, 4.7 mg/kg benzene, and 240 mg/kg MTBE in boring SB-D at a depth of 5.5 fbg. The maximum concentrations of hydrocarbons reported in groundwater were 190 µg/L benzene in well MW-3, and 31,000 µg/L MTBE by EPA Method 8020 in the southwestern tank backfill well. No TPHg was detected in any of the groundwater samples. Groundwater has been monitored onsite since August 1998.

2000 Site Investigation: On August 25 and September 5, 2000, Cambria drilled three offsite soil borings (SB-E, SB-F, SB-G) and installed one offsite groundwater monitoring well (MW-4). MTBE concentrations in soil samples collected during the investigation ranged from non-detect to 1.83 parts per million (ppm). MTBE concentrations in groundwater samples collected from the borings ranged from 68.3 parts per billion (ppb) (SB-F) to 58,400 ppb (SB-G).

2002 Site Investigation: On June 7, 2002, Cambria installed one onsite groundwater monitoring well (MW-5). MTBE concentrations of 13 ppm and 5.5 ppm were detected in the soil samples collected from 14 fbg and 19 fbg, respectively, in monitoring well MW-5. Both of these samples were collected from the saturated zone.

1999-2002 INTERIM REMEDIATION EFFORTS

From July 1999 through June 2000, mobile GWE using a vacuum truck was performed at the site to remove dissolved-phase hydrocarbons and MTBE from beneath the site. From June through December 2000, dual-phase vacuum extraction (DVE) was conducted to enhance GWE and to extract vapor-phase hydrocarbon and MTBE from the soil as well. DVE was discontinued after the December 2000 event, and monthly DVE events were resumed in May 2001. Due to low vapor mass-removal rates, DVE was discontinued in October 2001, and monthly GWE was re-initiated. Wells MW-1 and MW-3 and tank backfill well BW-D were used for extraction until April 2002, when extraction from the tank backfill was switched from well BW-D to BW-B due to higher historic MTBE concentrations observed in this well. Monthly extraction from these wells is ongoing. To date, a total of 77,845 gallons of groundwater have been extracted, resulting in removal of 12.81 pounds of liquid phase MTBE. A total of 0.72 lbs. of vapor phase MTBE were removed during DVE activities.

PROPOSED GWE SYSTEM

Shell has determined that contaminant concentrations detected at this facility warrant remedial action. Shell authorized the site's previous consultant, Miller Brooks Environmental (Miller Brooks), to design a GWE system to mitigate and remediate dissolved-phase MTBE in groundwater onsite and to hydraulically control MTBE migration in groundwater at the perimeter of the site. The system will also treat other fuel-related hydrocarbons detected in limited amounts in the groundwater, including benzene, ethylbenzene, xylene and tert-butanol. Cambria

will complete the design, permitting and installation of this system. The conceptual design of the system is described below.

System Design: Miller Brooks prepared engineering design drawings for permitting and construction of the GWE system. The system was designed with capacity for easy expansion to additional wells, and to handle additional groundwater flow, if necessary.

Data pertaining to anticipated groundwater flow rates has been collected during mobile GWE events currently conducted on a monthly basis. Although these events do not serve as a formal pump test designed to calculate properties such as transmissivity or hydraulic conductivity, sufficient data was gathered to allow for a reasonable estimation of system flow rates. Monitoring wells MW-1, MW-3, and MW-5 are anticipated to produce flows less than 0.5 gallon per minute (gpm) each. The tank backfill well, BW-B, is anticipated to produce flows of approximately 2.5 gpm. An average total flow from all wells is anticipated to produce a flow of approximately 4 gpm.

Pumping Locations: The proposed interim GWE and treatment system design includes pumping from wells MW-1, MW-3, MW-5 and tank backfill well BW-B. Refer to Figure 2, prepared by Miller Brooks, for the location of these wells.

Wells MW-1 and MW-3 were constructed using 2-inch diameter Schedule 40 polyvinyl chloride (PVC) casing installed to a depth of 25 and 20 feet bgs, respectively. Well MW-1 is screened from 5 to 25 feet bgs, well MW-3 is screened from 5 to 20 feet bgs, and both are screened with 0.010-inch slotted perforation. Well MW-5 was constructed using 4-inch diameter PVC casing installed to a depth of 20 feet bgs. Well MW-5 is screened from 5 to 20 feet bgs. Backfill well BW-B is a 4-inch slotted PVC casing installed within the pea gravel tank backfill.

System Equipment: Groundwater will be extracted from the wells using pneumatic submersible pumps due to the relatively low anticipated flow rates. Selection of pump makes and models will be determined as part of the final design. An air compressor will provide compressed air to drive the pneumatic pumps.

The extracted groundwater will be pumped from the wells into a 500-gallon surge tank, located in the remediation compound. The compound will be located next to the car wash as shown in Figure 2. The surge tank will be equipped with two high/low water level shutoffs to control the downhole well pumps and the treatment system transfer pump.

From the transfer pump, water will flow through a particulate bag filter and then through three 1000-pound aqueous-phase carbon vessels (in series) prior to discharge to the sanitary sewer.

Flow meters, pressure gauges, and sample ports will be installed to control and monitor system operation.

The steel adsorber tanks will be bolted down onto a concrete pad surrounded by a 6-foot high concrete block wall with a chain-link fence locking gate. Vertical slats will be placed in the chain-link gate. Necessary permits will be obtained from the City of Oakland, Pacific Gas and Electric, and the East Bay Municipal Utility District (EBMUD) prior to construction and installation of the proposed treatment system.

An electrical control panel with a programmable logic controller will interlock and operate the GWE system controls. A telephone autodialer will be installed to remotely notify Cambria of system shutdown events.

Building Permits: Cambria will complete engineered drawings and specifications and obtain necessary permits from the City of Oakland for construction of the system.

Discharge Permitting: Cambria anticipates discharging treated groundwater to the local sanitary sewer system, under the authorization of an EBMUD discharge permit. Cambria will obtain necessary permits from EBMUD on behalf of Shell.

Construction: Cambria will issue engineered drawings, specifications, and a detailed scope of work to a Shell-preferred contractor for submittal of construction costs and schedule. The contractor will begin construction after Shell approves the construction cost and schedule and after all permits are obtained. Cambria will provide oversight of construction activities included in the contractor's scope of work. The contractor will arrange all required inspections.

Utility Location: The contractor will notify Underground Service Alert of the construction activities.

Site Health and Safety Plan: Cambria and the contractor will prepare comprehensive site safety plans to protect site workers. The plan will be kept onsite during field activities and will be reviewed and signed by each site worker.

Start-up: After inspection approval, Cambria will collect GWE system start-up samples and operational data as specified by sewer discharge permit. The samples will be transported to a State-approved analytical laboratory for the appropriate chemical analysis. The analytical results will be submitted to EBMUD for review. Start-up of the GWE system will occur after receiving discharge approval from EBMUD. Copies of any start-up reports submitted to EBMUD will also be sent to the ACHCSA.

Monthly GWE: Monthly GWE through vacuum operations has been performed at this site as an interim measure to remove dissolved-phase hydrocarbons from the subsurface and currently continues. With the installation of the proposed fixed groundwater remediation system, monthly GWE will no longer be necessary and will be discontinued. Monthly GWE will continue until the GWE system is installed and operational.

CLOSING

Please call Diane Lundquist at (510) 420-3334 if you have any questions or comments. Thank you for your assistance.

Sincerely,
Cambria Environmental Technology, Inc.

Diane M. Lundquist, P.E.
Principal Engineer

Figures: 1 - Vicinity/Area Well Survey Map
2 - Site Plan Showing Proposed Remediation System Layout (prepared by Miller Brooks Environmental)

cc: Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, CA 91510-7869

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10/05/01

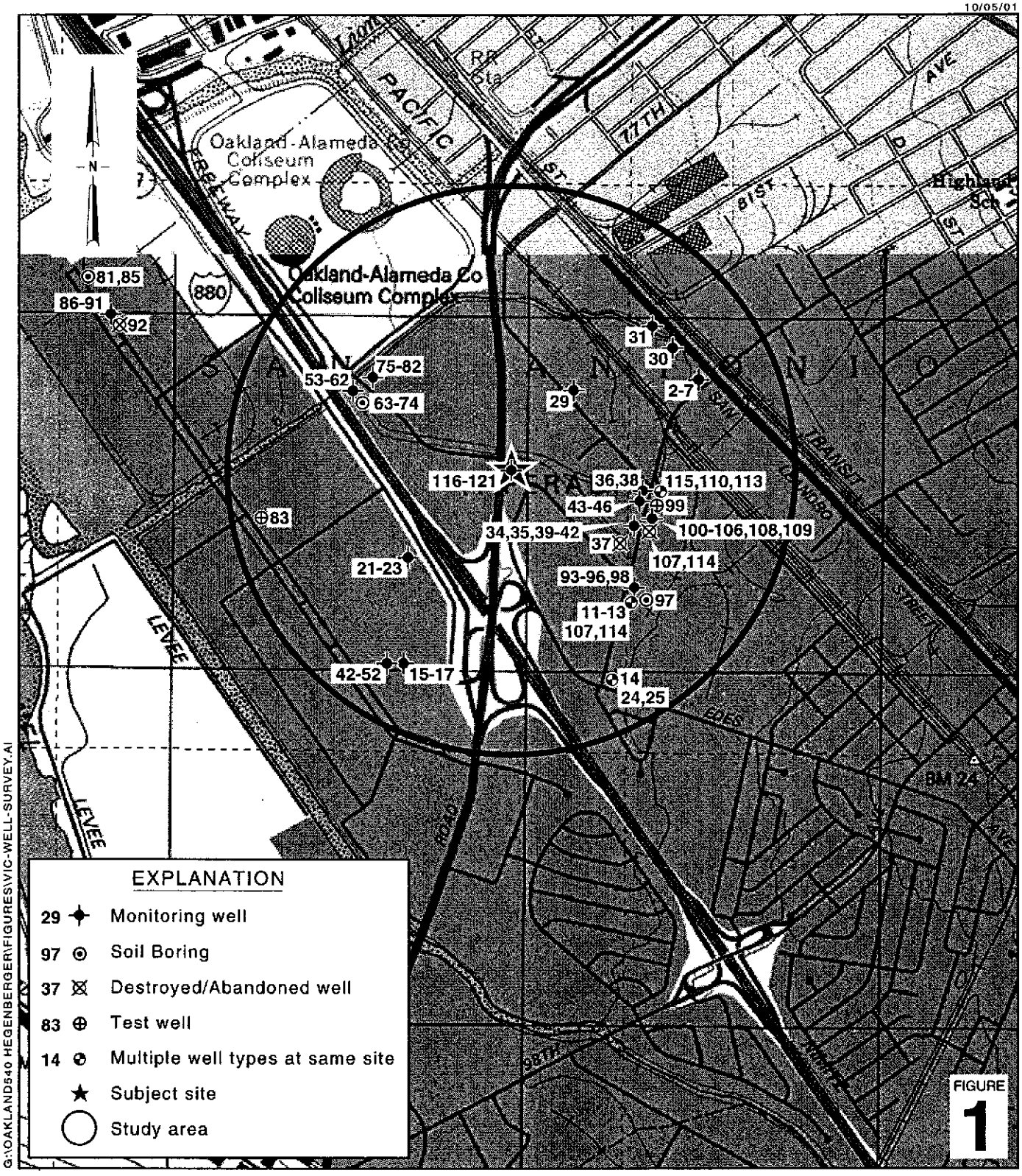

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FIGURE 1

Shell-branded Service Station
540 Hegenberger Road
Oakland, California
Incident #98995752

CAMBRIA

Vicinity / Area Well Survey Map
(1/2-Mile Radius)

tb-b1.dwg-08/21/00

SB-E

12" ss

planter

BW-A

FL = -1.0'

MW-4

LEGEND

PROPOSED SYSTEM COMPOUND

SB-3 ◐ SOIL BORING LOCATION (MARCH 1998)

SB-D ◉ SOIL BORING LOCATION (JULY 1998)

SB-G ● SOIL BORING LOCATION (AUGUST 2000)

BW-C TANK BACKFILL WELL

MW-4 SITE MONITORING WELL

BW-B

USTs

SB-F

BW-D

MW-5

BW-C

SB-2

SB-3

SYSTEM TRENCH

12" ss

MW-4

MW-3

MW-1

SB-D

Dispensers

Building

Dispensers

Carwash

planter

SB-5

SB-G

planter

N

W E

S

0 20 FEET

SCALE

SB-4

SYSTEM TRENCH
(INCLUDES SEWER DISCHARGE
PIPING & ELECTRICAL)

PG&E Vault

PROPOSED REMEDIATION COMPOUND

SEWER CLEANOUT

SB-1

MILLER BROOKS Environmental, Inc

2425 W. 14TH STREET, D-2
OAKLAND, CA
(510) 891-0092

PROJECT NO. 01-155-0302-01

DRAWN BY:	PEL
DATE:	08/20/02
REVISED BY:	PEL
REVISED:	08/21/02
APPROVED BY:	HB
DATE:	08/21/02

SITE PLAN SHOWING PROPOSED
REMEDIATION SYSTEM LAYOUT

SHELL SERVICE STATION
540 HEGENBERGER ROAD
OAKLAND, CA.

FIGURE 2

FILE: K:\DWGS\EQUILON\OAKLAND (540 HEGENBERGER)\SITE PLAN
DATE PLOTTED: 08/21/02