

March 22, 2002

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

Re: **Well Survey**
Former Shell Service Station
1230 14th Street
Oakland, California
Incident #: 97088250
Project #: 244-0233



Dear Mr. Chan:

Effective March 1, 2002, Equiva Services LLC and Equilon Enterprises LLC are now doing business as (dba) Shell Oil Products US (Shell). On behalf of Shell, Cambria Environmental Technology, Inc. (Cambria) is submitting this *Well Survey* as recommended in our March 7, 2002 *Risk-Based Corrective Action Report* and as agreed to in the meeting between the Alameda County Health Care Services Agency, Shell and Cambria on March 11, 2002. The well survey was conducted to identify potential receptors within ½-mile of the site.

GROUNDWATER DEPTH AND FLOW DIRECTION

Groundwater depth beneath the site has varied from approximately 4.8 to 13.9 feet below grade. The average groundwater flow direction, as calculated from depth to water measurements in on-and off-site monitoring wells, is toward the north-northeast at a gradient of approximately 0.003 ft/ft.

Oakland, CA
San Ramon, CA
Sonoma, CA

WELL RECEPTOR SURVEY

**Cambria
Environmental
Technology, Inc.**

Cambria reviewed California Department of Water Resources (DWR) records to identify potential receptor wells within a ½-mile radius of the former Shell service station at 1230 14th Street in Oakland. Cambria obtained a total of 247 well driller's reports for wells

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within the four township and range sections that encompass the survey area. From these records, Cambria located three potential receptor (water-producing) wells within a ½-mile radius of the site and three potential receptor wells just outside the ½-mile radius. The locations of wells identified in the well survey are shown on Figure 1, and well details are summarized in Table 1. Monitoring wells in the site vicinity were not located or mapped since they are not water producing wells and thus are not considered receptors. Given the confidential nature of DWR's well information, copies of the reviewed records are not included in this report. The DWR records will be maintained in Cambria's files and will be made available for review upon request.

According to DWR records, the closest potential receptor is a 147-foot well of unknown use located in DeFremery Park approximately 660 feet north-northeast of the site. However, Cambria was unable to locate the well during a site visit to the park. In addition, City of Oakland personnel working at the park had no knowledge of an operational well on the property. The DWR record indicated that the well was installed in 1927, so it is possible that it has since been destroyed or abandoned. ^{not} D.R. part of well

DWR records also identified a well of unknown use located approximately 1,600 feet north of the site and a cathodic protection well located approximately ½-mile northwest of the site. There are also two wells of unknown use and one industrial well just over ½-mile southwest of the site. In addition, DWR records identified a cluster of at least 53 product recovery wells (twenty of which were documented as destroyed) associated with a dairy facility, located approximately 660 feet west-northwest of the site. Given that these wells are only 15-16 feet deep, it is unlikely that they are used for water production. These wells are not considered receptors and were not mapped or included in the table. ^{at site / Carnation}

CONCLUSIONS

DWR records listed one potential receptor well located within ½-mile downgradient of the site, a well of unknown use in DeFremery park about 660 feet to the north-northeast. However, given the fact that a site visit provided no evidence of an operating well in the park, it is unlikely that this well is being used to produce water, and given the age of the well record, it is possible that the well has since been destroyed or abandoned. Due to either distance or location upgradient and crossgradient of the subject site, it is unlikely that any known well would be impacted by hydrocarbons or oxygenates originating from at the site. ?

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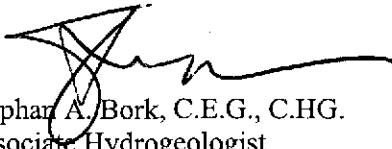
CLOSING

We appreciate the opportunity to work with you on this project. Please contact Melody Munz at mmunz@cambria-env.com or (510) 420-3324 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc




Sue Landsittel
Staff Geologist


Stephan A. Bork, C.E.G., C.HG.
Associate Hydrogeologist

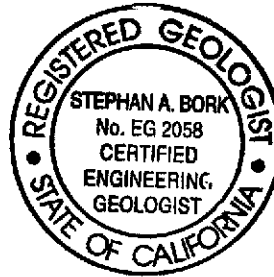


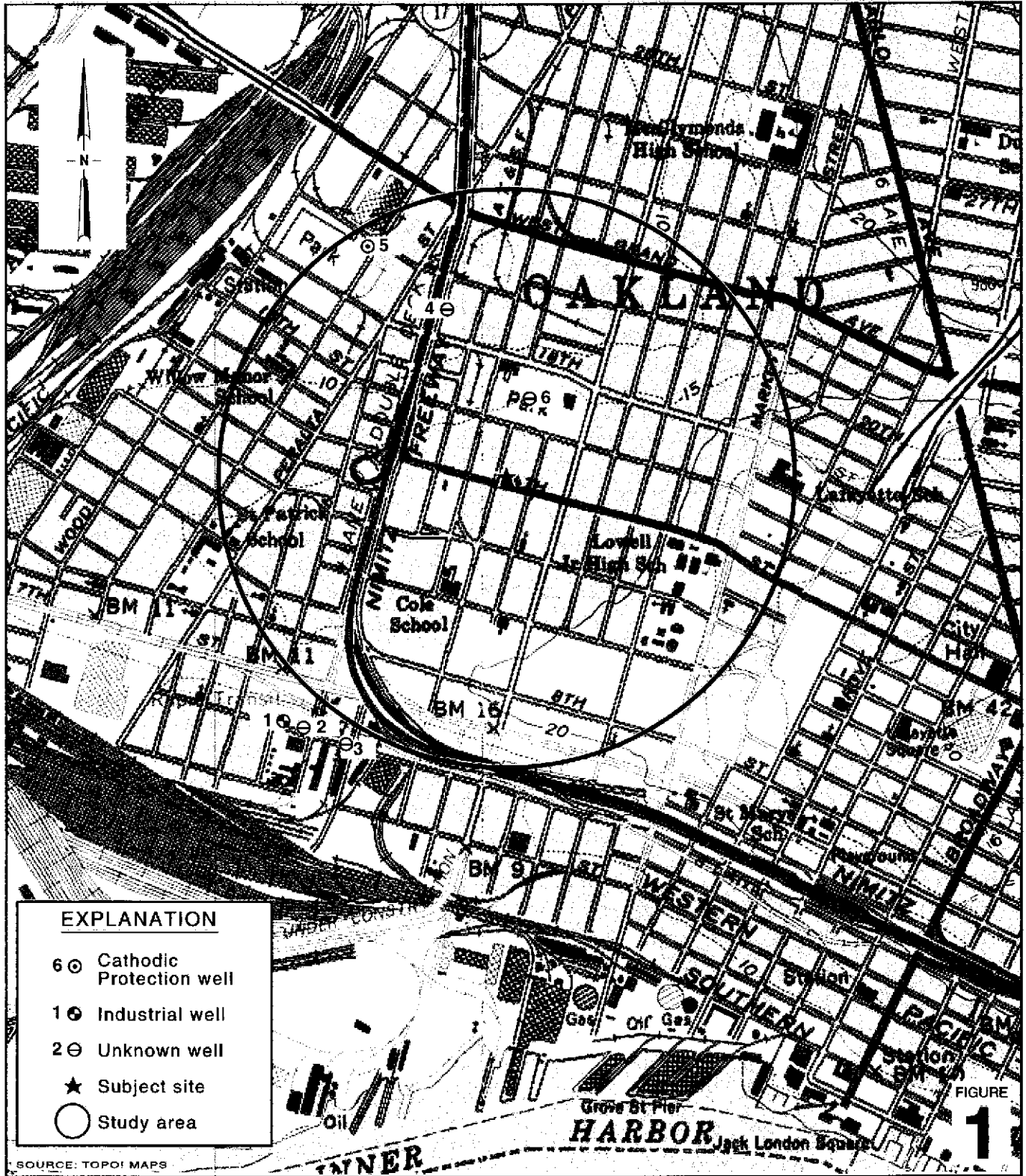
Figure: 1 - Area Well Survey

Table: 1 - Department of Water Resources Well Survey Results

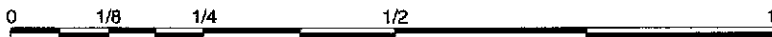
cc: Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, CA 91510-7869
Matthew Dudley, Sedgwick, Detert, Moran, & Arnold, 1 Embarcadero Center,
16th Floor, San Francisco, CA 94111-3628

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SOURCE: TOPOI MAPS



SCALE : 1" = 1/4 MILE

Former Shell Service Station
 1230 14th Street
 Oakland, California
 Incident #97088250



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Area Well Survey
 (1/2-Mile Radius)

Table 1. Department of Water Resources Well Survey Results

Former Shell Service Station - Incident# 97088250, 1230 14th St., Oakland

Map ID	Well ID	Installation Date	Owner	Use	Depth (fbg)	Screened Interval (fbg)
1	1S/4W-34F4	08/08/69	Universal Foods Corp.	IND	400	200-380
2	1S/4W-34F2	1946 or earlier	Red Star Yeast Co.	UNK	350	188-330
3	1S/4W-34F1	08/39	Golden West Brewing Co.	UNK	277	Unknown
4	1S/4W-27F	03/03/13	White	UNK	212	Unknown
5	1S/4W-27F1	07/31/74	Pacific Gas & Electric Co.	CAT	120	---
6	1S/4W-27K	09/06/27	City of Oakland	UNK	137	Unknown

Notes and Abbreviations:

Well information provided by the Department of Water Resources.

Map ID number refers to map location on Figure 1.

Well ID = California State well identification number as recorded by the Department of Water Resources in Sacramento, California

fbg =feet below grade

IND = Industrial Well

UNK = Well of Unknown Use

CAT = Cathodic Protection Well

Monitoring wells were not located or mapped.