CAMBRIA

March 18, 1998

Ms. Susan Hugo
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Well Abandonment Report**
Shell Service Station
3420 San Pablo Avenue
Oakland, California
WIC #204-5508-5306
Cambria Project #240-0554

Dear Ms. Hugo:

On behalf of Shell Oil Products Company (Shell), Cambria Environmental Technology (Cambria) has prepared this letter to document the abandonment of monitoring wells MW-3 and MW-6 at this site. The location of these wells is shown on the attached figure. During a December 4, 1997 telephone conversation with Paul Waite of Cambria, you gave approval for the wells to be abandoned because they are within the footprint of the planned building at the site.

Cambria obtained a well abandonment permit (#97WR211) from the Alameda County Department of Public Works (Attachment A). The wells were abandoned by pressure grouting on December 5, 1997 by Gregg Drilling & Systems, Inc. of Martinez, California. Paul Waite of Cambria was on site to oversee the well abandonment. Our standard field procedures for well abandonment are attached (Attachment B). No representative of the Alameda County Department of Environmental Health was on site during the abandonment because you stated that none was required.

As discussed, Shell will install two replacement wells in the vicinity of the abandoned wells. The replacement wells will be installed after the construction of the new building is finished.

Thank you for your assistance. Please call if you have any questions.

Sincerely,
Cambria Environmental Technology, Inc.

Paul Waite
Project Engineer

cc: A.E. (Alex) Perez, Shell Oil Products Company, P.O. Box 8080, Martinez, California 94553, Fax (510) 335-5029
Ray Newsome, Shell Oil Products Company, P.O. Box 8080, Martinez, California 94553, Fax (510) 335-5016
Alvin Kan, Alameda County Public Works Department, 951 Turner Court, Suite 300, Hayward, California 94545-2651, Fax (510) 670-5262

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CAMBRIA
ENVIRONMENTAL
TECHNOLOGY, INC.
1144 65TH STREET,
SUITE B
OAKLAND,
CA 94608
PH: (510) 420-0700
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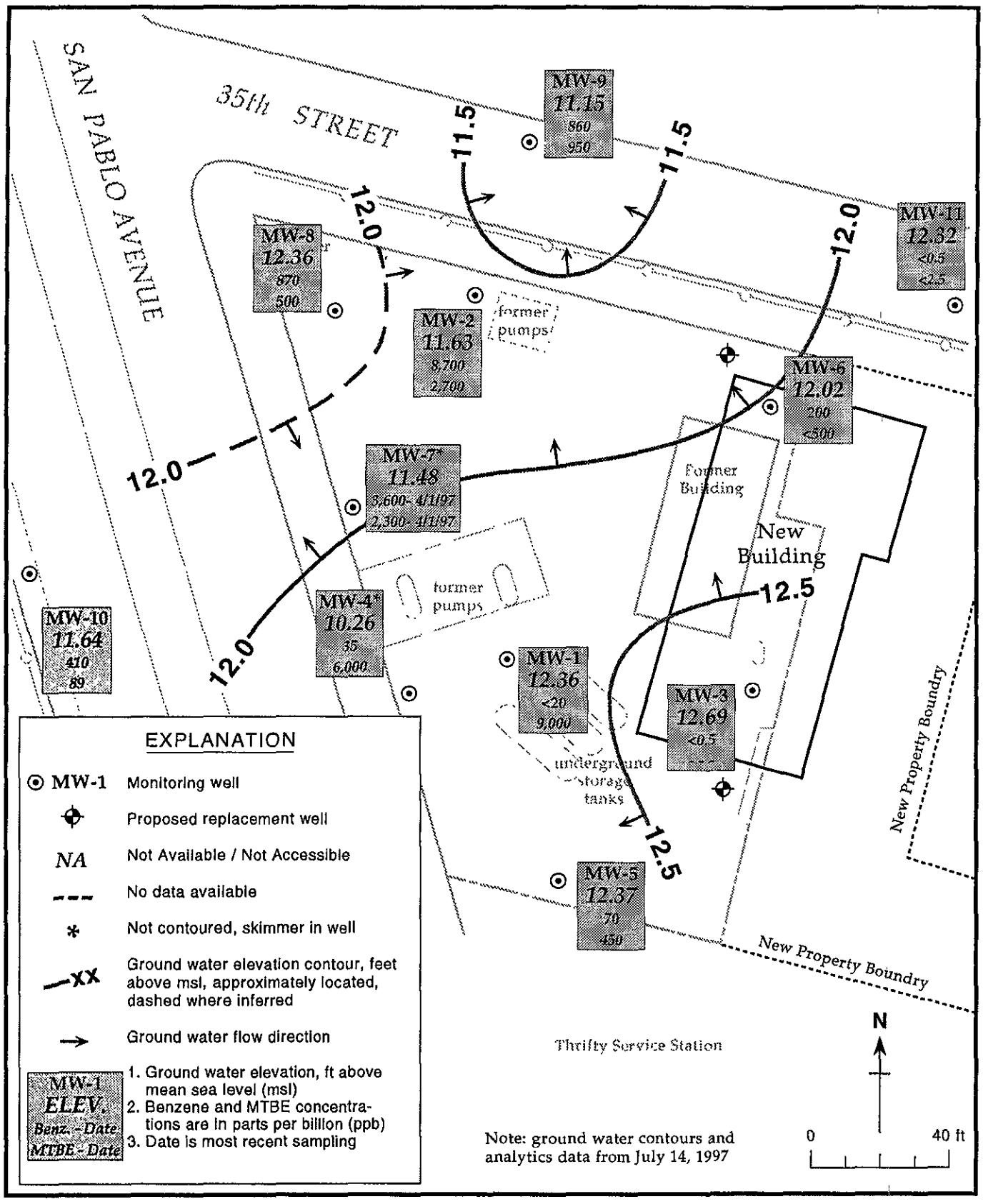

Figure 1. Future Building Location and Well Replacement - Shell Service Station WIC #204-5508-5306, 3420 San Pablo Avenue, Oakland, California

ATTACHMENT A

Well Abandonment Permit

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 3420 San Pablo Ave. Oakland, CA

California Coordinates Source _____ ft. Accuracy ± ___ ft.
CCN _____ ft. CCE _____ ft.
APN _____

CLIENT
Name Shell Oil Products Company
Address P.O. Box 5278 Phone (510) 335-5027
City Martinez Zip 94553

APPLICANT
Name Cambria Environmental Technology, Inc.
Fax (510) 420-9170
Address 1144 65th St, Suite B Phone (510) 420-0700
City Oakland, CA Zip 94608

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☐	Well Destruction	☑

by pressure grout (7 wells)

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other _____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☐
Cable	☐	Other	☐		

DRILLER'S LICENSE NO. C57-485-165

WELL PROJECTS
Drill Hole Diameter _____ in. Maximum
Casing Diameter _____ in. Depth _____ ft
Surface Seal Depth _____ ft. Number _____

GEOTECHNICAL PROJECTS
Number of Borings _____ Maximum
Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE 11-14-97 11/20/97
ESTIMATED COMPLETION DATE 11-14-97 11/24/97

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE _____ DATE 11/11/97

FOR OFFICE USE

PERMIT NUMBER 97WR211
WELL NUMBER _____
APN _____

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A) **GENERAL**
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. **WATER SUPPLY WELLS**
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. **GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS**
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. **GEOTECHNICAL**
Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. **CATHODIC**
Fill hole above anode zone with concrete placed by tremie.

(F) **WELL DESTRUCTION**
See attached.

G. **SPECIAL CONDITIONS**

APPROVED _____ DATE 11/21/97

ATTACHMENT B

Standard Field Procedures for Abandoning Monitoring Wells

STANDARD FIELD PROCEDURES FOR ABANDONING MONITORING WELLS

This document presents standard field methods for abandoning ground water monitoring wells. The objective of well abandonment is to destroy wells in a manner that is protective of potential water resources. The two procedures most commonly used are pressure grouting and drilling out the well. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Pressure Grouting

Pressure grouting consists of injecting neat Portland cement through a tremie pipe under pressure to the bottom of the well. The cement is composed of about five gallons of water to a 94 lb. sack of Portland I/II Cement. Once the well casing is full of grout, it remains pressurized by applying pressure with a grout pump. The well casing can also be pressurized by extending the well casing to the appropriate height and filling it with grout. In either case, the additional pressure allows the grout to be forced into the sand pack. After grouting the sand pack and casing, the well vault is removed and the area resurfaced or backfilled as required.

Well Drill Out

When well drill out is required, a hollow-stem auger drilling rig is used to drill out the well casing and pack materials. First, drill rods are dropped down the well and used to guide the augers as they drill out the well. Once the well is drilled out, the boring is filled with Portland cement injected through the augers or a tremie pipe under pressure to the bottom of the boring. The well vault is removed and the area resurfaced or backfilled as required.