CAMBRIA

January 8, 2007

Mr. Barney Chan
Alameda County Environmental Health Services (ACEHS)
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: **Remedial Action Plan**
Former Chevron Service Station #9-5607
5269 Crow Canyon Road
Castro Valley, California
Cambria Project No. 31J-1950

Dear Mr. Chan,

On behalf of Chevron Environmental Management Company (Chevron), Cambria Environmental Technology, Inc. (Cambria) is submitting this remedial action plan (RAP) for the above-referenced site (Figure 1). This RAP was requested by Alameda County Environmental Health Services (ACEHS) in a letter dated August 15, 2005 (Attachment A). The description of the proposed remediation system, hydrocarbon distribution in soil and groundwater, and proposed schedule of implementation are presented below.

PROPOSED REMEDIAL ACTION

A two-phase extraction (TPE) pilot test was performed at the site, which indicated that TPE would be an effective technology to remove hydrocarbon mass located in soil below the water table underlying the site. Results of this test were summarized in Cambria's *Two-Phase Extraction Pilot Test Report*, dated July 12, 2005. TPE is a form of multi-phase extraction (MPE) in which groundwater and soil vapor are extracted simultaneously from an extraction well by applying a high vacuum to a hose (or "stinger") which is lowered into the groundwater within the extraction well. Upon review of the extent of soil and groundwater impacts beneath the site and adjacent properties, Cambria believes that dual-phase extraction (DPE) is the more appropriate form of MPE to implement at the site. DPE is the form of MPE in which groundwater is extracted from a well using a submersible pump and then a vacuum is applied directly to the well casing to extract soil vapor. DPE would be more technically feasible due to the greater distances from the proposed remediation compound to the proposed extraction wells than originally estimated at the time of the TPE pilot test. Therefore, Cambria recommends implementation of a DPE system at the site to remove hydrocarbon mass to the point that environmental screening

Cambria Environmental Technology, Inc.

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levels (ESLs)[1] can be met under monitored natural attenuation (MNA) in a reasonable time frame. Existing groundwater monitoring wells C-1, C-3, C-6, C-9, C-12, and recovery well RW-1 will be utilized as extraction points.

DPE System Implementation

Remediation System Permits: Air and groundwater discharge permits will be obtained from the Bay Area Air Quality Management District and the Castro Valley Sanitation District, respectively. Building permits for system construction will be obtained from the City of Castro Valley Building and Planning Departments.

Remediation Compound and System Equipment: The DPE system will be constructed on the former Chevron service station site. Cambria will trench and install piping from the proposed extraction wells to a remediation compound. The proposed extraction well and treatment system compound layout is shown in Figure 2. The treatment compound will house a blower and natural gas-fired thermal/catalytic oxidizer for extracting and treating soil vapor. Groundwater will be extracted from the wells using pneumatic submersible pumps, and extracted groundwater will be treated using aqueous-phase granular activated carbon, located in the treatment compound. An air compressor will also be located in the treatment compound to supply compressed air to the pneumatic pumps.

Remediation Objectives: The ultimate clean up goal for the sites is to meet established ESLs for the chemicals of concern (COCs). It has been documented that hydrocarbon impacts in soil and groundwater degrade by natural processes, and background concentrations will be achieved given sufficient time. The goal of active remediation applied at this site is to sufficiently reduce hydrocarbon mass in soil and groundwater in the source areas to the point that natural attenuation can achieve cleanup goals within a reasonable period of time, usually considered up to 10 years. Once hydrocarbon mass removal rates decrease to asymptotic levels, and remain at that level for at least one calendar quarter (3 monthly samples), active remediation will cease. Following termination of active remediation, groundwater monitoring results will be used to estimate the rate of natural attenuation of the COCs and to determine when the WQOs will be met.

PETROLEUM HYDROCARBON DISTRIBUTION

Hydrocarbon concentrations in groundwater: The highest hydrocarbon concentrations in groundwater are present west (downgradient) of the former underground storage tanks (USTs) and dispenser islands. During groundwater sampling performed by Gettler-Ryan (GR) in October 2006, 0.02 foot of light non-aqueous phase liquid (LNAPL) was measured in on-site well C-3.

[1] Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater, California Regional Water Quality Control Board, San Francisco Bay Region, interim Final – February 2005.

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The sample collected from off-site well C-6 contained 52,000 micrograms per liter (µg/L) total petroleum hydrocarbons (TPHg), 12,000 µg/L benzene, 250 µg/L toluene, 1,100 µg/L ethylbenzene, and 1,400 µg/L xylenes. Groundwater concentrations in all site-related monitoring wells from the October 2006 monitoring event are illustrated on Figure 3.

Hydrocarbon concentrations in soil: During the subsurface soil investigation performed in July 2006, Cambria advanced five soil borings and collected soil samples at approximately 5-foot intervals from areas with evidence of hydrocarbon impacts. The highest hydrocarbon concentrations detected were 4,600 milligrams per kilogram (mg/kg) TPHg, 5.5 mg/kg benzene, 96 mg/kg ethylbenzene, and 450 mg/kg xylenes in SB-3 at 35 feet below grade (fbg). Toluene was detected at a maximum concentration of 60 mg/kg in SB-5 at 32 fbg.

Based on hydrocarbon distribution in groundwater observed in on- and off-site wells and the hydrocarbon distribution in soil presented in Cambria's subsurface soil investigation, it was determined that groundwater monitoring wells C-1, C-3, C-6, C-9, C-12, and groundwater extraction well RW-1 would be the most appropriate locations to perform DPE. These wells will be connected to the proposed treatment system without modification. The location, depths, and screen intervals for these wells will allow for the greatest access to submerged hydrocarbons beneath the site and adjacent property. Construction details for all site-related monitoring wells are summarized in Table 1.

SCHEDULE

Upon approval of this RAP, Cambria will finalize a package of construction drawings detailing the design of the DPE system. Due to anticipated issues with access and permitting to install remediation piping both on- and off-site, Cambria does not expect to begin DPE system construction until the Second Quarter of 2007. Construction should be completed and the system startup process should occur during the Third Quarter of 2007. A report of installation and startup activities will be prepared and submitted to the ACEHS within 45 days of system startup. A more detailed schedule of activities can be prepared and submitted to ACEHS upon approval of this plan, if requested.

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CLOSING

We appreciate your assistance on this project and look forward to collaborating with you on this next phase of work. Please contact Charlotte Evans of Cambria at (510) 420-3351 or Satya Sinha of Chevron at (925) 842-9874 if you have any questions or require additional information.

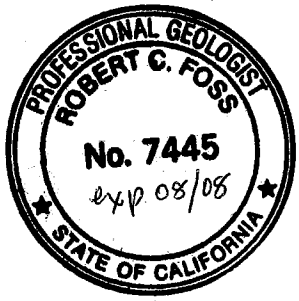
Sincerely,

Cambria Environmental Technology, Inc.

Sherrie Lang
Senior Staff Engineer

Charlotte Evans
Project Manager

Robert Foss, PG #7445
Associate Geologist



Figures: 1 – Vicinity Map
2 – Remediation System Well and Proposed Treatment Compound Configuration
3 – TPHg and BTEX Concentrations in Groundwater

Tables: 1 – Well Construction Details

Attachments: A – ACEHS Correspondence (August 15, 2005)

cc: Mr. Satya Sinha, Chevron Environmental Management Company, K2216, San Ramon, California 94583
Mr. Kevin Hinkley, 5269 Crow Canyon Road, Castro Valley, California 94552

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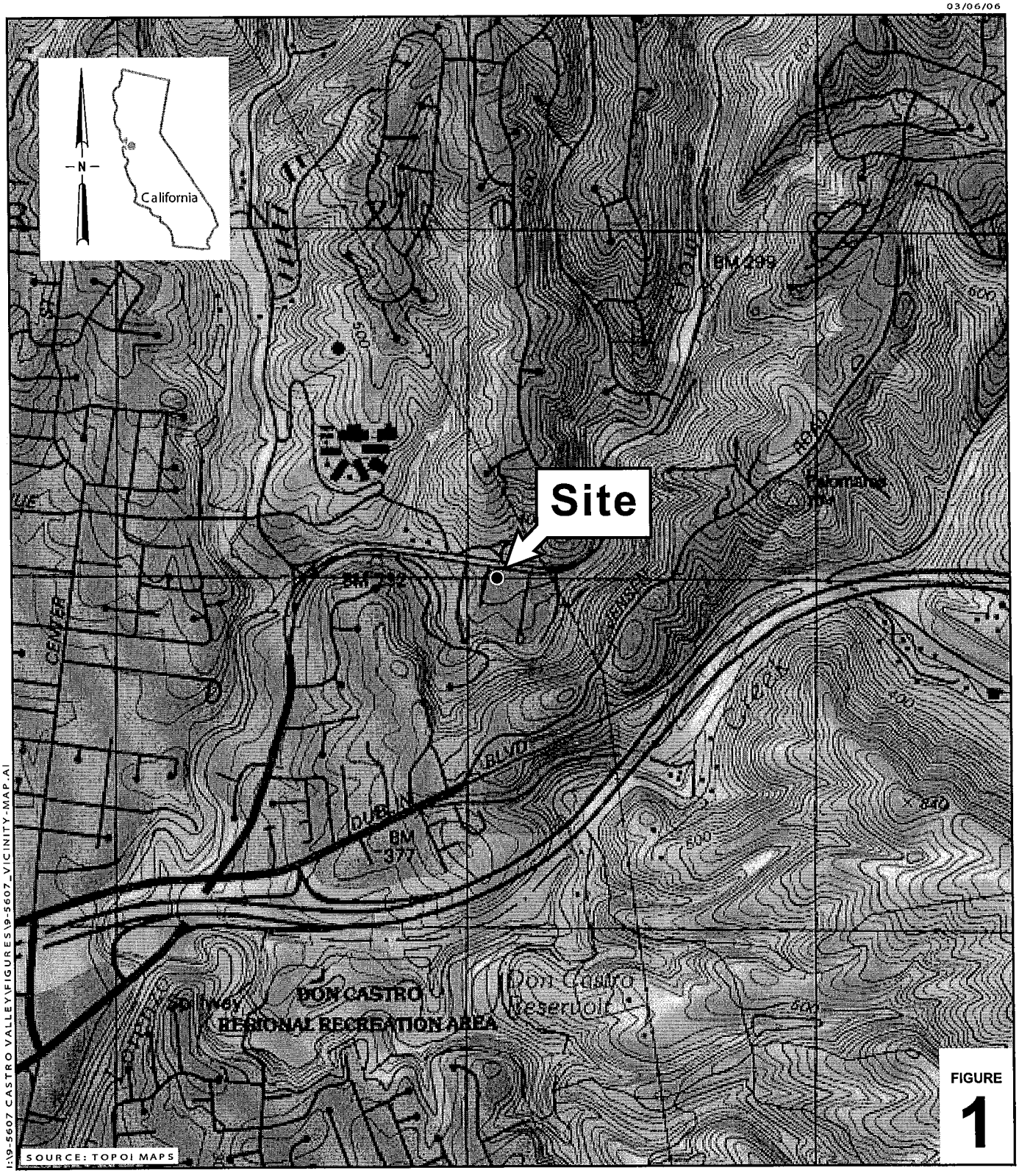
03/06/06



I:\9-5607 CASTRO VALLEY\FIGURES\9-5607_VICINITY-MAP.AI

FIGURE
1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Former Chevron Station 9-5607

5269 Crow Canyon Road

Castro Valley, California

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Vicinity Map

12/21/08

Remediation System Well and Proposed Treatment Compound Configuration

CROW CANYON ROAD

C-12

Residential Property

E
G

C-1

C-2

C-8

SB-3

SB-2

former USTs

Former Remediation Compound

C-6

SB-4

SB-5

C-3

RW-1

SB-1

existing used oil tank

SS

Proposed Remediation Enclosure (21'x28')

Automotive Facility

shed

C-5

C-4

Retaining Wall

C-7

C-9

WATERFORD PLACE

property line

parking lot

Residential Property

EXPLANATION

- C-1 Monitoring Well Location
- C-4 Abandoned/destroyed Monitoring Well Location
- RW Recovery Well Location
- SB-1 Soil Boring Location
- Underground Electrical Line (E)
- Underground Gas Line (G)
- Aboveground Vapor and Groundwater Line
- Underground Vapor and Groundwater Line
- Proposed Sanitary Sewer (SS)
- Sanitary Sewer

N

0 10 20 40

Scale (ft)

Basemap modified from drawing provided by Gettler-Ryan, Inc.

FIGURE

2

Former Chevron Service Station 9-5607

5269 Crow Canyon Road
Castro Valley, California

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11/10/06

EXPLANATION

- C-1 — Monitoring well location
- C-4 — Abandoned/destroyed monitoring well location
- RW-1 — Extraction well location
- Well ID — Well designation
- TPHg / Benzene / Toluene / Ethylbenz / Xylenes — Hydrocarbon concentrations are in micrograms per liter (µg/L)
- NS — Not sampled

CROW CREEK

ACCESS ROAD

C-10B

C-10A

abandoned lot

C-15
780
<0.5
<0.5
<0.5
<0.5

C-16
NS

residential

residential

residential

CROW CANYON ROAD

C-12
4,300
120
3
160
38

C-11
<60
<0.5
<0.5
<0.5
<0.5

C-9
8,900
370
24
170
92

WATERFORD PLACE

C-6
52,000
12,000
250
1,100
1,400

C-4

RW-1

C-3
SPH

used oil tank

C-1
4,800
280
70
410
170

C-13
NS

former USTs

C-2
NS

property line

C-7
NS

former Station Building

parking lot

residential

dispenser islands

C-14

wall

C-5

C-8
NS

N

0 20 40 80

Scale (ft)

Basemap modified from drawing provided by Gettler-Ryan, Inc.

I:\9-5607 CASTRO VALLEY\FIGURES\9-5607_4Q06_TPHG AND BTEX_GW.DWG

FIGURE

3

TPHg and BTEX Concentrations in Groundwater

October 6, 2006

Former Chevron Service Station 9-5607

5269 Crow Canyon Road

Castro Valley, California

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Table 1. Well Construction Details - Chevron Station #9-5607, 5269 Crow Canyon Road, Castro Valley

Well ID	Casing Diameter (inches)	Total Depth of Well (fbg)	Screen Interval (fbg)	TOC (ft)	GWE	DTW (ft)	Purpose	Date Installed	Consultant
RW-1	10	35	10-35	274.52	NM	NM	Extraction	5/31/1985	Groundwater Tech
C-1	4	55	25-55	283.46	263.43	20.03	GWM-extraction well	3/5/1985	Groundwater Tech
C-2	4	46	20-46	284.37	267.38	16.99	GWM	3/6/1985	Groundwater Tech
C-3	4	55	24.5-54.5	285.98	263.73	22.27	GWM	3/6/1985	Groundwater Tech
C-5	4	45	15-45	287.95	264.82	23.13	GWM	3/9/1985	Groundwater Tech
C-6	4	35	10-35	275.28	261.72	13.56	GWM	3/14/1985	Groundwater Tech
C-7	2	30	15-30	270.70	263.88	6.82	GWM	3/21/1985	Groundwater Tech
C-8	2	29	9-29	288.40	281.42	6.98	GWM	3/21/1985	Groundwater Tech
C-9	6	30	5-30	--	--	10.70	GWM	6/24/1985	Groundwater Tech
C-11	3	34	14-34	265.30	246.00	19.30	GWM	2/22/1990	PEG
C-12	3	30.5	9.5-30.5	269.66	259.27	10.39	GWM	2/22/1990	PEG
C-13	3	28.5	14-28.5	284.32	275.17	9.15	GWM	2/23/1990	PEG
C-14	3	28.5	13-28.5	270.74	NM	NM	GWM	2/23/1990	PEG
C-15	3	17.5	5.5-17.5	246.15	235.52	10.63	GWM	2/24/1990	PEG
C-16	3	29	13.5-29	246.69	233.84	12.85	GWM	2/24/1990	PEG

ATTACHMENT A

ACEHS Correspondence
(August 15, 2005)

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

August 15, 2005

AUG 18

Mr. Mark Inglis
Chevron Products Co.
P.O. Box 6012, Room K2256
San Ramon, CA 94583

Dear Mr. Inglis:

Subject: Fuel Leak Case No. RO0000350, Chevron #9-5607, 5269 Crow Canyon Road, Castro Valley, CA 94546

Alameda County Environmental Health (ACEH) staff has recently reviewed the Two-Phase Extraction Pilot Test Report, dated July 12, 2005, prepared by Cambria for the subject site. The test was performed over a period of twelve days from two extraction wells. Results from this test were positive, with apparent successful removal of petroleum hydrocarbons from through vapor and groundwater extraction. We request that you address the following technical comments, perform the proposed work, and send us the technical reports requested below.

TECHNICAL COMMENTS

1. Our office is concerned with the persistent free product and elevated dissolved product on and off the subject site. Such contamination serves as a continual source for the dissolved plume, which has migrated beneath the adjacent townhomes and likely impacted the down-gradient creek. We request that you initiate interim remediation at this site using the dual phase technology previously shown to be applicable for this site and/or rehabilitate and activate the existing groundwater extraction system. Please provide your interim remediation work plan as requested below.

2. Based upon the results of the pilot test, it appears that remediation using dual phase extraction technology is appropriate for this site. However, we are concerned about the delay, which has occurred since the completion of the pilot test (10/03) and the lack of submittal of your Remedial Action Plan (RAP) work plan: Please submit your remediation work plan as requested below.

3. Although prior estimations from Chevron predicted no benzene impact to the down-gradient Crow Creek in excess of 1 ppb, we are concerned that TPHg levels exceeding ESLs may be impacting the Creek. Although a replacement wells for C-10(A&B) is pending the development of the nearby property, it appears that additional groundwater sampling along a transect including C-16 and C-15 would be appropriate to determine the impact to Crow Creek. Please consider additional groundwater sampling near Crow Creek and respond as requested below.

4. We request that you develop a Site Conceptual Model (SCM) for your site, preferably an electronic version. We discussed the elements of a SCM in the meeting at the County offices and hope you are now familiar with it and its usefulness. Please contact me should you need further explanation or guidance in its development. It is believed that the SCM will identify the release hypothesis, data gaps and streamline additional work at the site. Please submit your SCM as requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to our office according to the following schedule:

- **September 16, 2005** - Work plan for Interim Remediation and Correction Action Plan with comments (or work plan) on/for additional down-gradient groundwater sampling.
- **October 14, 2005**- Initial SCM

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) now request submission of reports in electronic form. The electronic copy is intended to replace the need for a paper copy and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all reports is required in Geotracker (in PDF format). Please visit the State Water Resources Control Board for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or

certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6765.

Sincerely,

Barney M. Chan
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: files, D. Drogos
Mr. Brian Busch, Cambria Environmental, 5900 Hollis St., Suite A, Emeryville, CA 94608
Mr. Kevin Hinckley, 5269 Crow Canyon Rd., Castro Valley, CA 94546
Ms. Dianne Riggs, Forest Creek Townhomes Assoc., c/o Walsh Property Management, P.O. Box 2657, Castro Valley, CA 94541

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