CAMBRIA

ENVIRONMENTAL PROTECTION
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March 22, 1999

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

Re: **Work Plan Addendum**
Shell-branded Service Station
4255 MacArthur Boulevard
Oakland, California 94619
Incident #98995758
Cambria Project #240-524-019

near freeway

Dear Mr. Chan:

Thank you for your February 19, 1999 letter to Ms. Karen Petryna of Equiva Services LLC (Equiva) approving Cambria's June 29, 1998 *Additional Investigation Work Plan*. As you may be aware, Karen Petryna is now the engineer overseeing this site. Cambria has met with Ms. Petryna to discuss this site and the contents of your letter. Below we will address the additional requirements for site work requested in your February 19, 1999 letter.

ADDITIONAL REQUESTED WORK

Analysis for Bioattenuation Parameters: During our July 7, 1998 telephone conversation, you requested that samples from all site wells be analyzed for bioattenuation parameters during the third quarter 1998 monitoring event. This was to be done on a one-time-only basis. Ground water samples from wells MW-1, MW-3, and MW-4 collected during the third quarter 1998 monitoring event were analyzed for dissolved oxygen (DO), total alkalinity, ferrous iron, nitrate as nitrate, and sulfate. This information was presented in Cambria's September 21, 1998 *Third Quarter 1998 Monitoring Report*. **Samples were not collected from well MW-2 during this sampling event due to the presence of separate-phase hydrocarbons (SPH) in the well.** In order to better interpret site conditions, we will analyze for these bioattenuation parameters on an annual basis during the third quarter monitoring event. As requested in your February 19, 1999 letter, we will also analyze for oxygen reduction potential.

Oakland, CA
Sonoma, CA
Portland, OR
Seattle, WA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

Oxygen Estimate for Natural Attenuation: In your February 19, 1999 letter, you stated that natural attenuation was recommended for this site and requested an estimate of the amount of oxygen release compound (ORC) needed to treat the petroleum contaminant plume. You also asked for a recommendation for the addition of oxygen through ORC injection and/or the use of ORC "socks". In our April 15, 1998 *Remedial Action Plan* (RAP), we recommended remediating the hydrocarbon source area by conducting monthly manual bailing of SPH from wells MW-2 and MW-3 in conjunction with the installation of ORCs in selected wells to accelerate the natural attenuation of hydrocarbons in ground water. As stated in the RAP, we have estimated that a minimum of about 1 to 2 mg/l DO is required for natural attenuation to occur by aerobic processes. Based on DO measurements of up to 1.4 mg/l DO collected during recent monitoring events in the third and fourth quarter 1998, it appears that natural attenuation is occurring at the site. During our telephone conversations on July 7 and August 19, 1998, we discussed preparing an estimate of the amount of ORC needed to treat the hydrocarbon plume using software provided by the manufacturer of ORC, Regenesis Bioremediation Products (Regenesis). Because our RAP does not propose exclusive use of ORC to remediate the contaminant plume, providing an estimate for the amount of ORC needed to treat the plume would be inaccurate, as it does not account for other proposed mass removal techniques. Our objective is to use ORC on a limited scale to increase dissolved oxygen levels and accelerate the already occurring natural attenuation of hydrocarbons in ground water in the following areas: underground storage tank (UST) backfill wells, MW-1, MW-3, and MW-4. We will implement monthly bailing of SPH in wells MW-2 and install ORC socks in wells MW-1, MW-3, MW-4, and UST backfill wells as outlined in our April 15, 1998 RAP.

EPA Method 8260 Analysis: Cambria will arrange to have MTBE concentrations in all wells confirmed by EPA Method 8260 on a one-time-only basis during the second quarter 1999 monitoring event. During subsequent monitoring events, the highest MTBE concentration detected by EPA Method 8020 will be confirmed by EPA Method 8260.

ADDITIONAL PROPOSED WORK

Tank Pit Ground Water Extraction: In order to reduce hydrocarbon concentrations in the UST backfill area and adjacent well MW-2, Cambria proposes to extract ground water from two UST backfill wells and ground water monitoring well MW-2 using a vacuum truck. Ground water extraction from the UST backfill and monitoring wells will be done on a monthly basis for three months. After three months, Cambria will evaluate the effectiveness of ground water extraction. If ground water extraction is effective in reducing hydrocarbon concentrations, Cambria will continue monthly ground water extraction. If ground water extraction is ineffective at reducing hydrocarbon concentrations, Cambria will discontinue monthly visits and contact your office to discuss alternatives.

Risk-Based Corrective Action Analysis: Cambria began work on a risk-based corrective action (RBCA) analysis in June 1998. Initial results of the RBCA analysis indicate that the site will not pass the analysis based on hydrocarbon concentrations encountered in soil and ground water beneath the site and the presence of SPH in wells MW-2 and MW-3. Cambria will suspend work on the RBCA analysis until remedial activities reduce hydrocarbon concentrations beneath the site.

SCHEDULE

Upon receipt of written approval of this work plan addendum from your office, Cambria will implement monthly ground water extraction events from the UST backfill wells and well MW-2. Cambria will proceed with permitting and installing the two additional ground water monitoring wells. We will submit our investigation report describing the installation of the monitoring wells approximately six weeks after completing the field work.

CLOSING

We appreciate your assistance with this project. Please contact Brian Busch at (510) 420-3312 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Brian Busch
Project Environmental Scientist

Diane Lundquist, P.E.
Principal Engineer

cc: Karen Petryna, Equiva Services LLC, P.O. Box 6249, Carson, California 90749-6249

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