CAMBRIA

June 6, 2006

Mr. Steven Plunkett
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Re: **Response to Agency Letter – Technical Comments**
Former Exxon Service Station
3055 35th Avenue
Oakland, California
Cambria Project #130-0105

Dear Mr. Plunkett,

On behalf of Mr. Lynn Worthington of Golden Empire Properties, Cambria Environmental Technology, Inc. (Cambria) is submitting this response to your letter dated May 16, 2006 (attached) for the above referenced site.

Effective distribution of ozone in subsurface: The site lithology is heterogeneous consisting of interbedded lenses of silty gravel, sands, silty sands, and sandy silts and clays, to the maximum explored depth of 30 feet. Based on Cambria's discussions with vendors, ozone sparging has been effectively used under similar lithologic conditions with closely spaced sparge points. Also, generally gases have better dispersion under pressure compared to under vacuum. Pore spaces in fine grained soils might collapse under vacuum and reduce permeability, while under pressure gases tend to force their way into the formation without any adverse effect on subsurface permeability. For the subject site, ozone sparging is proposed to be conducted under pressure (approximately 10 to 15 psi).

Rationale for sparge point spacing: Based on Cambria's discussions with ozone sparge equipment vendors, a radius of influence ranging between 5 and 15 feet was observed at sites with similar lithologic conditions. Cambria has conservatively used a sparge point spacing of 12 ft (approximately 6 ft radius of influence) for the interim remediation at the site.

Rationale for sparge point screen intervals: Based on soil boring observations and analytical data, hydrocarbon-impacted soil is present within a zone extending from 8 to 30 ft bgs with the highest hydrocarbon concentrations at approximately 15 ft bgs. Since ozone is a gas, it tends to rise through the water column. Hence, the first row of sparge points (SP-1 to SP-3) near the southernmost former pump island were proposed to be screened from 15 to 20 ft bgs. The second row of sparge points (SP-4 to SP-7) were proposed to be screened deeper from 23 to 28 ft bgs to address deeper hydrocarbon impacted soils beneath the site.

Cambria Environmental Technology, Inc.

5900 Hollis Street
Suite A
Emeryville, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

Sparge point material: Cambria proposes to use schedule 80 PVC well casing and screen instead of stainless steel casing and wire wrapped screen, as originally proposed in our January 30, 2006 *Revised Remediation Work Plan.* Stainless steel casing and wire wrapped screen are very expensive and difficult to handle due to their weight compared to schedule 80 PVC.

Updated Corrective Action Plan: Per telephone conversation between you and Subbarao Nagulapaty of Cambria, an updated Corrective Action Plan (CAP) for the site is not required at this time. Upon evaluating the effectiveness of in-situ chemical oxidation using ozone (ISCO), as proposed in our January 30, 2006 *Revised Remediation Work Plan*, Cambria will update the CAP for the site as appropriate.

Please call Mark Jonas at (510) 420-3307, if you have any questions.

Sincerely,

Cambria Environmental Technology, Inc.

Subbarao Nagulapaty
Project Engineer

Mark Jonas, P.G.
Senior Geologist

Statement of Limitations

Cambria prepared this document for use by our client and appropriate regulatory agencies. It is based partially on information available to Cambria from outside sources and/or in the public domain, and partially on information supplied by Cambria and its subcontractors. Cambria makes no warranty or guarantee, expressed or implied, included or intended in this document, with respect to the accuracy of information obtained from these outside sources or the public domain, or any conclusions or recommendations based on information that was not independently verified by Cambria. This document represents the best professional judgment of Cambria. None of the work performed hereunder constitutes or shall be represented as a legal opinion of any kind or nature.

Attachment: Copy of Agency Correspondence

cc: Mr. Lynn Worthington, Golden Empire Properties, Inc. 5942 MacArthur Boulevard, Suite B, Oakland, California 94605

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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

May 16, 2006

Mr. Lynn Worthington
Golden Empire Properties, Inc.
5942 MacArthur Blvd. Suite B
Oakland, CA 94605

Subject: Fuel Leak Case No. RO0000271, Exxon Service Station, 3055 35th Avenue, Oakland, California.

Dear Mr. Worthington:

Please be advised that I have taken over the above referenced site from Mr, Amir Ghloami. Alameda County Environmental Health Department (ACEH) staff have reviewed the case file and a recently revised work plan received in February 2006 and entitled, "Revised Remediation Work Plan" prepared on your behalf by Cambria Environmental Technology. This letter is in response to the revised work plan. In addition to the report requested below, a Site Conceptual Model (SCM) should be prepared to summarize the site background, history, geology, hydrogeology, and investigation results to date for the site. The SCM also presents conclusions and recommendations for future actions. Lastly, ACEH request that the Corrective Action Plan (CAP) originally prepared in April 1998 be updated to reflect all site remediation activities.

Elevated concentrations of fuel hydrocarbons continue to be detected in groundwater in on-site monitoring wells, of particular concern are benzene concentrations in onsite monitoring wells. It also appears that the fuel hydrocarbon plume has not been adequately defined off site and the trajectory of the plume may be in the path of nearby residences. No monitoring wells or soil boring data exists off-site or downgradient of monitoring wells MW-3, MW-4 or RW-5. In order to assess the extent of dissolved fuel hydrocarbons in soil and groundwater, we request that you prepare a Work Plan to collect soil and groundwater samples offsite along the plume axis to define the extent of contamination in the downgradient direction.

Based on ACEH staff review of the case file, we request that you address the following technical comments and prepare a work plan detailing work to be performed, and send us the reports described below. Please provide 72-hour advance written notification to this office (e-mail preferred to steven.plunkett@acgov.org) prior to the start of field activities.

TECHNICAL COMMENTS

1. **Proposed Interim Remedial Alternative.** In-situ Chemical Oxidation (ISOC) has been proposed as the most cost effective technique to address the remediation goals at the subject site. Previously, Dual Phase Vapor Extraction (DPE) was implemented as the interim remedial alternative. The results of the interim DPE indicate that soils at the site have low permeability to air and groundwater flow, which limits the effectiveness of in-situ remedial technologies. Given hydrogeologic conditions at the site, ACEH is concerned that ISOC using ozone may not have a significant impact because the technique may have limited distribution due to low permability soils. Additionally, several remedial alternatives have been used at the site with varying degrees of success. Please discuss specific soil characteristics, in particular

site with varying degrees of success. Please discuss specific soil characteristics, in particular soil permability, and how these qualities will allow the effective distribution of ISOC using ozone in the subsurface. In addition, please elaborate on the rational for your decisions regarding sparge point screen intervals and linear distances. Please present your conclusion in the revised work plan presented below.

Furthermore, ACEH recommends updating the Corrective Action Plan (CAP) prepared in April 1998 to reflect all remediation activities that have occurred at the site, as ISOC and ozone sparging was not a recommended remedial alternative in the original CAP. The updated CAP should recommend several technically and economically feasible methods to meet cleanup objective leading to site closure. The CAP must also discuss monitoring and evaluation of remedial alternatives in order to demonstrate the efficacy of the chosen remediation method leading to the completion of corrective actions. Please see 23 CCR Section 2726 for CAP preparation guidelines. Please propose a schedule for implementing the corrective action plan in the work plan requested below.

2. **Preparation of Site Conceptual Model.** The SCM for this project is to incorporate, but not be limited to, the following:

   A. A concise narrative discussion of the regional geologic and hydrogeologic setting. Include a list of technical references you reviewed.

   B. A concise discussion of the on-site and off-site geology, hydrogeology, release source and history, secondary source areas, remediation status, risk assessment, plume migration, attenuation mechanisms, preferential pathways, and potential threat to downgradient receptors. The SCM shall include an analysis of the hydraulic flow system at and downgradient from the site, including potential vertical hydraulic gradients.

   C. Local and regional maps showing location of sources, extent of soil and groundwater contamination for appropriate depth intervals (i.e., an interpretive drawings and isoconcentration maps—not a plot of laboratory results), rose diagram of recent and historical groundwater gradients, and locations of receptors. "Receptors" include, but are not limited to, all supply wells and surface water bodies within 2,000 feet of the source area, and all potentially impacted schools, hospitals, daycare facilities, residences, and other areas of heightened concern for vapor impact.

   D. Geologic cross-sections, which include an interpretive drawing of the vertical extent of soil and groundwater contamination (i.e., an interpretive drawing—not a plot of laboratory results). The SCM report requested below is to include one cross section parallel and one cross section perpendicular to the contaminant plume axis. Each cross section should include, but not be restricted to, the following:

      1. Subsurface geologic features, depth to groundwater and man-made conduits.
      2. Surface topography. The cross sections should be extended off-site where necessary to show significant breaks in slope.
      3. Soil descriptions for all borings and wells along the line of section.
      4. Screen and filter pack intervals for each monitoring well.
      5. Sampling locations and results for soil and grab groundwater samples.
      6. Site features such as the tank pit, dispensers, etc.
      7. Where appropriate, monitoring well location and soil boring locations will be projected back to the strike of the cross section line.

E. Temporal changes in the plume location and concentrations are also a key element of the SCM. In addition to providing a measure of the magnitude of the problem, these data are often useful to confirm details of the flow system inferred from the hydraulic head measurements.

F. Exposure evaluation flowchart (similar to Figure 2 in ASTM's Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites) and/or a graphical SCM (similar to Figure 1 in the Central Valley Regional Water Quality Control Board's Appendix A – Reports, Tri - Regional Board Staff Recommendations For Preliminary Investigation And Evaluation Of Underground Tank Sites, 16 April 2004).

G. Plots of chemical concentrations vs. time and vs. distance from the source. Plots should be shown for each monitoring well, which has had detectable levels of contaminants.

H. Summary tables of chemical concentrations in each historically sampled media (including soil, groundwater and soil vapor).

I. Boring and well logs (including construction/screening), and a summary table indicating construction specifications for each monitoring and extraction well.

J. Identification and listing of specific data gaps that require further investigation during subsequent phases of work.

Please prepare and present the SCM in the report requested below.

3. **Proposed activities to investigate and fill data gaps identified above.**

4. **Off Site Investigation and Soil and Groundwater Sampling.** During previous investigations it appears that no soil or groundwater samples were collected off site. ACEH recommends that an off site investigation be conducted to determine the extent of pollution in both soil and groundwater. Given the groundwater flow direction as determined by Cambria, it appears that the contamination plume is migrating in the direction of near by residences. Consequently, ACEH requests Cambria investigate the extent of off site soil and groundwater contamination to ascertain the extent of off site contamination plume migration.

   ACEH requests soil and groundwater samples be collected off site and down gradient of the site on 35th Avenue. All soils from the boreholes are to be examined for staining and odor and are to be screened using a PID. Soil samples are to be collected from any interval where staining, odor, or elevated PID readings are observed. If no staining, odor, or elevated PID readings are observed, soil sample are to be collected from each boring at the capillary fringe, where groundwater is first encountered and at five foot intervals until total depth of the boring is reached. After soil sampling has been completed grab groundwater samples should be collected from the soil boring. All soil and groundwater samples are to be analyzed for TPHg, BTEX and fuel oxygenates including TAME, ETBE, DIPE, TBA AND EtOH using EPA methods 8015M and 8260B, respectively. Please prepare a work plan detailing the proposed investigation and requested below.

5. **Quarterly Groundwater Monitoring.** ACEH recommends sampling wells MW-1 through MW-4 and recovery wells RW-5 through RW-9, RW-11 and RW-12 on a quarterly basis after interim remediation and off site investigation. However, should contamination remain at levels currently detected on site, groundwater monitoring may need to continue into the future and

other forms of remediation may need to be considered to reduce the concentrations of dissolved petroleum hydrocarbon in the subsurface.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Mr. Steven Plunkett), according to the following schedule:

- **June 15, 2006** – Updated Corrective Action Plan
- **June 30, 2006** – Revised ISOC and Ozone Sparging Interim Remediation Work Plan Report
- **July 15, 2006** – Offsite Soil and Groundwater Investigation Work Plan/SCM Report
- **September 15, 2006** – Quarterly Groundwater Monitoring Report Third Quarter 2006
- **December 15, 2006** – Quarterly Groundwater Monitoring Report Fourth Quarter 2006

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

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will 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 (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

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. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. 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 monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website 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) 383-1767.

Sincerely,

Steven Plunkett
Hazardous Materials Specialist

cc: Mr. Subbarao Nagulapaty
Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, Ca 94608

Donna Drogos, ACEH
Steven Plunkett, ACEH
File

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**ISSUE DATE:** July 5, 2005
	REVISION DATE: December 16, 2005
	PREVIOUS REVISIONS: October 31, 2005
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection.** (Please do not submit reports as attachments to electronic mail.)
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- Signature pages and perjury statements **must** be included and have either original or electronic signature.
- **Do not password protect the document.** Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:
  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Additional Recommendations

- A separate copy of the tables in the document should be submitted by e-mail to your Caseworker in **Excel** format. These are for use by assigned Caseworker only.

Submission Instructions

1) Obtain User Name and Password:
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to dehloptoxic@acgov.org
         or
      ii) Send a fax on company letterhead to (510) 337-9335, to the attention of Alicia Lam-Finneke.
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape and Firefox browsers will not open the FTP site.
   b) Click on File, then on Login As.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to dehloptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name at acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload)