CKG Environmental, Inc.

808 Zinfandel Lane, St. Helena, CA 94574
Phone: (707) 967-8080 Fax: (707) 967-8080
ckennedy@geologist.com

RO 2809

April 22, 2003

Alameda County
APR 24 2003
Environmental Health

Mr. Amir Gholami
Alameda County Health Care Services
Environmental Health Services
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

3600 Alameda Ave

Subject: **WORK PLAN TO INSTALL ONE MONITORING WELL AND ASSESS THE DISTRIBUTION OF PETROLEUM HYDROCARBONS, OWENS-BROCKWAY GLASS CONTAINER FACILITY, OAKLAND, CALIFORNIA.**

Dear Mr. Gholami:

CKG Environmental, Inc. (CKG) is pleased to provide this work plan to install one new monitoring well; conduct an investigation to understand the distribution of petroleum hydrocarbons; and compile all the site data for a case closure request at the Owens-Brockway Glass Container facility in Oakland, California.

PROJECT UNDERSTANDING

CKG understands that two former underground fuel storage tank areas exist at the Oakland plant. One UST site is located on the west side of the plant and included two former USTs, which were used to contain fuel oil. At the time these USTs were removed it was discovered that they had leaked, and some fuel oil product had been released to the subsurface. The second UST area is located near the central part of the plant adjacent to the compressor building. Originally there were four USTs in the area. When they were removed and replaced by two new USTs a gasoline release to the subsurface was observed.

Owens-Brockway excavated impacted soil at the time the USTs were replaced. Floating product associated with the fuel oil release exists and past efforts to remove it have been unsuccessful. This lack of success is mainly due to the clay rich nature of the subsurface and the viscosity of the product. Groundwater monitoring has been ongoing for the last 16 years.

Owens-Brockway would like to move forward with the petroleum hydrocarbon release case at the site, either by doing what has to be done to close the case or by reviewing other alternatives to remediate the site if needed. To that end, CKG and Mr. Robert Neal of Owens-Brockway met with Mr. Barney Chan of the Alameda County Health Agency on September 27, 2002 to discuss an approach. Mr. Chan suggested that although the fuel oil appears to have moved off site toward the Oakland Estuary, it may be possible to close the site as a "Low Risk" site if the groundwater

concentration of fuel oil is lower than levels set by the Regional Water Quality Control Board for aquatic protection. Previous offsite sampling using a Hydropunch indicated that fuel oil is present in groundwater but it is necessary to install a groundwater monitoring well to obtain more reliable data.

Mr. Chan also indicated that the interpretation of "Low Risk" would be influenced by the extent of fuel oil remaining in the subsurface on site. We speculate that the fuel oil migrated preferentially along subsurface utilities and is probably still concentrated along them. If this is the case then the total quantity of fuel oil in the subsurface is substantially less than it appears simply by contouring petroleum hydrocarbon concentrations in groundwater on a map (where it appears to be a large mass).

In March 2003 Owens-Brockway was made aware that the site had been transferred to you for oversight. Since that time we have spoken to you about the site and CKG Environmental, on behalf of Owens-Brockway submitted a site historical summary dated April 4, 2003. It is our understanding, based on our conversation, that you would review the site summary but that we should proceed with preparing this work plan to implement the planned investigation.

OBJECTIVE

The objective of this scope of work is to complete an investigation to address the two data gaps discussed above. CKG will install a monitoring well off site toward the estuary, and assess the distribution of fuel oil in the subsurface. CKG will then use the data from these investigations, along with all the monitoring data from the past 16 years to prepare a compilation report of findings and potentially request case closure on the basis that it is a "Low Risk" site. CKG will evaluate the data against the following criteria (as provided by you).

Criteria for Case Closure:

1. Has the site been adequately investigated? (are soil groundwater plume defined?)
2. Has source (primary) been removed? (Tank removed?)
3. Is F.P. removed to the extent practicable? (floating product removed?)
4. Do you have a stable plume? (stable or decreasing plume?)
5. Any current / future public health threat?
6. Any current / future ecological threat? (i.e. any creek around?)
7. Any current? future water sources threat? (is groundwater being used?)
8. Is risk management plan in place? (use RMP if some stuff left in place for bigger stuff/sites only)

CKG also will review site information with respect to the Alameda County Case Closure Summary form that you provided, again to make sure that data gaps are closed and that the site meets the closure criteria.

SCOPE OF WORK

CKG will complete the following scope of work to meet the above objective.

Task 1 – Obtain Access to Offsite Well Location, and Prepare Drilling Permit

CKG has contacted the City of Oakland to inquire about their requirements to install a well on City property. The City provided a detailed list of Encroachment Permit Application requirements as well as a written procedure for groundwater monitoring wells. This task has been completed.

A boring permit will be obtained from Alameda County Public Works Agency. Although a permit application is required there are no fees and no inspection required. CKG has completed this task and has received the well installation permit.

Task 2 - Subsurface Utility Survey

CKG will subcontract with Subtronic, Inc. to survey the proposed well location and the area around the former fuel oil USTs. CKG also will work with Owens-Brockway to locate potential subsurface utilities. Plate 1 shows the proposed well location.

Task 3 – Install One Groundwater Monitoring Well Off Site

CKG will subcontract with an appropriately C-57 licensed contractor to install one monitoring well off site, south of Alameda Avenue near the estuary. The well will be installed using a truck-mounted drill rig equipped with hollow stem augers to a depth of no more that 30 feet. The monitoring well will be constructed of 2-inch schedule 80 PVC pipe. A maximum of 20 feet of slotted screen will be used in the well. The boring annulus will be backfilled with clean 0/30 sand or equivalent to a depth approximately 2 feet above the screen. A minimum of two feet of bentonite pellets will be placed above the sand and the remainder will be filled with cement slurry. The well will be finished with a traffic grade flush mounted box. A sketch of the proposed well completion is included as Plate 2.

A minimum of 48 hours after the well is installed it will be developed by surging and pumping (or bailing) until the water runs relatively clear of fines. CKG will place development water into the onsite wastewater management system. Soil cuttings will be managed on site with the oily cullet.

The well will then be surveyed and tied into the existing well survey. A more complete description of CKG's field procedures for well installation, development and sampling is presented in Appendix A.

Task 4 – Complete One Round of Groundwater Monitoring

After the new well is completed CKG will contract with BlaineTech to measure groundwater elevations and collect a groundwater sample in the new well at the site. Purge water will be placed in the onsite wastewater management system.

The groundwater sample from the new well will be submitted to McCampbell Analytical laboratory for quantitative analysis. The analysis will include:

- Total Petroleum Hydrocarbons quantified as Gasoline (TPHg)
- Benzene, Toluene, ethylbenzene, and xylenes (BTEX)
- Total Petroleum Hydrocarbons quantified as motor oil (TPHmo)

Task 5 – Assess Fuel Oil Distribution in Southwest Corner of Plant

CKG will contract Gregg Drilling to use a Cone Penetrating Test (CPT) rig equipped with ultraviolet infrared (UVIF) sensing instrumentation.

The CPT rig will be used to push the sensor into the subsurface until groundwater is encountered (approximately 10-15 feet below surface). The probe is approximately 1½ inch in diameter. The CPT tip measures soil density and can provide lithologic information. The UVIF detector provides a semi quantitative reading for total petroleum hydrocarbons. With this CPT/UVIF combination CKG will be able to map out the vertical and horizontal fuel oil distribution in soil and groundwater at the site, in real time. The initial holes will be located adjacent to marked utilities. Subsequent holes will be located at consistent distances away from the utilities to evaluate whether or not the petroleum hydrocarbon concentrations vary with distance from the utility lines. Because the data is available immediately on site, it will be possible to optimize the locations of holes based on actual site data. Attached, as Appendix B is a copy of the proposal for CPT work from Gregg Drilling, which includes a more detailed description of the UVIF technology.

Gregg estimates that they can complete 8-10 holes in a day. CKG proposes two days of CPT assessment to develop a thorough understanding of the distribution of fuel oil in the subsurface. The probe holes will be filled with cement grout when they are completed.

Task 7– Site investigation, Data Compilation and Closure Report

CKG will prepare a site investigation, data compilation and closure report that includes the following:

- Site background, including physical characteristics, and history
- Fieldwork including well installation and fuel distribution investigation (including tables and plates). Plates will include potentiometric surface maps and isoconcentration contour maps.
- Compilation of all monitoring data to date
- Conclusions
- Case closure summary and request

LIMITATIONS

CKG will perform the scope of work in a manner consistent with the standards of care and skill normally exercised by members of the profession practicing under similar conditions in the geographic vicinity and at the time the services will be performed. No warranty or guarantee expressed or implied is part of the services offered in this proposal.

CKG is pleased to prepare this work plan and we look forward to working with you. If you need further information or would like more details regarding this work plan please feel free to call me at (707) 967-8080, or Mr. Bob Neal of Owens-Brockway at (510) 436-2174.

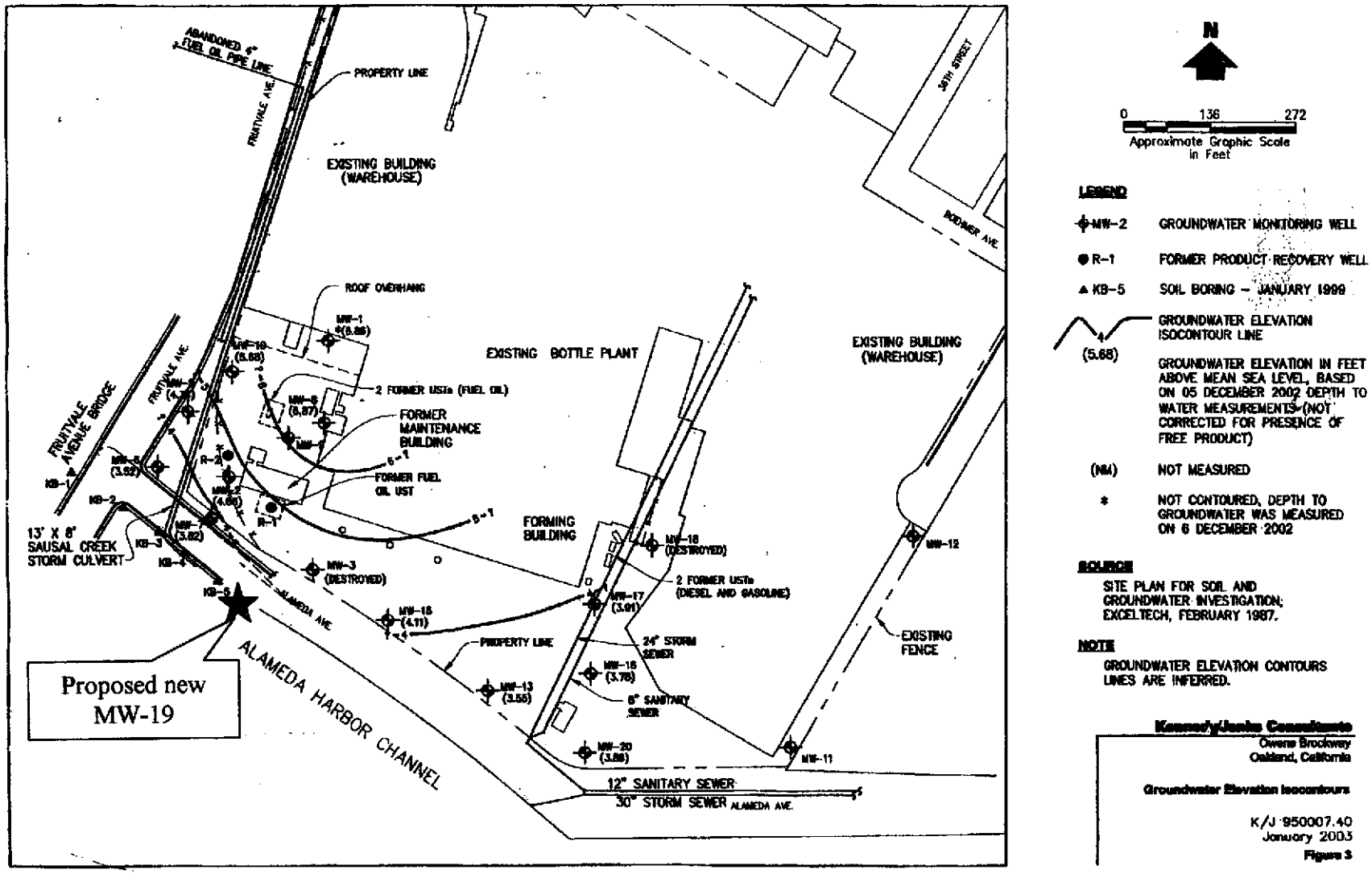
Sincerely
CKG Environmental, Inc.,

Christina J. Kennedy
Principal,

cc Mark Tussing – Owens-Brockway, Toledo
Bob Neal – Owens-Brockway, Oakland

Plate 1 – Proposed Well Location Map
Plate 2 – Proposed Well Construction

Appendix A – CKG Field Protocol
Appendix B – Gregg Drilling CPT/UVIF proposal



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XREF: H:\95.lab\950007.40\Siteplan.dwg

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Approximate Graphic Scale in Feet

LEGEND

MW-2	GROUNDWATER MONITORING WELL
R-1	FORMER PRODUCT RECOVERY WELL
KB-5	SOIL BORING – JANUARY 1999
(5.68)	GROUNDWATER ELEVATION ISOCONTOUR LINE
	GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL, BASED ON 05 DECEMBER 2002 DEPTH TO WATER MEASUREMENTS (NOT CORRECTED FOR PRESENCE OF FREE PRODUCT)
(NM)	NOT MEASURED
*	NOT CONTOURED, DEPTH TO GROUNDWATER WAS MEASURED ON 6 DECEMBER 2002

SOURCE

SITE PLAN FOR SOIL AND GROUNDWATER INVESTIGATION; EXCELTECH, FEBRUARY 1987.

NOTE

GROUNDWATER ELEVATION CONTOURS LINES ARE INFERRED.

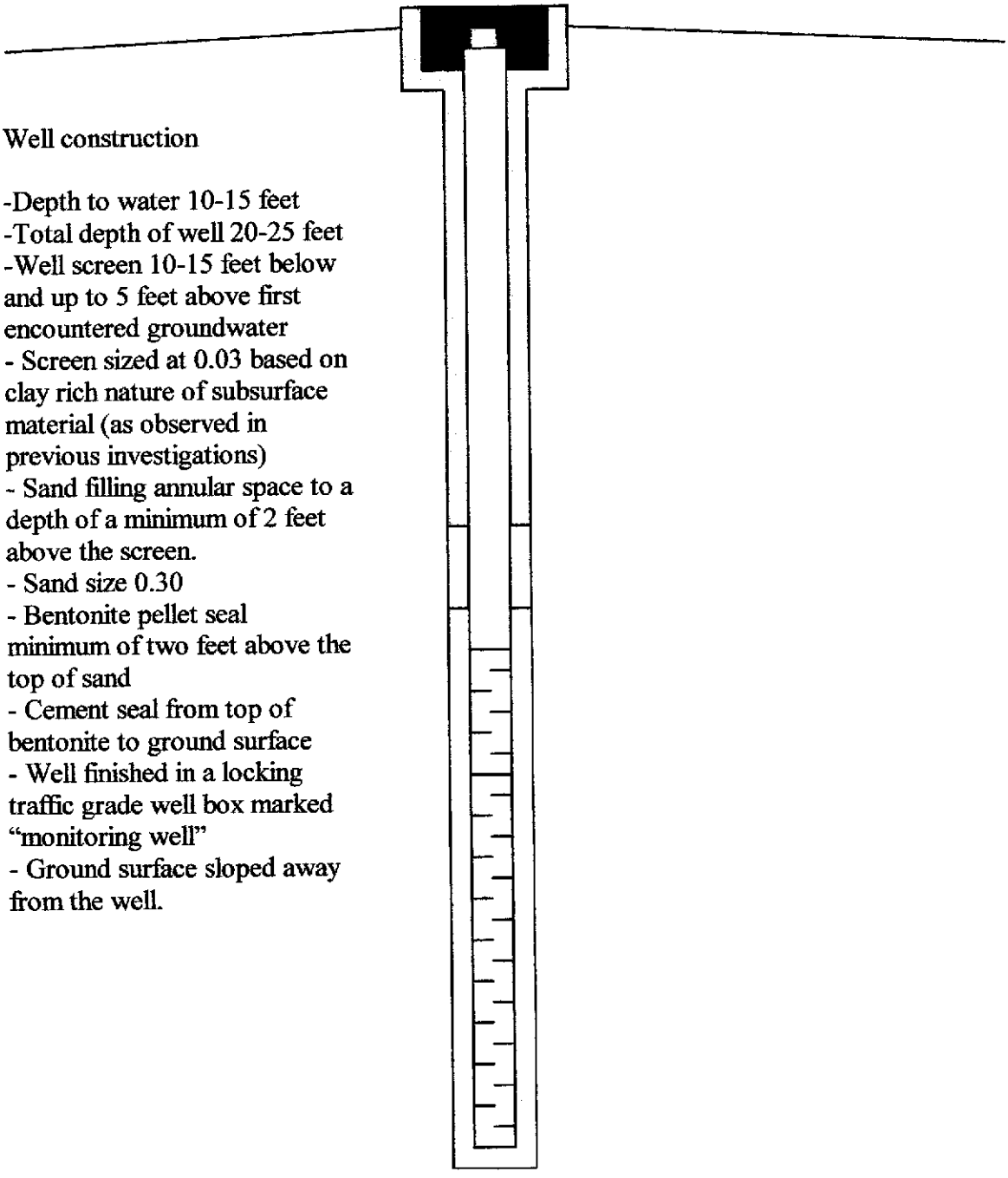
Kennedy/Jenks Consultants
Owens Brockway
Oakland, California

Groundwater Elevation Isocontours

K/J 950007.40
January 2003
Figure 3

Plate 1 Proposed Well Location Map – Owens Brockway Glass Container Plant, Oakland, California

PLATE 2
Proposed Well Construction MW-19
Owens-Brockway Glass Container, Inc
Oakland, California,



Well construction

-Depth to water 10-15 feet
-Total depth of well 20-25 feet
-Well screen 10-15 feet below and up to 5 feet above first encountered groundwater
- Screen sized at 0.03 based on clay rich nature of subsurface material (as observed in previous investigations)
- Sand filling annular space to a depth of a minimum of 2 feet above the screen.
- Sand size 0.30
- Bentonite pellet seal minimum of two feet above the top of sand
- Cement seal from top of bentonite to ground surface
- Well finished in a locking traffic grade well box marked "monitoring well"
- Ground surface sloped away from the well.

APPENDIX A
CKG ENVIRONMENTAL FIELD PROTOCOL

A-1 FIELD PREPARATION

Before performing work in the field, environmental staff review the scope of work, prepare a health and safety plan, coordinate the work to be done with their supervisor, assemble the necessary sample containers, and check, calibrate and clean equipment to be used in the field. When underground utilities may exist at a site where subsurface soil samples are being collected, USA Underground is contacted with the boring locations and the scheduled date of drilling, or a utility locating firm is employed to check the boring locations. Proper traffic control measures are carried out during roadwork.

A-2 SUBSURFACE SOIL SAMPLING

A-2.1 Drilling

Subsurface soil samples will be collected from soil borings. Soil borings will be advanced using a truck-mounted drill rig, equipped with 8-inch hollow stem augers. During drilling, a geologist registered with the State of California will classify the soil, log the lithology and collect soil samples for laboratory analysis.

A-2.2 Equipment Decontamination

To reduce the potential for cross-contamination, augers and associated equipment will be steam cleaned prior to drilling each boring. In addition, sampling equipment will be cleaned with a trisodium phosphate wash and rinsed with distilled water prior to collecting each soil sample.

A-2.3 Soil Sample Collection

Soil samples will collected approximately every 5 feet, and at changes in lithology, for field screening, lithologic logging, and potential chemical analysis. Samples will be collected by advancing the boring to a point immediately above the desired sampling depth and then driving a Modified California Sampler, lined with three brass tubes, into the undisturbed soil. The sampler will then be removed from the bottom of the boring. The ends of the bottom (third) tube will be covered with Teflon and sealed with tight-fitting plastic caps.

After the samples are collected they will be individually labeled. The label will include CKG Environmental's name, job number, the date and time the sample was collected, the employee's name and a unique sample identifier.

A-2.5 Sample Handling

After labeling, the sample is immediately stored in an iced cooler for transport to the analytical laboratory. A laboratory chain-of-custody form is attached to the cooler. The chain-of-custody form includes CKG Environmental's name, address and telephone number, the name of the

individual who performed the sampling, the sample numbers, the date and time the samples were collected, the number of containers each sample occupies, and the analyses for which the samples are being submitted, if any. Each person who handles the samples, including all CKG employees and the receiving employee of the analytical laboratory when the samples are delivered, signs the chain-of-custody form.

A-2.6 Soil Sample Selection for Laboratory Analysis

The selection of soil samples for laboratory analysis is based upon: 1) the project objectives and requirements, 2) qualitative field screening performed in the field using the organic vapor detector, and 3) field observations such as lithology, odor, discoloration, or high moisture content. In addition, a soil sample will be collected from the capillary fringe zone. Generally, samples are submitted from the bottom of the boring and from soil horizons with significant potential for contamination as indicated by the organic vapor detector, observations, and site history. In addition, a soil sample will be collected from the capillary fringe zone.

A-2.7 Soil Boring Closure and Soil Cutting Disposal

Soil borings are closed immediately after the collection and logging of soil samples. Closure is accomplished by grouting the boring with a cement/bentonite slurry or as otherwise required. Drill cuttings will be left on site for disposal by the site owner.

A-3 GROUNDWATER MONITORING

A-3.1 Monitoring Well Construction

Monitoring wells are constructed inside a borehole drilled as described above. Construction details for shallow ground water monitoring wells are described on Plate 2 of the work plan. After the borehole has been drilled the well casing will be placed into the borehole and the sand pack material placed in the annular space around the screened interval. The sand pack will be placed by slowly dropping the material from the surface. Frequent measurements will be made to reduce unrecognized bridging of the sand pack. The hollow auger will be gradually removed from the borehole as the sand packing progresses. The sand pack material will extend along the length of the perforated section to no more than 2 feet above the top of the screen.

A minimum two-foot thick seal of bentonite pellets will then be placed on top of the filter pack and allowed to hydrate. The pellets will be hydrated by pouring deionized water into the annular space. The grout seal will then be mixed and pumped into the annular space. The hollow auger will be gradually removed from the borehole as the grouting operation progresses.

All wells will be completed at the surface using traffic-rated well covers. These well covers will be installed approximately ¼-inch above grade to reduce the entry of surface waters and fixed in place with concrete.

A-3.2 Monitoring Well Development

The wells will be developed to reduce the effects of drilling on the formation and to increase the effective hydraulic radius of the well.

Monitoring wells are generally developed 24 to 48 hours after installation to allow the grout to set. Each well is first sampled with a clear acrylic bailer to visually inspect for hydrocarbon layer or sheen. If no product layer or sheen is observed on the water, the well is developed by surging, pumping, or bailing. Surging along the screened interval of the well is performed to draw the sediment from the formation into the filter pack and the well and to set the sand pack. The sediment-laden water is purged from the well at a rate of between 0.75 to 10 gallons per minute (gpm) depending on recharge rate and casing size. Development continues until the discharge runs relatively clear of fines. Approximately 5 to 10 well volumes are generally removed from each monitoring well. Discharge water will be discharged into the on site oil-water separator.

A-3.3 Well Survey

The locations of soil borings and monitoring wells and the elevation of the top of the PVC casings is usually surveyed and tied into permanent markers, if readily available. Survey accuracy is 0.1 foot for the "x" and "y" coordinates and .01 foot for the "z" coordinate. The depth to static ground water is measured from a set location at the top of the PVC casing. The depth of water is then subtracted from the elevation of the top of the well casing to provide a ground water elevation for each monitoring well location.

GREGG

GREGG DRILLING & TESTING, INC.

SPECIALIZING IN ENVIRONMENTAL, GEOTECHNICAL AND IN-SITU TESTING

November 14, 2002

Chris Kennedy
CKG Environmental
808 Zinfandel Lane
St. Helena, CA 94574
Phone/Fax # (707) 967-8080

SUBJECT: COST PROPOSAL FOR CONE PENETROMETER TESTING AND U.V.I.F. TESTING AT THE PROJECT LOCATED IN OAKLAND, CA

Dear Chris:

As requested, we are providing our fee proposal for performing electronic Cone Penetrometer Test (CPT) soundings and U.V.I.F. testing for the above referenced project.

SCOPE OF WORK:

We understand a number of CPT locations to a depth of approximately 15 feet with U.V.I.F. testing is currently proposed. Measurements of tip resistance, sleeve friction and pore water pressure will be recorded at 5 cm intervals.

EQUIPMENT/PROCEDURE:

The work will be completed using our 20 or 25 ton CPT rig and accompanying support rig. The dead weight of the CPT rig is used as a reaction to push the cone penetrometer using a hydraulic ram located at the center of the truck. Soil parameters such as cone bearing, sleeve friction, friction ratio and pore water pressure are measured as the cone penetrometer is advanced. These measurements are sent uphole through the cone rods to our on-board data acquisition system. All data is processed in real time in the field so that decisions can be made by your personnel. CPT plots of tip resistance, sleeve friction, friction ratio and pore pressure will be provided in the field along with a table of interpreted soil parameters.

Ultra-violet induced fluorescence (UVIF) testing will be carried out in conjunction with the standard CPT for the delineation of hydrocarbon contamination. The UVIF module has high energy ultra-violet light directed through a sapphire window into the soil and groundwater being penetrated. The ultra-violet light causes fluorescence of contaminants contained within the soil and groundwater. The fluorescence is returned to the surface in a fibber optic cable and analyzed both for amplitude and wavelength spectrum using a light spectrometer. As the UVIF module collects information on contaminant characteristics, the CPT characterizes the ground in terms of soil type, soil permeability, soil strength and phreatic surface. Therefore, at each test location an integrated vertical profile of contaminant location, relative contaminant concentration, soil stratigraphy and soil permeability are generated in real-time on site. Having all this information allows for on-site assessment and decision-making resulting in optimization of the site investigation and ultimately a reduction in site characterization costs.

COST SCHEDULE:

Based on the information given, Gregg In Situ estimates that we could do approximately 8 to 10 soil borings to a depth of approximately 15 feet with U.V.I.F. testing per day, (9 hours on site).

Gregg In Situ assumes CKG would probably not want us to hand auger the first five feet in order to get readings. Gregg will not accept responsibility for any damages to underground utilities.

COST ESTIMATE [redacted]

The preceding costs represent our best estimate for the tasks as we understand them. The cost estimate does not reflect additional charges which would be incurred for standby time or adverse drilling conditions. The client will be responsible for obtaining necessary permits and for the clearance of underground utilities. GREGG IN SITU, INC. will accept no responsibility for damages to underground utilities.

GREGG IN SITU, INC. looks forward to the opportunity of providing our services on this project. If you have any questions or would like to schedule work, please contact our office at (925) 313-5800.

Sincerely,
GREGG IN SITU, INC.

Mary Walden
CPT Operations Manager