TOXICHEM Management Systems, Inc.
Environmental & Occupational Health Services
1562 44th Avenue
San Francisco, California 94122
(415) 681-8816 / Fax (415) 681-8132

August 10, 1999
Project EQ-02.1A

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

Re: **Work Plan Addendum for Soil Excavation**
Former Texaco Service Station
3810 Broadway, Oakland, California

Dear Mr. Chan:

Thank you for your letter to Ms. Karen Petryna of Equiva Services LLC (Equiva), dated June 17, 1999, that conditionally approved the *Work Plan for Soil Excavation* (Toxichem Management Systems, Inc. (TOXICHEM), May 20, 1999) for the above referenced site. On behalf of Equiva, TOXICHEM prepared this work plan addendum to provide the additional information that you requested, which is presented below.

1. *Please provide a work plan to compensate for the destruction of monitoring wells MW-3 and MW-8.*

TOXICHEM proposes to replace Wells MW-3 and MW-8 following completion of the soil excavation and backfilling activities at the site. The proposed well installation procedures are presented as Attachment A, and this letter should be considered the requested work plan.

2. *Please clarify how the assumed "clean" excavated soil will be tested to justify its reuse onsite. How many samples will be collected and from what locations and depths?*

Based on soil sample results, boring log descriptions and photoionization detector (PID) readings, soil between ground surface and approximately 8 feet below ground surface (bgs) does not appear to be impacted by petroleum hydrocarbons. It is anticipated that this "clean" soil could be reused to backfill portions of the excavation. The soil removed from approximately the upper 8 feet of the excavation will be segregated from soil collected below approximately 8 feet bgs. Furthermore, all soil that has observable petroleum hydrocarbon impact will be segregated from the "clean" soils that have no observable petroleum hydrocarbon impact. The "clean" stockpiled soil will then be divided into cells with each cell representing approximately 100 cubic yards of soil. Each cell will then be subdivided into four quadrants. A soil sample will be collected from the approximate horizontal and vertical center of each quadrant. The four soil samples collected from each cell will be composited by the laboratory and analyzed for total purgeable petroleum hydrocarbons (TPPH), total extractable petroleum hydrocarbons (TEPH),

benzene, toluene, ethylbenzene, xylenes (BTEX compounds), and methyl tertiary-butyl ether (MtBE). Cells of the stockpiled soil that contain concentrations of the analyzed compounds that are below the proposed soil reuse concentrations will be reused as backfill material. Cells of the stockpiled soil that contain concentrations of the analyzed compounds that are above the proposed soil reuse concentrations will be profiled and transported off-site to an appropriate landfill.

3. *Please provide alternative soil reuse concentrations and a justification for them.*

TOXICHEM consulted with Mr. Chuck Headlee of the Regional Water Quality Control Board, San Francisco Bay Region, regarding appropriate concentrations of TPPH, TEPH, BTEX compounds, and MtBE in native soil that could be reused as backfill material. Based on this consultation, TOXICHEM proposes the following soil reuse concentrations.

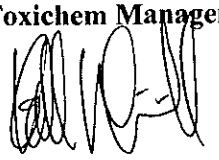
Proposed Soil Reuse Concentrations

Compound	Proposed Soil Reuse Concentration (mg/kg)
TPPH	100
TEPH	100
BTEX (total)	1
Benzene	0.3
MtBE	<0.0100

If you have any questions regarding this work plan, please contact me at your convenience at (415) 681-8816.

Sincerely,

Toxichem Management Systems, Inc.



Keith Winemiller, P.E.
Senior Engineer

Attachment: Attachment A - Field Procedures for Groundwater Monitoring Well Installation

cc: Ms. Karen Petryna, P.E., Equiva Services LLC, P.O. Box 6249, Carson, CA 90749-6249
Mr. Joe Zadik, 8255 San Leandro Street, Oakland, CA 94621

ATTACHMENT A

FIELD PROCEDURES FOR GROUNDWATER MONITORING WELL INSTALLATION

TOXICHEM will supervise the installation of replacement groundwater monitoring wells, which will be installed in the approximate locations of the destroyed wells. Under the supervision of TOXICHEM staff, a licensed drilling contractor will advance a 10-inch diameter soil boring. The boring will be advanced with a truck-mounted drill rig equipped with a 10-inch diameter continuous flight, hollow-stem auger. There will be no soil samples collected since each monitoring well will be installed within clean backfill material. (✓ this)

Each groundwater monitoring well will be designed and constructed in accordance with Alameda County Health Care Services Agency (ACHCAS) guidelines. When the borings are completed, a 4-inch diameter, groundwater monitoring well will be constructed within the borehole. Flush thread jointed, Schedule 40, polyvinyl chloride (PVC) casing of 4-inch diameter will be placed down the hollow stem of the augers to the base of the boring. The well will be constructed to approximately 10 feet below the depth of first-encountered groundwater. The bottom 15 feet of the well will be constructed using 0.02-inch slotted well casing. The remaining casing section will be solid and non-slotted. A well cap will be slipped on to the top of the well casing and a locking cap will be placed at the top of each well.

The monitoring wells will be filter-packed with clean Monterey silica sand throughout the screened interval. Specification of the filter material will be determined based on lithology encountered during drilling and will likely consist of one of the following: No. 3 Monterey Sand, No. 2/12 Lonestar Sand, and/or No. 2/16 Lonestar Sand. The filter-pack material will be installed in the annular spacing between the monitoring well pipe and the auger; the filter-pack material will extend a minimum of 6-inches above the top of the screened interval.

A one foot thick layer of bentonite pellets will be placed above the filter material to provide an annular seal and the remainder of the boring will be filled with a sand-cement slurry to within one foot of grade under direct observation of ACHCSA inspection personnel. The well casing will be enclosed inside a watertight cast iron or aluminum traffic-rated box installed in concrete slightly above the surface.

A licensed surveyor will be retained to survey the top of the casing of the well head relative to mean sea level. The initial well development will be conducted by using a 1.7 inch Brainard-Kilman mechanical lift hand pump, an air-lift or nitrogen-lift pump, or a positive displacement bladder pump dependent on the depth to ground water and the screened interval. The wells will be developed until a minimum of four well volumes have been purged (if recharge rates permit) and the discharged water appears clear of sediment. Electrical conductivity, temperature, and pH of the ground water will be recorded throughout the development process. The well development will continue until the electrical conductivity, temperature, and pH of the discharged water have stabilized. Depth to water measurements will be recorded prior to and following the well development activities. The monitoring wells will then be scheduled for sampling in accordance with the groundwater monitoring and sampling program that has been approved for the site.