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#435

May 20, 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 for Soil Excavation**
Former Texaco Service Station
3810 Broadway, Oakland, California

Dear Mr. Chan:

This letter has been prepared by Toxichem Management Systems, Inc. (TOXICHEM) on behalf of Equiva Services LLC (Equiva). This letter is written in response to the Alameda County Health Care Services Agency (ACHCSA) letter to Equiva dated February 4, 1999. The ACHCSA letter approved the Corrective Action Plan ([CAP] TOXICHEM, November 15, 1998) with three conditions. The letter acknowledged that the current property owner wants to install new underground storage tanks (USTs), and that remedial excavation, as selected in the CAP would facilitate future tank installation. The letter requested a specific work plan be submitted to describe the expected limits of the proposed excavation at the above referenced site. The letter also requested that the work plan include a confirmation soil and groundwater sampling plan, a stockpile sampling plan, a groundwater disposal plan, a work plan schedule, and that the work plan address additional requirements outlined in the letter.

The letter also mentioned that the risk assessment and risk based clean-up levels (RBCs) are currently being evaluated by the ACHCSA. This work plan uses the revised RBCs specified in *Revised Risk-Based Corrective Action Goals* (TOXICHEM, April 29, 1999) to estimate the expected limits of the proposed excavation. The revised RBCs were developed in cooperation with the ACHCSA.

PROPOSED SCOPE OF WORK

This work plan describes the tasks necessary to perform the proposed excavation, and addresses the requirements outlined in the ACHCSA letter.

Well Abandonment

Monitoring Wells MW-3 and MW-8 are located within the proposed excavation limits. Therefore, TOXICHEM proposes the wells be abandoned by pressure grouting. Prior to abandonment, the wells will be sounded to ensure no obstructions are present. The wells will then be pressure-grouted with neat cement grout to the top of casing. Following completion of

the excavation activities, new monitoring wells will be installed to replace Wells MW-3 and MW-8.

Soil Excavation

Alternative 1 of the CAP proposed excavating hydrocarbon impacted soil exceeding the soil based RBCs. Figure 1 presents historic concentrations of total purgeable petroleum hydrocarbons (TPPH) and benzene in soil. Benzene is the only constituent in soil that exceeds its RBC. The CAP recommended that the benzene RBC be 0.3 milligrams per kilogram (mg/kg) at 8 feet below ground surface (bgs), 0.4 mg/kg at 15 feet bgs, and 0.5 mg/kg at 20 feet bgs. The maximum expected lateral extent of excavation is proposed on Figure 1 and is based on the removal of historic soil concentrations exceeding the RBCs. The extent realized will be governed by surface and underground obstructions, and by shoring limitation and as the excavation approaches the nearby city sidewalks and streets.

In general, the RBCs are exceeded only in soil samples collected deeper than eight feet bgs. Based on soil sample results, boring log descriptions and photoionization detector (PID) readings, soil between ground surface and approximately 8 feet bgs does not appear to be impacted by petroleum hydrocarbons. Figure 1 presents the contoured base of the initial excavation from which soil will be stockpiled on-site for profiling. The soil stockpile sampling plan is discussed in a following section. It is anticipated that this soil (approximately 600 cubic yards), after profiling, will be reused on-site to backfill portions of the excavation. The soil underlying the eastern product island however was observed to contain petroleum hydrocarbons from ground surface and will therefore be removed from site to an appropriate landfill.

Figure 2 presents the maximum expected depth of excavation based on soil sample results, boring log descriptions, lithologies and PID readings. The soil generated by this phase of excavation (approximately 1,000 cubic yards) will be preprofiled to an appropriate landfill and immediately off-hauled upon excavation.

Upon completion of the proposed excavation, confirmatory soil samples will be collected approximately every 20 linear feet along the basal wall (between approximately 18 and 20 feet bgs). The soils will be collected in brass sample sleeves by driving a slide hammer sampler into undisturbed soil, or by directly driving the sleeve into soil within the excavator bucket immediately upon removal from the excavation. Each end of the samples will then be covered with Teflon squares and sealed by plastic end caps. The samples will be labeled, logged into a chain of custody and placed on ice to await transport to a California certified laboratory. The samples will be analyzed by EPA Method 8015 (modified) for TPPH and total extractable petroleum hydrocarbons (TEPH), and by EPA Method 8020 for benzene, toluene, ethylbenzene and xylene (BTEX) compounds and methyl tertiary-butyl ether (MtBE).

Additionally, at the same sample locations approximately 30 grams of soil will be collected into resealable plastic bags and warmed for approximately 20 minutes. The bags will then be pierced by the PID tip and measurements recorded. Overexcavation beyond the proposed limits will be performed if feasible, only if petroleum hydrocarbon saturated soils are observed and confirmed above RBCs by certified analytical reports.

Groundwater Removal

Groundwater occurs at between 16 and 20 feet bgs. Therefore, groundwater extraction will be necessary during excavation in order to remove petroleum hydrocarbon saturated soil that extends below 18 feet bgs. As requested by the ACHCSA, TOXICHEM proposes that excavation to 22 to 24 feet bgs be performed in the vicinity of Well MW-3 to remove as much impacted

groundwater and SPH as possible (Figure 2). Extracted groundwater will be temporarily stored on-site and treated using granulated activated carbon, then batch-discharged to the sanitary or storm sewer under a POTW or NPDES permit, respectively. Based on the volume and concentration of each batch of groundwater discharged, the mass of petroleum hydrocarbons and SPH removed will be calculated.

Excavation Backfill

Backfilling the excavation will consist of the following tasks:

Profiling Stockpiled Soil

Soil removed from approximately the upper 8 feet of the excavation will be stockpiled on site. At minimum, four composite soil samples will be collected (as described above) from each 100 cubic yards of soil and analyzed for TPPH, BTEX compounds, MtBE, and TEPH. If the resultant concentrations are below the RBCs, then the soil may be reused as backfill material.

PVC Piping Array

As requested by the ACHCSA, TOXICHEM proposes to install polyvinyl chloride (PVC) piping in the excavation for the possible future injection of supplements or extraction of impacted groundwater. Conceptually, the PVC piping array will consist of two components: (1) a vertical 4 inch Schedule 40 PVC casing; and (2) a horizontal 4 inch Schedule 40 PVC pipe with 0.020 slotted screen. The vertical riser will be tentatively positioned at the north end of the product island (near Boring B-5), and placed in an excavated sump that will be approximately 2 to 4 feet deeper than the surrounding excavation. The horizontal pipe will be laid in and covered by a base of clean sand on the floor of the excavation and connected to the vertical riser. The horizontal pipe will tentatively extend from the vertical riser to the opposite side of the excavation (near Boring B-4), approximately 60 feet to the southwest. The final design of the piping array will depend on the final limits of excavation.

ORC Mixing

Oxygen releasing compounds (ORC) have been shown to increase dissolved oxygen concentrations in groundwater and thus enhance the rate of bioremediation of petroleum hydrocarbons. Mixing ORC powder, at between 0.1 to 0.3% by weight, with soil to be backfilled in the saturated zone is an effective method of implementation. As requested by the ACHCSA, TOXICHEM proposes that the excavation be backfilled from its maximum depth to approximately 20 feet bgs with a mixture of 0.2% ORC. It is anticipated that approximately 576 pounds of ORC is required.

Backfilling and Compacting

Appropriate clean fill will be imported, backfilled and compacted as necessary to prepare the site to receive the new USTs.

SCHEDULE

Upon approval of the work plan, permitting and abandonment of the wells may be performed. The excavation permits and groundwater discharge permits will also be requested upon work plan approval. The site operator who is replacing the USTs will determine the schedule for the excavation activities. A report will be prepared within 6 weeks of completion of the field activities.

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

Attachments: Figure 1 - Initial Soil Excavation Limits
Figure 2 - Final Soil Excavation Limits

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