ENGINEERING-SCIENCE, INC.

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21 June 1993
Ref: NC367

Mr. Warren Gee
East Bay Regional Park District
Parklands Design Department
P.O. Box 5381
Oakland, California 94605-0381

Subject: Proposal for Exploratory Borehole Investigation at the Redwood Corporation Yard in Oakland, California

Dear Mr. Gee:

Engineering-Science, Inc. (ES) is pleased to submit this proposal to the East Bay Regional Park District (EBRPD) to complete an exploratory borehole investigation at the Redwood Corporation Yard (RCY) (project site). The objective of this investigation is to evaluate the extent and magnitude of soil contamination associated with the former leaking underground fuel storage tank (UFST) containing gasoline, which was removed on 29 April 1993.

Soil samples collected during UFST removal and associated soil excavation activities contained total petroleum hydrocarbons as gasoline (TPH-g) and aromatic hydrocarbons (benzene, toluene, total xylenes and ethylbenzene, or BTXE) at levels above regulatory agency concern. Groundwater was encountered in the deepest portion of the excavation at approximately 22 to 23 feet bgs. In addition, a slow seep of groundwater was encountered at approximately 8 feet below ground surface (bgs) in the southeast corner of the excavation, originating from an on-site spring. **Approximately 600 cubic yards of soil was removed from the excavation and stockpiled on-site;** an unknown volume of contaminated soil remains in the vicinity of the former UFST. ES understands that continued excavation of contamination was halted due to the potential for landslide and excavation instability due to infiltrating groundwater. We further understand that EBRPD is considering options for in situ soil and groundwater remediation.

The technical approach and scope of work proposed herein are based on the results of previous investigations conducted by ES at the project site, telephone conversations between you and Mr. Bruce Rucker of ES, and our significant experience in conducting UFST-related contaminant investigations.

TECHNICAL APPROACH

The preferred ES approach to projects of this type is the "phased" approach in which project tasks are focused into separate, sequential stages, or phases. The phased approach allows ES management to follow a project from its inception to its completion by recommending appropriate, cost-effective measures for each succeeding step during project implementation. The initial phase of this investigation was UFST removal and initial excavation of contaminated soil. This proposal delineates the scope of work, costs

and schedule associated with the next recommended phase of the investigation, which is the conduct of an exploratory borehole investigation. This program will be designed to assess the lateral and vertical extent of residual soil contamination associated with the former leaking UFST. ES anticipates that future investigative phases might include:

- Installation and quarterly sampling and analysis of up to three groundwater monitoring wells
- Evaluation of appropriate soil and/or groundwater remedial options
- Performance of a remediation feasibility study
- Implementation of the selected remedial option(s)

Field activities proposed herein will be conducted by an ES geologist under the direct supervision of a California Registered Geologist (RG) or Professional Engineer (PE). All activities will be conducted in accordance with the guidelines and/or requirements of the Alameda County Health Care Services Agency - Division of Hazardous Materials (ACHCSA-DHM), the local implementing agency (LIA) for the investigation.

SCOPE OF WORK

The proposed scope of work for this project is presented in the following subsections: 1) Update site health and safety plan (HASP); 2) Prepare technical workplan and permits; 3) Exploratory borehole investigation; 4) Laboratory analyses; and 5) Data evaluation and report preparation.

Task 1: Update Site Health and Safety Plan

Consistent with federal Occupational Safety and Health Administration requirements (29 CFR Part 1910.120 [j]) and ES health and safety policy, ES will prepare an update of the existing site-specific HASP prior to site activities to include borehole drilling activities. This plan will detail general and emergency health and safety procedures, toxicological effects of the potentially hazardous materials, primary routes of exposure, personnel protection equipment requirements, air monitoring procedures, site organization and control, and decontamination procedures. All ES personnel and subcontractors shall conform to this HASP at a minimum.

Task 2: Prepare Technical Workplan and Permits

Prior to field activities, ES will prepare and submit to ACHCSA-DHM for review a technical workplan summarizing the proposed investigation. This workplan will include the following general items:

- Summary of previous investigations
- Methodologies and protocols of proposed work
- Field and laboratory quality assurance/quality control procedures
- Health and safety procedures
- Data reporting

ES will obtain required borehole drilling permits from Alameda County Flood Control and Water Conservation District - Zone 7 (ACFCWCD). Prior to field activities, ES will notify ACHCSA-DHM and ACFCWCD so that representatives from these agencies may be present, if necessary. In addition, ES will act as liaison between EBRPD and regulatory agency personnel for agency inquiries regarding project environmental concerns.

Task 3: Exploratory Borehole Investigation

ES will advance a maximum of fifteen boreholes around the perimeter of the UFST site. The exact location of the boreholes will be determined in the field based on facility constraints and field observations during borehole advancement. The borings will be advanced using an approximately 2.5-inch outside diameter (OD), pneumatic-powered drive sampler. Boreholes will be advanced to a maximum depth of 25 feet ground surface (bgs) or to first occurrence of groundwater, whichever is least. Soil samples will be collected for geologic logging and laboratory analysis using a split-spoon sampler. Soil samples will be collected for geologic logging at five foot depth intervals in four of the boreholes. A maximum of two soil samples per borehole (total of 30 soil samples) will be collected and submitted for laboratory analysis. All soil samples collected will be screened for the presence of fuel and aromatic hydrocarbons at five foot depth intervals utilizing a field photoionization detector (PID). Should field conditions permit, ES will install temporary 1-inch OD polyvinyl chloride (PVC) well casings in five of the 15 boreholes. ES will then collect "grab" water samples from these five boreholes to evaluate local hydrochemistry.

Soil cuttings generated during drilling will be placed in the contaminated soil pile on site. All boreholes will be backfilled to surface with neat portland cement grout by tremie grouting. All drilling and sampling equipment will be decontaminated prior to use and between each borehole to prevent cross-contamination. Equipment will be decontaminated by steam cleaning, and/or by washing with an Alconox (tradename) detergent solution or equivalent, and rinsing with deionized water. Decontamination rinsate will be containerized on site in labeled DOT-approved 55-gallon drums. Disposal of the decontamination rinsate will be the responsibility of EBRPD.

Soil and water sample containers for laboratory analysis will be labeled, refrigerated and transported the same day under chain-of-custody to a California Environmental Protection Agency (CAL-EPA) Environmental Laboratory Accreditation Program (ELAP) certified hazardous waste laboratory.

Task 4: Laboratory Analyses

Based on the analytical results of site soil samples collected to date, ES proposes to analyze the 30 soil and five "grab" water samples collected during the drilling program for the following constituents:

- Total petroleum hydrocarbons as gasoline (TPH-g) by State of California Department of Toxic Substances Control (DTSC) Leaking Underground Fuel Tank (LUFT) Method
- BTXE by United States Environmental Protection Agency (USEPA) Method 8020

Laboratory analyses will be conducted on the standard turnaround time of ten working days.

Task 5: Data Analyses/Report Preparation

ES will prepare a submit to EBRPD a draft and final report summarizing the proposed investigation. These reports will include the following elements:

- Site description including site location map and site plan
- Brief summary of environmental investigations conducted to date
- Discussion of exploratory borehole drilling and sampling procedures
- Discussion of local site geology and stratigraphy based on borehole date, including borehole geologic logs
- Presentation of soil sample analytical results in the context of regulatory agency "action levels" or guidelines
- Evaluation of the spatial extent of residual soil contamination in excess of soil cleanup levels, including an estimate of soil volumes requiring remediation
- Certified laboratory analytical reports including chain-of-custody records
- Photodocumentation of site activities
- Evaluation of appropriate remedial options for residual soil contamination
- Conclusions and recommendations for additional soil and/or groundwater characterization and/or remediation

Following EBRPD review of the draft report, ES will incorporate appropriate EBRPD comments, and submit one copy each of the final report to EBRPD, ACHCSA-DHM and RWQCB.

ESTIMATED WORK SCHEDULE

ES proposes to complete the scope of work proposed herein within ten weeks from written notice to proceed, contingent on the availability of the exploratory borehole drilling contractor and the length of time required for ACHSCA-DHM to review and approve the technical workplan. We estimate that two weeks will be required to update the HASP, prepare and submit the technical workplan, obtain drilling permits and select the drilling contractor. We estimate that up to three weeks may be required for ACHCSA-DHM to review and approve the technical workplan. Within one week of workplan approval, ES will implement the exploratory borehole drilling program, which will be completed within one week. Laboratory analyses will be completed within two weeks. The draft report will be completed and submitted to EBRPD within three weeks of completion of field activities. One copy of the final report will be submitted to EBRPD and ACHCSA-DHM within one week of receipt of EBRPD comments on the draft report. Note that the estimated schedule may vary depending on availability of the drilling contractor, ACHCSA-DHM review of the workplan and field conditions encountered during the drilling program.

ESTIMATED COSTS

In accordance with the cost breakdown by task (Tables 1 and 2), we estimate the cost to complete the proposed scope of work to be $21,300. ES proposes to provide these services to EBRPD on a time-and-expense basis, not to exceed the total authorized amount of $21,300 without prior written approval from EBRPD. Hence, EBRPD will be billed only for those expenses actually incurred. Note that the estimated costs to complete the exploratory borehole drilling program assume that ES will spend a maximum of three 8-hour days at the site to advance a maximum of fifteen boreholes. Should a greater level of effort be required due to unexpected conditions, ES will advise EBRPD as to the approximate additional costs anticipated prior to incurring greater than estimated labor or other direct costs (ODCs).

This cost estimate is valid for sixty (60) days from the date of this submittal. Should Notice-to-Proceed be received by ES in excess of sixty (60) days, ES reserves the right to re-evaluate proposal costs and submit to EBRPD a revised cost estimate.

Should this proposal be acceptable, please sign the enclosed change order and return the original to our office.

Engineering-Science appreciates he opportunity to provide East Bay Regional Parks District with continued technical services. Should you have any questions regarding this submittal, please call.

Very truly yours,

ENGINEERING-SCIENCE, INC.

Bruce M. Rucker
Project Manager

Neal Siler
Manager, Hazardous Waste
Management Department

BMR/sac/41-44.R1
Attachments

cc: T.G. Cole, ES

ES ENGINEERING-SCIENCE, INC.

Client East Bay Regional Parks District | Job No. NC367 | Sheet 1 of 2

Subject Redwood Regional Park UST Excavation Confirmation Sampling 15 June 1993 | By Bruce Rucker | Date 6/25/93

Checked | Rev. 0