

LOWNEY ASSOCIATES

Environmental/Geotechnical/Engineering Services

September 26, 1991
P4195, MV092303

ALAMEDA COUNTY HEALTH DEPARTMENT
80 Swan Way, Suite 200
Oakland, California 94621

**RE: WORK PLAN FOR SOIL AND
GROUND WATER QUALITY
RECONNAISSANCE,
TWO HAYWARD PARCELS,
HAYWARD, CALIFORNIA**

Attention: Ms. Pam Evans

Ladies and Gentlemen:

We present this work plan to perform soil and ground water quality reconnaissance at the referenced site, located in Hayward, California (see Figures 1 and 2). The site consists of a 32-acre parcel bordered to the east and south by Alameda Creek flood control channel levees, to the west by Hesperian Boulevard, and to the north by industrial and commercial developments.

Introduction

The site was used for agricultural purposes until 1959 and left fallow until 1970, when a drive-in movie theater was constructed on the eastern portion of the site. Currently both parcels are unoccupied and the drive-in theater has been removed.

Site Background

Our recent work at the site has included the installation of five ground water monitoring wells and collection of numerous soil samples. Laboratory analysis of the ground water and soil samples for EPA priority pollutant compounds has not detected volatile or semi-volatile organic compounds, asbestos, cyanide, organochlorine pesticides or PCBs. Laboratory analyses did detect motor oil in near surface soil at one location on-site. Ground water from three of five wells did reveal either TPH as diesel or total petroleum oil at laboratory detection limits.

Metals have also been detected in near surface soils. These metals may be associated with slag that has apparently been intermixed with the gravel on a portion of the site which has historically been used as a drive-in theater. Slag is also locally present in piles on the southwestern portion of the site. Slag is generally produced as a by-product in metal foundry

of refining operations. It was commonly used as granular fill material prior to the 1970s.

The proposed investigation would be conducted under the direction and review of Glenn A. Romig, P.E., Principal Engineer (CE No. 39882, GE 2157), Registered Environmental Assessor, (REA No. 1167). The project manager will be Associate Ron Helm, Registered Environmental Assessor (REA no. 2215). Environmental Engineer Stason I. Foster and Staff hydrogeologist Peter Leffler will assist in the office and field phases of the investigation.

Statement of Qualifications

To characterize the slag, and further evaluate soil and ground water quality on-site, we present the following scope of work.

Scope of Work

TASK A: OIL EVALUATION

Oil has been detected in near surface soil samples collected across the site. However, the majority of oil detected has been characterized as asphaltic oil and is likely due to the presence of asphalt chips in the soil. The oil detected in sample SS-8, however, displayed characteristics similar to motor oil. To further evaluate soil quality in this vicinity, we would resample the location of SS-8 and collect four additional soil samples located in a radial pattern around SS-8 at a distance of approximately 10 feet. The five samples, collected from the 0.5 to 1.0 foot depth interval, would be analyzed for total petroleum oil by Standard Method 5520EF. A fingerprint analysis to differentiate between asphaltic and motor oils would be conducted using gas chromatography-mass spectrometry.

Supplemental Soil Sampling

Laboratory analysis of the most recent ground water samples from the site detected levels of diesel in well AF-5. The petroleum hydrocarbons detected were just slightly above laboratory detection limits. To confirm the presence of this compound, and further evaluate ground water quality from other wells, we would resample the five on-site wells. One ground water sample from each well would be analyzed for total petroleum oil (Standard Method 5520EF). The sample collected from well AF-5 would additionally be analyzed for TPH as diesel (EPA Test Method 3510/8015).

Supplemental Ground Water Sampling

TASK B: SLAG/GRAVEL EVALUATION

An extensive investigation at Pacific States Steel located in Union City is currently in progress. This investigation addresses an on-site slag issue and will reportedly be influential in the regulatory agencies decision as to whether slag should be classified as a hazardous or non-hazardous material. To obtain information regarding this case, we would review the files of the Union City Fire Department and/or the County Health Department. Reportedly, a significant amount of information is currently available.

**Fire Department File
Review**

The slag observed on-site is a hard, refuse metal containing material which is likely associated with metal smelting operations. Approximately four to six different types of slag, some appearing very dense and some appearing very porous and of differing colors, have been noted on the undeveloped portions of the site. In addition, this material appears to be intermixed with the gravel on the drive-in portion of the site. To characterize this slag, we would collect samples of each of the four to six slag varieties and also two gravel samples. To evaluate total metal content (TTLC), these samples would be analyzed by atomic absorption spectrometry to detect 18 toxic metals listed in Title 22 of the California Code of Regulations. Previous investigations have detected elevated levels of lead, copper, chromium, and zinc in soil at the site. These metals are expected to be present in the slag. If total chromium is detected at an elevated level, approaching or exceeding the TTLC, an analysis to distinguish hexavalent chromium (Cr VI) will be performed on the two samples with the highest total chromium content. Chromium III compounds show little or no toxicity, while chromium VI has been listed as a carcinogen by the EPA.

Slag Characterization

To evaluate soluble metal concentrations and contaminant behavior under site conditions, the slag would also be analyzed using modified STLC extraction techniques. These analyses would only be performed for metals with total levels exceeding the STLC. The soluble threshold limit concentration (STLC) is the level at which a solid is considered a hazardous waste.

The typical STLC extraction technique requires the agitation of the samples for several days in a buffered citric acid solution (pH of 5.0) to simulate a landfill leachate environment. However, the actual average pH of soil and ponded water at the site has been shown to be approximately 9.5 to 9.0. Therefore, to simulate actual on-site conditions, an extraction solution with a pH of 9.0 will be used. The slag would be additionally analyzed for soluble metals using deionized water at a neutral pH, and acidic extraction solutions at a pH of 1.5 to simulate neutral on-site conditions and conditions within the human digestive system, respectively. After extraction, the pH of the neutral extraction solution would be measured to further characterize the behavior of soil, water and metals at the site. These additional analyses would aid in the preparation of the risk assessment discussed below which would consider human ingestion as a possible exposure pathway.

To evaluate the slag/gravel samples for hazardous waste characteristics defined by Title 22 of the California Code of Regulations, we would additionally analyze the two slag/gravel samples with the highest metal content for corrosivity, reactivity, and toxicity. These analyses would aid in evaluating whether remedial actions are or are not needed at the site.

Hazardous Waste Characterization (Title 22)

To evaluate the potential impact of the slag on soil at the site, near surface soil samples would be collected at twelve locations across the site using a backhoe. The backhoe pits would be approximately 3 to 5 feet in depth. One of the twelve pits would be located near sample SS-3, a location where elevated lead levels were previously located. Two additional pits would be located in areas where no slag is observed. The remaining nine pits would be located in areas at which slag is present. A composite of four soil samples from each backhoe pit would be analyzed by atomic absorption spectrometry and/or STLC extraction techniques for the total and soluble metals detected in the slag which exceeded the TTLC or STLC, respectively. To simulate naturally occurring on-site conditions, the actual pH of each composite soil sample would be determined and the STLC analyses would be performed using an extraction solution with a similar pH. The data results would be statistically analyzed using the methods described in EPA document SW846 to properly characterize the

Additional Soil Quality Evaluation

soils at the site and establish the maximum concentration of each metal of concern at 90 percent confidence.

Laboratory analysis of ground water samples, collected on September 7, 1990, from on-site wells detected various metals. In our opinion, the levels detected may at least in part be due to suspended particulate matter within the ground water samples. To better evaluate the actual metal content of ground water at the site, we would resample the five on-site wells. Ground water samples collected would be analyzed for total dissolved solids and by atomic absorption spectrometry to detect 18 toxic metals listed in Title 22 of the California Code of Regulations. Before the metal analyses, each sample would be filtered to remove suspended soils.

Additional Ground Water Sampling

Our toxicologist would prepare a site specific health based risk assessment. The risk assessment would be conducted following various EPA guidance documents, and would address potential human health impacts and would not address ecological impacts. This assessment would evaluate the actual risk, if any, associated with the slag which is present on-site and if health risks are found to be unacceptable, acceptable soil clean-up levels would be derived. The risk assessment would consider compound concentrations, transport and fate of the compounds detected, exposure pathways, and the possible future uses of the property. We understand that future plans include industrial development of the site.

Site Specific Health Based Risk Assessment

We would prepare a soil and ground water quality reconnaissance report focusing on the oil and slag detected at the site. The report would present the results of our investigation, summarizing the field and laboratory data, and presenting our conclusions and recommendations.

Report Preparation

Per our recent conversation, a meeting is scheduled for October 10, 1991, to further discuss proposed work at the site. We understand that there is a \$67 per hour fee to cover Health Department expenses involved with oversight and review of this project. We have attached a check for \$500 to cover initial review expenses.

If you have any questions, please call. As an approval of our scope of work, please sign one copy of the work plan and return it to us.

Very truly yours,

LOWNEY ASSOCIATES



Ron L. Helm, R.E.A.
Associate



Glenn A. Romig, P.E.
Vice President

GAR:RLH:SIF

Copies: Addressee (2)
 Hayward Fire Department (2)
 Attention: Hugh Murphy

Attachments: Check
 Figures 1 & 2

AUTHORIZATION

BY: _____

TITLE: _____

DATE: _____