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Harza Engineering Company of California

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November 1, 1993
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Alameda County Department of
Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Attention: Ms. Juliet Shin

RE: WORKPLAN FOR ADDITIONAL GROUND WATER QUALITY INVESTIGATION
MILLS COLLEGE CORPORATION YARD
OAKLAND, CALIFORNIA

Dear Ms. Shin:

At the request of Mr. David Johnson of Mills College, we are submitting for your review, this workplan for conducting additional ground water quality investigations at the Mills College Corporation Yard in Oakland, California. The purpose of this additional investigation is to install one ground water monitoring well below the Corporation Yard office, in order to provide additional information on the downgradient extent of petroleum hydrocarbons in ground water related to a previously removed underground gasoline storage tank at the site. This additional investigation has been requested by the Alameda County Department of Environmental Health (ACDEH) in their letter of April 23, 1993.

BACKGROUND

In October, 1988, a 1,000 gallon, underground gasoline storage tank was removed from the Corporation Yard facility. A report prepared by Blaine Tech Services, Inc. of San Jose, California, indicated that soil samples collected from a depth of 21 feet below ground surface following tank removal contained moderately high levels of petroleum hydrocarbons as gasoline. It is understood that 100 cubic yards of contaminated soils were excavated from the tank pit area at the time of tank removal and aerated onsite. The Alameda County Department of Environmental Health (ACDEH) subsequently issued a letter, dated February 15, 1989, requesting investigation of the vertical and lateral extent of petroleum hydrocarbons in soil and ground water related to the former tank.

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Between June, 1989, and December, 1990, Harza Kaldveer (formerly Kaldveer Associates) performed soil and ground water quality investigations at the site, consisting of the installation and sampling of three ground water monitoring wells and two additional shallow soil borings. The results of these investigations, presented in a report titled Soil and Ground Water Testing Report For Mills College Corporation Yard, dated May 7, 1991, indicated that the majority of gasoline contamination in the unsaturated zone in the vicinity of the tanks appeared to have been removed during the soil excavation program conducted when the tanks were removed. However, due to proximity of the corporation yard buildings, not all of the contaminated soil could be removed, and soils containing petroleum hydrocarbons as gasoline at concentrations of up to 1,200 parts per million (ppm) remained in the ground immediately adjacent to the former tank area. During these investigations, ground water samples were collected from the three onsite monitoring wells in June, 1989, and December, 1990. Chemical test results indicated the presence of petroleum hydrocarbons as gasoline in ground water sampled from the downgradient well at concentrations of 11 ppm in June, 1989, and 2.5 ppm in December, 1990. The other wells did not contain petroleum hydrocarbons in detectable quantities, except for 0.05 ppm gasoline measured in the lateral-gradient well in December, 1990.

Additional ground water sampling has been performed at the site in June, 1991, and March and October, 1992. Results of these sampling events are described in Ground Water Sampling Reports dated April 9, and December 7, 1992. Chemical test results from samples collected during these sampling rounds have shown a fluctuation in reported TPH concentrations in the downgradient well (MW-1) from a low of 1.6 ppm to a high of 16 ppm. The apparent fluctuations in reported hydrocarbon concentration do not appear to correlate with changes in ground water levels or other obvious conditions. Changes in relative concentrations of purgeable aromatic compounds generally reflect the changes in TPH concentration. Measured concentrations of benzene in MW-1 have ranged from 0.26 ppm to 2 ppm. Modest fluctuations in TPH concentration (non-detect to 0.1 ppm) have also been reported in the lateral gradient well, MW-3, over the same monitoring period. The upgradient well (MW-2) has periodically reported the presence of low levels of TPH and has recorded the presence of benzene (0.003 to 0.047 ppm) during the last three sampling rounds.

The measured ground water flow direction at the site has consistently been toward the south, beneath the existing Corporation Yard buildings. The lateral downgradient extent of hydrocarbons in ground water has not been determined. The investigation outlined in this workplan is intended to provide additional information on the downgradient extent of gasoline hydrocarbons in ground water, and to provide an update on ground water quality at the site.

SCOPE OF SERVICES

The scope of work to be performed during this investigation is based on the results of a meeting with Juliet Shin of ACDEH at the Mills College offices office on January 8, 1993, the ACDEH letter of April 23, 1993, and our previous experience at the site. The investigation will include the following:

1. Preparation of this workplan for submittal to ACDEH outlining the installation of one ground water monitoring well, and performing one round of ground water sampling at the Corporation Yard site.

2. A ground water sampling program consisting of:

   a) Installing one ground water monitoring well to a depth of approximately 30 feet in the Seminary Avenue right-of-way, immediately below the Corporation Yard office building,

   b) Collecting ground water samples from the new well and the three existing wells previously installed in the Corporation Yard. All ground water samples will be analyzed for total petroleum hydrocarbons as gasoline using EPA Method 5030, and for purgeable aromatic compounds using EPA Method 8020.

   Applicable local regulations will be followed in permitting and installing the well, including obtaining excavation permits and encroachment permits from the City of Oakland, and submittal of a traffic control plan to the City Engineering Department.

3. Surveying the new well-top elevation relative to the existing Corporation Yard wells, and measuring ground water levels in all wells for use in developing a ground water elevation contour map.

4. Submittal of a report describing the investigation, results of the laboratory analyses, and our conclusions concerning the extent of petroleum hydrocarbons in ground water.

SCHEDULE

The investigation summary report will be submitted to ACDEH within six weeks of the date of this workplan. We are presently in the process of obtaining encroachment permits from the City of Oakland.

If you have any questions regarding this workplan, please do not hesitate to call.

Very truly yours,

HARZA KALDVEER

Dennis Laduzinsky, C.E.G.
Senior Engineering Geologist

DL:pv
Copies: Addressee (1)
Mills College (1)
Attention: Mr. Tom Biddle

letter

APPENDIX I

EXPLORATORY BORINGS

The exploratory boring for monitoring well installation will be permitted through the Alameda County Flood Control and Water Conservation District. A truck-mounted drill rig equipped with 8-inch diameter hollow stem augers will be used to complete the boring. All equipment will be steam-cleaned prior to drilling. All sampling equipment will be cleaned with a laboratory grade detergent and rinsed with distilled water between samples. Thus, cross-contamination will be minimized.

Soil samples will be collected from the boring at five foot intervals using either a 2-inch I.D. Modified California sampler containing thin brass liners, or a standard penetration split-spoon sampler. The sampler will be driven with a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler the last 12 inches of an 18-inch drive will be recorded as the penetration resistance (blows/foot) on the boring logs.

Soils encountered during drilling will be classified by Harza Kaldveer staff by visual examination in the field in accordance with the Unified Soil Classification System. All samples will be screened for hydrocarbon vapors in the field using a portable photoionization detector. Field hydrocarbon vapor measurements will be recorded on the boring logs. Soil samples collected for possible chemical analysis were collected in 2-inch diameter, 6-inch long, brass liners. These samples will be examined for logging, sealed with aluminum foil-lined lids, labeled and immediately placed in refrigerated storage. Chain-of-custody forms will be initiated in the field and accompany samples to a California Environmental Protection Agency certified laboratory.

Borings completed as ground water monitoring wells will be extended approximately 10 to 15 feet past the first free water encountered. They will be terminated at a shallower depth if a minimum of five feet of clay, acting as an aquitard is encountered. Soil cuttings produced by the drilling operation will be stockpiled on the Corporation Yard site.

MONITORING WELLS

The boring will be converted to a monitoring well, utilizing 2" schedule 40 threaded PVC pipe and slotted screen. The perforations will extend approximately 10 to 15 feet below, and 5 feet

above, the upper zone of saturation. The perforated section annulus will be packed with clean graded sand to a level approximately two feet above the highest screen slots, and a one foot thick bentonite plug will be placed above the sand pack. The remaining annulus will be backfilled with cement grout to grade.

The well will be finished with a traffic rated concrete or metal box grouted to match the existing grade. The well will be completed with a locking cap to guard against vandalism. No solvents or glues will be used during monitoring well construction.

After installation, the well will be developed utilizing hand bailing or a submersible pump. Development will consist of the rapid removal of water from the well until the water is relatively free of sand, silt, and turbidity.

MONITORING WELL SAMPLING

Following an initial water level measurement, the monitoring well will be sampled using a teflon bailer. Prior to sample collection, a minimum of four well-casing volumes of water will be purged in an attempt to collect a representative formation sample. Should the well become completely evacuated during purging, samples will be collected after the well has recovered to 80 percent of this initial water elevation. Water generated during well development and sampling will be stored in properly labeled drums at the Corporation Yard.

All samples collected will be placed in containers approved for the type of analyses required. Following the addition of any preservatives required per EPA approved sampling protocols, the samples will be labeled and immediately placed in refrigerated storage. A chain-of-custody form will be initiated by the sampler and accompany the samples to American Environmental Network of Pleasant Hill, California (AEN) for analysis. AEN is approved by the California Environmental Protection Agency for the type of analyses to be performed.