MILLS COLLEGE

5000
MacArthur
Boulevard
Oakland
California
94613-1399

March 22, 1989

Mr. Rafat A. Shahid
Hazardous Materials Division
80 Swam Way, Room 200
Oakland, Ca. 94621

Dear Mr. Shahid:

Enclosed is a work plan for soil and ground water testing at the Mills College Corporation yard, in response to your letter of February 15, 1989. Also enclosed is a deposit/refund check in the amount of $500.00, payable to Alameda County.

If you have any questions, please call me at 415-430-2146.

Sincerely yours,

F. G. Charlton III
Director of Campus Facilities

Project # 1152882
Fee Paid $500.00
Date 3/28/89

Kaldveer Associates
Geoscience Consultants

Peter Kaldveer, P.E., G.E.
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Richard Short, P.E., G.E.
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March 3, 1989
KE1025-2, 13292

Mills College
5000 Mac Arthur Blvd.
Oakland, California 94613-1399

Attention: Mr. Frank G. "Chuck" Charlton
Director, Campus Facilities

RE: WORK PLAN FOR SOIL AND GROUND WATER TESTING
MILLS COLLEGE
CORPORATION YARD
OAKLAND, CALIFORNIA

Gentlemen:

In accordance with your request, we are pleased to submit this work plan for soil and ground water testing in the vicinity of the S.I.E.T. corporation yard fuel storage tank, in Oakland, California. The purpose of this investigation is to evaluate the vertical and lateral extent of gasoline contamination related to a former underground storage tank.

BACKGROUND

In October, 1988, a 1000-gallon fuel tank, which had been used to store gasoline, was excavated and removed from the corporation yard facility. A report prepared by Blaine Tech Services, Inc., indicates that soil samples, obtained following tank removal from as deep as 21 feet, contained significant levels of petroleum hydrocarbons. The Alameda County Health Department has required investigation of the extent of soil and ground water contamination.

SCOPE OF SERVICES

Our scope of work is based on our discussions with Mr. Chuck Charlton of Mills College, Mr. Larry Seto of the Alameda County Health Department, Ms. Lisa McKan of the California Regional Water Quality Control Board, San Francisco Bay Region, and upon our site reconnaissance, and will include the following:

425 Roland Way
Oakland, California 94621
(415) 568-4001
FAX: 415-568-2205
A California Corporation

A. Soil and Ground Water Testing

1. A field subsurface exploratory program consisting of drilling five continuous flight hollow stem auger borings to depths of about 40 feet. Proposed boring locations are shown on Figure 1. Soil samples will be collected at five-foot intervals in each boring. Soil samples collected for the possible chemical analysis will be appropriately packed, refrigerated and transported to the chemical laboratory for testing. The augers, samplers and equipment would be steam-cleaned prior to the field investigation. See Appendix I for details.

2. Three of the exploratory borings will be completed as monitoring wells to a maximum depth of 50 feet, if water is encountered prior to 40 feet. Monitoring wells will not be installed if ground water is not encountered within 40 feet of the surface. Borings not completed as monitoring wells will be grouted to the ground surface. Applicable local regulations will be followed in permitting and installing the wells. The wells will be developed and sampled. See Appendix II for details.

   Well-top elevations will be surveyed to a common datum for evaluation of ground water flow potential.

3. The chemical testing program will consist of analyzing soil and ground water samples for total petroleum hydrocarbons as gasoline with benzene, toluene, xylene, and ethylbenzene distinction. A California Department of Health Services approved analytical laboratory will be utilized. See Appendix III for details.

   Approximately 15 soil sample analyses will be conducted. Please note that approximately half of the samples will consist of composites of two samples each. This is the generally accepted method of initially screening a site for soil contamination.

B. Report

1. Submittal of a brief report presenting the results of our

investigation. The report will include a description of the field and laboratory methods, analytical results, and our conclusions regarding the lateral and vertical extent of possible contamination related to the former underground storage tank.

CONDITIONS

Our soil and ground water testing services will be provided in accordance with the Schedule of Charges and General Conditions outlined in our proposed PK2041, dated March 3, 1989. We currently plan to store all soil cuttings and ground water in drums on the site. It probably will be possible to then dispose of them in any convenient manner. However, contaminated soil cuttings (those classified as "hazardous waste" by California Department of Health Services regulations) or water may need to be treated or removed to a hazardous waste depository. We will assist with disposal, or treatment, but the costs will be the responsibility of the owner.

We thank you for the opportunity to be of service to you and trust this work plan meets your needs at this time. If you have any questions, or require additional information, please don't hesitate to call.

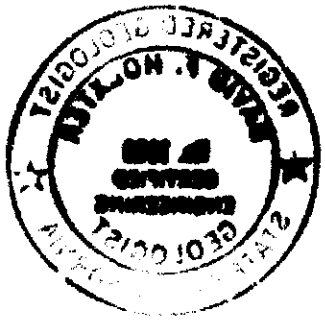
Very truly yours,

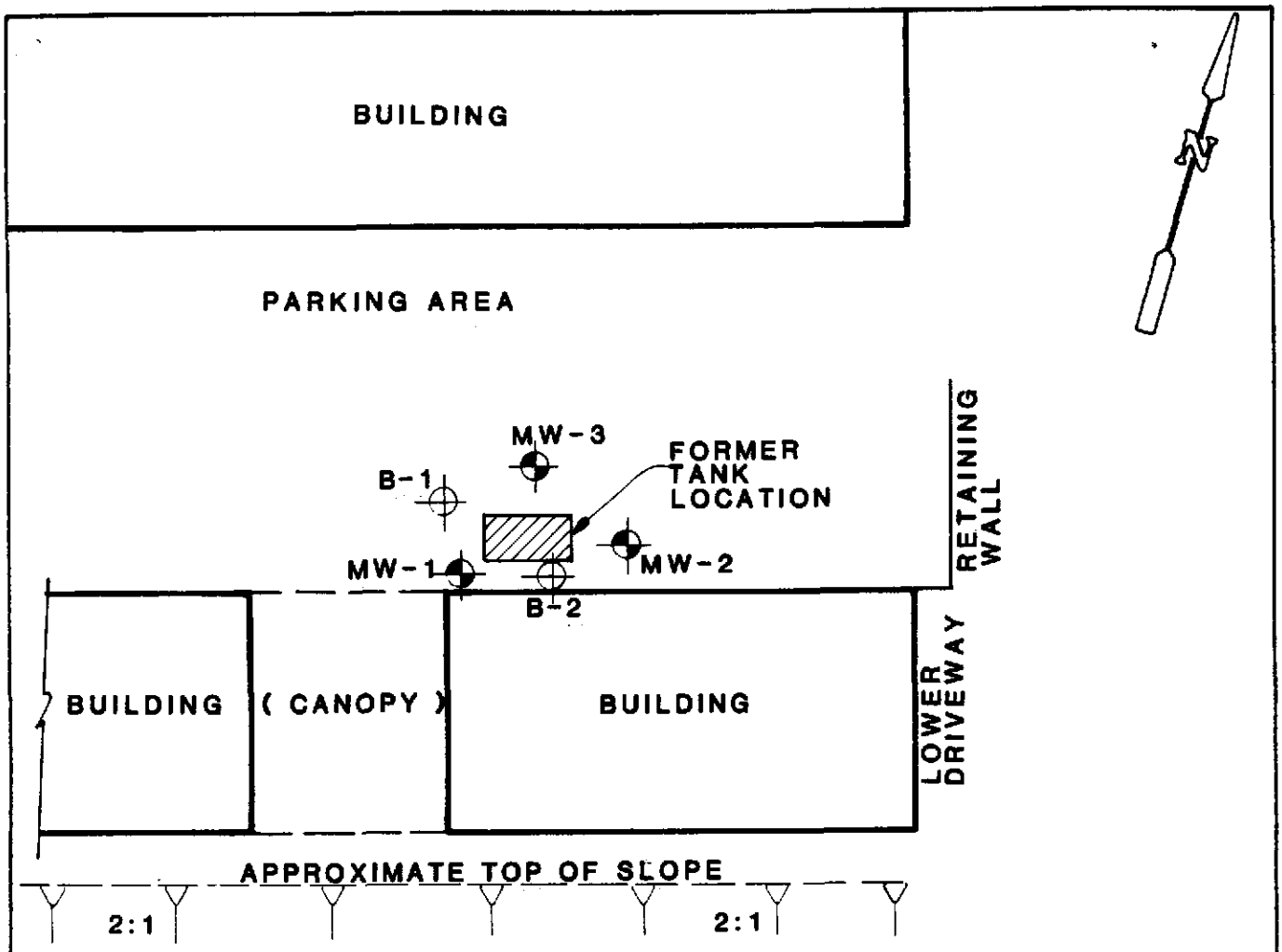
KALDVEER ASSOCIATES, INC.

David F. Hoexter, C.E.G./R.E.A.
Associate/Manager Environmental Services

Ronald L. Bajuniemi, P.E./G.E.
Vice President Engineering

DFH/RLB:jb
Copies: Addressee (2)





LEGEND

B-1 ⊕ Approximate Location of Soil Boring

MW-3 ⊕ Approximate Location of Monitoring Well

APPROXIMATE SCALE (FEET)

0 20 40

Base: after Blaine Tech Services Inc., 1988

Kaldveer Associates
Geoscience Consultants
A California Corporation

SITE PLAN

MILLS COLLEGE
CORPORATION YARD FACILITY
Oakland, California

PROJECT NO.	DATE	
KE1025-2	March 1989	Figure 1

APPENDIX I

EXPLORATORY BORINGS

The exploratory borings will be permitted as required. A truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers will be utilized to complete the borings. All equipment will be steam-cleaned prior to drilling and between borings. Soil samples will be collected in clean, brass tubes utilizing a modified California-type drive sampler. The sampler will be cleaned with TSP (tri-sodium phosphate) detergent and rinsed with clear and then distilled water between samples. Thus, cross-contamination will be minimized.

The borings completed as monitoring wells will be extended approximately 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 (impediment to ground water movement) is penetrated.

APPENDIX II

MONITORING WELLS

The borings will be converted to monitoring wells, utilizing 2" schedule 40 threaded PVC pipe and slotted screen. The perforations will extend approximately 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 as a seal against surface water infiltration. The slot and annular sand grain size will be determined following qualitative evaluation of available grain size data. The remaining annulus will be backfilled with concrete to grade.

The wells will be finished with a Cristy-type concrete or metal box grouted to match the existing grade. The well will be sealed with a threaded locking cap to prevent surface contamination and to guard against vandalism. No solvents or glues will be used during monitoring well construction.

After installation, the wells will be developed utilizing hand bailing or a well development pump.

MONITORING WELL SAMPLING

Following an initial water level measurement, monitoring wells will be sampled using a teflon bailer, or bladder or hand pump. Prior to sample collection, a minimum of four well volumes 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 its initial water elevation.

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.

All samples will be labeled in such a manner as to maintain

client confidentiality. A chain-of-custody form will be initiated by the sampler and accompany the samples to the analytical laboratory. All soil and water samples collected will be delivered to the laboratory approved for the type of analysis to be performed by the California Department of Health Services.

APPENDIX III

SAMPLE ANALYSIS

Analyses will be conducted by EPA approved methods and in accordance with Attachment 2 of the "Guidelines for Addressing Fuel Leaks" by the California Regional Water Quality Control Board for the San Francisco Bay Region, September, 1985.

Test Name	EPA Test Method Water/Soil
Total Petroleum Hydrocarbons ("Gasoline") with Benzene, Toluene, Xylene, Ethylbenzene (BTXE) distinction	Modified 615/8015 Modified 602/8020