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Geoscience Consultants**

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July 30, 1990
KE1179-1A, 16747

Mr. Loren Smith
3527 Magnolia Drive
Alameda, California 94501

RE: WORK PLAN FOR GROUND WATER
QUALITY INVESTIGATION
1829 CLEMENT AVENUE
ALAMEDA, CALIFORNIA

Dear Mr. Smith:

Kaldveer Associates is pleased to submit this work plan for a ground water quality investigation at 1829 Clement Avenue in Alameda, California. The purpose of this investigation is to evaluate the chemical quality of the shallow ground water at the site of a former photo-chemical machining job shop. This work plan outlines a scope of work designed to satisfy the Alameda County Health Care Services Agency, Department of Environmental Health requirements for a ground water quality investigation as outlined in their Site Remediation letter of April 17, 1990.

BACKGROUND

Kaldveer Associates has previously conducted a soil quality investigation at the site and observed the clean-up of contaminated soil from beneath the building. These programs are described in detail in reports entitled "Soil Testing Report for 1829 Clement Avenue", dated April 4, 1990 and "Soil Clean-Up Report, 1829 Clement Avenue" dated July 18, 1990.

SCOPE OF SERVICES

Our scope of work is based on our previous investigations at the site and discussion with Mr Ariu Levi of Alameda County Health Department, and would include the following:

1. A ground water sampling program consisting of the installation of three monitoring wells to depths of approximately 15 feet. During our previous investigation ground water was initially encountered at a depth of six feet below ground. Stabilized water levels were measured at a depth of about three feet below ground several hours later. Proposed well locations are shown on Figure 1.

□ 425 Roland Way, Oakland, CA 94621 (415) 568-4001 FAX: 415-568-2205

□ 1737 North First Street, Suite 300, San Jose, CA 95112 (408) 436-5703 FAX: 408-436-5735

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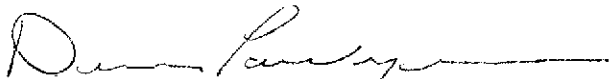
The well locations are based on the assumption that the principal ground water flow direction is to the northeast, toward the Alameda Inner Harbor Tidal Canal. Applicable local regulations will be followed in permitting and installing the wells. The wells will be developed and sampled. See Appendix I for well construction and sampling details.


2. Level-line surveying of well-top elevations and obtaining water level measurements for analysis of ground water flow direction.
3. A chemical testing program consisting of analyzing three ground water samples for chemical constituents identified during our previous investigations. Ground water samples will be analyzed for cyanide, arsenic, total chromium, chromium VI, copper, molybdenum and lead. A California Department of Health Services approved analytical laboratory will be utilized for all chemical analyses.
4. Submittal of our report presenting a description of our investigation, results of the laboratory analyses, and our conclusions and recommendations regarding site ground water quality.

We appreciate the opportunity to provide services to you on this project. If you have any questions or require additional information, please do not hesitate to call.

Very truly yours,

KALDVEER ASSOCIATES, INC.


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


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

DML/DFH:ms

Copies: Addressee (2)
Alameda Marina (1)
Attention: Mr. Wayne Milani
Alameda County Health Department (2)
Mr. Ariu Levi

APPENDIX I

GROUND WATER MONITORING WELLS

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 advanced for monitoring well installation. Soil samples will be collected at 5-foot intervals during drilling. 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.

Borings completed as ground water monitoring wells will be extended to a depth of approximately 15 feet. 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. Borings not completed as monitoring wells will be grouted to the ground surface.

The borings will be converted to monitoring wells, utilizing 2" schedule 40 threaded PVC pipe and 0.020-inch slotted screen. The perforations will extend from the base of the well at 15 feet to a depth of five feet below the ground surface. The perforated section annulus will be packed with clean graded sand to a level approximately six-inches 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 a cement/bentonite slurry 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 completed with a locking cap 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 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. Well development water will be stored onsite in 55-gallon drums.

MONITORING WELL SAMPLING

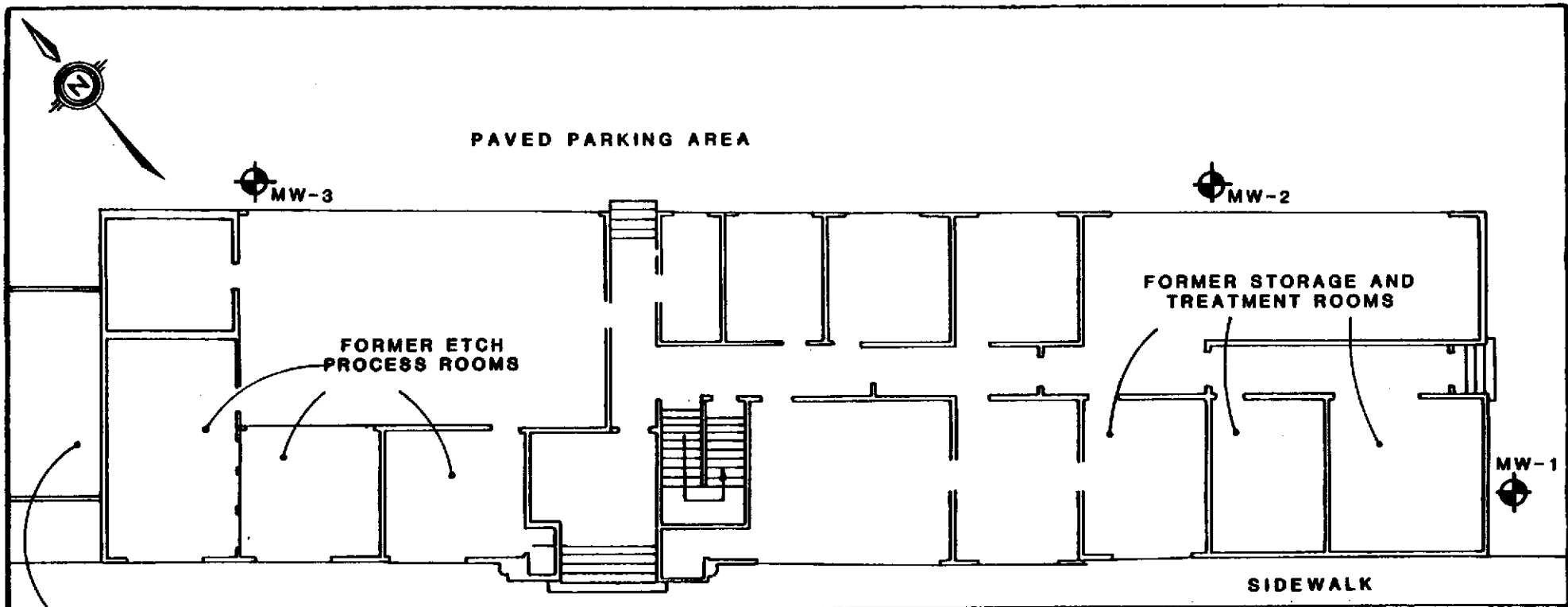
Following an initial water level measurement, monitoring wells will be sampled using a teflon bailer or submersible pump. Prior to sample collection, a minimum of four well-casing volumes of water will be purged in an attempt to collect a representative formation sample. Should the well become completely evacuated during

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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 a laboratory approved by the California Department of Health Services for the type of analysis to be performed.



BUILDING ADDITION

— Clement Avenue —

APPROXIMATE SCALE IN FEET



MW-1



PROPOSED MONITORING WELL LOCATION



Kaldveer Associates
Geoscience Consultants
A California Corporation

PROPOSED MONITORING WELL LOCATIONS

1829 CLEMENT AVENUE
Alameda, California

PROJECT NO.

DATE

KE1179-1A

July, 1990

Figure 1