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CONSULTING GEOLOGISTS

October 22, 1993

Alameda County Health Agency
Division of Hazardous Materials
Department of Environment Health
80 Swan Way, Rm. 200
Oakland, CA 94621

Attn: Mr. Barney Chan

Subject: Technical Workplan to Address the Vertical and Lateral
Extent of Soil and Groundwater Contamination and Provide
Other Site Characterization for the Site Located at 2301
East 12th Street, Oakland

Dear Mr. Chan;

The site is located at the southwest corner of the intersection of East 14th Street and 23rd Ave. A location map is presented on Figure 1. Results of analysis of groundwater samples from the three existing monitoring wells on the site have shown that significant groundwater contamination (diesel, gasoline and BTEX) is present. A summary of the existing analytical data from the three wells is presented in Table 1.

This workplan was prepared to address the legal request from the Regional Water Quality Control Board (RWQCB) resulting from the Pre-enforcement Review Panel Meeting on August 31, 1993. The Legal Request is dated September 27, 1993. The scope of work presented in this workplan is based on discussions at the Pre-enforcement Review Panel and subsequent conversations with Mr. Barney Chan of the Alameda County Department of Environmental Health regarding the site.

Since the Pre-enforcement Review Panel on August 31, two technical reports for the subject site have been submitted to the Alameda

County Department of Environmental Health with copies to the RWQCB.
These documents are:

- 1) Tank Closure Report dated August 31, 1993; and
- 2) Quarterly Monitoring Report for the third quarter (July - September) dated September 29, 1993.

The proposed scope of work for this workplan is divided into a series of tasks as discussed below.

TASK 1 - SITE AREA MAP

Because of the need to investigate the extent of offsite contamination in the down-gradient direction from the site and assess the potential for up-gradient contamination, a detailed map of the site and surrounding area needs to be prepared. This site area map will be produced by enlarging an aerial photograph to scale (1" = 50') and have it printed on reproducible Mylar. The first task is to arrange for the map and to plot existing data such as former tank locations, existing and proposed well locations, geographic data, etc.

TASK 2 - INSTALLATION OF EXTRACTION WELL

At least one extraction well will be required to carry out the groundwater remediation at the site. The decision whether or not an additional extraction well is required will be based, in large part, on the results of this investigation. The presently proposed extraction well (designated EW-1) will be located between the 6000-gallon diesel tank and the former waste oil tanks. The location is shown on Figure 2.

The well will be constructed of 4 inch diameter Schedule 40 PVC pipe and will extend to a depth of approximately 30 feet to allow for anticipated drawdown of the groundwater. The lower 25 feet of the casing will be screened with factory-slotted pipe. It is presently anticipated that the slot size will be 0.01" and the sand filter pack will consist No. 2/16 graded sand. The sand will extend one foot above the screen and a bentonite transition seal will be placed above the sand. The remainder of the boring will be grouted with a cement grout to provide a sanitary seal. The well head will be set in a vault large enough to allow the future connection of subsurface piping to a remediation system.

Two soil samples will be collected for analysis; one at a depth of approximately five to six feet (at the base of the former waste oil tank) and the other in the capillary fringe zone just above the groundwater level. Because the extraction well will be located adjacent to the former waste oil tanks the full suite of tests required for waste oil tanks will be run on the samples. Samples will be collected and transported to a State Certified Laboratory following standard QA/QC procedures and chain-of-custody control.

~8.5'
check
to see
what
depth
this is

In a later task of this investigation a pump test will be run on the extraction well to assess the shallow aquifer characteristics and effectiveness of the well in capturing the contamination plume. Based on the data from the pump test and the results of analysis of groundwater samples from the additional monitoring wells as discussed below, a determination will be made as to whether or not an additional extraction well or wells will be required.

TASK 3 - INSTALLATION OF ADDITIONAL MONITORING WELLS

Three additional monitoring wells (designated MW-4, MW-5 and MW-6) are proposed to assess the extent of migration of the contamination

*open up
parameters for
MW 2 + MW 3*

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*add 8270 + 8240 on MW 2 if
on ~~future~~ next 6W spring.*

*more MW-4 easterly, ~ 10' to account
for varying gradient direction*

More MW's SEasterly to have another up gradient well

plume. The monitoring wells will be constructed of 2 inch diameter Schedule 40 PVC pipe and will extend to a depth of approximately 20 feet. Depth to groundwater during the last sampling episode was approximately 8.5 feet. The lower 15 feet of casing will be screened with factory-slotted pipe. Because of the anticipated fine-grained nature of the underlying deposits, the slot size will be 0.01" and the sand filter pack will consist of No. 2/16 sand. The sand will be installed to a depth of one foot above the slotting. A bentonite transition seal will be placed above the sand and the remainder of the boring will be grouted using a cement grout to provide a sanitary seal. Well locations are shown on the attached site plan (Figure 2).

Two of the new monitoring wells (MW-4 and MW-5) will be located offsite on City of Oakland property (on the north side of 23rd Ave.). These well locations were selected to intercept the northwest migration of the plume which is the calculated direction of the gradient based on the three existing wells. The permits from the City of Oakland required that the wells be located in the parking lane and not the traffic lane.

These offsite wells will require additional permits from the City of Oakland for their installation. These permits have been obtained and are valid through the end of November. The permits for all wells and borings have also been obtained from Zone 7.

A third new monitoring well (MW-6) will be located onsite, west of the waste oil tanks to help assess the lateral extent of the plume in a westerly direction. The well will also be used to monitor drawdown during the pump test.

Because there is no anticipated soil contamination in the area of the three new monitoring wells other than that resulting from the

Should field screen w/ either HAN or OVA & analyze any significant readings

migration of contaminated groundwater, wells are designed primarily to assess groundwater contamination. Soil samples will be collected to provide stratigraphic data to log the borings but not retained for analysis.

TASK 4 - DEVELOPMENT AND SAMPLING OF WELLS

The new wells will be developed by pumping after a minimum of 72 hours from the time of installation. Wells will be pumped until they are relatively clear of sediment. After they stabilize, they will be purged and sampled. The groundwater sample from the extraction well will be tested for the full suite of analysis required for waste oil tanks. Groundwater samples from the three monitoring wells will be tested for TPH as gasoline with BTEX and TPH as diesel.

initially

Groundwater samples will be collected in a new disposable bailer for each well and placed in 40 ml VOAS and one liter bottles supplied by the laboratory. They will be labeled and kept in a cooled ice chest for transportation to a State Certified Laboratory under chain-of-custody control. A field blank and duplicate sample will be included as part of the QA/QC procedures.

Relative elevations of the top of casings will be established for the new wells to allow groundwater gradient calculations. Depth to water will be measured using an electronic probe calibrated to 0.01 feet.

The three existing wells will be purged and sampled at the same time as the new wells. All wells will then be put onto the same quarterly monitoring schedule.

TASK 5 - SOIL BORINGS

The is a concern that some backfill for the 6000-gallon diesel tank excavation was contaminated with diesel and/or gasoline when replaced in the excavation. This concern is discussed in more detail in the Tank Closure Report. Two soil borings are proposed in the area of the backfill to test the soil for contamination. The excavation was reported to extend to a depth of 23 feet. The borings will be drilled to a depth of 20 feet and sampled every 5 feet with the lowest sample taken at a depth of 21.5 feet. *

*location of borings S/B on the north end of tank pit where
6k diesel tank had been.*

The soil sample from each 5-foot depth will be collected in brass tubes, capped, labeled, and placed a cooled ice chest. They will be transported to a State Certified Laboratory under chain-of-custody control and analyzed for TPH as gasoline with BTEX and TPH as diesel fuel.

TASK 6 - PUMP TEST

Upon completion of the new well installations and after the wells have been developed and sampled, EW-1 will be used for a pump test to obtain representative transmissivity (T), hydraulic conductivity (K), and storativity (S) values for the screened interval of the shallow aquifer. A step drawdown test is proposed, possibly followed by a constant rate discharge test. Water level measurements will be recorded in all the monitoring wells. Drawdown and recovery measurements will be recorded from both the extraction well and the monitoring wells. The duration of the pump test will be determined in the field based on semi-log plotting of the drawdown of EW-1 vs. time. When an equilibrium condition has been achieved for a period of time equal to or extrapolated for one log

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cycle of time, pumping will cease and well recovery measurements will be recorded. Water from this pumping test will be routed to a large holding tank and disposed of properly under manifest. The final report will provide a discussion of these data and calculations of the T, K and S values.

TASK 7 - REPORT PREPARATION

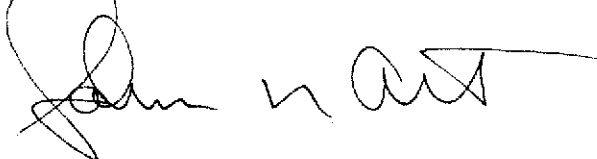
A report will be prepared at the completion of the above tasks to document the installation of the wells, interpretation of the pump test data and the results of the chemical analysis for both the soil and groundwater samples. The report will provide conclusions and recommendations for any additional characterization that may be required and propose alternatives for groundwater and possibly soil remediation at the site.

SCHEDULE

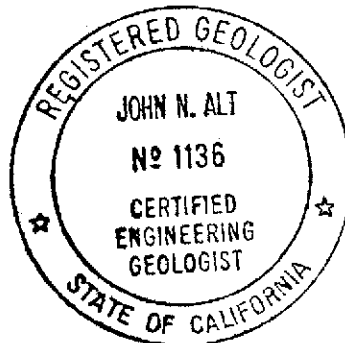
The schedule for the completion of this investigation is shown on Table 2. The schedule assumes that the scope of work is approved and authorized on or about November 1, 1993.

Should you have any questions or require additional information regarding this workplan, please contact the undersigned.

Sincerely,



John N. Alt, CEG No.1136



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Attachments: Table 1 - Summary of Previous Analytical Results
Table 2 - Schedule of Tasks
Figure 1 - Site Location
Figure 2 - Site Plan

Distribution: Mr. Rich Hiett, RWQCB
Mr. James Brinker
Mr. Robert Shapiro, Esq.

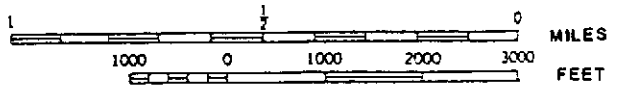
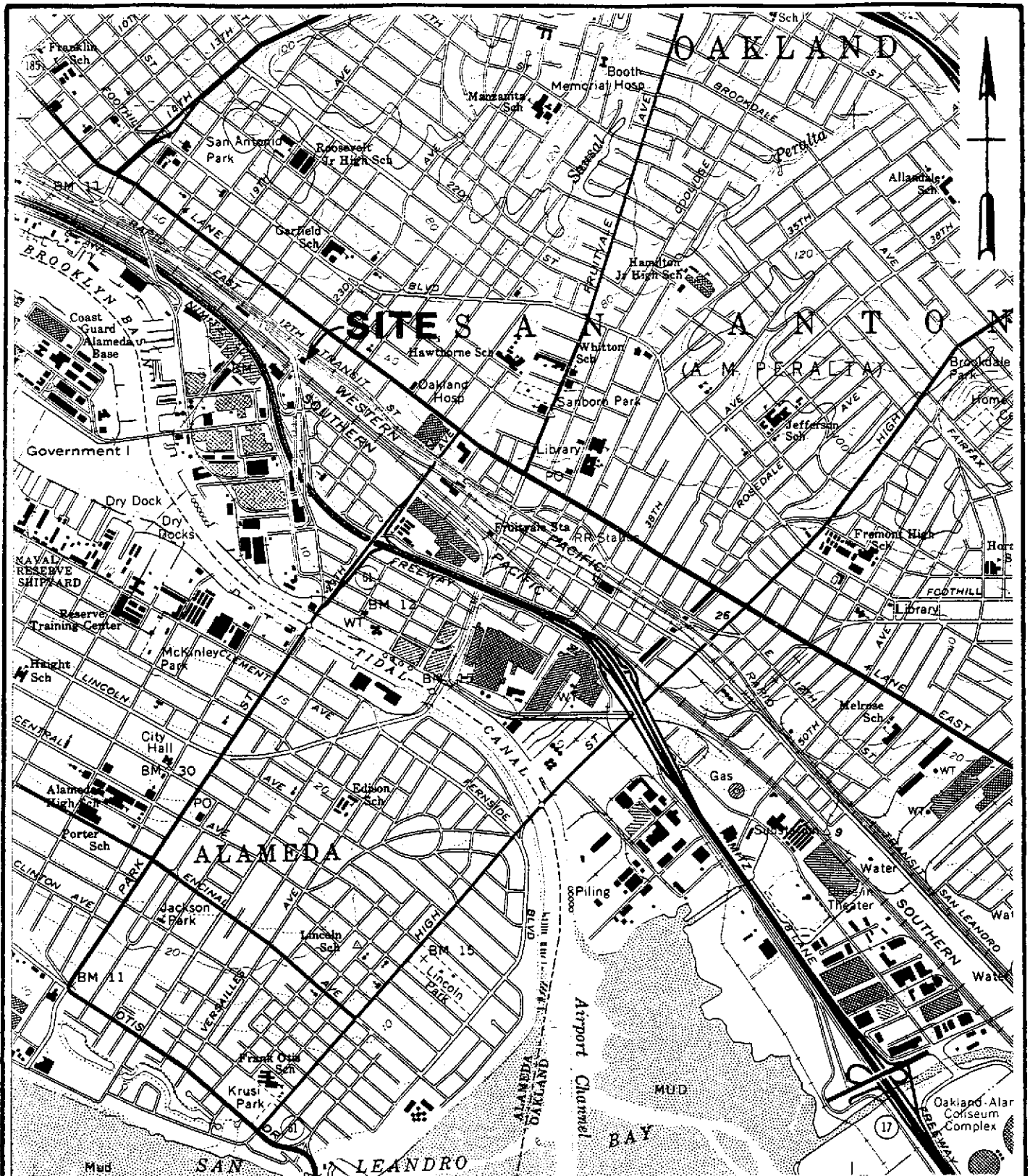
TABLE 1 - SUMMARY OF GROUNDWATER ANALYSES RESULTS IN PARTS PER MILLION (ppm)
2301 12 Street, Oakland

DATE	WELL NO.	OIL AND GREASE	TPH DIESEL	TPH GASOLINE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENE
7/27/92*	MW-1	NA	0.360	1.800	0.600	0.005	0.013	0.018
	MW-2	NA	1.500	20.000	0.110	0.006	0.037	0.039
	MW-3	NA	4.000	8.800	0.150	0.009	0.088	0.013
11/6/92	MW-1	NA	0.670	8.000	2.400	0.006	0.041	ND
	MW-2	NA	17.000	19.000	2.800	0.120	0.790	1.100
	MW-3	NA	21.000	10.000	0.078	0.003	0.830	0.013
3/02/93	MW-1	NA	1.100	5.600	3.800	ND	0.120	ND
	MW-2	NA	37.000	14.000	3.800	0.110	0.950	1.100
	MW-3	NA	9.300	3.900	0.120	ND	0.240	0.037
5/26/93	MW-1	NA	1.700	4.800	3.400	0.044	0.140	0.150
	MW-2	32.000	6.000	11.000	5.200	0.140	1.000	0.990
	MW-3	NA	4.400	7.400	0.570	0.004	0.640	0.008
8/27/93	MW-1	ND	1.200	8.4000	2.300	0.035	0.180	0.057
	MW-2	ND	5.400	16.000	1.700	0.120	0.640	0.710
	MW-3	ND	8.200	7.100	0.180	0.015	0.110	0.0094

* Data for 7/27/92 from Artesian Environmental Consultants

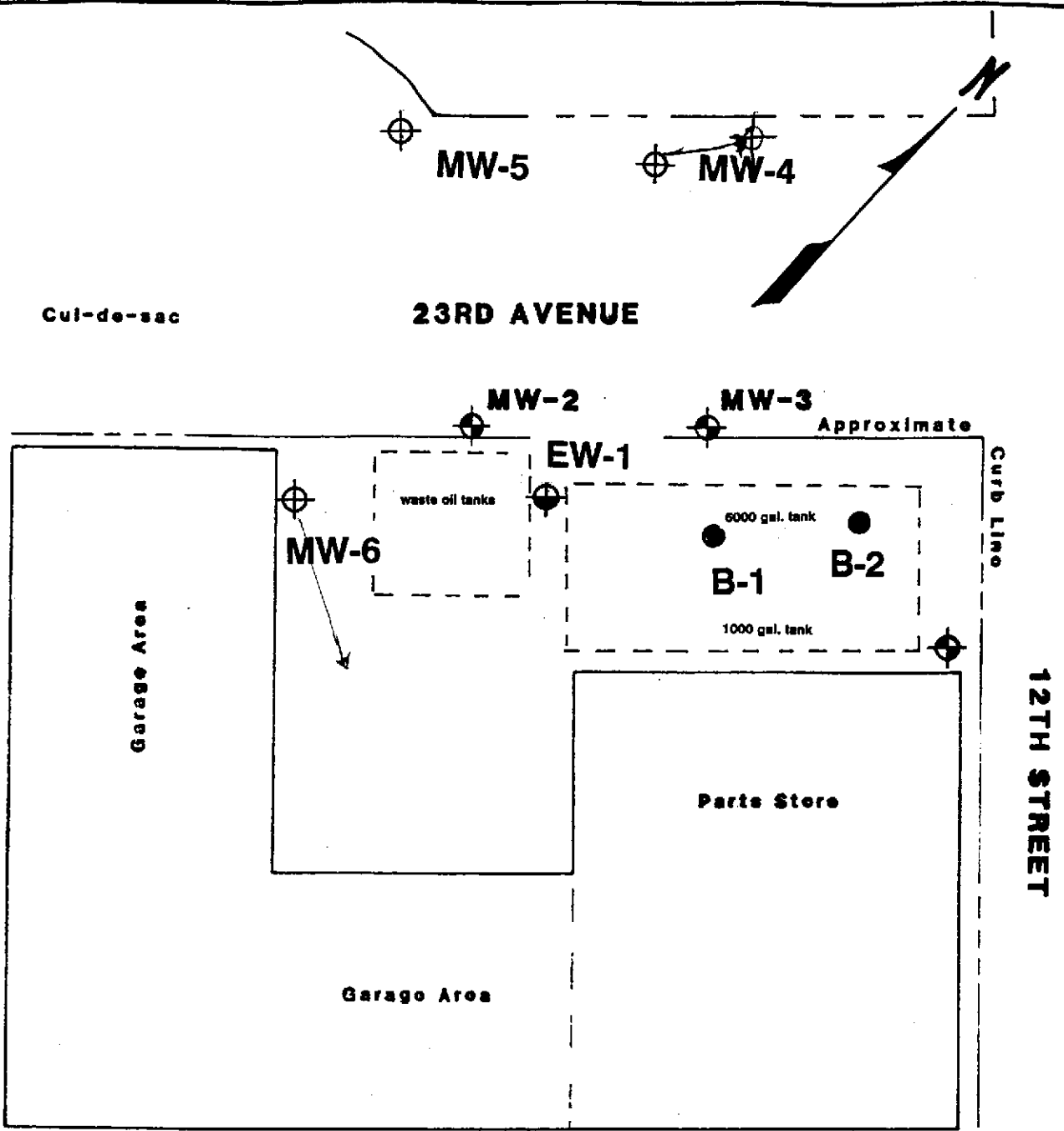
TABLE 2 - Schedule of Task Activities

Task	November			December			January				
Task 1 Site Area Map	■										
Task 2 Ext. Well			■								
Task 3 Mon. Wells			■								
Task 4 Sampling				■							
Task 5 Soil Borings			■								
Task 6 Pump Test					■						
Task 7 Final Report						-	-	-	-	-	-
Quarterly Mon. Report								-			
Meetings									-		



From U.S.G.S. 7 1/2° Quadrangle OAKLAND EAST

PLATE	No.
SITE LOCATION MAP	



LEGEND

- ⊕ MW-1 Existing Monitoring Wells
- ⊕ MW-4 Proposed Monitoring Wells
- ⊕ EW-1 Proposed Extraction Well
- B-1 Proposed Soil Borings



PLATE	No.
SITE MAP	