This file contains the following documents:

1) ATT – Plan of Correction (12/6/88)
2) Applied Geosystems (AG) – Environmental Investigation related to UST removal (2/13/87)
3) AG – Subsurface Environmental Investigation (3/24/87)
4) PR – Preliminary Chemical Test Report (6/1/88)

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Aqua Terra Technologies
Consulting Engineers
& Scientists

2950 Buskirk Avenue
Suite 120
Walnut Creek, CA
94596
415 934-4884

(5) CHRIS Frost 934-4884

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HAZARDOUS MATERIALS/
WASTE PROGRAM

December 6, 1988

Mr. Ariu Levi
Alameda County Health Care Agency
Hazardous Materials Division
80 Swan Way, Suite 200
Oakland, CA 94621

Subject: Plan of Correction
Petroleum Hydrocarbon Contaminated Soil
McGuire & Hester Facility
796 66th Avenue, Oakland, CA

Dear Mr. Levi:

This Plan of Correction for the McGuire and Hester 66th Avenue facility is presented in accordance with the requirements of California Code of Regulations (CCR) Title 22 Section 66328 (d), and the Alameda County Health Care Services Agency (ACHCSA) First Notice of Violation (ACHCSA, November 15, 1988). This Plan presents the proposed method of problem definition, remediation, and verification for soils containing detectable concentrations of petroleum hydrocarbons.

REGIONAL SETTING

The property is located at the southeast corner of 66th Avenue and Coliseum Way in an industrialized portion of Oakland, California (Plate 1). McGuire and Hester, a heavy engineering general contractor, has been located at the 66th Avenue facility for 32 years. The facility is used primarily for offices, storage of construction material, heavy engineering equipment storage and light maintenance, and default inventory.

The site is located within the San Leandro Cone groundwater subarea of the East Bay Plain, near the lower portion of the Oakland Upland and Alluvial Plain, as described in <u>Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California, 205(J) Report</u>, Alameda County Flood Control and Water Conservation District (ACFCWCD), June, 1988. Shallow sediments deposited within the groundwater subarea include bay mud, interfluvial deposits of silt and clay rich in organic material, fluvial deposits of sand and silty to clayey sand, and younger alluvium consisting of sand and gravel. The bay mud deposits, upon which the site is located, are generally of very low permeability, and are saturated with brackish water. Information presented in the ACFCWCD 205(J) report indicates that the regional shallow groundwater gradient in the vicinity of the site is directed southwest to

south-southwest, away from the Hayward fault and towards San Francisco Bay. Shallow groundwater encountered below the facility may be tidally influenced, due to the location of a nearby slough. Six sites, where soil and/or groundwater contamination has been detected, have been identified within a one-mile radius of the facility, based on information presented in the ACFCWCD 205(J) report.

BACKGROUND AND PREVIOUS WORK

On August 19, 1988 McGuire and Hester closed escrow for the property located at 796 66th Avenue, Oakland. The property was sold to Cruise America, Inc. (CAI), located in Miami, Florida. It was agreed that McGuire and Hester would vacate the 66th Avenue property by January 15, 1989.

On November 1, 1988, a representative of ACHCSA conducted a hazardous materials site inspection of the facility. Results of the facility inspection resulted in an Order of Quarantine dated November 4, 1988, and the above referenced Notice of Violation. ATT provided comments to the ACHCSA Notice in a letter dated December 2, 1988. In the response, it was agreed that McGuire and Hester would fully comply with the requirements of CCR Title 22 66328 (d). Further, McGuire and Hester agreed to provide all documentation regarding previous site investigations, and all laboratory analytical results from soil and groundwater sampling.

The results of the previous site investigations present the basis of the Plan of Correction and include 1) underground tank closure activities conducted for McGuire and Hester, 2) post closure soil and ground water sampling and analyses conducted for McGuire and Hester, 3) due diligence environmental investigations conducted for Cruise America, Inc., and 4) recent work conducted for McGuire and Hester by Subsurface Consultants, Inc., and ATT.

Underground Tank Closure for McGuire and Hester

Three underground petroleum fuel storage tanks were formerly located at the facility (Plate 2). Closure of the underground tanks was accomplished in January, 1987 as documented in a report prepared by Applied Geosystems (AGS) (AGS, February 13, 1987) the report is presented in Appendix A. Results of soil testing, conducted in

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compliance with CCR Title 23 Section 2672 (d) (1), were provided by Mr. Steve Zigan, of AGS to Mr. Ted Gerow, of the Alameda County Division of Environmental Health and Tom Callaghan, of the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region.

AGS provided construction inspection and soil sampling services for the excavation of the underground fuel tanks. The Oakland Fire Department and the Alameda County Division of Environmental Health were notified in advance of the schedule and plans to excavate the three tanks. An appropriate tank removal permit was obtained from the City of Oakland prior to initiation of removal activities. The Oakland Fire Department was on site to inspect and approve the removal of the underground storage tanks.

Field Activities and Analytical Results

Plate 2 illustrates the former location of both a 1,000 gallon tank (T1, Plate 2) and a 5,000 gallon tank (T2) which contained unleaded fuel, and an 8,000 gallon tank (T3) which contained diesel fuel.

An AGS geologist oversaw the removal of the three underground storage tanks. In accordance with 23 CCR 2672 (d) (1), appropriate soil sampling was performed immediately following excavation. Two samples were collected from the base of each tank excavation, for a total of six soil samples. Analytical results are summarized in Table 1. Sampling protocol, certified analytical reports (CARs), and chain of custody (COC) documentation are provided in the AGS report. AGS determined that additional excavation was unnecessary based on Regional Water Quality Control Board (RWQCB) guidelines for response actions where fuel product has been detected in soil and groundwater (RWQCB, 1985).

Post Closure Investigation for McGuire and Hester

Results of a post closure subsurface investigation, conducted in accordance with RWQCB guidelines for addressing fuel leaks (RWQCB, 1985), are documented in an AGS report dated March 24, 1987.

Field Activities and Analytical Results

In accordance with the above referenced RWQCB (1985) guidelines, and based on the discussions with Mr. Gerow

(ACHCSA) and Mr. Callaghan (RWQCB), one monitoring well was installed adjacent to the location of each excavated tank. Monitoring wells AGS-MW-1, AGS-MW-2, and AGS-MW-3 were drilled adjacent to the excavations for Tanks T1, T2, and T3, respectively (Plate 2). Monitoring well installation permits were obtained from Alameda County Flood Control and Water Conservation District (ACFCWCD) Zone 7. Lithologic logs, well construction details, and information regarding drilling methods is provided in the AGS March 24, 1987 report. After the wells were completed, they were developed by air and water jetting and purged of approximately three well volumes of groundwater.

Soil samples collected from depths of five and ten feet during drilling of the monitoring wells were analyzed for petroleum hydrocarbons. One groundwater sample was collected from each well. The sampling methods, chain of custody forms, and analytical results are provided in the March 24, 1987 report. The analytical results are summarized in Tables 2 and 3.

The analytical results indicate that soil total petroleum hydrocarbon (TPH) concentrations in excess of 1,000 ppm were present in the area of the excavated diesel tank to an approximate depth of five feet. Concentrations of TPH and ethylbenzene, toluene, and xylene were detected in Wells AGS-MW-1 and AGS-MW-2. Trace concentrations of benzene were detected in AGS-MW-1. TPH concentrations were not detected in AGS-MW-3.

WHAT HAPPENED TO THIS?

Initial Due Diligence Investigations for Cruise America, Inc.

No further investigations were undertaken at the facility until February, 1988. At that time, the consulting firm Purcell, Rhoades & Associates (PRA) was retained by CAI, a potential buyer for the property, to conduct a property preacquisition survey in accordance with due diligence activities.

The PRA investigation was conducted on February 17, 1988. Soil and laboratory samples were received by the laboratory on March 1, 1988. Results were reported to PRA on March 28, 1988. Mr. Irving Affeldt of PRA has informed ATT that results of the investigation were presented to CAI in a report dated June 1, 1988. A copy of the PRA report dated is provided in Appendix C.

Results of the June investigation are presented in detail below. The report recommended that any soil cleanup operations, pending regulatory approval, be observed and verified by a representative of PRA.

Field Activities and Analytical Results

It is reported that three shallow exploratory borings and three temporary monitoring wells were installed by PRA in February, 1988 in conjunction with the initial due diligence preacquisition investigation for the property. The reported location of temporary Monitoring Wells PRA-MW-1, PRA-MW-2 and PRA-MW-3, and Borings B-4, B-5 and B-6 are shown in Attachment A, Plate 2. The location of PRA monitoring wells shown on Plate 2 could not be verified during ATT site inspections. Well and boring permits, lithologic logs of borings, monitoring well completion details, sample COC documentation, information regarding field and travel sample blanks, and well destruction permits have not been made available to ATT.

PRA unwilling to release report?

Analytical results for soil samples collected during the February, 1988 are summarized in Tables 4 and 5. The soil samples, collected February 17, 1988, were received by the laboratory on March 1, 1988. Laboratory results were reported March 28, 1988. There is no record of groundwater sample collection or analyses.

The analytical results indicate that TPH concentrations for soil collected to depths of three feet in the vicinity of the former underground diesel tank fell below the 1,000 ppm RWQCB (1985) general decision value for requiring excavation of contaminated soil. Additional results indicate that one soil sample (B-6-1), collected from a depth of one foot in an equipment storage and fueling area located adjacent to the excavated diesel tank, contained trace concentrations of benzene, toluene, and ethylbenzene. No additional purgeable or extractable organic compounds were detected in samples submitted for analyses. Oil and grease concentrations exceeding 1,000 ppm were detected in Sample B-4-1, located in an area used for above ground fuel storage and light equipment maintenance.

Leak ok

Concentrations of metals detected in soil samples submitted from Boring MW-3, drilled in an area used for storage of scrap metal are presented in Table 4. Values

for each substance are compared to their respective Total Threshold Limit Concentration (TTLC) criteria for designation as a hazardous waste. The comparison indicates that all concentrations fall several orders of magnitude below the corresponding TTLC value. Likewise, if the Soluble Threshold Limit Concentration (STLC) values are applied, assuming the 10:1 dilution allowed under the Waste Extraction Test (WET) protocol defined in 22 CCR 66700 and assuming that all of the detectable metal was available for extraction, the maximum possible concentration for metal constituents in the sample extract would generally be below the corresponding STLC criteria for designation as a hazardous waste.

Additional Preacquisition Due Diligence Investigations for Cruise America, Inc.

A second investigation to further evaluate the potential extent of petroleum hydrocarbons on site was conducted by PRA on July 11, 1988. Results of the PRA investigation were summarized in a report, addressed to CAI, dated August 16, 1988. This report is presented in Appendix D. A third, supplemental investigation of the former diesel tank area was conducted by PRA between July 28 and August 1, 1988. Results of the supplemental investigation were presented to CAI in a report also dated August 16, 1988. This report is presented in Appendix E.

Field Activities and Analytical Results

Eleven shallow borings (Borings B20 through B-30) were drilled during the July 11, 1988 investigation. The locations of the borings are shown in Plate 2. Soil sample analytical results are presented in Attachment B, Table 5. The soil analytical results of July 11 indicate that TPH concentrations were either non detectable or fell below the RWQCB decision value of 100 ppm for required groundwater monitoring. The concentrations observed are generally acceptable for soil to be used in backfill for excavated underground tanks.

Groundwater samples were collected from three monitoring wells during the July 11 investigation. The three monitoring wells are located in close proximity to the former underground diesel tank. The PRA report and laboratory CARs designate these wells as MW-1, MW-2, and

MW-3. As reported to ATT by Irving Affeldt of PRA, the designations apply to Wells PRA-MW-1, PRA-MW-2, and AGS-MW-3, respectively.

Groundwater analytical results for groundwater samples collected during the July 11, 1988 investigation are presented in Table 6. Reported concentrations range for 0.72 to 60 ppm. As reported to ATT by Irving Affeldt, a thin product sheen was observed during sampling of the wells. There is no evidence to support that the sheen exceeded a thickness of one quarter inch. As reported, a bailer was used for collection of samples. Due to media cross contamination use of a bailer is an inappropriate sampling method where product sheen is present. Consequently, the reported results may be unrepresentative of actual groundwater conditions.

PRA continued investigation of the former diesel tank area on July 28, 1988. The supplemental investigation included physical removal of area soils for visual inspection and sampling. Seven soil samples, designated S-1 through S-7, were obtained from the base and sidewalls of the soil investigation area and submitted for analyses. The analytical results of the July 28, 1988 event are also summarized in Table 5. Based on sample analytical results from Samples S-2 and S-4, the investigation was continued on August 1, 1988. Soil samples S-8 through S-10 were collected at that time. The analytical results of soil sampling conducted in the course of the PRA investigations indicate that the area and depth of soils containing TPH concentrations in excess of general RWQCB decision level criteria for requiring soil excavation have been defined.

Analytical results for composite samples collected from soils which were stockpiled during the course of the investigation are also presented in Table 5. These samples were analyzed for total petroleum hydrocarbons as diesel. The composite samples contained between 100 and 3,400 mg/L diesel. PRA recommended appropriate treatment or disposal of the soils based on the analytical results.

An additional monitoring well, Well PRA-MW-4, was installed adjacent to the investigation area. Analyses of the groundwater sample obtained from the well are presented in Table 6. Petroleum oil concentrations of 2300 ppm are reported by the laboratory. The sample is reported to have an absence of floating product.

Subsurface Consultants, Inc. for McGuire & Hester

In the course of the PRA soil investigation, exposed soils were stockpiled on site pending evaluation of disposal alternatives for the soil. To evaluate potential disposal alternatives for the soil, McGuire and Hester retained Subsurface Consultants, Inc. (SCI) to collect and submit for analyses representative composite soil samples. Composite soil samples were collected on October 17, 1988. Analytical results were submitted to SCI on October 19, 1988. Results of the sampling and analyses were presented in a letter report to McGuire and Hester on November 10, 1988. This report is presented in Appendix F.

Field Activities and Analytical Results

Subsurface Consultants collected samples from the stockpiled soils in an effort to establish appropriate disposition of the material. Analytical results, summarized in Table 7, indicate that TPH concentrations for samples collected by SCI generally fell below present RWQCB decision level criteria for requiring treatment, and/or disposal at an appropriate hazardous waste facility. The reported values were within the range of concentrations appropriate for classification as a designated waste in accordance with criteria referenced in CCR Title 22, Subchapter 15. Elevated total oil and grease concentrations were detected in one sample.

Aqua Terra Technologies, Inc. for McGuire & Hester

On November 1, 1988, a representative of ACHCSA conducted a hazardous materials site inspection of the facility. Results of the facility inspection resulted in the above referenced Notice of Violation. On November 17, 1988, Mcguire and Hester retained the services of ATT to assist them in the proper design and implementation of a Correction Plan in accordance with CCR Title 22, Section 66328 (d). ATT reviewed site conditions on November 18 and 21, 1988. In the course of the site review, composite samples were collected from soils stockpiled on site and analyzed.

Field Activities and Analytical Results

Composite samples of stockpiled soils were collected by ATT on November 21, 1988. Results are summarized in Table 7. Laboratory CARs, field sample collection data sheets, and chain of custody documentation are presented in Appendix E. The results of sampling indicate that on site treatment is required before appropriate final disposition of the stockpiled soils.

Present Site Conditions

ATT conducted a preliminary visual inspection of site conditions on November 18, 1988. Results of the evaluation are summarized in Plate 3. The evaluation indicates that 1) Monitoring Wells AGS-MW-1, AGS-MW-2, PRA-MW-4, and an undocumented well are present on site, 2) floating product was not observable in any existing monitoring well, 3) the area of the former diesel tank has been backfilled by imported, clean fill, and 4) stockpiled soil has been spread out over a limited area in the western portion of the facility.

CLOSURE PLAN

On the basis of information presented in the previous section, there is no evidence to suggest the presence of extensive subsurface soil contamination remaining beneath the property. However, present analytical data for soils stockpiled on site suggest that soils should be treated prior to appropriate disposal. Accordingly, the following plan of correction is proposed for closure:

- On site bioreclamation of stockpiled soil
- Sampling and analyses of treated soil
- Appropriate disposal of treated soil

Bioreclamation of Stockpiled Soil

The bioreclamation site will be prepared to receive soil by covering the area with 10 mil Visqueen and constructing a 1.5 foot high berm around the area. The Visqueen sheet and berm are intended to contain leachate from precipitation or released as part of the bioreclamation treatment. Soil will be spread in a

don't say how much soil to be removed

layer approximately six inches thick following bioreclamation site preparation. Since the contaminant is not volatile, there will be no contamination released into the atmosphere during treatment. Following spreading of affected soil, a nutrient will be added to stimulate the growth of naturally occurring bacteria. Soil spreading allows for natural oxygenation to occur and facilitates the dispersion of liquid fertilizer. Dispersion of oxygen and nutrients are essential to assure rapid microbial degradation of contaminants.

At the beginning of the treatment process and at appropriate times thereafter, soils will be irrigated with a liquid fertilizer mixture formulated by ATT and consisting of ammonium polyphosphate. Further nutrient additions will be made if monitoring indicates their necessity.

To maintain an optimal water level for bacterial growth, ATT will install a sprinkler system on the top surface of the soil pile. Application of water will be controlled by an automatic timer and moisture probe to provide adequate soil moisture (20 to 30 percent).

ATT anticipates that soil treatment will be complete within a period of six months. After a period of three months following the start of bioreclamation, one composite soil sample for each 500 square feet of soil treatment area will be collected and analyzed for TPH and total oil and grease (TOG) to track the progress of the treatment. If a TPH and TOG value of 100 ppm has not ben achieved at this time, treatment will continue for an additional three month period. Once treatment has resulted in acceptable contaminant levels, the RWQCB will be petitioned to dispose of the soil as clean fill on site, or as a designated waste off site.

Health and Safety

The health and safety of persons working on the site will be the sole responsibility of their employers. Contractors and their personnel will be responsible for their own health and safety, as will the ATT representative, representatives of regulatory agencies, and representatives of the property owner.

All personnel will be approved for work at the site at the required level of protection. Personnel approved for work at the site must have received appropriate

training and medical approval. All personnel will be briefed in personal protection, specific site hazards, standard operating procedures, and emergency procedures.

Personnel performing soil handling tasks will take measures necessary to prevent exposure to hazardous waste, if any. All activities will start at Level D protection as described in the U.S. EPA Standard Operating Safety Guides (November 1984), with continuous organic vapor monitoring. Disposable Tyvex coveralls, steel-toe/steel-shank boots (chemical resistant), disposable latex gloves, hard hat, and eye protection will be used to minimize injury from engine-driven equipment and to minimize any exposure from contact of chemicals.

Personnel not involved in the work will be prevented from entering the bioremediation site. No eating, drinking, chewing gum or tobacco will be permitted in the work area. A first aid kit will be made available on the site.

Closure Report

A report summarizing closure activities will be presented to ACHCSA. The report will document the bioreclamation activities, present analytical results of sampling, and provide copies of all agency petitions, manifest or bills of lading, transportation records, and CARs.

SCHEDULE

ATT requests review and approval of this closure plan be expedited in order to meet scheduling requirements for site construction associated with the recent transfer of the property. ATT is prepared to commence closure activities immediately following approval of the closure plan.

ATT

Should you have any questions regarding this closure plan, please do not hesitate to call us.

Very truly yours,
Aqua Terra Technologies, Inc.

Ronald M. Block, Ph.D.
President

Christopher M. French, R.G.
Registered Geologist #4465 (Expires 6/30/90)

RMB/CMF:pd

Attachments
cc: Perry Peterson, McGuire and Hester
Peter Johnson, RWQCB
Dwight Hoenig, DHS
Gil Jensen, Alameda County District Attorney

REFERENCES

Alameda County Flood Control and Water Conservation District. 1988. Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California, 205 (J) Report. June, 1988.

Alameda County Health Care Services Agency. 1988. First Notice of Violation. Letter dated November 15, 1988.

Applied Geosystems. 1987a. Environmental Investigation Related to Underground Tank Removal. McGuire and Hester, 796 66th Avenue, Oakland, California. February 13, 1987.

Applied Geosystems, 1987b. Subsurface Environmental Investigation, Soil Boring and Monitoring Well Installation. McGuire and Hester, 796 66th Avenue, Oakland, California. March 24, 1987.

Purcell, Rhoades & Associates, 1988. Field Note Summary, Plate Indicating Excavation Boundaries, and Laboratory Data. Cruise America. 796 66th Avenue, Oakland, California. August 23, 1988.

RWQCB. 1985. Guidelines for Addressing Fuel Leaks. California Regional Water Quality Control Board. San Francisco Bay Region. September 1985.

Subsurface Consultants. 1988. Analytical Test Results Aerating Soils. McGuire and Hester Facility, 796 66th Avenue, Oakland, California. November 10, 1988.

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Table 1. Soil Chemical Data Summary[a]
Underground Tank Closure Investigation
McGuire & Hester, Oakland, CA

Tank Number	Sampling Date	Sample Number	TPH[b] as Diesel (mg/Kg)	TPH[b] as Gasoline (mg/Kg)
Tank T1	01/16/87	SE-8	NA[c]	758
	01/16/87	SW-8	NA	9.6
Tank T2	01/16/87	SE-10	NA	415
	01/16/87	SW-10	NA	3.8
Tank T3	01/16/87	SS-9	78	NA
	01/16/87	SN-9	492	NA

a. Summary of analytical results presented in AGS report dated February 13, 1987 (Attachment D-1)
b. TPH = Total petroleum hydrocarbons reported as either gasoline or diesel. Analysis for TPH as diesel using EPA Method 3550/8015. Analysis for TPH as gasoline using EPA Method 5030.
c. NA = Sample not analyzed for this constituent.

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Table 2. Soil and Groundwater Chemical Data Summary, Post Closure Underground Tank Investigation, McGuire & Hester, Oakland, CA[a]

SOIL RESULTS

Boring Number	Sampling Date	Depth (ft)	TPH[b] as Diesel (mg/Kg)	TPH[b] as Gasoline (mg/Kg)
MW-1	02/10/87	5	NA[c]	2.1
	02/10/87	10	NA	0.3
MW-2	02/10/87	5	NA	0.4
	02/10/87	10	NA	1.8
MW-3	02/10/87	5	1,750	NA
	02/10/87	10	30	NA

GROUNDWATER RESULTS

Monitoring Well Designation	Sampling Date	TPH[b] as Diesel (ug/L)	TPH[b] as Gasoline (ug/L)	Aromatic Hydrocarbons[d] (ug/L)			
				B	E	T	X
MW-1	02/12/87	NA	29	0.7	4.2	1.2	5.8
MW-2	02/12/87	NA	23.7	ND[d]	1.3	0.8	4.3
MW-3	02/12/87	ND[e]	NA	NA	NA	NA	NA

a. Summary of Analytical Results presented in AGS report dated March 24, 1988.
b. TPH = Total petroleum hydrocarbons reported as either gasoline or diesel. Analysis for TPH as diesel using EPA Method 3550/8015. Analysis for TPH as gasoline using EPA Method 5030.
c. NA = Sample not analyzed for this constituent.
d. B = Benzene, E = Ethylbenzene, T = Toluene, X = Xylenes.

Table 3. Soil Organic Chemical Data Summary, Preacquisition Due Diligence Investigation, McGuire & Hester, Oakland, CA[a].

Sample Number	Depth (Feet)	(mg/Kg) TPH[b,c,d]	(mg/Kg) Oil & Grease	(ug/Kg) POC[e] B	(ug/Kg) POC[e] T	(ug/Kg) POC[e] E	(ug/Kg) EOC[f]
MW-1-1	1.5-2.0	160[c]	NA[g]	NA[h]	NA	NA	NA
MW-1-2	2.5-3.0	270[c]	NA	NA	NA	NA	NA
MW-2-1	1.5-2.0	<10	NA	NA	NA	NA	NA
MW-2-1	1.5-2.0	460[b]	NA	NA	NA	NA	NA
MW-2-2	2.5-3.0	74[d]	NA	NA	NA	NA	NA
MW-2-2	2.5-3.0	42[b]	NA	NA	NA	NA	NA
MW-3-1	1.0-1.5	NA	NA	ND[h]	ND	ND	ND
MW-3-2	2.0-2.5	NA	NA	ND	ND	ND	ND
B-4-1	1.0-1.5	NA	32,000	ND	ND	ND	ND
B-5-1	1.0-1.5	NA	50	ND	ND	ND	NA
B-6-1	1.0-1.5	NA	220	42	77	39	ND

a. Summary of Analytical Results presented in Purcell, Rhoades & Associates report dated June 1, 1988. Samples collected 2/17/88. Concentrations expressed in milligrams per kilogram (mg/Kg) or as micrograms per kilogram (ug/Kg), as noted.
b. Total Petroleum Hydrocarbon as diesel.
c. Total Petroleum Hydrocarbon as gasoline.
d. Total Petroleum Hydrocarbon as Motor Oil.
e. Purgeable Organic Compounds.
f. Extractable Organic Compounds. B = benzene, T = toluene; E = ethylbenzene
g. Not analyzed
h. None detected

Table 4. Soil Metal Concentration Summary, Initial Preacquisition Due Diligence Investigation, McGuire & Hester, Oakland, CA[a]

Parameter	TTLC[b] (mg/Kg)	STLC[c] (mg/L)	MW-3-1 2/17/88 1 - 1.5'	MW-3-2 1/17/88 2 - 2.5'
Antimony, & compounds	500	15	62[d]	55
Arsenic, & compounds	500	5.0	28	24
Barium, & compounds[e]	10,000	100	80	72
Beryllium, & compounds	75	0.75	<5	<5
Cadmium, & compounds	100	1.0	7	5
Chromium (VI), & compounds	500	560	NA[f]	NA
Chromium, & compounds	2,500	5.0	56	57
Cobalt, & compounds	8,000	80	19	24
Copper, & compounds	2,500	25	44	34
Lead, & compounds	1,000	5.0	78	<50
Mercury, & compounds	20	0.200	0.07	0.11
Molybdenum, & compounds	3,500	350	<20	<20
Nickel, & compounds	2,000	20	74	130
Selenium, & compounds	100	1.0	<0.5	3.4
Silver, & compounds	500	5.0	<2	<2
Thallium, & compounds	700	7.0	53	46
Vanadium, & compounds	2,400	24	54	42
Zinc, & compounds	5,000	250	100	100

a. Summary of analytical results presented in Purcell, Rhodes & Associates report dated June 1, 1988. Samples collected February 17, 1988.
b. TTLC - Total Threshold Limit Concentration, from Section 66699, Article 11, California Code of Regulations:
c. STLC - Soluble Threshold Limit Concentration, from Seciton 66699, Article 11, California Code of Regulations.
d. Data are expressed as milligrams analyte per kilogram sample.
e. Excludes Barite.
f. NA - Not analyzed, total Cr below regulatory criterion for Cr(VI).

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Table 5. Soil TPH Concentration Summary, Final Preaquisition Due Diligence Investigations, McGuire and Hester, Oakland, CA[a]

Sample Number	Sampling Date	TPH[b] as Diesel (mg/Kg)
B-25-1	7-11-88	ND[c]
B-25-2	7-11-88	ND
B-26-1	7-11-88	ND
B-26-2	7-11-88	1.7
B-27-1	7-11-88	1.8
B-27-2	7-11-88	ND
B-28-1	7-11-88	ND
B-28-2	7-11-88	ND
B-29-1	7-11-88	15
B-29-2	7-11-88	57
B-30-1	7-11-88	1.2
S1	7-28-88	9.6
S2	7-28-88	3,300
S3	7-28-88	10
S4	7-28-88	1,600
S5	7-28-88	20
S6	7-28-88	22
S7	7-28-88	ND
S8	8-01-88	140
S9	8-01-88	ND
S1	8-01-88	18
C1	8-01-88	3,100
C2	8-01-88	3,100
C3	8-01-88	100
C4	8-01-88	1,300
C5	8-01-88	3,400
C6	8-01-88	360
C7	8-01-88	960
C8	8-01-88	1,400

a Summary of analytical results presented in Purcell, Rhoades & Associates reports dated August 16, 1988 (preliminary and supplemental reports). TPH = Total Petroleum hydrocarbons reported as diesel.

b Analysis for TPH as diesel using EPA Method-3550/8015.

c ND = This constituent not detected.

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Table 6. Groundwater Analytical Data Summary, Preacquisition Due Diligence Investigation, McGuire and Hester, Oakland, CA[a]

Sample Designation	Sample Date	TPH[b] Concentration (mg/L)
MW - 1	7-11-88	0.72
MW - 2	7-11-88	60
MW - 3	7-11-88	33
MW - 4	8-11-88	2300

a Summary of analytical results presented in Purcell, Rhoades & Associates report dated August 16, 1988 (preliminary and supplemental reports).

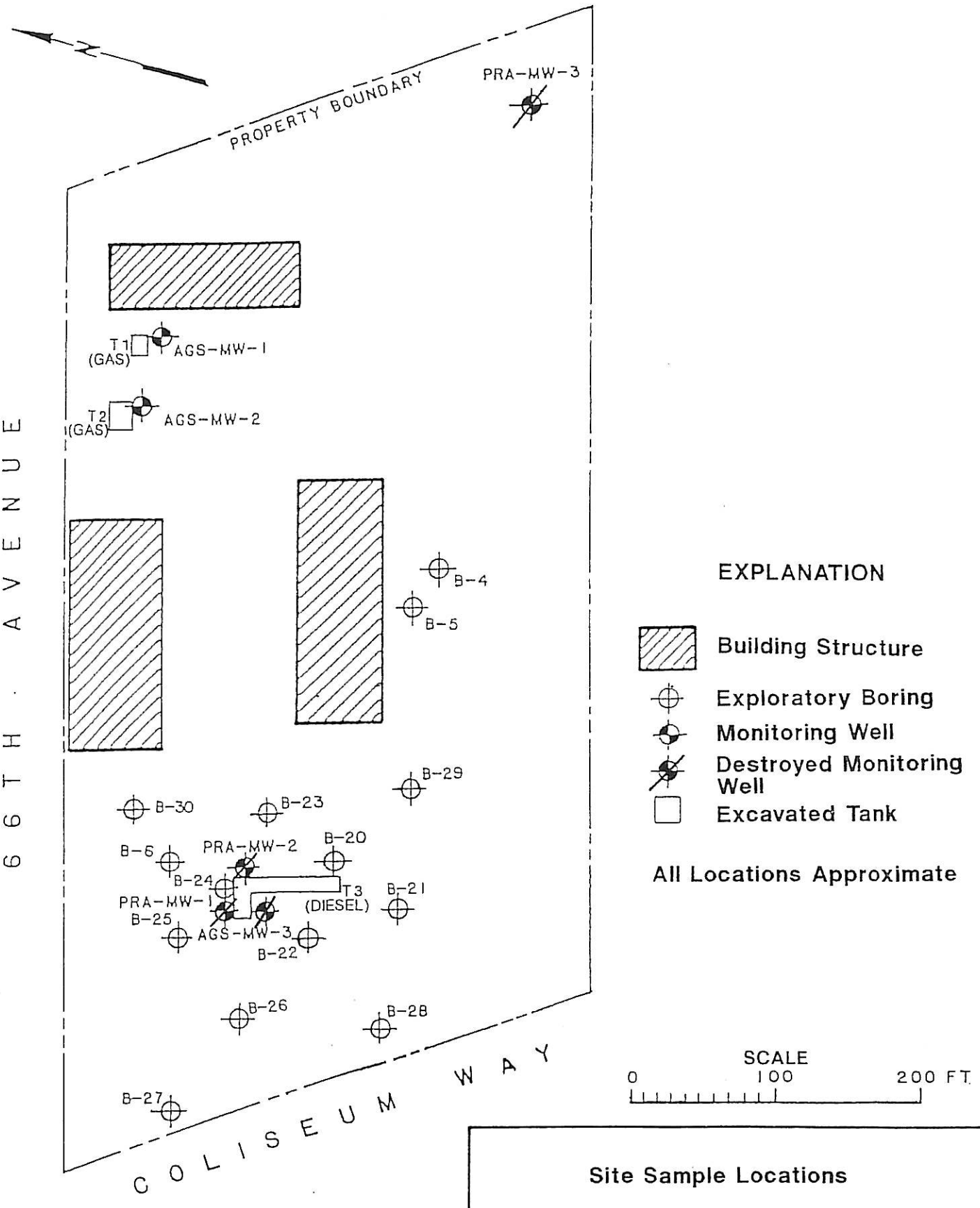
b Total petroleum hydrocarbons reported as diesel by EPA Method 3510/8015. Results experienced in milligrams per liter (mg/L). Sampling method may not have been appropriate for site conditions.

c Concentration reported as petroleum oil by Method 418.1.

Table 7. Stockpiled Soil Analytical Data Summary, Postacquisition Investigations, McGuire & Hester, Oakland, CA[a]

Sample Number	Sample Date	TPH as diesel (mg/Kg)	Total Oil & Grease (mg/Kg)
1	10-17-88	ND[c]	NA[d]
2	10-17-88	200	NA
3	10-17-88	270	2,600[e]
4	10-17-88	ND	NA
5-surface	10-17-88	ND	NA
SS1	11-21-88	1,200	1,700[f]
SS2	11-21-88	1,200	1,900[f]
SS3	11-21-88	870	1,300[f]
SS4	11-21-88	910	1,700[f]

a. Samples collected by Subsurface Consultants, Inc. on October 17, 1988 and by ATT on November 21, 1988.
b. Total petroleum hydrocarbons reported as diesel. Analysis for TPH as diesel using EPA Method 3550/8015.
c. Non detected.
d. Not analyzed.
e. Analysis for total oil and grease using Standard Method 503A.
f. Analysis for total oil and grease using Standard Method 503E.



Site Sample Locations

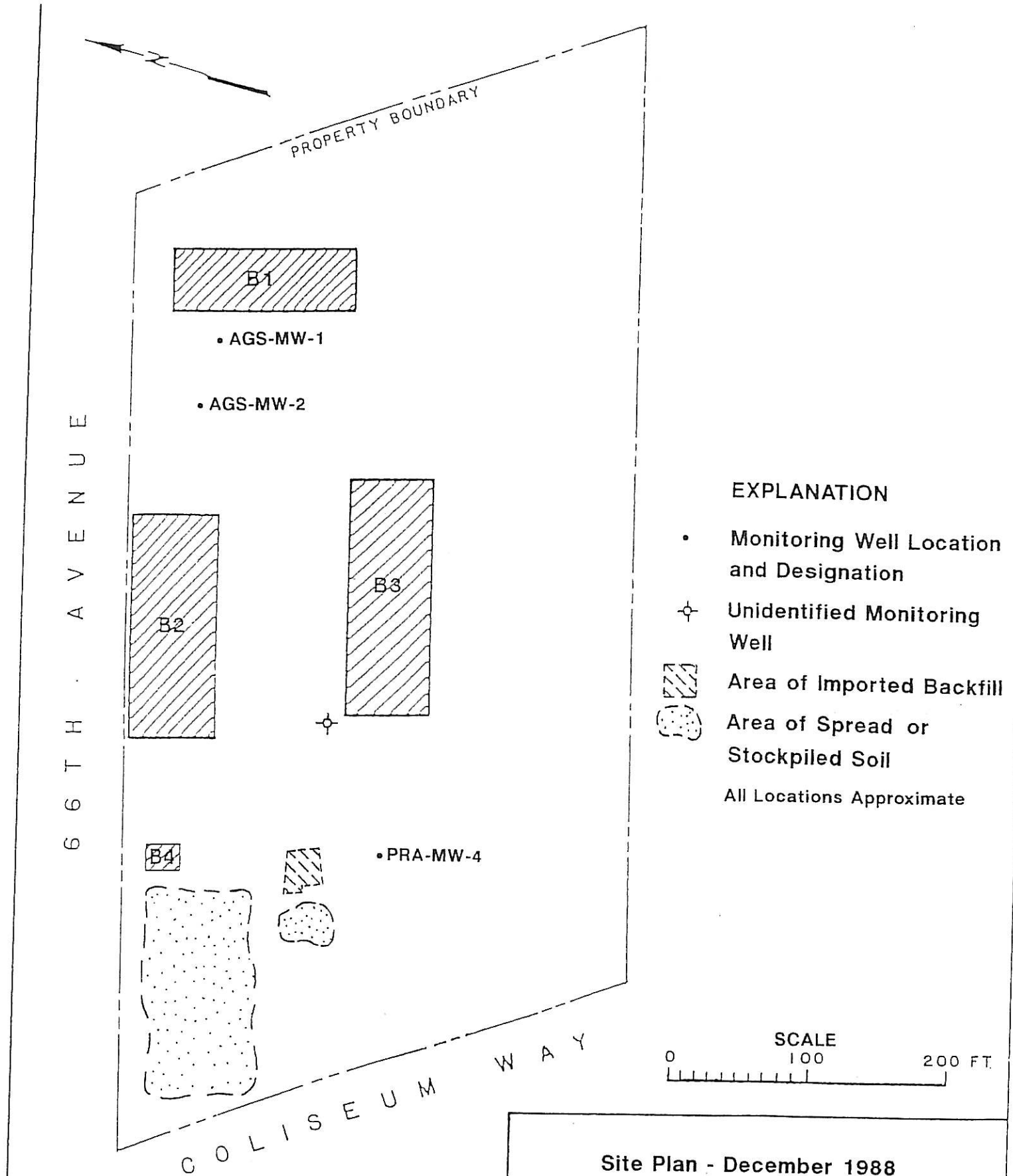
ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

McGuire and Hester

PLATE 2

JOB NUMBER 892.1

DATE December 1988



Site Plan - December 1988

ATT Aqua Terra Technologies
Consulting Engineers
& Scientists

McGuire and Hester		PLATE
JOB NUMBER	DATE	3
892.1	December 1988	

Applied GeoSystems 43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

REPORT

ENVIRONMENTAL INVESTIGATION RELATED TO UNDERGROUND TANK REMOVAL at McGuire and Hester 796 66th Avenue Oakland, California

Applied GeoSystems Job No. 86120-1

Report prepared for:

McGuire and Hester
796 66th Avenue
Oakland, California

by

Steve M. Zigan
Project Geologist

Michael N. Clark
C.E.G. 1264

February 13, 1987

Applied GeoSystems 43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

February 13, 1987
86120-1

Mr. John Cummings
McGuire and Hester
796 66th Avenue
Oakland, CA 94621

Subject: Transmittal of Report No. 86120-1, Environmental Investigation Related to Underground Tank Removal at McGuire and Hester, 796 66th Avenue, Oakland, California.

Mr. Cummings:

This report presents the results of our limited environmental investigation at the above-referenced site. The purpose of the investigation was to inspect three underground storage tanks when they were removed, and assess whether hydrocarbon product was or was not present in the soil under or adjacent to the tanks.

It is our understanding that the 1000-gallon tank (T1) and 5000-gallon tank (T2) had contained gasoline and that the 8000-gallon tank (T3) had contained diesel fuel. Inspection of the removed tanks indicate that the 1000-gallon and 5000-gallon tanks were rusted and pitted and that a hairline fracture may be present on the bottom of the 5000-gallon tank. The 8000-gallon tank showed no signs of rust, pitting or leakage.

Laboratory analysis indicate relatively high levels of hydrocarbon contamination in soil samples from beneath the fillport ends of the tanks. Contamination levels in soil samples from beneath the opposite ends are lower. Based on guidelines of the Regional Water Quality Control Board, Bay Region, these contamination levels do not require removal of the soil but do require that monitoring wells be constructed so that ground water samples be collected and analyzed.

Based on these guidelines and our conversations with County Health and Regional Water Quality Control Board authorities, we recommend that three ground water monitoring wells be installed, one adjacent to each tank pit, and that soil samples be taken every five feet in the soil borings for these wells. Water retrieved from wells adjacent to the gasoline tank pits will be

analyzed for total volatile hydrocarbons (TVH) and the aromatic hydrocarbon constituents benzene, ethyl benzene, toluene and total xylenes (BETX). Water retrieved from the well adjacent to the diesel tank pit will be analyzed for total extractable hydrocarbons (TEH). We further recommend that McGuire and Hester submit a copy of this report to Mr. Ted M. Gerow, Public Health Engineer, Alameda County Division of Environmental Health, 470 27th Street, Rm. 324, Oakland, California, 94612 and to Mr. Tom Callaghan, California Regional Water Quality Control Board, San Francisco Bay Region, 1111 Jackson Street, Rm. 6040, Oakland, California, 94607. If you have any questions regarding this report, please due no hesitate to call.

Sincerely,
Applied GeoSystems

Steve M. Zigan

Steve M. Zigan
Project Geologist

Applied GeoSystems 43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

REPORT

ENVIRONMENTAL INVESTIGATION RELATED TO UNDERGROUND TANK REMOVAL at McGuire and Hester 796 66th Avenue Oakland, California

INTRODUCTION

The following report summarizes the limited environmental investigation conducted in conjunction with the removal of three underground storage tanks at McGuire and Hester's company yard located at 796 66th Avenue in Oakland, California. McGuire and Hester requested that Applied GeoSystems conduct an Underground Storage Tank (UST) investigation to inspect the removed tanks, and assess whether hydrocarbon product is or is not present in the soil under or adjacent to the tanks. This report describes the work elements associated with tank removal and inspection, soil sampling and analysis, summarizes the analytical results obtained, and presents our recommendations.

BACKGROUND

McGuire and Hester's company yard is located on 796 66th Avenue east of Coliseum Way as shown on the Site Vicinity Map (Plate P-1). The site is used as office space and to store and maintain construction equipment. The tanks to be removed were located in three separate tank pits as shown on the Generalized Site Plan (Plate P-2). It is our understanding that the 1000-gallon tank (T1) and 5000-gallon tank (T2) had contained gasoline and that the 8000-gallon tank (T3) had contained diesel fuel.

An appropriate tank removal permit was obtained from the City of Oakland prior to initiation of the excavation at the site. A copy of this permit is included in the Appendix of this report. The Oakland Fire Department and Alameda County Division of Environmental Health were notified of our schedule and plans to excavate.

TANK REMOVAL AND INSPECTION

Verl's Construction Company of Castro Valley, California excavated the tanks with a backhoe on January 9, 1987. A geologist from Applied GeoSystems arrived on site the morning of January 16, 1987 to observe removal of the tanks, inspect their

outer surfaces, and inspect and sample native soil from beneath the tanks after their removal. A representative from the Fire Department was present at various times during tank removal and inspection.

The tanks were checked by Applied GeoSystems before their removal and were found to be empty. Approximately 30, 120, and 150 pounds of dry ice were placed inside T1, T2, and T3, respectively, approximately two hours prior to their removal, creating a non-explosive environment inside the tanks. Standing water up to six inches deep was present in each tank pit. The bottoms of the tanks apparently sat below the water table level during high tide stages of the nearby San Leandro Bay (Site Vicinity Map).

Tanks were removed, rolled on their sides for inspection, then loaded onto a flatbed truck with a crane supplied and operated by McGuire and Hester. The outer surface of the tanks were inspected by a Field Geologist from Applied GeoSystems for signs of leakage, holes, pitting or areas of weakness. The sides and ends of the tanks were scraped, and particular attention was paid to seams and points directly below the fill port. A summary of the observations made is shown in Table 1.

Table 1
Summary of Observations during Tank Inspection

Tank T1 (gasoline): appx. 1000-gallon capacity, no external supplemental covering, rusted near fill port, seams are pitted on upper third of tank, no signs of leakage or through-going holes; product sheen on standing water in pit.

Tank T2 (gasoline): appx. 5000-gallon capacity, tar-paper coating locally absent, rust and pitting of wall and seems on west end of tank, petroleum-stained area on eastern third of the bottom of the tank suggests that a hairline fracture may be present; product sheen on standing water in pit.

Tank T3 (diesel): appx. 8000-gallon capacity, tar-paper coating intact, no rust, pitting, fractures or through-going holes were observed; product sheen on standing water in pit.

The tanks were placed on a flatbed truck and transported by H and H Ship Service Company of San Francisco to their site in San Francisco for cleaning and metal salvage. A copy of the Bill of Lading for this transport is included in the Appendix of this report.

SOIL INSPECTION AND SAMPLING

Standing water in the tank pits was pumped out prior to soil sampling. Native soil beneath where the tanks had been removed consists of a black, organic rich clay overlain by approximately three feet of fill material. Product odor was subjectively detected in the excavated material. Soil samples were collected from the native soil material beneath the fillport and opposite

ends of each tank, approximately one foot below the bottom of the tank. Samples were collected by driving a laboratory-cleaned brass sleeve into a backhoe-bucket load of soil material immediately after it was brought to the surface. Samples were immediately sealed with aluminum foil, plastic caps, and air-tight tape. Samples were labeled and placed in iced storage for transport to Applied GeoSystems certified laboratory in Fremont, California. A copy of the Chain-of-Custody report for these samples is included in the Appendix of this report.

ANALYTICAL RESULTS

Soil samples from beneath the gasoline tanks (T1 and T2) were analyzed for total volatile hydrocarbons (TVH) while those from beneath the diesel tank (T3) were analyzed for total extractable hydrocarbons (TEH). Analyses were conducted by Applied GeoSystems certified laboratory in Fremont, California using gas chromatography with attached flame ionization detector (FID) and photo-ionization detector (PID). Analytical results are shown in Table 2 and in the Appendix of this report.

TABLE 2
ANALYSIS OF SOIL SAMPLES AFTER TANK REMOVAL
McGuire and Hester
796 66th Avenue
Oakland, California

sample no.	total volatile hydrocarbons	total extractable hydrocarbons	detection limit
SE-8-T1	758.	-	1.0
SW-8-T1	9.6	-	0.1
SE-10-T2	415.	-	1.0
SW-10-T2	3.8	-	0.1
SS-9-T3	-	78.	5.0
SN-9-T3	-	492.	5.0

results in parts per million (ppm)

DISCUSSION AND RECOMMENDATIONS

Laboratory analyses indicate relatively high levels of hydrocarbon contamination in soil samples from beneath the fillport ends of the tanks. Contamination levels in soil samples from beneath the opposite ends are lower. Based on guidelines of the Regional Water Quality Control Board, Bay Region, these contamination levels do not require removal of the soil but do require that ground water samples be collected and analyzed.

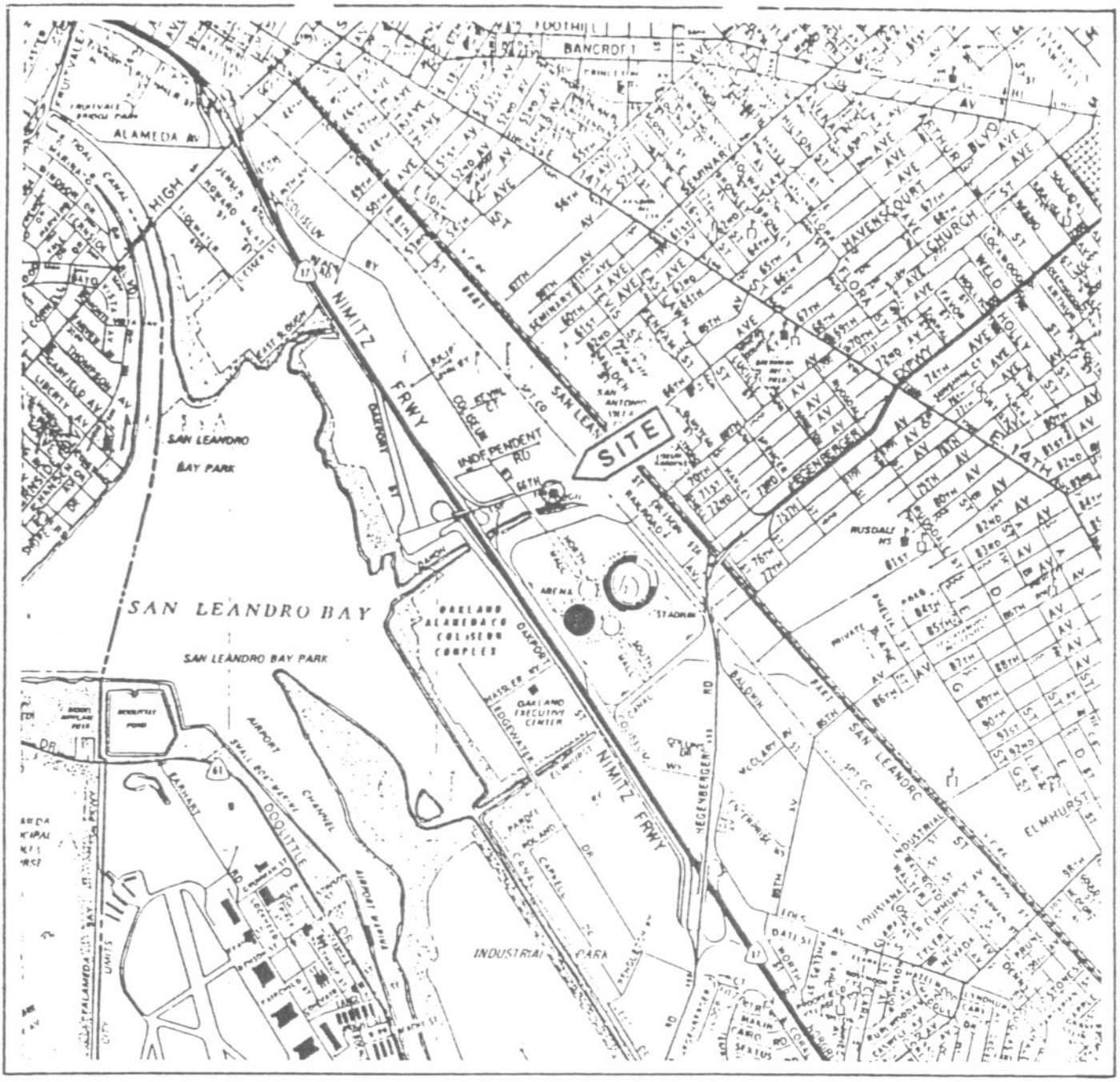
Analytical results were telephoned to McGuire and Hester on January 23, 1986. With McGuire and Hester's authorization, these results were relayed to Ted Gerow of the Alameda County Division

of Environmental Health and Tom Callaghan of the California Regional Water Quality Control Board, San Francisco Bay Region. Based on the Water Quality Control Board guidelines and our discussions with Mr. Gerow and Mr. Callaghan, we recommend that three ground water monitoring wells be installed, one adjacent to each tank pit in the area of highest contamination, and that soil samples be taken every five feet in the soil borings for these wells. Water retrieved from wells adjacent to the gasoline tank pit should be analyzed for total volatile hydrocarbons (TVH) and the aromatic hydrocarbon constituents benzene, ethyl benzene, toluene and total xylenes (BETX). Water retrieved from the well adjacent to the diesel tank pit should be analyzed for total extractable hydrocarbons (TEH). We further recommend that McGuire and Hester submit a copy of this report to Mr. Ted M. Gerow, Public Health Engineer, Alameda County Division of Environmental Health, 470 27th Street, Rm. 324, Oakland, California, 94612 and to Mr. Tom Callaghan, California Regional Water Quality Control Board, San Francisco Bay Region, 1111 Jackson Street, Rm. 6040, Oakland, California, 94607.

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. This investigation was conducted solely for the purposes of evaluating environmental conditions of the soil with respect to hydrocarbon product contamination in the vicinity of the removed tank. No soil engineering or geotechnical implications are stated or should be inferred. Evaluation of the geologic conditions at the site for the purpose of this investigation are made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation.

Applied Geo-Systems



N

Approximate Scale

2200 1100 0 2200

Feet

Source: Thomas Brother Maps
Alameda/Contra Costa Counties
(1985)

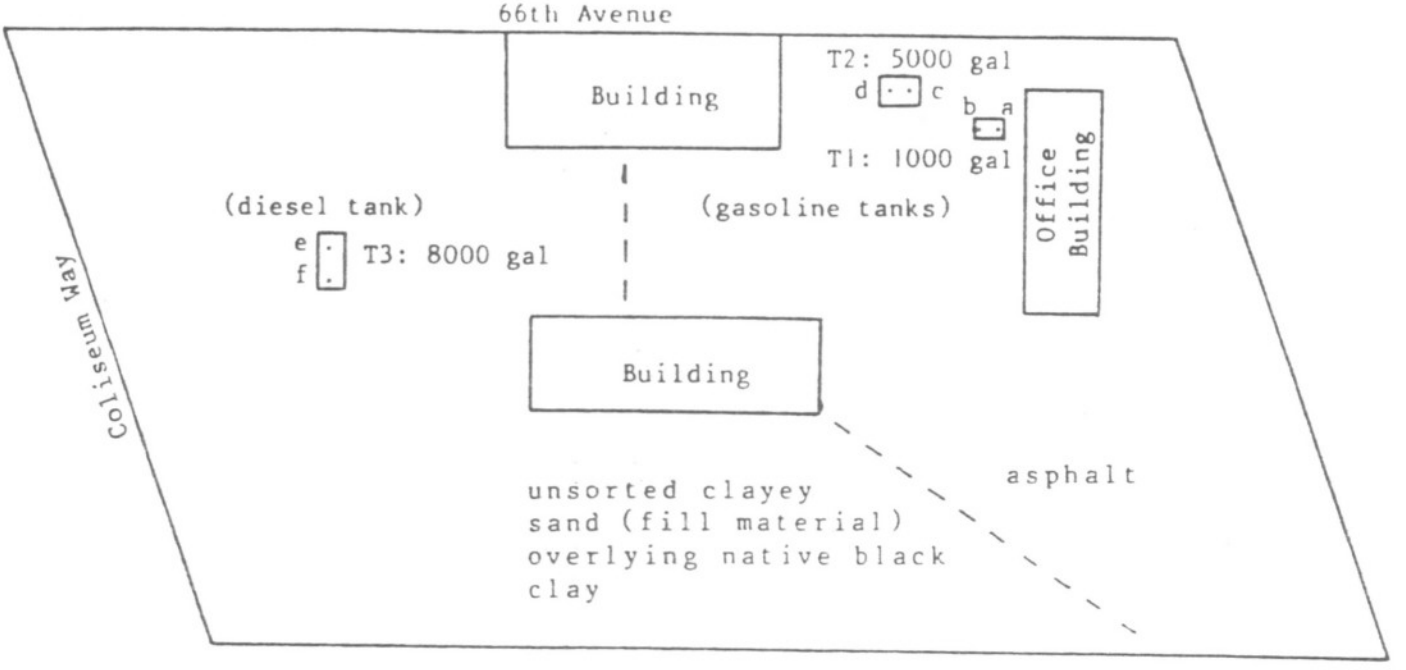
Applied GeoSystems

PROJECT NO. 86120-1

SITE VICINITY MAP
McGuire and Hester
796 66th Avenue
Oakland, California

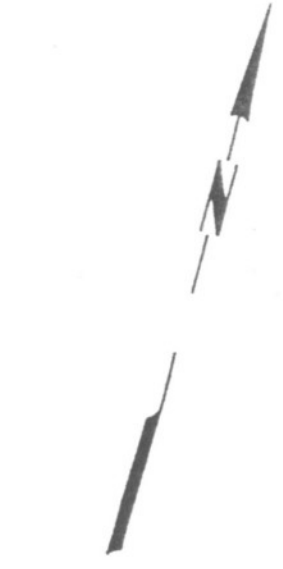
PLATE

P-1



Source: measured by Applied GeoSystems by tape and compass method

sample location
a. SE-8-T1
b. SW-8-T1
c. SE-10-T2
d. SW-10-T2
e. SN-9-T3
f. SS-9-T3



Approximate Scale

0 100 200

Feet

Applied GeoSystems

4125 Alhambra Blvd. Suite B Fremont, CA 94538 (415) 651-1906

PROJECT NO. 86120-1

GENERALIZED SITE PLAN
McGuire and Hester
796 66th Avenue
Oakland, California

PLATE

P-2

APPENDIX

RECEIVED DEC 19 1986

Excavation Permit Granted _____ No. _____

CITY OF OAKLAND

Tank Permit

Permit to Excavate and Install, Repair, or Remove Inflammable Liquid Tanks. No. 8845

Oakland, California, December 17, 19 86

PERMISSION IS HEREBY GRANTED TO XXXX remove XXXX Gasoline tank and excavate commencing _____ feet inside property line

on the south side of 66th Avenue Street Avenue feet _____ of _____ Street Avenue

House No. 796 - 66th Avenue Street Avenue Present Storage _____

Owner McGuire & Hester Address 796 - 66th Avenue Phone 632-7676

Applicant Applied Geosystems Address 43255 Mission Blvd. Fremont 95030 Phone 651-1906

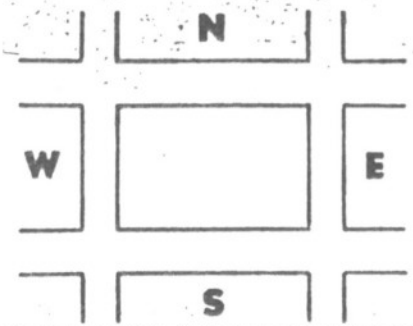
Dimensions of street (sidewalk) surface to be disturbed _____ X _____ Number of Tanks 1 1 1 Capacity 1000 5000 8000 Gallons, each

Remarks: _____

This Permit is granted in accordance with existing City Ordinances.
Owner hereby agrees to remove tanks on discontinuance of use or when notified by the City Authorities.
When installing, removing or repairing tanks, no open flame to be on or near premises.

Approved _____ Fire Marshal

Approved _____ Drainage Division Engineering Dept.



EXCAVATING PERMIT

Issued in accordance with Ord. No. 278 CMS, Sec. 6-2.04

_____ square feet of digging or removal granted.

The receipt of $ _____ special deposit is hereby acknowledged.

GENERAL DEPOSIT.

BUREAU OF PERMITS AND LICENSES.

CERTIFICATE OF TANK AND EQUIPMENT INSPECTION

Inspected and passed on _____ 19 ____

By _____ Fire Marshal

Inspection Fee Paid . . . . . $ 50.00 ck#1111 rec#110017

Received by G. Johnson FIRE PREVENTION BUREAU

NOTICE

Before Covering Tanks, Above Certificate Must Be Signed.

When ready for inspection notify Fire Prevention Bureau, 273-3851

THIS PERMIT MUST BE LEFT ON THE WORK AS AUTHORITY THEREFOR.

830.60 (6-67)

86120-1

THIS SHIPPING ORDER must be legibly filled in, in Ink, in Indelible Pencil, or in Carbon, and retained by the Agent

McGuire & Herster

CARRIER HH

SHIPPER'S NO.

AGENT'S NO.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading

FROM Applied Geo Sys, AT McGuire & Herster yard Unk [illegible]

DATE 1/10/07

[illegible fine print]

CONSIGNED TO 220 China Basin SF ← Same Cal

STREET | CITY | COUNTY | STATE

DESTINATION H/H Ship Service

ROUTING

DELIVERING CARRIER M [illegible]

VEHICLE OR CAR INITIAL New white truck NO. 11

COLLECT ON DELIVERY

$ ________ and remit to: ________

STREET | CITY | STATE | ZIP

C.O.D. CHARGE TO BE PAID BY: SHIPPER ☐ CONSIGNEE ☐

FOR EMERGENCY ASSISTANCE INVOLVING HAZARDOUS MATERIALS → CALL CHEMTREC 800-424-9300 DAY OR NIGHT

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

NO. PKGS	HM	DESCRIPTION OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS	WEIGHT (SUB. TO COR.)	CLASS OR RATE	CK COL
1		8K DIESEL	8000 gal		
1		5K unLeaded	5000 gal		
1		1K superLeaded	1000 gal		
		Tanks for disposal			
		Dry Ice Befor			
		Removeal			

(Signature of Consignor.)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Received $ ________ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

PER

(The signature here acknowledges only the amount prepaid.)

Charges Advanced $

[signature]

* This is to certify, that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

________ Shipper

Per ________

The fibre boxes used for this shipment conform to the specifications set forth in the box maker's certificate thereon, and all other requirements of Rule 41 with reference to the packaging requirements in the National Motor Freight Classification.

* If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."

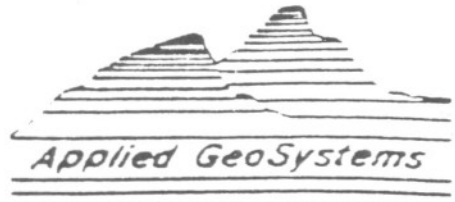
NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding ________ per ________

SHIPPER, PER

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading

2

Permanent address of shipper.



41255 Mission Blvd. Suite B Fremont, CA 94539 (415)651-190

LER (signature): Steve A. Zigan

: 651-1906

RATORY:
Applied GeoSystems
3255 Mission Blvd.
remont, CA 94539
AROUND TIME: 1 week
tion: Steve Zigan
No. 651-1906

SHIPPING INFORMATION:
Shipper
Address
Date Shipped
Service Used
Airbill No. Cooler No.

quished by: (signatures)	Received by: (signatures)	Date	Time
Steve Zigan			
	Received for laboratory by:	1-16-87	17:20

RATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

ple	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
T1	86120-1	1/16/87	TVH	Iced
T1	86120-1	1/16/87	TVH	Iced
T2	86120-1	1/16/87	TVH	Iced
T2	86120-1	1/16/87	TVH	Iced
T3	86120-1	1/16/87	TEH	Iced
T3	86120-1	1/16/87	TEH	Iced

Applied GeoSystems 43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 1-23-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Steve M. Zigan

Date Received: 1-16-87
Date Analyzed: 1-21-87

Laboratory# 8701S057

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these sample is 1.0 milligram/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
SE-8-T1	86120-1	758
SE-10-T2	86120-1	415

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 1-23-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Steve M. Zigan

Date Received: 1-16-87
Date Analyzed: 1-21-87

Laboratory# 8701S058

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these sample is 0.1 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
SW-8-T1	86120-1	9.6
SW-10-T2	86120-1	3.8

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 1-23-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Steve M. Zigan

Date Received: 1-16-87
Date Analyzed: 1-22-87

Laboratory# 8701DS23

Procedure:

The soil samples were analyzed for high boiling point hydrocarbons by EPA method 3550 for soil extraction. The samples were injected into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL EXTRACTABLE HYDROCARBONS
SS-9-T3	86120-1	78
SN-9-T3	86120-1	492

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

BROWN AND CALDWELL LABORATORIES
1251 POWELL STREET EMERYVILLE CA 94608 • 415 428 2300

ANALYTICAL REPORT

LOG NO: E87-10-664

Received: 29 OCT 87
Reported: 11 NOV 87

RECEIVED
NOV 13 1987
McGUIRE & HESTER

Mr. John Cummings
McGuire and Hester
796 66th Avenue
Oakland, California 94621

Purchase Order: 459-000

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, WATER SAMPLES	DATE SAMPLED
10-664-1	1000 Gallon Gas Tank Well	
10-664-2	5000 Gallon Gas Tank Well	
10-664-3	Diesel Tank	

PARAMETER	10-664-1	10-664-2	10-664-3
Total Fuel Hydrocarbons, mg/L	1.3	1.3	<1.0

D. A. McLean, Laboratory Director

9-E. Hold / Report

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

REPORT

SUBSURFACE ENVIRONMENTAL INVESTIGATION, SOIL BORING AND MONITORING WELL INSTALLATION at McGuire and Hester Oakland, California

AGS Job No. 86120-2

Report prepared for:

McGuire and Hester
796 66th Avenue
Oakland, California

by

Steve M. Zigan
Project Geologist

Michael N. Clark
C.E.G. #1264

March 24, 1987

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

March 24, 1987
86120-2

Mr. John Cummings
McGuire and Hester
796 66th Avenue
Oakland, California 95241

Subject: Transmittal of Report No. 86120-2, Subsurface Environmental Investigation, Soil Boring and Monitoring Well Installation at McGuire and Hester, 796 66th Avenue, Oakland, California

Mr. Cummings:

This report presents the results of our limited environmental investigation at the above-referenced site. The purpose of the investigation was to evaluate the degree and extent of hydrocarbon contamination in the soil and ground water at the above-referenced site. Hydrocarbon contamination had previously been found in the soil and water at the site after three product tanks were removed (ref. AGS report 86120-1, Feb. 13, 1987). The current investigation included the drilling of three boreholes and the construction of three two-inch diameter monitoring wells.

Laboratory analyses of the soil and water samples show hydrocarbon contamination concentrations ranging from non-detectable to 1750 ppm. We recommend that soil with hydrocarbon contamination levels greater than 1000 parts per million be excavated and properly treated or disposed and that ground water samples from the three monitoring wells be collected and analyzed on a quarterly basis for one hydrologic cycle. Applied GeoSystems can arrange to have the soil excavated and perform the quarterly sampling on authorization from McGuire and Hester. We further recommend that McGuire and Hester submit a copy of this report to Mr. Ted Gerow, Alameda County Division of Environmental Health, 470 27th Street, Rm. 324, Oakland, CA 94612 and Mr. Tom Callaghan, California Regional Water Quality Control Board, 1111 Jackson Street, Oakland, CA 94607.

As discussed in February, you must file an "Unauthorized Release Report" with the various agencies listed on the back of the report form. A copy of this form is included with this report. If you have any questions regarding the content of our report, please do not hesitate to call.

Sincerely,
Applied GeoSystems

Steve M. Zigan

Steve M. Zigan
Project Geologist

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

REPORT
SUBSURFACE ENVIRONMENTAL INVESTIGATION, SOIL BORING AND MONITORING WELL INSTALLATION
at
McGuire and Hester
796 66th Avenue
Oakland, California

for: McGuire and Hester

INTRODUCTION

The following report describes the work performed to observe the drilling of three soil borings and install three ground water monitoring wells at McGuire and Hester's company yard located at 796 66th Avenue, Oakland, California. McGuire and Hester contracted Applied GeoSystems to evaluate the degree and extent of soil and ground water hydrocarbon contamination at the site. Hydrocarbon contamination had previously been found in the soil and water at the site after three product tanks were removed (ref. AGS report 86120-1, Feb. 13, 1987). This report reviews previous work at the site, describes the work conducted during this second phase of the investigation, presents analytical results obtained, discusses our interpretations of the data collected, and presents our recommendations.

BACKGROUND

McGuire and Hester's company yard is located on 796 66th Avenue east of Coliseum Way as shown on the Site Vicinity Map (Plate P-1). The site is used as office space and to store and maintain construction equipment. The tanks which had been removed were located in three separate tank pits as shown on the Generalized Site Plan (Plate P-2). It is our understanding that the 1000-gallon tank (T1) and 5000-gallon tank (T2) had contained gasoline and that the 8000-gallon tank (T3) had contained diesel fuel. Hydrocarbon contamination was found in soil samples taken from the locations shown on the Generalized Site Plan. Laboratory analyses for these soil samples are shown in Table 1. Standing water in the tank pits was subjectively evaluated as contaminated based on the presence of visible hydrocarbon sheen and product odor.

TABLE 1
ANALYSIS OF SOIL SAMPLES AFTER TANK REMOVAL
McGuire and Hester
796 66th Avenue
Oakland, California

sample no.	total volatile hydrocarbons	total extractable hydrocarbons	detection limit
SE-8-T1	758.	-	1.0
SW-8-T1	9.6	-	0.1
SE-10-T2	415.	-	1.0
SW-10-T2	3.8	-	0.1
SS-9-T3	-	78.	5.0
SN-9-T3	-	492.	5.0

results in parts per million (ppm)

LOCAL GEOLOGY, HYDROLOGY AND GROUND WATER USE

Native soil at the site consists predominantly of black, brown or green, organic rich clay overlain by approximately three feet of sandy gravelly clay fill material. Surface waters near the site include the nearby Damon Slough to the south and San Leandro Bay to the west. Neither is a known source of drinking water. Ground water flow direction is possibly influenced by the rise and fall of the tides in the bay.

FIELD WORK

On February 9, 1987 personnel from Applied GeoSystems observed the drilling of three soil borings and installation of three ground water monitoring wells at the site. Locations of the soil borings and monitoring wells are shown on the Generalized Site Plan.

Soil Borings

Borings were drilled with an 8-inch diameter, hollow stem auger, using a CME-75 drill rig operated by Datum Exploration, Inc. of Pittsburg, California. Augers were steam-cleaned prior to each boring to minimize the possibility of cross-contamination. Borings were located in the inferred downgradient direction of ground water flow from the tank pits.

Borings B-1, B-2 and B-3 were drilled to depths of approximately 31, 27 and 36 feet, respectively, approximately 20 feet below first occurrence of ground water. Boring B-3 is located on a constructed mound approximately five feet higher than the tops of the other two borings. Because some soil samples from boring B-3 were subjectively analyzed as contaminated, based on product odor, the boring was terminated when a clayey sand was

encountered and was backfilled with approximately three feet of bentonite to reduce the possibility of opening a conduit for contamination to reach lower aquifers. Drill cuttings were left on site and remain the responsibility of McGuire and Hester.

Soil sampling

Soil samples were collected and described at 5-foot intervals from ground surface to total depth, as indicated on the Boring Logs. Soil samples were collected by advancing the boring to a point immediately above the sampling depth and then driving a California modified split spoon sampler into the soil through the hollow center of the auger. The sampler was driven 18 inches with a standard 140 pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each six inches was counted and recorded to evaluate the relative consistency of soil materials.

The samples were removed from the sampler, immediately sealed in their brass sleeves with aluminum foil, plastic caps, and air-tight tape, and were labeled and placed in iced storage. Samples were delivered to Applied GeoSystems' laboratory for analytical testing. The Chain-of-Custody record for samples tested is included in the Appendix of this report.

Plate P-3 gives a summary of the Unified Soils Classification System used to describe samples from the borings. Descriptions of earth materials encountered in the soil borings are presented on the Boring Logs, Plates P-4 through P-7. Earth materials encountered at this site consist predominately of black, brown or green clay and sandy clay.

Soil samples collected from the depths of five and ten feet in boring B-3 were subjectively evaluated as contaminated based on product odor and discoloration. The other soil samples collected from borings B-1, B-2 and B-3 were subjectively analyzed as uncontaminated.

Monitoring well construction and borehole backfilling

Ground water monitoring wells were installed in the borings B-1, B-2, and B-3. Wells are constructed of 2-inch diameter polyvinyl chloride (PVC) pipe. The lower 20 to 25 feet consist of 0.020-inch, machine slotted PVC, the remainder is blank. All casing joints are threaded and no glues, chemical cements, or solvents were used to join casing sections. The top of the casing is covered with a slip cap and the bottom has a threaded end plug. The annular space of the well was backfilled with #3 Monterey sand from total depth to approximately two feet above the

screened casing. A bentonite plug approximately one foot thick was placed above the sand as a seal against cement entering the sand pack, and the remaining annulus was backfilled with neat cement to grade. Graphic representations of well constructions are shown on the right margin of the Boring Logs.

The well is protected by a cast iron and steel wellhead cover installed flush with the surrounding grade and cemented into place. The wellhead cover has a water-tight, threaded seal to protect against surface water infiltration and requires a specially-designed spanner wrench to open. This reduces the possibility of well vandalism or accidental disturbance.

Water sampling

A water sample was collected for subjective evaluation from each of the monitoring wells by gently lowering a teflon bailer approximately halfway through the air/water interface. The sample was retrieved and inspected for floating product, sheen, emulsion, and product odor. No product sheen or odor were detected in the water samples.

On February 12, 1987 the wells were developed by air- and water-jetting and purged of approximately three well volumes prior to sampling for laboratory analysis. Following the purge period, and after well recovery to static water level, water samples were collected using a laboratory-cleaned teflon bailer. The bailer was lowered approximately five feet into the water in order to retrieve a representative sample. Clean, 40 ml. and 1000 ml. vials were used to store the water samples collected for the gasoline and diesel tank areas, respectively. Each container was rinsed with sample from the bailer, emptied, then slowly filled again with sample. Hydrochloric acid was added to the sample as a preservative. The sample was then immediately sealed with a teflon-lined cap, labeled, and placed on ice for transport to Applied GeoSystems analytical laboratory for testing. The Chain-of-Custody record for the water sample is included in the Appendix of this report.

ANALYTICAL RESULTS

Soil samples collected from borings adjacent to the gasoline and diesel tank pits were analyzed for total volatile hydrocarbons (TVH) and total extractable hydrocarbons (TEH), respectively. Water samples collected from monitoring wells adjacent to the gasoline tank pits were analyzed for TVH and aromatic

hydrocarbons (benzene, ethyl benzene, toluene, and total xylenes - BETX). The water sample collected from the monitoring well adjacent to the diesel tank pit was analyzed for TEH. Analyses were performed on a gas chromatograph fitted with a flame ionization detector (FID) and photo-ionization detector (PID). Analytical results are shown in Table 2 and in the Appendix of this report.

TABLE 2
ANALYSIS OF SOIL AND WATER SAMPLES
COLLECTED FROM BORINGS AND WELLS
McGuire and Hester
796 66th Avenue
Oakland, California

SAMPLE NO.	B	E	T	X	TVH	TEH	DL
soil (results in parts per million):							
S-5-B1	-	-	-	-	2.1	-	0.1
S-10-B1	-	-	-	-	0.3	-	0.1
S-5-B2	-	-	-	-	0.4	-	0.1
S-10-B2	-	-	-	-	1.8	-	0.1
S-5-B3	-	-	-	-	-	1750	5
S-10-B3	-	-	-	-	-	30	5
water (results in parts per billion):							
W-19-MW1	.7	1.2	4.2	5.8	29.0	-	0.5
W-18-MW2	ND	0.8	1.3	4.3	23.7	-	0.5
W-18-MW3	-	-	-	-	-	ND	0.5

B = benzene E = ethyl benzene T = toluene X = xylene
TEH = total extractable hydrocarbons
TVH = total volatile hydrocarbons
DL = detection limit ND = non-detectable

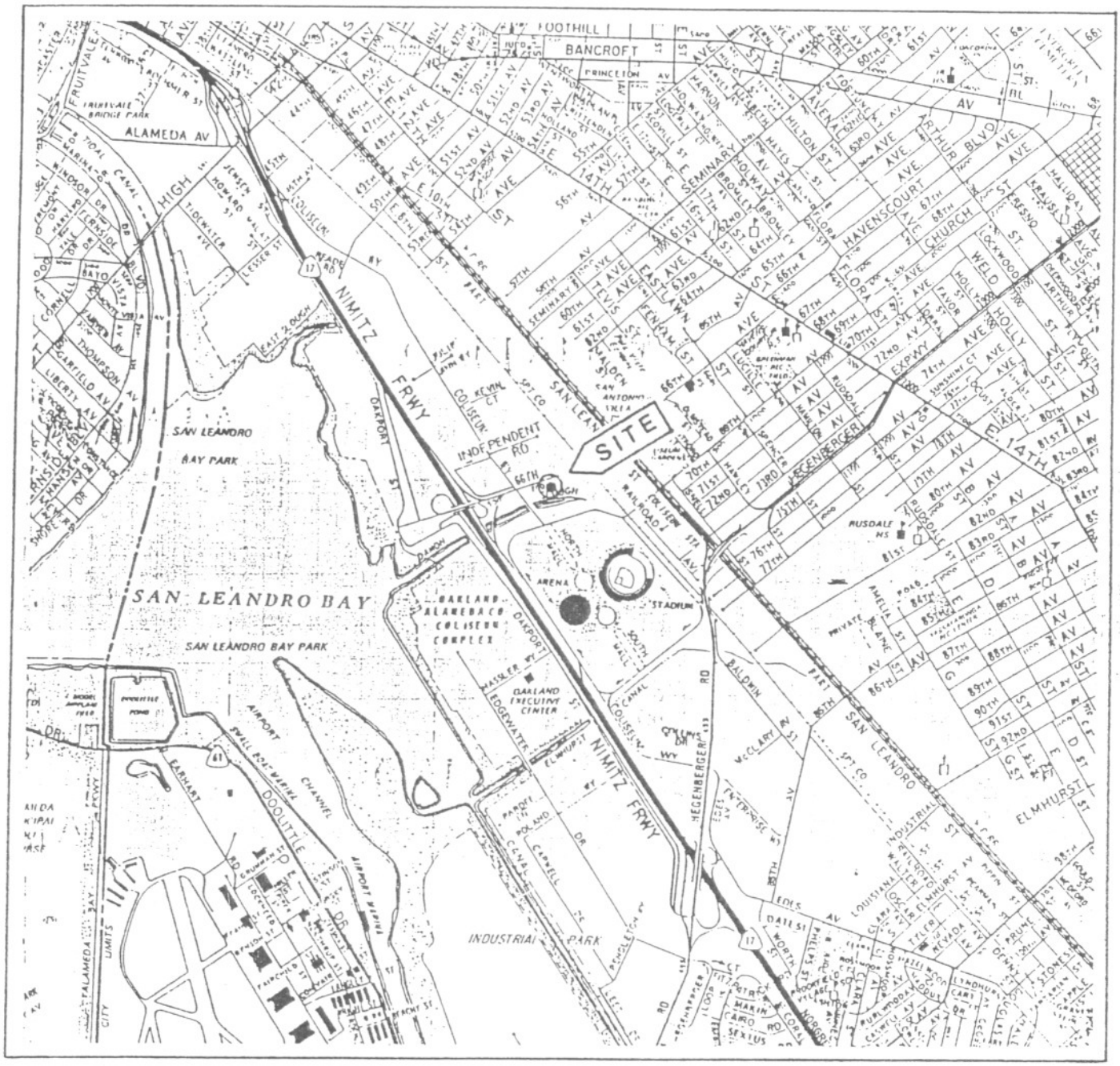
CONCLUSIONS AND RECOMMENDATIONS

Laboratory analyses of the soil and water samples show hydrocarbon contamination concentrations ranging from non-detectable to 1750 ppm. Based on California Regional Water Quality Control Board's Guidelines for addressing fuel leaks, we recommend that: 1) soil with hydrocarbon contamination levels greater than 1000 parts per million be excavated and properly treated or disposed; 2) ground water samples from the three monitoring wells be collected and analyzed on a quarterly basis (May, August and November 1987) for one hydrologic cycle; 3) analytical results from the excavation and ground water testing be submitted to the Regional Water Quality Control Board on a timely basis; and 4) that McGuire and Hester submit a copy of this report to Mr. Ted Gerow, Alameda County Division of Environmental Health, 470 27th Street, Rm. 324, Oakland, CA 94612 and Mr. Tom Callaghan, California Regional Water Quality Control Board, 1111 Jackson Street, Oakland, CA 94607.

We further recommend, as discussed in February, that you file an "Unauthorized Release Report" with the various agencies listed on the back of the report form.

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. This investigation was conducted solely for the purposes of evaluating environmental conditions of the soil and ground water with respect to hydrocarbon product contamination in the vicinity of the subject property. No soil engineering or geotechnical references are implied or should be inferred. Evaluation of the geologic conditions at the site for the purpose of this investigation are made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation.



N

Approximate Scale

2200 1100 0 2200

Feet

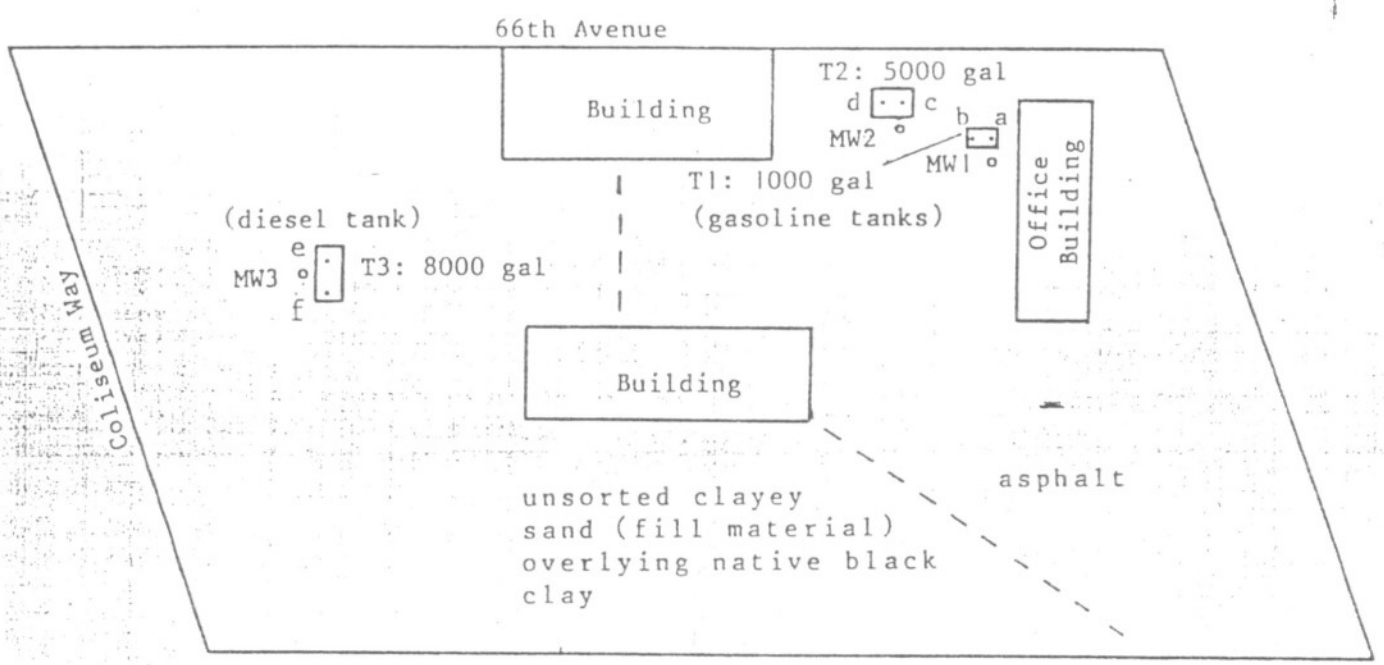
Source: Thomas Brother Maps
Alameda/Contra Costa Counties
(1985)

Applied GeoSystems

SITE VICINITY MAP
McGuire and Hester
796 66th Avenue
Oakland, California

PLATE
P-1

PROJECT NO. 86120-2



Source: measured by Applied GeoSystems by tape and compass method

sample location
a. SE-8-T1
b. SW-8-T1
c. SE-10-T2
d. SW-10-T2
e. SN-9-T3
f. SS-9-T3

MW1 ° monitoring well location

Approximate Scale

0 100 200

Feet

Applied GeoSystems

43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-3006

PROJECT NO. 86120-2

GENERALIZED SITE PLAN
McGuire and Hester
796 66th Avenue
Oakland, California

PLATE

P-2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	DESCRIPTION	MAJOR DIVISIONS		LTR	DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravels or gravel sand mixtures, little or no fines.	FINE GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
		GP	Poorly-graded gravels or gravel sand mixture, little or no fines			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		GM	Silty gravels, gravel-sand-clay mixtures.			OL	Organic silts and organic silt-clays of low plasticity.
		GC	Clayey gravels, gravel-sand-clay mixtures.		SILTS AND CLAYS LL<50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
	SAND AND SANDY SOILS	SW	Well-graded sands or gravelly sands, little or no fines.			CH	Inorganic clays of high plasticity, fat clays.
		SP	Poorly-graded sands or gravelly sands, little or no fines.			OH	Organic clays of medium to high plasticity.
		SM	Silty sands, sand-silt mixtures.	HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils.
		SC	Clayey sands, sand-clay mixtures.				

Depth through which sampler is driven

Relatively undisturbed sample

Missed sample

Ground water level observed in boring

S-10 Sample number

Sand pack

Bentonite annular seal

Neat cement annular seal

Blank PVC

Machine-slotted PVC

BLOW/FT. REPRESENTS THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH THE LAST 12 INCHES OF AN 18 INCH PENETRATION.

DASHED LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

Applied GeoSystems

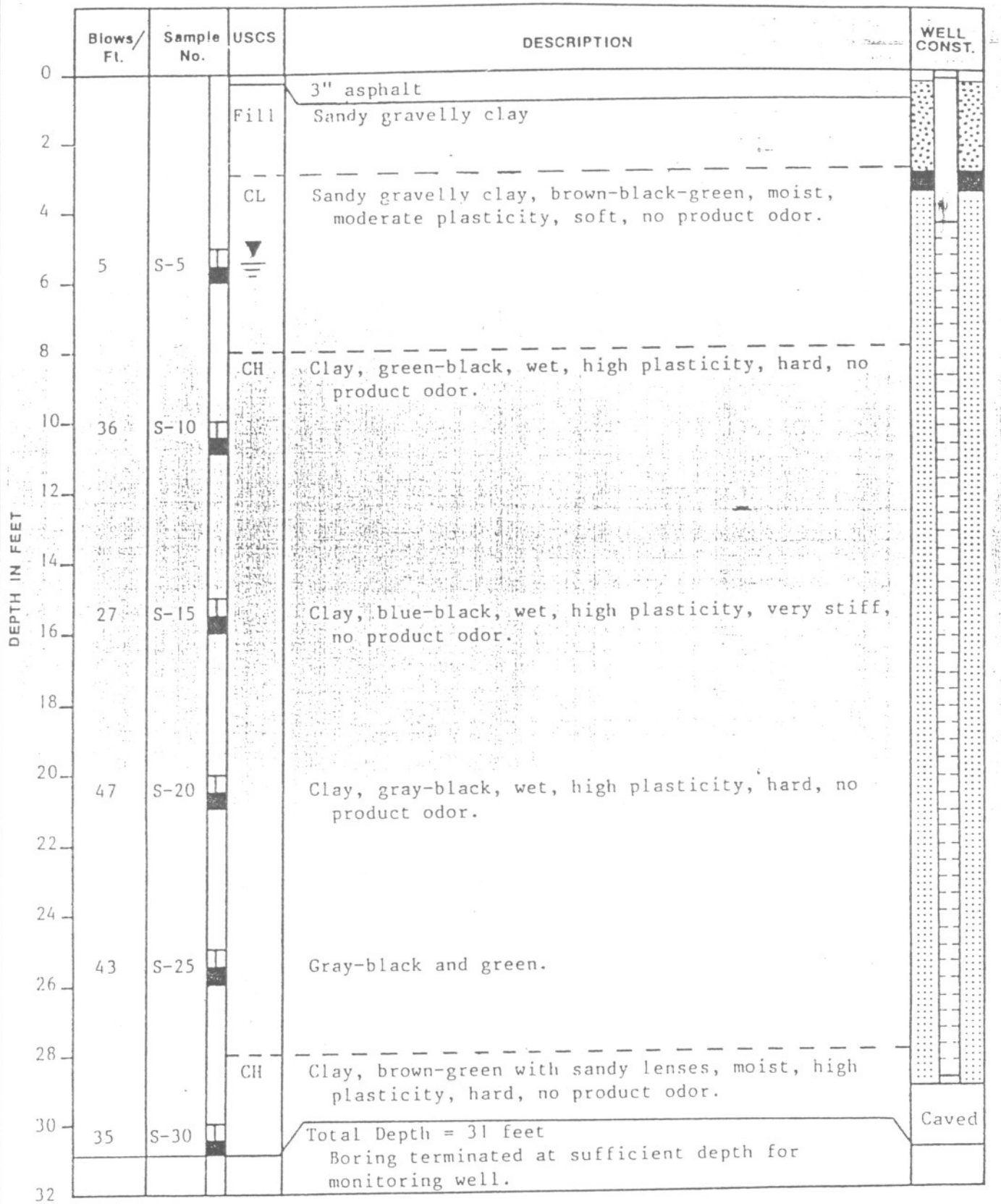
PROJECT NO. 86120-2

UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL KEY

McGuire and Hester
796 66th Avenue
Oakland, California

PLATE

P-3



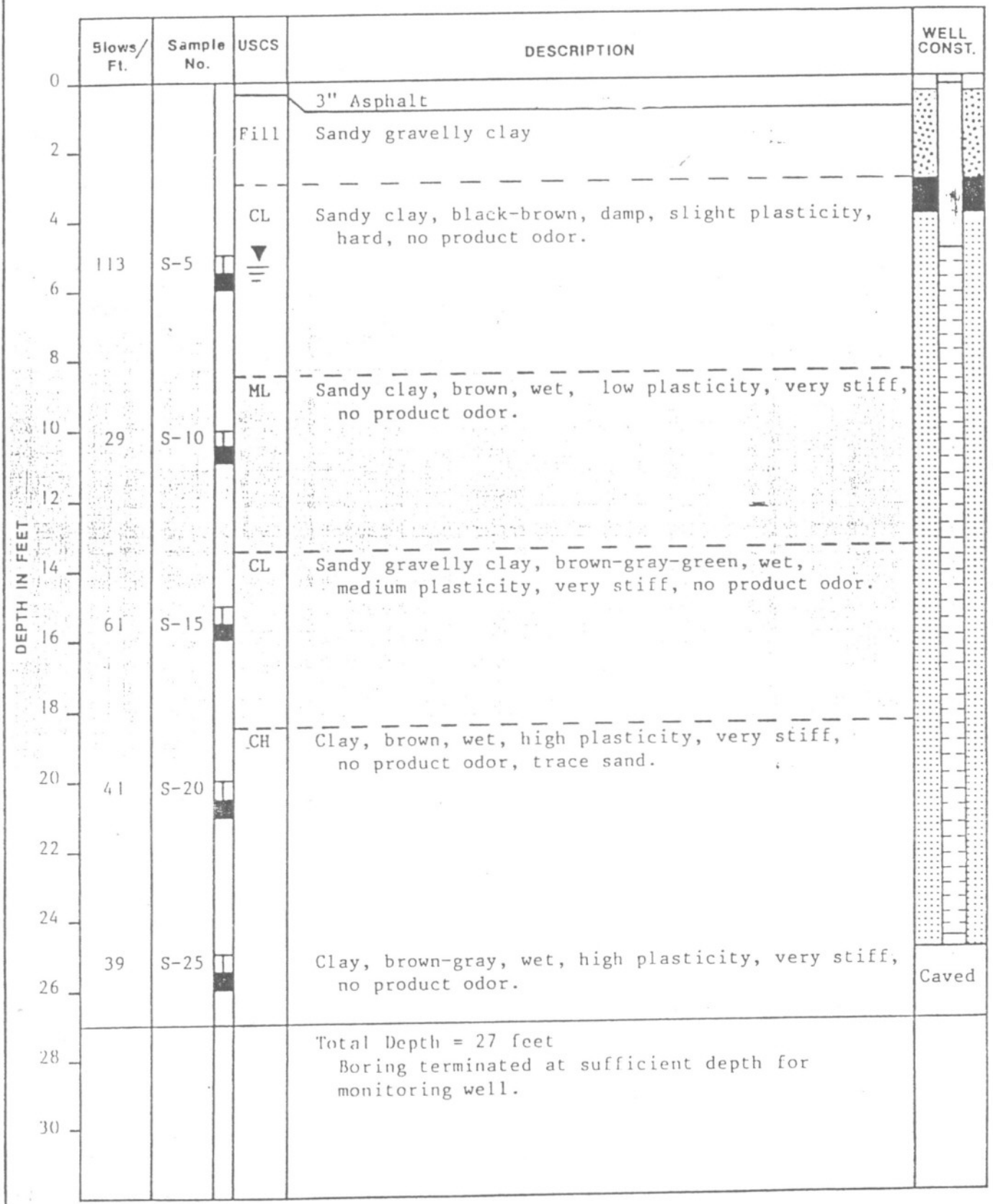
Applied GeoSystems

LOG OF BORING B-1 / MW-1

McGuire and Hester
796 66th Avenue
Oakland, California

PLATE P-4

PROJECT NO. 86120-2



Applied GeoSystems

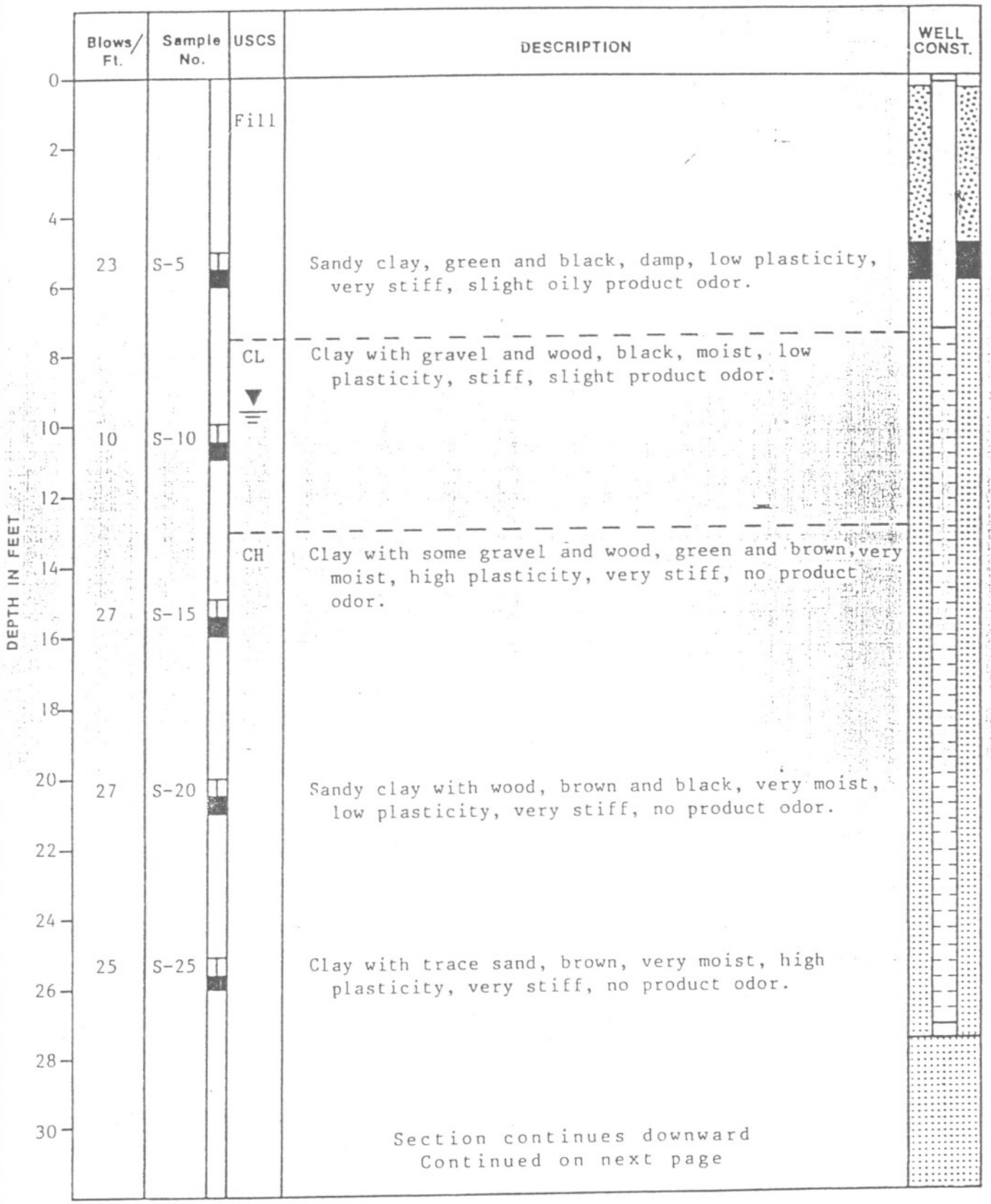
LOG OF BORING B-2/MW-2

McGuire and Hester
796 66th Avenue
Oakland, California

PLATE

P-5

PROJECT NO. 86120-2



Applied GeoSystems

LOG OF BORINGB-3/MW-3

McGuire and Hester
796 66th Avenue
Oakland, California

PLATE P-6

PROJECT NO. 86120-2

Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
22	S-30	CH	Clay, brown, very moist, high plasticity, very stiff, no product odor.	
		CL	Clayey sand with some gravel, brown, wet, no plasticity, dense, no product odor.	Caved
45	S-35			
			Total Depth = 36 feet Boring terminated at sufficient depth for monitoring well.	

DEPTH IN FEET

30
32
34
36
38
40

Applied GeoSystems

LOG OF BORING B-3/MW-3

McGuire and Hester
796 66th Avenue
Oakland, California

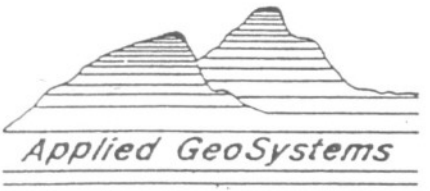
PLATE

P-7

PROJECT NO. 86120-2

APPENDIX

CHAIN OF CUSTODY RECORD



43255 Mission Blvd / Suite B Fremont, CA 94539 (415)651-1906

SAMPLER (signature):

Phone:

ABORATORY:
Applied Geosystems
43255 Mission Blvd.
Fremont

TURNAROUND TIME: 2 week

ttention: Steve Ryan

Phone No.

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

elinquished by: (signatures)	Received by: (signatures)	Date	Time
	Received for laboratory by:	2-10-87	10:00

ABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-5-B1	86120-1	2/9/87	TVH	iced
S-10-B1	86120-1	2/9/87	TVH	iced
S-5-B2	86120-1	2/9/87	TVH	iced
S-10-B2	86120-1	2/9/87	TVH	iced
S-10-B3	86120-1	2/9/87	TEH	iced
S-15-B3	86120-1	2/9/87	TEH	iced

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 2-19-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Steve M. Zigan

Date Received: 2-10-87
Date Analyzed: 2-10-87

Laboratory# 8702S018

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.1 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S-5-B1	86120-1	2.1
S-10-B1	86120-1	0.3
S-5-B2	86120-1	0.4
S-10-B2	86120-1	1.8

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 152)

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 2-19-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Steve M. Zigan

Date Received: 2-10-87
Date Analyzed: 2-13-87

Laboratory# 8702DS04

Procedure:

The soil samples were analyzed for high boiling point hydrocarbons by EPA method 3550 for soil extraction. The samples were injected into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL EXTRACTABLE HYDROCARBONS
S-10-B3	86120-1	1750
S-15-B3	86120-1	30

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

AMPLER (signature): [signature]

Phone: (415) 651-1906

LABORATORY: APPLIED GEOSYSTEMS

TURNAROUND TIME: 2 WKS

Attention: TIA TRAN

Phone No. (415) 651-1706

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
[signature]			
	Received for laboratory by: [signature]	2-13-87	10:30

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
V-17-MW1	AGS-86120-2	2-12-87	TVH AND BTEX	ICED
V-18-MW2	AGS-86120-2	2-12-87	TVH AND BTEX	ICED
V-18-MW3	AGS-86120-2	2-12-87	TEH	ICED

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 2-20-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Steve M. Zigan

Date Received: 2-12-87
Date Analyzed: 2-19-87

Laboratory# 8702W042

Procedure:

The water samples referenced on the attached Chain-of-Custody were analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Volatile Hydrocarbons (TVH) by EPA method 602. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for these samples is 0.0005 milligrams/liter (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES	TVH
W-19-MW1	86120-2	0.0007	0.0012	0.0042	0.0058	0.0290
W-18-MW2	86120-2	ND	0.0008	0.0013	0.0043	0.0237

Results in milligrams/liter (parts per million = ppm).
ND=Non Detectable - Less than 0.0005 milligrams/liter (ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 2-19-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Steve M. Zigan

Date Received: 2-13-87 Laboratory# 8702DW11
Date Analyzed: 2-18-87

Procedure:

The water sample was analyzed for high boiling point hydrocarbons by EPA method 3510 for water extraction. The sample was injected into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for this sample is 0.5 milligrams/liter (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL EXTRACTABLE HYDROCARBONS
W-18-MW3	86120-2	ND

Results in milligrams/liter (parts per million = ppm).
ND=Non Detectable - Less than 0.5 milligrams/liter (ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

(8)

APPENDIX C

Purcell, Rhoades & Associates Report
June 1, 1988

PURCELL, RHOADES & ASSOCIATES

2504 Technology Drive
Hayward, CA 94545

Xerox Telecopier 7020
(415) 732-9890
FAX (415) 732-0289

DATE: 12-1-88 OPERATOR INITIALS T.S.

TO: Chris French. FROM: Dean Affeldt

SUBJECT: Info. you requested.

PRA JOB NUMBER: _____ TIME: 1:10.

NUMBER OF PAGES (INCLUDING THIS COVER SHEET): 8

REMARKS:

****

IF YOU DO NOT RECEIVE ALL
PAGES, PLEASE CALL
(415) 732-9890

No. 3-0216/4780-01
June 1, 1988

Cruise America
5959 Blue Lagoon Drive
Suite 250
Miami, Florida 33126

Attention: Mr. Jack Beaver

SUBJECT: Preliminary Chemical Test Results - 796 66th Avenue, Oakland, California

Gentlemen:

At your request, a representative of this office obtained random samples within the area of the above subject location. An effort was made to locate soil sampling sites that would be representative of the site character. It is our understanding that the former and present site usage has been as a fueling, repair, and storage area for construction equipment and machines. A select grouping of chemical tests were chosen to represent an appropriate evaluation for the presence of hydrocarbon chemicals. This investigation was limited to the chemical species analyzed in the location and depth interval tested. No representation as to the absence or presence of chemical constituents in other locations or soil depth is made.

Field Sampling

Six exploratory locations were selected. Of these, three included subsurface boring and sampling of the soils at selected depths, followed by drilling and installation of temporary groundwater monitoring wells, and three consisted of subsurface boring and sampling of the soils at selected depths. Monitoring wells were drilled with a truck-mounted Mobile B-40 drill rig and were drilled to depths of 9-1/2, 8 and 14-1/2 feet below the existing ground surface. Subsurface samples were obtained by driving a 2-inch O.D. split-spoon sampler into the undisturbed soil mass with a 140-pound hammer free-falling 30 inches. Subsurface samples were properly sealed in the field and placed into refrigerated storage prior to transport to the laboratory. During drilling below the sampling depths for installation of Monitoring Wells MW-1 and MW-2, what appeared to be oil contaminated wood fragments and soils were encountered.

Laboratory Testing

The soils were delivered to the state-approved laboratory of Anatec Laboratories, Inc. in Santa Rosa. Samples from the first monitoring well location were analyzed for gasoline, samples from the second monitoring well location were analyzed for diesel, and samples from the third monitoring well were analyzed for solvents and metals. Samples from the three sampling locations were analyzed for oil and grease, and of these three, two were further analyzed for solvents. The actual test results for Anatec Laboratories, Inc. are presented as Tables 1, 2, 3 and 4.

Table 1 shows the concentrations in parts per million (ppm) of various hydrocarbon analyses. The California Regional Water Quality Control Board, San Francisco Bay Region generally considers petroleum soil contamination concentrations of less than 10 ppm to not constitute a threat; concentrations higher than 100 ppm will require installation of a monitoring well and an investigation to document the source of the contamination, with on-site excavation, aeration and, if the concentration is verified to be less than 100 ppm, replacement; and concentrations higher than 1000 ppm must be removed (Guidelines for Addressing Fuel Leaks, September, 1985).

Table 2 shows various concentrations of the heavy metals tested for in the laboratory, but all were below the total threshold limit concentration established by the State Department of Health. In Table 3, detectable amounts of benzene, ethylbenzene and toluene, breakdown products of gasoline, were found; however, they are below the generally accepted 100 ppm action level. No extractable organic compounds were found at the listed method detection limits shown in Table 4.

Discussion

The soil samples tested did not detect tested for extractable organic compounds. Various concentration levels of heavy metals were detected in these samples, but none were above the total threshold limit concentration established by the Department of Health. The purgeable organic compounds benzene, ethylbenzene and toluene were found, but all were below the generally accepted 100 ppm action level. What appeared to be oil-contaminated wood fragments and soil constituents were observed while drilling for installation of Water Monitoring Wells MW-1 and MW-2. As discussed verbally with Mr. Jack Beaver, the concentrations of petroleum hydrocarbons detailed in Table 1 will, pending regulatory approval, probably require the following procedures. Concentrations above 100 ppm of volatile hydrocarbons can be excavated, aerated on-site to concentrations below 100 ppm and replaced. The apparent source of the contamination is the fueling and storage use of the site and as such, is local-

ized and may not require an investigation to determine the contamination source. Semi-volatile hydrocarbon concentrations above 100 ppm may require excavation and removal from the site. Semi-volatile hydrocarbon concentrations above 1000 ppm will require excavation and removal from the site. As discussed, isolated surface areas of oil and grease from construction equipment may need cleanup, and the fuel tank area has soil containing fuel requiring remedial treatment. The expected usage of this property will result in the covering over of much of the site with asphalt, building foundations and landscaping. No quarrying, excavation or intensive usage of this soil is expected for prolonged periods of time that would result in a persistent and intensive exposure. While clay soils tend to restrict migration of fluids, future seepage exposure within the adjacent gully, while unlikely, cannot be discounted.

It should be understood that at present there are no established action levels for soil under present guidelines of the State Department of Health. Regulations concerning chemical health risk and exposure levels is an ongoing field, with regulatory standards and requirements being assessed on a case-by-case basis. Therefore, we defer to the regulatory agencies for final determination of health risk and remedial action levels.

It is recommended that a representative of this office observe any soil cleanup operations to observe the contractors work, to perform verification sampling and to provide supplemental recommendations. This preliminary soil investigation is limited to the areas explored through test borings and the chemical tests performed. Areas not explored or other chemical testing may detect other areas containing chemical or other chemical constituents not requested of this investigation.

If you have any questions or desire additional information, please contact this office.

Very truly yours,

PURCELL, RHOADES & ASSOCIATES

Irving D. Affeldt, C.E.G.
Associate

Reviewed by:

Daniel J. Rhoades, G.E.
Principal

REGISTERED PROFESSIONAL ENGINEER
DANIEL J. RHOADES
GE-716
EXP. 6/30/87
GEOTECHNICAL
STATE OF CALIFORNIA

pl

No. 3-0216/4780-01

ANATEC LABORATORIES INC.

435 Tesconi Circle
Santa Rosa, CA 95401
707-526-7200
Fax 707-526-9623

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Richard A. Garlow
Purcell-Rhoades Associates
2504 Technology Drive
Hayward, CA 94545

March 28, 1988
ANATEC Log No: 2441 (1-9)
Series No: 377/004
Client Job #4780-01

Subject: Transmittal of Results for Nine Soil Samples Identified as "Cruise America, Job #4780-01" Received March 1, 1988.

TABLE 1. SUMMARIZED ANALYTICAL RESULTS - PETROLEUM HYDROCARBONS AND OIL & GREASE

				Results (mg/Kg)[a]			
				Petroleum Hydrocabons			
ANATEC Lab No.				Volatile, as Gasoline	Extractable, as Motor Oil	Extractable, as Diesel	Oil & Grease
-5933	MW-1-1	2/17/88	1.5 - 2'	160	NR[b]	NR	NR
-5934	MW-1-2	2/17/88	2.5 - 3'	270	NR	NR	NR
-5935	MW-2-1	2/17/88	1.5 - 2'	NR	<10	460	NR
-5936	MW-2-2	2/17/88	2.5 - 3'	NR	74	42	NR
-5939	B-4-1	2/17/88	1 - 1.5'	NR	NR	NR	32,000
-5940	B-5-1	2/17/88	1 - 1.5'	NR	NR	NR	<50
-5941	B-6-1	2/17/88	1 - 1.5'	NR	NR	NR	220

[a]mg/Kg--Data are expressed as milligrams analyte per kilogram sample, as-received basis.
[b]NR--Analysis not requested.

Further data is presented in Tables 2-4. Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:

David Hirano
Project Chemist

Approved by:

Jules Skamarack
Project Manager

/hs
Enc: Sample Custody Document

NATIONAL ENVIRONMENTAL TESTING, INC. NET Laboratory Group

TABLE 2. SUMMARIZED ANALYTICAL RESULTS - METALS

Parameter	Regulatory Criteria[a] TTLC (mg/Kg)	Descriptor, Lab No. & Results (mg/Kg)[b] MW-3-1 2/17/88 1 - 1.5' (-5937)	MW-3-2 2/17/88 2 - 2.5' (-5938)
Antimony, & compounds	500	62	55
Arsenic, & compounds	500	28	24
Barium, & compounds[c]	10,000	80	72
Beryllium, & compounds	75	<5	<5
Cadmium, & compounds	100	7	5
Chromium (VI), & compounds	500	NA[d]	NA
Chromium, & compounds	2,500	56	57
Cobalt, & compounds	8,000	19	24
Copper, & compounds	2,500	44	34
Lead, & compounds	1,000	78	<50
Mercury, & compounds	20	0.07	0.11
Molybdenum, & compounds	3,500	<20	<20
Nickel, & compounds	2,000	74	130
Selenium, & compounds	100	<0.5	3.4
Silver, & compounds	500	<2	<2
Thallium, & compounds	700	53	46
Vanadium, & compounds	2,400	54	42
Zinc, & compounds	5,000	100	100

[a]TTLC--Total Threshold Limit Concentration, from Section 66699, Article 11, California Administrative Code.
[b]mg/Kg--Data are expressed as milligrams analyte per kilogram sample, as-received basis.
[c]Exoludes barite.
[d]NA--Not analyzed, total Cr below regulatory criterion for Cr(VI).

TABLE 3. SUMMARIZED ANALYTICAL RESULTS - PURGEABLE ORGANIC COMPOUNDS

Analyte	MDL[b] (ug/Kg)	Descriptor, Lab No. & Results (ug/Kg)[a] MW-3-1 02/17/88 1-1.5' (-5937)	MW-3-2 02/17/88 2-2.5' (-5938)	B-4-1 02/17/88 1-1.5' (-5939)	B-6-1 02/17/88 1-1.5' (-5941)
Benzene	25	ND[c]	ND	ND	42
Bromodichloromethane	10	ND	ND	ND	ND
Bromoform	25	ND	ND	ND	ND
Bromomethane	15	ND	ND	ND	ND
Carbon tetrachloride	15	ND	ND	ND	ND
Chlorobenzene	25	ND	ND	ND	ND
Chloroethane	15	ND	ND	ND	ND
2-Chloroethylvinyl ether	35	ND	ND	ND	ND
Chloroform	10	ND	ND	ND	ND
Chloromethane	15	ND	ND	ND	ND
Dibromochloromethane	15	ND	ND	ND	ND
1,2-Dichlorobenzene	25	ND	ND	ND	ND
1,3-Dichlorobenzene	25	ND	ND	ND	ND
1,4-Dichlorobenzene	25	ND	ND	ND	ND
1,1-Dichloroethane	20	ND	ND	ND	ND
1,2-Dichloroethane	15	ND	ND	ND	ND
1,1-Dichloroethene	15	ND	ND	ND	ND
trans-1,2-Dichloroethene	10	ND	ND	ND	ND
1,2-Dichloropropane	25	ND	ND	ND	ND
cis-1,3-Dichloropropene	20	ND	ND	ND	ND
trans-1,3-Dichloropropene	25	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	39
Methylene chloride	15	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	30	ND	ND	ND	ND
Tetrachloroethene	20	ND	ND	ND	ND
Toluene	25	ND	ND	ND	77
1,1,1-Trichloroethane	20	ND	ND	ND	ND
1,1,2-Trichloroethane	25	ND	ND	ND	ND
Trichloroethene	10	ND	ND	ND	ND
Trichlorofluoromethane	15	ND	ND	ND	ND
Vinyl chloride	15	ND	ND	ND	ND

[a]Data expressed in units of micrograms analyte per kilogram sample, as-received basis.

[b]MDL--Method detection limit.

[c]ND--Not detected at the listed method detection limit.

TABLE 4. SUMMARIZED ANALYTICAL RESULTS - EXTRACTABLE ORGANIC COMPOUNDS

Analyte	MDL[b] (ug/Kg)	Descriptor, Lab No. & Results (ug/Kg)[a]: MW-3-1 02/17/88 1-1.5' (-5937)	MW-3-2 02/17/88 2-2.5' (-5938)[d]	B-4-1 02/17/88 1-1.5' (-5939)[e]	B-6-1 02/17/88 1-1.5' (-5941)[f]
Acenaphthene	33	ND[c]	ND	ND	ND
Acenaphthylene	33	ND	ND	ND	ND
Aldrin	33	ND	ND	ND	ND
Anthracene	33	ND	ND	ND	ND
Benzidine	33	ND	ND	ND	ND
Benzo(a)anthracene	33	ND	ND	ND	ND
Benzo(b)fluoranthene	33	ND	ND	ND	ND
Benzo(k)fluoranthene	33	ND	ND	ND	ND
Benzo(a)pyrene	33	ND	ND	ND	ND
Benzo(ghi)perylene	33	ND	ND	ND	ND
Benzyl butyl phthalate	33	ND	ND	ND	ND
delta-BHC	33	ND	ND	ND	ND
gamma-BHC	33	ND	ND	ND	ND
Bis(2-chloroethyl)ether	33	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	33	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	33	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	3,300	ND	ND	ND	ND
4-Bromophenyl phenyl ether	33	ND	ND	ND	ND
2-Chloronaphthalene	33	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	33	ND	ND	ND	ND
Chrysene	33	ND	ND	ND	ND
4,4'-DDD	33	ND	ND	ND	ND
4,4'-DDE	33	ND	ND	ND	ND
4,4'-DDT	33	ND	ND	ND	ND
Dibenzo(a,h)anthracene	33	ND	ND	ND	ND
Di-n-butyl phthalate	1,650	ND	ND	ND	ND
1,2-Dichlorobenzene	33	ND	ND	ND	ND
1,3-Dichlorobenzene	33	ND	ND	ND	ND
1,4-Dichlorobenzene	33	ND	ND	ND	ND
3,3'-Dichlorobenzidine	33	ND	ND	ND	ND
Dieldrin	33	ND	ND	ND	ND
Diethyl phthalate	33	ND	ND	ND	ND
Dimethyl phthalate	8	ND	ND	ND	ND
2,4-Dinitrotoluene	33	ND	ND	ND	ND
2,6-Dinitrotoluene	33	ND	ND	ND	ND
Di-n-octylphthalate	33	ND	ND	ND	ND
Endrin aldehyde	33	ND	ND	ND	ND
Fluoranthene	33	ND	ND	ND	ND
Fluorene	33	ND	ND	ND	ND
Heptachlor	33	ND	ND	ND	ND
Heptachlor epoxide	33	ND	ND	ND	ND
Hexachlorobenzene	33	ND	ND	ND	ND
Hexachlorobutadiene	33	ND	ND	ND	ND
Hexachlorocyclopentadiene	33	ND	ND	ND	ND
Hexachloroethane	33	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	33	ND	ND	ND	ND
Isophorone	33	ND	ND	ND	ND
Naphthalene	33	ND	ND	ND	ND
Nitrobenzene	33	ND	ND	ND	ND
N-Nitrosodi-n-propylamine	1,320	ND	ND	ND	ND
Phenanthrene	33	ND	ND	ND	ND
Pyrene	33	ND	ND	ND	ND
1,2,4-Trichlorobenzene	33	ND	ND	ND	ND
4-Chloro-3-methylphenol	33	ND	ND	ND	ND
2-Chlorophenol	33	ND	ND	ND	ND
2,4-Dichlorophenol	33	ND	ND	ND	ND
2,4-Dimethylphenol	33	ND	ND	ND	ND
2,4-Dinitrophenol	825	ND	ND	ND	ND
2-Methyl-4,6-dinitrophenol	1,650	ND	ND	ND	ND
2-Nitrophenol	33	ND	ND	ND	ND
4-Nitrophenol	825	ND	ND	ND	ND
Pentachlorophenol	33	ND	ND	ND	ND
Phenol	33	ND	ND	ND	ND
2,4,6-Trichlorophenol	33	ND	ND	ND	ND

[a] ug/Kg--Data are expressed in units of micrograms analyte per kilogram sample, as-received basis.
[b] MDL--Method detection limit.
[c] ND--Not detected at the listed method detection limit.
[d] The detection limits for this sample were 10x the listed MDLs.
[e] The detection limits for this sample were 200x the listed MDLs.
[f] The detection limits for this sample were 100x the listed MDLs.