APPLIED GEOSCIENCES INC.

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12 February 1992
A901749A

Union Bank
445 South Figueroa Street
Los Angeles, California 91748

Attention: Ms. Jodi Siegner

SUBJECT: PHASE II SUBSURFACE INVESTIGATION AT ANOTHER TREE DEVELOPMENT IN THE CITY OF EMERYVILLE, CALIFORNIA

Dear Ms. Siegner:

Applied Geosciences Inc. is pleased to submit two copies of this draft report in general accordance with revised Attachment 12 to the contract dated 1 April 1988 between Applied Geosciences Inc. and Union Bank.

If you have any questions regarding this report, please contact either of the undersigned at your convenience.

Very truly yours,
APPLIED GEOSCIENCES INC.

Fred R. Conwell
Associate
Certified Engineering Geologist #546

Alex J. Gallego
Senior Staff Geologist

Enclosures

cc: Mark S. Cousineau, Applied Geosciences Inc., Tustin

Copy No. _____

12 February 1992

CONFIDENTIAL AND PRIVILEGED:
ATTORNEY-CLIENT AND WORK PRODUCT
PRIVILEGES ASSERTED

PHASE II SUBSURFACE INVESTIGATION
ANOTHER TREE DEVELOPMENT
EMERYVILLE, CALIFORNIA

Prepared for:

UNION BANK
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Los Angeles, California 90071

Prepared by:

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Project No. A901749A

02.9.4.1

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1.0 INTRODUCTION

This report presents the results of a Phase II subsurface investigation conducted at Another Tree Development, a vacant parcel of land located on Shellmound Street northeast of the junction of the Shellmound Street and Powell Street overpass (site) in the city of Emeryville, California (Figure 1). The work was conducted by Applied Geosciences Inc. during the period from 24 July 1991 to 13 November 1991 in general accordance with revised Attachment 12 to the contract dated 1 April 1988 between Applied Geosciences Inc. and Union Bank. It is the understanding of Applied Geosciences Inc. that the site is approximately 2.1 acres in size, that the site is underlain by imported fill, and that a portion of the site was formerly occupied by a paint and roofing material manufacturing facility (Pabco Industries). The site is bounded on the south by the Powell Street overpass, on the east and north by parcels of The Marketplace (a shopping center development), and on the west by Shellmound Street. A Southern Pacific Railroad right-of-way is parallel to the eastern boundary of the site. At the present, the site is unoccupied property that is predominantly capped by asphalt. It is the understanding of Applied Geosciences Inc. that Union Bank is evaluating the possibility of foreclosing on this property and has requested this investigation to evaluate the environmental impact of the site.

In a preliminary site assessment previously conducted at the site, Applied Geosciences Inc. (1990) concluded that potentially hazardous materials were possibly present in the following areas: (1) in the vicinity of a former concrete holding tank, (2) along the eastern property boundary, (3) in the vicinity of a former railroad spur, and (4) within drums containing an unidentified liquid. The drums were not present on the site at the time of the current investigation. The preliminary site assessment is included as Appendix A to this report.

This report presents the results of the groundwater monitoring and soil sampling of these areas of concern as recommended in the preliminary site assessment (1990). This report also presents the results of a second round of groundwater monitoring and additional soil sampling that were conducted due to elevated concentrations of various potentially hazardous materials that were reported during the initial sampling event.

Additionally, concerns about the fill material underlying the site were expressed by personnel of Union Bank in relation to environmental guidelines for construction. This report also addresses these additional concerns.

2.0 OBJECTIVE

The objective of this investigation was to assess the likelihood that potentially hazardous materials are present in the soils or groundwater beneath the site from off-site and/or on-site sources, or in the drums that contain unidentified liquid.

3.0 APPROACH

The approach used to meet the objective consisted of the interviewing of regulatory agency staff, the review of regulatory agency files, the collection and laboratory analyses of soil and groundwater samples, the analysis of data, and the preparation of this report.

4.0 SCOPE OF WORK

The scope of work was developed in general accordance with the recommendations promulgated in the Applied Geosciences Inc. (1990) report titled "Preliminary Site Assessment, Another Tree Development, Emeryville, California" (Appendix A) and included the following tasks:

- Task 1. Regulatory Agency Interviews
- Task 2. Regulatory Agency File Reviews
- Task 3. Preparation of a Health and Safety Plan
- Task 4. Field Investigation
- Task 5. Laboratory Analyses
- Task 6. Data Assessment and Report Preparation
- Task 7. Technical Staff Support

These seven tasks are described in detail in the following text. The scope was expanded during the course of the investigation due to the initial findings of the investigation. Therefore, a second phase of work was conducted as described below.

Task 1. Regulatory Agency Interviews

Interviews were conducted with personnel of the Emeryville Building Department and Alameda County Health Care Services Agency, Division of Hazardous Materials, Department of Environmental Health (ACHCSA). During these interviews, Applied Geosciences Inc. attempted to assess the environmental guidelines, as well as other possible environmental issues, associated with building on the fill material in the City of Emeryville. Applied Geosciences Inc. also attempted during these interviews to assess the investigation boundaries of The Marketplace with respect to the site.

Task 2. Regulatory Agency File Reviews

An expanded review of available files concerning sites in the immediate site vicinity was conducted at the Emeryville Fire Department, the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), and ACHCSA. This included the review of the files for the following investigations:

- Pabco Industries
- The Marketplace
- Michel and Pelton
- Westinghouse Electric Company - Emeryville
- Chevron-Emeryville Terminal
- ITT Grinnell
- Nielson Freight Lines

This review focused on the potential impacts these sites may have on the site. This review also included judgments as to the likelihood that future subsurface investigations of these sites will involve the installation of borings and/or groundwater monitoring wells on the site. Letters and reports regarding the site from the ACHCSA are included as Appendix B to this report.

Task 3. Preparation of a Health and Safety Plan

A Health and Safety Plan was prepared to meet the needs and conditions of this specific project and is an integral part of the hazardous materials consulting practice of Applied Geosciences Inc. (Applied Geosciences Inc., 1991). The plan was based on an understanding of the potentially hazardous materials that may have been present on the site, and on associated safety concerns related to personnel working at the site. The design and implementation of such a plan is intended to minimize the likelihood of exposure of Applied Geosciences Inc. personnel and subcontractors to potentially hazardous substances and related unsafe conditions during field work.

Task 4. Field Investigation

The field investigation consisted of various subtasks pertaining to the different areas of concern on the site. This task included mobilization and soil and groundwater sampling, and was to include the sampling of the drums formerly present on-site. The drums, however, were removed from the site prior to the onset of the field investigation. The party responsible for removing the drums is not presently known by Applied Geosciences Inc. The subtasks were defined as follows:

- For soil and groundwater sampling along the Southern Pacific Railroad right-of-way, three borings were installed to a depth of approximately 15 feet below the ground surface (BGS) along the eastern property boundary. These borings were sampled at approximate 2.5-foot intervals to a depth of

10 feet BGS and at approximate 5.0-foot intervals below 10 feet BGS. The borings were advanced to approximately 5 to 10 feet below the shallow groundwater table and were converted to groundwater monitoring wells ATD1, ATD2, and ATD3 (Figure 2).

- Sampling in the areas of the concrete holding tank and the railroad spur was to consist of advancing eight borings to a depth of 6.0 feet BGS. Only five borings (B1 through B5) were actually drilled (Figure 2) because of conditions in the fill material within the subsurface of the site.

- Samples were collected at 0.5, 3.0, 4.5, and 6.0 feet BGS in each boring. The boring located nearest the former location of EM8, a boring installed by Earth Metrics, Inc. (Earth Metrics) during a previous investigation (Earth Metrics, 1988a), was advanced to approximately 5 to 10 feet below the groundwater table and converted to groundwater monitoring well ATD4 (Figure 2).

- Three additional borings were installed to a depth of approximately 15 feet BGS in the western portion of the site and converted to monitoring wells ATD5, ATD6, and ATD7 (Figure 2). Based on previous investigation in the immediate site vicinity, these wells were installed in what was interpreted to be the downgradient groundwater flow direction prior to the initiation of the field investigation. These wells were used to assess the quality of the groundwater leaving the site as a comparison to the quality of groundwater entering the site.

- Samples from the liquid in the drums were to be obtained with a dipper. The samples were to be transferred to laboratory-supplied containers in a manner that minimized potential volatilization. As noted previously, the drums were no longer present on the site. Therefore, samples could not be obtained of the contents of the drums.

- Six surface grab samples were to be obtained in various locations along the railroad spur. These samples were to be obtained with a hand shovel and laboratory-supplied glass sample jars. Although information obtained during this phase of the investigation reported that some of the land adjacent to the railroad spur is not a part of the site (McLaren Environmental Engineering [McLaren], 1990) and that two parcels of land occur between the site and the railroad right-of-way (Figure 2), grab samples GS4 through GS6 were obtained at the locations off-site as shown in Figure 2. These samples were thought to be representative of adjacent on-site areas that were inaccessible due to the asphalt pavement on the site.

Boring procedures and logs, monitoring well construction logs, and a well location and elevation survey are included in Appendix C to this report.

Task 5. Laboratory Analyses

Soil and groundwater samples were analyzed by CKY incorporated Analytical Laboratories of Pleasanton, California, a State-certified hazardous waste laboratory, and by CGS Analytical Laboratory of Fremont, California, a State-certified hazardous waste laboratory. The chain-of-custody forms and the results of these laboratory analyses are included in Appendix D to this report.

Groundwater samples collected on-site were analyzed for the following:

- California Assessment Manual (CAM) metals
- Total petroleum hydrocarbons as diesel (TPHd)
- Oil and grease (for asphalt)

The upper three soil samples obtained from the 12 borings were also analyzed for the above compounds. The remaining samples were held pending receipt of analytical results.

In addition to the above-noted analyses, the uppermost soil samples collected along the eastern property boundary were analyzed for organochlorine pesticides and polychlorinated biphenyls (PCBs) in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 8080. In addition to this, three soil samples were analyzed for volatile organic compounds (VOCs) in general accordance with EPA Method No. 8240. These samples were selectively chosen as field conditions warranted. Surface grab samples collected in the vicinity of the concrete holding tank and near the railroad spur were analyzed for asbestos.

Task 6. Data Assessment and Report Preparation

The results of the analyses reported by the laboratory were reviewed, and the occurrence of potentially hazardous materials in soil and groundwater on the property was assessed based on these data. Recommendations for necessary further investigative action regarding the site were submitted, as appropriate and meetings were conducted to enlarge the scope of work as described in Task 7 below. After the second phase of the investigation was completed, this report was prepared presenting the results of the regulatory agencies review and interface, the field investigation, the laboratory reports, and our assessment of the data.

Task 7. Technical Staff Support

Applied Geosciences Inc. attended various meetings with regulatory agencies and personnel of Union Bank during the course of this investigation. This task covers the completion of such activities by Applied Geosciences Inc. Work completed within this task was performed only in direct response to the request and direction of Union Bank.

Due to the results of the soil and groundwater analysis and at the recommendation of Applied Geosciences Inc., Union Bank requested additional sampling of the soil and groundwater. The additional scope of work that was conducted as a second phase is presented below:

- Installation of three shallow soil borings HA3, HA4, and HA5 (Figure 2) in the vicinity of monitoring well ATD6. These borings were added because two soil samples obtained from boring ATD6 were reported to contain total petroleum hydrocarbons as gasoline (TPHg).

- Proposed installation of a soil boring in the vicinity of boring B5. This additional boring was proposed because a soil sample obtained from boring B5 was reported to contain elevated concentrations of various CAM metals.

- Proposed installation of three shallow soil borings, one each in the vicinities of monitoring wells ATD1 and ATD5 and boring B3. Only shallow soil borings HA6 and HA8, located in the vicinities of boring B3 and monitoring well ATD5, respectively, were actually installed. These borings were added because soil samples obtained from these locations were reported to contain concentrations of oil and grease exceeding 5,000 parts per million (ppm).

- Collection of soil samples from the new borings at approximately 3.0 and 5.0 feet BGS.

- Analysis of the new soil samples for TPHg, semivolatile organic compounds (SVOCs), and soluble CAM metals.

- Collection of groundwater samples from the seven monitoring wells ATD1 through ATD7 previously installed on-site.

- Analysis of the water samples for TPHg and SVOCs.

- Interpretation of the laboratory analysis results and incorporation of the results of this second phase of the investigation into this report.

During this second phase of the investigation, concrete was encountered in several borings. As time and conditions permitted, the borings were installed in different adjacent

locations. However, borings were not installed and, therefore, samples were not collected adjacent to boring B5 or monitoring well ATD1 due to the repeated presence of concrete in the additional borings.

5.0 REGULATORY AGENCY REVIEW AND INTERVIEWS

Selected documents currently in the files at the offices of the Emeryville Fire Department, the RWQCB, and ACHCSA were reviewed to assess the potential impact of off-site releases in the vicinity of the site on the subsurface of the site. Also, because the site was listed on the most recent chemical release list issued by the RWQCB (RWQCB, 1991), the file at the RWQCB for the site was reviewed. Reports and letters regarding the site from the files at ACHCSA are included as Appendix B.

A list of the sites that were judged to potentially have an impact on the subsurface of the site is included in Section 4.0 and in Figure 1. Additionally, interviews were conducted with personnel of ACHCSA to assess the possible construction problems of building on potentially hazardous fill materials that underlie the site. A geotechnical report, previously reviewed in the preliminary site assessment (Appendix A), was reviewed again for additional information that was not pertinent at the time of the preliminary site assessment. Comments regarding the review of the Emeryville Fire Department files have not been included because of the lack of new information within the fire department files concerning facilities in the immediate vicinity of the site.

5.1 Another Tree Emeryville Project (The Site)

5.1.1 Environmental Reports

Two reports, "Review of Site Characterization Studies and Proposed Work Plan Relating to Another Tree Emeryville Project" and "Supplemental Site Characterization Studies Relating to the Another Tree Emeryville Project," dated 18 May 1990 and 5 July 1990, respectively, by Tenera Environmental Services (Tenera), an environmental consulting firm, regarding Another Tree Development (site) were available at ACHCSA (Tenera, 1990a; 1990b). These reports are included as Appendix B.1. Additionally, two letters dated 8 June 1990 and 3 August 1990, respectively, written in response to the work conducted by Tenera from ACHCSA to Another Tree Development Corporation, the present owner of the site, were in the file (ACHCSA, 1990a; 1990b). These letters have been included as Appendix B.2.

According to information in the two Tenera reports, Tenera judged that soil impacted with asphaltic material should be considered non hazardous (Tenera, 1990a; 1990b). Tenera analyzed four soil samples for hydrocarbons and one of the samples for "complete Title 22 CCR evaluation" (Tenera, 1990b). Total petroleum

hydrocarbons were reported at concentrations ranging from less than 50 parts per million (ppm), which was below the reporting limits for the analytical method utilized, to 420 ppm in the four soil samples. A sample from Tenera boring B-2 was analyzed for complete Title 22 CCR evaluation. According to Tenera, based on the analysis of the soil sample against the criteria of Title 22 of the California Code of Regulations (CCR), the sample would not be classified as a hazardous waste (Tenera, 1990b). However, it should be noted that the sample obtained from boring B-2 that was analyzed for Title 22 evaluation was the sample that was reported as below the reporting limits for total petroleum hydrocarbons and, therefore, may not have been representative of the characteristics of the "asphaltic" material (Tenera, 1990b).

Tenera also concluded that approximately 150 cubic yards of soil contained concentrations of heavy metals in excess of applicable (total) threshold limit concentration values (Tenera, 1990b). Tenera proposed that the metals be excavated and disposed of off-site. Tenera proposed the installation of three monitoring wells to assess the quality of the groundwater with regards to the potentially hazardous materials that were reported in the subsurface of the site.

ACHCSA concurred with the recommendations set forth by Tenera (ACHCSA, 1990a; 1990b). ACHCSA also agreed, based on the results of the Title 22 analysis, that the asphaltic substance should not be considered hazardous (ACHCSA, 1990b).

Based on observations made in the field by personnel of Applied Geosciences Inc., neither of the recommendations set forth by Tenera in August 1990 (Tenera, 1990b) (i.e., removal of soil impacted with heavy metals and installation of three groundwater monitoring wells) were completed prior to the initiation of this investigation by Applied Geosciences Inc. Additionally, no environmental reports other than those previously discussed documenting more recent investigation on the site were available from the regulatory agencies contacted during the Applied Geosciences Inc. investigation.

5.1.2 Geotechnical Report

A geotechnical report was prepared by Geomatrix Consultants, Inc. (Geomatrix) for The Martin Company (current owner of The Marketplace) for a theater that had been proposed for the site (Geomatrix, 1987). According to information in this report, the storage tank previously observed in historic aerial photographs in the southeast corner of the site was present in 1987 and was utilized for the storage of water (Geomatrix, 1987).

Additionally, a Pabco building that was formerly located at the site had a basement that occupied approximately one-quarter of the northeast corner of the site (Geomatrix, 1987). Geomatrix encountered a 3-foot thick concrete slab or foundation at

approximately 13 feet BGS in one of the five borings that were drilled on the site in the vicinity of the former location of the basement during this investigation (Geomatrix, 1987). Geomatrix also encountered a 12-inch-thick concrete slab approximately 2 feet BGS in one of the other borings. Heterogeneous fill was present in the borings between 7 and 13 feet BGS. (It is the judgment of Applied Geosciences Inc. that it is likely that concrete from the former basement was the concrete encountered in the borings drilled during the present investigation).

Geomatrix (1987) concluded that the soil strength and density were too variable to provide firm, uniform support for a theater building. Geomatrix also concluded that it was likely the backfill of the former basement was not well compacted. Geomatrix recommended that either deep foundations extending below the fill or shallow foundations bearing on densified or treated fill be installed prior to the construction of the theater (Geomatrix, 1987).

5.2 Pabco Industries

No information concerning Pabco Industries, the former occupant of the site, was available from ACHCSA, the RWQCB, or the Emeryville Fire Department.

5.3 The Marketplace

According to information obtained from the files at the RWQCB, The Marketplace has free petroleum products reported in the groundwater near the north-central portion of the property. The area reported to have petroleum products in the groundwater is approximately 500 feet north-northwest of the site (McLaren, 1990). The petroleum product of concern in this area is total petroleum hydrocarbons as diesel (TPHd). The plume of TPHd in the groundwater trends in a westerly direction. Based on the distance of the TPHd plume from the site and the direction the plume is trending, it is the judgment of Applied Geosciences Inc. that there is a low likelihood the TPHd reported in the groundwater at The Marketplace has impacted the subsurface of the site.

According to an environmental report concerning The Marketplace, five groups of underground concrete storage tanks were formerly located on the Pabco facility (Earth Metrics, 1988b). Four of the five tank groups were located either on or adjacent to The Marketplace property. Three of the tank groups were reported to store solvents utilized in the manufacture of paint products (Earth Metrics, 1988b). The other group of tanks formerly located at The Marketplace was reported to store crude asphalt. The fifth group of tanks was located on what is now the site.

Asphaltic material reported in the subsurface of The Marketplace (and the site) has been characterized previously by Aqua Terra Technologies (ATT). According to ATT (1988) and McLaren (1989), various analyses have been conducted on the asphaltic material. ATT concluded that the asphaltic material was not hazardous in accordance with criteria set forth in Title 22, Division 4, Chapter 30, Article 11, of the California Code of Regulations (CCR). ATT also concluded that disposal of the soil containing the asphaltic material could be managed as nonhazardous (ATT, 1988). After conducting the Toxicity Characteristic Leaching Procedure (TCLP) on the asphaltic material, McLaren concluded that under the conditions expected to occur at The Marketplace, significant leaching of the asphaltic material was not expected to occur (McLaren, 1989).

Information contained in the most recent available report concerning The Marketplace, "Groundwater Characterization, Emery Bay Marketplace," indicates that Another Tree Development is considered by McLaren to be within the boundaries of The Marketplace investigation (McLaren, 1990). However, the RWQCB and ACHCSA consider Another Tree Development to be a separate investigation (subsection 5.7).

The asphaltic substance that has been reported in the subsurface beneath the site and beneath The Marketplace was reported to be floating as free product on the shallow groundwater in a monitoring well in the northeast corner of The Marketplace facility adjacent to the former Nielson Freight Lines facility (Earth Metrics, 1988b). The floating product was reported to contain various polynuclear aromatic compounds including chrysene, fluorene, and phenanthrene, which were reported at concentrations of 170 ppm, 170 ppm, and 440 ppm, respectively (Earth Metrics, 1988b).

5.4 Michel and Pelton

No information concerning Michel and Pelton, located approximately 500 feet south of the site, was available from ACHCSA, the RWQCB, or the Emeryville Fire Department. The RWQCB has this facility listed as having had a release of potentially hazardous materials to the groundwater, but did not have a file available regarding the release. However, given the analysis results of the current investigation and the interpreted on-site shallow groundwater flow direction, it is the judgment of Applied Geosciences Inc. that there is a very low likelihood potentially hazardous materials reported at Michel and Pelton have impacted the subsurface of the site.

5.5 Westinghouse, Chevron-Emeryville Terminal, and ITT Grinnell

A cursory review of the files for Westinghouse Electric Company-Emeryville (Westinghouse), Chevron-Emeryville Terminal, and ITT Grinnell was performed at ACHCSA on 5 September 1991, and copies

of pertinent reports were requested on 9 September 1991. As of the date of this report, the reports requested from ACHCSA have not been received. Based on the cursory review of the files at ACHCSA, there is a low likelihood that the reported potentially hazardous materials beneath these three facilities have impacted the subsurface of the site. A more extensive review of these facilities will be conducted when the reports are received, and a letter report will be prepared.

5.6 Nielson Freight Lines

Nielson Freight Lines (Nielson), located approximately 800 feet northwest of the site and adjacent to The Marketplace, was formerly at the same location as Pabco Industries. Reported concentrations of oil and grease in the soils under the former Nielson site ranged from 6 ppm to 7021 ppm. The estimated thickness of the asphaltic substance reported in the subsurface exceeds 5 feet under a portion of the former Nielson facility (Earth Metrics, 1988a). Other than the asphaltic material, several areas were reported to have elevated concentrations of total petroleum hydrocarbons present from the use of the property as a trucking facility. The extent of the petroleum hydrocarbons at Nielson in these other areas is limited and unlikely to impact the site. Based on the limited extent of the potentially hazardous materials reported at the Nielson facility, it is the judgment of Applied Geosciences Inc. that, other than the asphaltic material, there is a very low likelihood that potentially hazardous materials reported beneath the Nielson facility have impacted the subsurface of the site.

5.7 Regulatory Agency Interviews

According to the most recent report concerning The Marketplace, Another Tree Development is within the site boundaries for The Marketplace (McLaren, 1990). However, according to personnel of ACHCSA, the site is not considered a part of The Marketplace investigation (Byrne, 1991). Additionally, the RWQCB listing of Another Tree Development as a separate investigation indicates that the site is not considered a portion of The Marketplace.

Concern was expressed by personnel of Union Bank that the reported underlying asphaltic fill material might prevent the site from complying with environmental guidelines for construction. However, according to Mr. Byrne, the materials that were previously identified on the site, with the exception of the heavy metals, are considered nonhazardous (Byrne, 1991). After the heavy metals are removed from the subsurface, Mr. Byrne stated that ACHCSA would not object to construction on the site (Byrne, 1991). However, it should be noted that the results of the current Applied Geosciences Inc. investigation have not yet been made available to ACHCSA and that the ACHCSA opinion regarding the hazardous nature of materials reported in the subsurface of the site may be subject to change. Additionally,

why?

the results of the current investigation may provoke the involvement of the RWQCB in the oversight of future investigation on the site.

6.0 FIELD INVESTIGATION

The first phase of the field investigation was conducted by personnel from Applied Geosciences Inc. from 31 July to 5 August 1991, and the second phase on 17 and 18 October 1991. The field investigation involved the drilling of 12 soil borings with subsequent soil sampling, the conversion of seven borings to groundwater monitoring wells, the sampling of groundwater from the seven groundwater monitoring wells, and the sampling of shallow soils via grab samples and hand auger borings from the south and east portions of the property and in areas reported to have elevated concentrations of various potentially hazardous materials. The groundwater monitoring well and boring locations (ATD1 through ATD7 and B1 through B5) are shown in Figure 2. The shallow soil sample locations (GS1 through GS6, HA1 through HA6, and HA8) are also shown in Figure 2. Table 1 presents the groundwater elevation measurements from the first and second phases of the field investigation. Tables 2 and 3 present the sample number, location, collection depth, analytical methods used, and laboratory analysis results of the samples from the soil borings and groundwater monitoring wells. The work was conducted in general accordance with the Health and Safety Plan developed by Applied Geosciences Inc. for the project (Applied Geosciences Inc., 1991). All work was conducted under the supervision of a State-certified engineering geologist.

6.1 Soil Sampling

Soil sample locations (Figure 2) were selected to provide data on chemical concentrations in or adjacent to areas judged to be potentially degraded by potentially hazardous materials. Soil samples collected from the borings were retained for laboratory analysis and to provide lithologic data. A summary of the conditions encountered was recorded on a log for each boring. Boring logs are presented in Appendix C.

Soil samples were collected at the site according to three types of sampling methods:

- Discrete samples were obtained with a modified California drive sample advanced with a 140-pound downhole hammer with a 30-inch (estimated) drop in the drilled borings.
- Discrete samples were obtained with a hand sampling apparatus utilizing a slide hammer in the hand auger borings.
- Grab samples were obtained immediately below the soil surface for asbestos analysis.

6.1.1 Soil Borings and Monitoring Well Installation

Underground Service Alert (USA) was contacted one week prior to the commencement of drilling activities, and USA ticket no. 215042 was issued to Applied Geosciences Inc. A geophysical survey was also conducted prior to the commencement of drilling activities by California Underground Location of Fremont, California. The subsurface geophysical reconnaissance was performed on 30 July 1991 and included a survey of the boring locations. The survey and reconnaissance were conducted to assess the presence of any materials that might impede or pose a hazard to drilling.

Boring Locations

Borings ATD1, ATD2, and ATD3 were drilled adjacent to the Christie Avenue Partners-JS Parcel 4 (Figure 2) and approximately downgradient of the Chevron-Emeryville Terminal and Westinghouse. Borings ATD4, B4, and B5 were drilled in the approximate area of boring EM8, a boring previously drilled on the site by Earth Metrics. A soil sample obtained from EM8 during the previous investigation was reported to contain elevated concentrations of various heavy metals (Earth Metrics, 1988b).

Borings ATD5, ATD6, and ATD7 were drilled adjacent to Shellmound Street and at the approximate downgradient boundary of the site. Borings B1, B2, B3, HA1, and HA2 were drilled in the vicinity of the former concrete holding tank. Borings HA3, HA4, and HA5 were drilled in the vicinity of monitoring well ATD6, which was reported to have elevated concentrations of TPHg and various SVOCs in the soil during the first phase of this investigation.

Boring HA6 was drilled in the vicinity of boring B3, which was reported to have elevated soil concentrations of oil and grease, and lead during the first phase of this investigation. Boring HA8 was drilled adjacent to monitoring well ATD5, which was reported to have elevated soil concentrations of oil and grease, and CAM metals during the first phase of the investigation.

Groundwater Monitoring Well Locations

Groundwater monitoring wells ATD1, ATD2, and ATD3 were installed in the respective soil borings to assess the presence of potentially hazardous materials migrating onto the site from possible upgradient sources, particularly Chevron-Emeryville Terminal and Westinghouse. The locations of these groundwater wells were selected to maximize the likelihood that the potentially hazardous materials reported in groundwater samples obtained from these wells originated from an off-site source.

Groundwater monitoring well ATD4 was installed in the respective soil boring in the vicinity of boring EM8 to assess the presence of potentially hazardous materials, particularly heavy metals, in the groundwater. The hazardous materials reported by Earth Metrics (1988b) to be in the soil in this area at concentrations exceeding current regulatory guidelines included lead, mercury, copper, and zinc.

Groundwater monitoring wells ATD5, ATD6, and ATD7 were installed in the respective soil borings to assess the presence of potentially hazardous materials migrating off the site from potential on-site sources. The locations of these groundwater wells were selected to maximize the likelihood that potentially hazardous materials reported in groundwater samples obtained from these wells originated from an on-site source.

Monitoring Well Construction and Drilling Methods

Monitoring wells were constructed with 4-inch-inner-diameter polyvinyl chloride (PVC) well casing with 0.020-inch-width machine-slotted screen and No. 3 Monterey sand for filter pack. The filter pack and slot size selection were based on a grain-size analysis conducted for previous monitoring well installations in the immediate vicinity of the site (McLaren, 1990). The screened interval was selected based on the initial appearance of the shallow groundwater. The monitoring wells were developed by block-surging and bailing approximately 3 casing volumes from the well.

Drilling services were provided by Spectrum Exploration, Inc., of Stockton, California. Two drill rigs were utilized for the drilling of the borings and the installation of the groundwater monitoring wells: a truck-mounted Acker Drill Co. AD-2 drill rig and a truck-mounted Central Mine Equipment (CME) CME-55 drill rig, both equipped with a 10-inch-outside-diameter hollow-stem auger. The augers were steam-cleaned on-site prior to the drilling and between borings.

The borings were logged under the supervision of a State-certified engineering geologist from Applied Geosciences Inc. using samples obtained from a modified California split-barreled sampler and drill cuttings. Procedures used to drill and log borings, collect soil samples, and install and develop the monitoring wells are summarized in Appendix C.1. Explanation of the format and terms used in the boring logs, a summary of the soil classification used to describe the soil conditions on the logs, and logs for the soil borings are presented in Appendix C.2. Monitoring well construction logs are presented in Appendix C.3. The well locations and elevations were surveyed by Mission Engineers, Inc., of Santa Clara, California, on 5 August 1991 and are presented in Appendix C.4.

6.1.2 Hand Auger Borings

Hand auger borings were advanced in areas adjacent to ATD3 to assess the concentration of diesel, organochlorine pesticides, and CAM metals in the vicinity of the former concrete holding tanks. Analysis for organochlorine pesticides was performed on each sample because of the proximity to the railroad right-of-way and the former railroad spur. Hand auger borings were advanced to 1.5 feet BGS and 3.0 BGS by personnel of Applied Geosciences Inc. Soil samples were collected from boring HA1 at 1.5 and 3.0 feet BGS. Soil samples were collected from HA2 at 1.5 and 2.0 feet BGS. A sample was not obtained at 3.0 feet BGS because of the presence of concrete in the boring at 2.5 feet, which halted further drilling of the boring. A third hand auger boring was attempted adjacent to ATD6, but concrete present at approximately 1.0 foot BGS halted the drilling of the boring.

Following the conclusion of the initial sampling and the receipt of analytical results, additional hand auger borings were advanced in the vicinity of monitoring well ATD6, in the vicinity of boring B5, and in the vicinities of monitoring wells ATD1 and ATD5 and boring B3 for the following reasons:

- Two soil samples obtained from boring ATD6 were reported to contain total petroleum hydrocarbons as gasoline (TPHg).
- A soil sample obtained from boring B5 was reported to contain elevated concentrations of various CAM metals.
- Soil samples obtained from monitoring wells ATD1 and ATD5 and from boring B3 were reported to have concentrations of oil and grease exceeding 5,000 parts per million (ppm).

Soil samples were obtained from the borings at approximately 2.5 and 4.5 feet BGS and analyzed for TPHg, SVOCs, and soluble CAM metals.

Hand auger borings were not completed and samples were not collected adjacent to monitoring well ATD1 and boring B5 during the second phase of the field investigation due to the presence of concrete in the subsurface of the site. The borings were terminated when further drilling was not possible because of the concrete.

The hand auger bit was washed with a bristle bottle brush and Alconox solution and was given two tap water rinses and a deionized water rinse between each boring. The auger was either air dried or dried with paper towels after the deionized water rinse.

6.1.3 Grab Sample Collection

Grab samples were collected along the former railroad spur, in the area of the former concrete holding tank, and along the present railroad right-of-way at a depth of approximately 6 inches. Soils were collected by the removal of the upper

6 inches of soil. The samples were collected by grab sample method and placed in plastic storage bags.

6.2 Conditions Encountered

Lithologies encountered in the borings were predominantly clays and silts with some gravels and sands. The soils were observed to consist predominantly of fill material. An Hnu organic vapor meter (OVM), used in the field to monitor the volatile organic compound (VOC) concentration in the soil samples, indicated concentrations of VOCs at less than 1 ppm in most of the soil samples analyzed, with the exception of the samples obtained from boring ATD6. Sample Nos. ATD6-1, ATD6-2, ATD6-3, and ATD6-4 indicated 78 ppm, 94 ppm, 9 ppm and 1 ppm, respectively (Appendix C.2). A gasoline odor was also noted during the drilling of ATD6. Hnu samples were not obtained from sample Nos. ATD-2-2, ATD-2-3, ATD4-1, ATD5-1, ATD5-2, B1-1, and B4-1 because of the lack of soil recovered in the second tube of the sampler.

Portions of the soils in most of the borings, with the exception of borings ATD2 and ATD3, were observed to be stained gray-black between approximately 1 and 5.5 feet BGS. The soil in boring ATD4 was observed to be stained from just below the ground surface to 5.5 feet BGS. Organic odors were noted to be emanating from the stained soils.

Groundwater was initially encountered in five of the monitoring well borings between approximately 4 and 5 feet BGS. Groundwater was encountered in the boring for monitoring well ATD1 at 15 feet BGS and at 18.5 feet BGS in the boring for monitoring well ATD3. Groundwater was encountered in fine-grained materials (predominantly clays and silts) in all the monitoring wells.

6.3 Groundwater Sample Collection

Groundwater samples were collected by Applied Geosciences Inc. on 5 August 1991. On 17 October 1991, based on the laboratory analysis results of the initial soil and groundwater sampling (Section 7.0), additional groundwater samples were collected by Applied Geosciences Inc.

Prior to both well-samplings, depth-to-groundwater measurements were obtained from the wells. From these depth-to-groundwater measurements and the casing elevations supplied by Mission Engineers, Inc. (Appendix C.4), the groundwater elevations were determined (Table 1). From the groundwater elevations, the

shallow groundwater flow direction was interpreted to be southwesterly (Figures 3 and 3A). The wells were then block-surged, and approximately three casing volumes of water were purged from each well to enhance the flow of formation water into the well and thereby provide a sample as representative of the formation as possible. Because monitoring well ATD4 was block-surged before the depth to groundwater was measured during the first sampling event, an accurate depth-to-groundwater measurement could not be obtained from this monitoring well prior to the first sampling event. However, a depth-to-groundwater measurement was obtained from all the wells during the second sampling event.

Samples were collected with a stainless steel bottom-valve bailer. The bailer was washed with a bristle bottle brush and Alconox solution and rinsed twice with tap water and once with deionized water between each well sampling.

Groundwater samples were placed into laboratory-supplied containers and were retained on ice in an insulated chest prior to and during delivery to the laboratory. Chain-of-custody procedures, including the use of chain-of-custody forms, were used to document sample handling and transport from collection at the site to delivery to the laboratory (Appendix D).

7.0 LABORATORY ANALYSES

Soil and groundwater samples were collected by Applied Geosciences Inc. and retained for chemical analyses by CKY incorporated, Analytical Laboratories (CKY) of Pleasanton, California, a State-certified hazardous waste laboratory, and for asbestos analysis by CGS Analytical Laboratory of Fremont, California, also a State-certified hazardous waste laboratory. Chain-of-custody forms and laboratory reports are presented in Appendix D.

Results for soil and groundwater samples in general accordance with the specified EPA methods used are presented in Tables 2 and 3. The EPA methods are explained in Table 4. The results of the sampling program are discussed in Section 8.0. Results are given in milligrams per kilogram (mg/kg, equivalent to ppm) for soil samples, and in milligrams per liter (mg/L, approximately equivalent to ppm) and micrograms per liter (µg/L, approximately equal to ppb) for water samples. The results of the asbestos analysis for the six soil samples were all below the reporting limits for the analytical method used.

8.0 DISCUSSION

A subsurface investigation of soil and groundwater was conducted at the site. The purpose of this investigation was to assess the possible presence of potentially hazardous materials in the subsurface of the site as a result of migration from off-site

sources and of past uses of the site. Based on the results of the groundwater investigation, shallow groundwater is judged to flow in a southwesterly direction beneath the site.

8.1 File Review/Agency Personnel Interviews

8.1.1 The Site

Recent environmental reports prepared by Tenera (1990) concluded that the subsurface of the site was impacted with CAM metals and asphaltic material. Tenera concluded that soil impacted with asphaltic material should be considered nonhazardous and soil impacted with CAM metals should be removed from the subsurface and disposed of at a landfill. ACHCSA concurred with these conclusions. However, as is discussed in subsection 8.3, these conclusions may no longer be applicable to the site.

8.1.2 Immediate Site Vicinity Investigations

Based on the expanded review of files for the facilities in the immediate site vicinity and the groundwater analysis results of the upgradient groundwater monitoring wells, it is the judgment of Applied Geosciences Inc. that there is a low likelihood that potentially hazardous materials reported in the groundwater at facilities in the immediate site vicinity have impacted the subsurface of the site.

8.1.3 Regulatory Agency Personnel Interviews

According to the most recent report concerning The Marketplace, Another Tree Development is within the site boundaries for The Marketplace. However, according to personnel of ACHCSA and information from the RWQCB, the site is not considered a part of The Marketplace investigation. Additionally, personnel of ACHCSA stated that environmentally-related subsurface conditions of the site would not restrict development. However, because it was based on the limited amount of information available to ACHCSA, this position may change when additional subsurface information is supplied to ACHCSA.

why?

8.2 Hydrogeologic Conditions

Groundwater was initially encountered at 4 to 5 feet BGS in fine-grained material in five of the monitoring well borings (ATD2, ATD4, ATD5, ATD6, and ATD7) (Appendix C.2). Groundwater was initially encountered between 15 and 19 feet BGS in fine-grained material in the two other monitoring well borings (ATD1A and ATD3) (Appendix C.2). Based on the lack of shallow groundwater in two of the monitoring well borings, it is the judgment of Applied Geosciences Inc. that the shallow groundwater beneath most of the site is a perched, discontinuous aquifer. Generally, aquifers that are perched and composed of fine-grained sediment are low in permeability and may have restricted lateral

Bad intent by Mrs. claus probably sealed the holes resulting in delay of water entering 2 boreholes

groundwater flow. Given this, it is the judgment of Applied Geosciences Inc. that the potentially hazardous materials reported in the shallow groundwater are not likely to migrate laterally great distances within the perched aquifer. However, it is possible that potentially hazardous materials may migrate from the perched aquifer to a lower aquifer. If this has occurred, the potentially hazardous materials may migrate laterally at a greater rate.

The movement of groundwater, including estimation of the velocity, cannot be assessed fully at this time without additional data. Because the amount of potentially hazardous materials currently reported in the groundwater is limited, the characterization of the physical conditions of the shallow aquifer zone may not be necessary.

8.3 Field Investigation

Soil and groundwater samples were obtained on the site for analysis to assess the potential impact of potentially hazardous materials on the subsurface of the site. These samples were obtained from the following areas:

- Areas that had the potential to be impacted from off-site sources
- Areas on the site reported to be impacted by potentially hazardous materials
- Areas that were identified by Applied Geosciences Inc. during the conductance of the preliminary site assessment as possible sources of potentially hazardous materials

8.3.1 Oil and Grease

During the field investigation, soil in the upper portion of most of the borings was observed to be stained grayish-black. It is likely that this staining was caused by the asphalt material described during previous investigations conducted at the site and in the immediate vicinity of the site. When the soil samples obtained from the "ATD" and "B" borings during the field investigation were analyzed for oil and grease, 24 of the 36 soil samples were reported to contain oil and grease (Table 2). Because the analytical method used (EPA Method No. 413.2) includes analysis for the asphalt fraction of petroleum hydrocarbons and asphalt has been previously reported in the subsurface of the site, it is likely that the oil and grease reported in the samples is a result of the asphalt material. Eight of the soil samples were reported to have concentrations of oil and grease exceeding 1,000 ppm (Table 2). A concentration of oil and grease exceeding 1,000 ppm typically requires mitigation. Only one sample located lower than 2.5 feet BGS, was reported to

contain oil and grease exceeding 1,000 ppm: sample no. ATD1-2, which was obtained from approximately 5 feet BGS, was reported to contain 1,300 ppm oil and grease.

The eight groundwater samples were reported to contain oil and grease concentrations between 1 ppm (sample nos. ATD1W-1 and ATD3W-1) and 4 ppm (sample nos. ATD6W-1 and ATD8W-1 [duplicate of ATD4W-1]) (Table 2). The lower concentrations of oil and grease were reported in samples obtained from the two deeper groundwater monitoring wells (monitoring wells ATD1 and ATD3). Based on the reported concentrations of oil and grease in the soil, the oil and grease reported in the shallow groundwater, and the extent of oil and grease in the soil, it is the judgment of Applied Geosciences Inc. that a large release of oil and grease in the form of asphalt material has occurred on the site and that it has impacted the shallow groundwater.

Based on the written position of the ACHCSA regarding the asphalt material in the subsurface of The Marketplace site, it is not likely that soil impacted with oil and grease at the site will need to be removed. However, based on the results of soil analyses conducted during this investigation, particularly the analysis of semivolatile organic compounds (SVOCs) (subsection 8.3.6), if soil is removed from the site during development, it is the judgment of Applied Geosciences Inc. that the soil containing oil and grease may need to be handled as a hazardous waste. It should be noted that the current position of ACHCSA is based on previous investigations of the site and immediate site vicinity.

Why?

8.3.2 Total Petroleum Hydrocarbons as Diesel (TPHd)

Total petroleum hydrocarbons as diesel (TPHd) was reported in 22 of the 40 soil samples tested for TPHd. The concentration of TPHd was reported to exceed 100 ppm in two of the soil samples. (Sample nos. ATD5-1 and ATD7-1 were reported to contain 230 ppm and 130 ppm TPHd, respectively.) Concentrations of TPHd exceeding 100 ppm typically require mitigation. According to Dr. Kam Pang of CKY, the laboratory that performed the analysis, in some cases lighter fractions of oil and grease may be reported as TPHd (Pang, 1991). However, Dr. Pang stated that the TPHd chromatograms for the soil samples obtained from the site did not appear to be lighter fractions of oil and grease (Pang, 1991). She stated that the chromatograms appeared to indicate that the compound reported in the samples is TPHd.

The eight groundwater samples analyzed for TPHd were reported to contain concentrations below the reporting limits (BRL) for the analytical method utilized. Based on the concentrations of TPHd reported in the soil, the vertical extent of the TPHd, the lack of TPHd reported in the shallow groundwater, and the professional judgment of personnel of CKY concerning the analysis of the

chromatograms, it is the judgment of Applied Geosciences Inc. that a release of diesel fuel has occurred at the site but the vertical extent of the diesel is limited.

8.3.3 Heavy Metals

Because elevated concentrations of various metals were reported on the site during previous investigations, all the soil samples and the initial seven groundwater samples obtained during this investigation were analyzed for California Assessment Manual (CAM) metals, 17 select heavy metals regulated by the State as hazardous. Monitoring well ATD4 and borings B4 and B5 were drilled in the approximate location of the EM8 series of borings (Figure 2), borings drilled during a previous investigation conducted by Earth Metrics (1988b). Samples from the EM8 borings were reported to contain concentrations of several metals above the Total Threshold Limit Concentration (TTLC). (The TTLC is the concentration of an element or compound in a waste that classifies the waste as a hazardous waste, as promulgated in Title 22, Division 4.5, Chapter 11, Article 2 of the CCR.)

Phase I Soil Samples

Copper and lead were reported in concentrations above the TTLC in the sample obtained from 1.5 feet BGS in boring B5 (sample no. B5-1) (Table 3). No other samples obtained in the vicinity of EM8 were reported to contain heavy metal concentrations above the TTLC.

One other soil sample, sample no. ATD7-1, was reported to contain mercury in concentrations above the TTLC (Table 3). Moreover, a number of the other soil samples collected during the field investigation had concentrations of metals that were judged by personnel of Applied Geosciences Inc. to be above background levels. Eight soil samples in addition to the two previously mentioned had metals concentrations that exceeded 10 times (10X) the Soluble Threshold Limit Concentration (STLC)(Table 3). (The STLC is the soluble fraction of an element or compound in a waste that classifies the waste as a hazardous waste, as promulgated in the CCR.) Compounds reported at concentrations of 10X the STLC or greater have the potential to contain a soluble fraction that exceeds the STLC.

This is inconclusive because a WET was never run!

Groundwater Samples

Groundwater samples obtained from the seven monitoring wells were analyzed for CAM metals. Although most of the analyses reported concentrations that were BRL for the analytical method utilized, one sample, ATD5W-1, was reported to have chromium at a concentration of 80 ppb (Table 3). (The Maximum Contaminant Level [MCL] for drinking water, according to the Title 22, Division 4, Chapter 15, Article 5.5 of the CCR, is 50 ppb.) However, soil samples obtained from boring ATD5 were reported to

have concentrations of chromium that were judged by Applied Geosciences Inc. to be at or near background levels. Moreover, no other metals were reported to be above the MCL in the groundwater samples.

Based on the results of the soil samples in the vicinity of water sample ATD5W-1 (Table 3) and the nearness of the reported level of chromium to the MCL, it is the judgment of Applied Geosciences Inc. that the elevated concentration of chromium reported in this one groundwater sample may have been anomalous. It should be noted, however, that the soluble fraction of chromium exceeded the STLC in one soil sample (sample no. HA5-1) obtained during the second phase of this investigation, as is discussed below.

Second Phase Soil Samples

Based on the results of the CAM metals analyses from the initial phase of the field investigation, seven additional soil samples were collected during the second phase of the field investigation and analyzed for the soluble fraction of CAM metals. The soil samples were collected in areas that were judged by Applied Geosciences Inc. to have an increased likelihood of having elevated metals concentrations in the soil. The soluble fractions of chromium, lead, copper, and zinc were reported to meet or exceed the STLC in sample no. HA8-2. Sample no. HA8-2 was collected at approximately 4.5 feet BGS from boring HA8 located adjacent to monitoring well ATD5 (Figure 2). The soluble fractions of chromium and lead were reported to exceed the STLC in sample no. HA5-1 and the soluble fraction of lead was reported to be within 10 percent of the STLC in sample no. HA5-2. Sample nos. HA5-1 and HA5-2 were collected at approximately 2.5 and 4.5 feet BGS, respectively, from boring no. HA5 (Figure 2) located adjacent to monitoring well ATD6. Other soil samples collected during the second phase of the field investigation were reported to have soluble fractions of CAM metals that were judged by Applied Geosciences Inc. to be at or near background concentrations for the site.

Areas with Elevated Concentrations

Elevated concentrations of CAM metals are reported to be present in soil samples collected from three distinct locations on the site (Figure 4). Based on laboratory analysis data and an estimated impacted thickness of 4 feet, Applied Geosciences Inc. has estimated that within these three areas at least 1700 cubic yards and up to 4200 cubic yards of soil underlying the site are impacted with CAM metals in concentrations exceeding State regulatory limits for hazardous waste. An uncertainty factor of 100 percent should be added to any soil estimate to account for the inherent uncertainty in estimating soil volumes.

1700 to 11200 yd3

There were many areas on the site where soil samples were not collected. These areas have the potential to have elevated concentrations of CAM metals. Based on this, the estimated volumes of soil reported to be impacted with CAM metals should be considered minimum values.

Several areas exist on the site where elevated concentrations of CAM metals were reported in soil samples obtained from borings adjacent to other borings in which the soil samples were judged to have concentrations of CAM metals at or near background levels. This phenomenon occurred in the vicinity of monitoring wells ATD4 and ATD6. Based on the inconsistency of the presence of CAM metals in the soils beneath the site, it is the judgment of Applied Geosciences Inc. that there is a very high likelihood that elevated concentrations of CAM metals are present in some areas on the site that have not been mapped as having elevated concentrations of CAM metals, and that background concentrations of CAM metals are present in some areas that have been mapped as having elevated concentrations of CAM metals (Figure 4). It is also the judgment of Applied Geosciences Inc. that a comprehensive subsurface investigation that includes the discrete sampling of variable intervals of the subsurface of the site in a grid system with analysis for the total concentration and soluble fractions of CAM metals would be needed to fully assess the presence of metals in the subsurface of the site.

Fate of Potentially Hazardous Soils

Tenera, an environmental consultant previously involved with the site, estimated that 150 cubic yards of soil were impacted with elevated concentrations of CAM metals. Tenera recommended that the soil be removed and landfilled. However, based on the current field investigation, it is our judgment that a much greater amount of soil is impacted with CAM metals that, if removed, would be considered a hazardous waste. Additionally, an unknown amount of soil beneath the site that has not been assessed is potentially impacted with CAM metals. Based on the large amount of potentially hazardous soils containing elevated concentrations of CAM metals, the asphaltic cap on the majority of the site, and the general lack of CAM metals reported in the groundwater, it is the judgment of Applied Geosciences Inc. that, at the present time, there is a low likelihood that physical contact, either human or animal, with soils containing elevated concentrations of the CAM metals will occur; moreover, there is a high likelihood that the soils may be left in place with minimal environmental consequences if the site remains undisturbed. It should be noted, however, that a risk assessment has not been performed at the site and that, although human and animal contact with soils containing elevated concentrations of CAM metals does not appear to be likely, it is possible.

It is also the judgment of Applied Geosciences Inc. that, if soil is to be exported from the site during development, samples of the soil should be obtained and analyzed for total CAM metals; this analysis should be performed because of the number of soil samples obtained during the first phase of the investigation with reported CAM metal concentrations that exceeded the TTLC. Additionally, the soluble fraction of each soil sample should be analyzed because of the large number of soil samples collected during the first phase of the investigation reported to have concentrations of metals exceeding 10X the STLC and the number of samples exceeding the STLC collected during the second phase of the field investigation.

8.3.4 Organochlorine Pesticides and Polychlorinated Biphenyls

Ten soil and two groundwater samples were analyzed for organochlorine pesticides and polychlorinated biphenyls (PCBs) in general accordance with EPA Method No. 8080. The samples were obtained at the property boundary nearest the Westinghouse facility, under which PCBs have been reported in the groundwater, and near the railroad right-of-way, where pesticide use most likely occurred. Samples that were analyzed for organochlorine pesticides and PCBs were reported to contain concentrations below the reporting limits for the analytical method utilized (Table 2).

Based on the reported laboratory analysis results, it is the judgment of Applied Geosciences Inc. that there is a low likelihood that organochlorine pesticides and PCBs have migrated onto the site from off-site sources.

8.3.5 Total Petroleum Hydrocarbons as Gasoline

During the field investigation, gasoline odors were noted throughout the course of the drilling of monitoring well ATD6. Soil samples obtained from this boring were analyzed in the field with an Hnu organic vapor meter, which indicated the presence of VOCs in the soil (Appendix C.2). Given this, soil sample nos. ATD6-2 and ATD6-3 were analyzed for total petroleum hydrocarbons as gasoline (TPHg). TPHg was reported in sample no. ATD6-2 at a concentration of 160 ppm and in sample no. ATD6-3 at a concentration of 0.62 ppm (Table 2). Analysis for benzene, toluene, ethylbenzene, and total xylenes (BTEX), aromatic compounds which are commonly associated with gasoline, was conducted on sample no. ATD6-2. BTEX were reported in concentrations below the reporting limits (BRL) for the analytical method utilized (Table 2).

Groundwater was present at the approximate location of sample no. ATD6-2. A groundwater sample collected from ATD6 (ATD6W-1) was reported to contain BTEX at 6 ppb, 5 ppb, 3 ppb, and 5 ppb, respectively (Table 2). However, because the analytical program was established before the onset of the field investigation and

no soil analysis data from previous investigations reported TPHg in the immediate vicinity of the site, groundwater sample no. ATD6W-1 was not analyzed for TPHg during the initial phase of the investigation. To compensate, a groundwater sample (ATD6W-2) was collected during the second phase of this investigation and was analyzed for TPHg. The laboratory reported the sample as below the reporting limits for TPHg (Table 2). Moreover, groundwater samples obtained during the second phase of the field investigation from the six other monitoring wells located on the site were reported by the laboratory to contain concentrations below the reporting limits for TPHg (Table 2).

Additional soil samples were collected from the vicinity of ATD6 during the second phase of the investigation and were analyzed for TPHg. The samples were collected from borings HA3, HA4, and HA5 (Figure 2). Each of the three borings was located approximately 10 feet from ATD6 and equidistant from each other. Samples from boring HA5, located at 2.5 and 4.5 feet BGS, were reported to contain 45 ppm and 37 ppm TPHg, respectively. Concentrations in samples obtained at 2.5 feet BGS from borings HA3 and HA4 were reported as 2.7 ppm and below the reporting limits for TPHg, respectively. Samples were not obtainable from borings HA3 and HA4 at 4.5 feet BGS due to the high moisture content of the soils at this depth.

Soil samples were also collected from HA6 and HA8 and analyzed for TPHg. Concentrations in the soil samples obtained from these two borings were reported as below the reporting limits for TPHg.

Based on the lack of TPHg in the groundwater at well ATD6 and the decrease in the concentration of TPHg in soil samples obtained away from monitoring well ATD6, it is the judgment of Applied Geosciences Inc. that the extent of the TPHg reported in the soil is likely limited to the immediate vicinity of monitoring well ATD6 and that the impact on groundwater at the site, if any, is limited.

The source of the TPHg is not apparent from data collected by Applied Geosciences Inc. during the two investigation phases conducted at the site. Because no other soil samples collected during the field investigation indicated the presence of VOCs when tested with the Hnu organic vapor meter (OVM), an analysis for TPHg was not conducted in any of the other soil samples collected during the initial phase of the field investigation on the site. Monitoring well ATD6 was installed to assess the presence of potentially hazardous materials migrating off the site from potential on-site sources. Based on the location of ATD6, the interpreted southwesterly direction of groundwater flow, and the limited concentrations of TPHg reported in the soil samples collected from and around ATD6, it is the judgment of Applied Geosciences Inc. that the TPHg reported in the soil beneath the site likely originated from an on-site source and that the origination of the TPHg was very likely of limited size.

8.3.6 Other Compounds

Semivolatile Organic Compounds

Soil sample no. ATD6-2 was analyzed for SVOCs in general accordance with EPA Method No. 8270. Five compounds were reported in the sample, and 17 other compounds were tentatively identified in the sample (Table 2). Most of the SVOCs reported in the sample are associated with petroleum hydrocarbon products. One of the compounds, phenanthrene, is a carcinogen and was reported in the sample at a concentration of 0.15 ppm (150 ppb). Phenanthrene occurs in coal tar, which may be a component of the asphaltic material reported in the subsurface of the site. An MCL for drinking water has been proposed for phenanthrene, as promulgated by the EPA Office of Drinking Water (1990), of 0.2 ppb with a proposed MCL goal (MCLG) of 0 (zero). No standards for the allowable concentration of phenanthrene in soil were readily available at the time of this report. The soil sample was obtained at 5 feet BGS, which is below the present shallow groundwater table.

The soil and groundwater samples obtained during the second phase of the field investigation were analyzed for SVOCs. Groundwater samples obtained from the seven monitoring wells were reported as below the reporting limits for the primary SVOCs. However, two samples, ATD1W-2 and ATD2W-2, were reported to have several tentatively identified compounds. (Tentatively identified compounds are typically not reported in the standard analytical method that has been utilized and are not subject to the same quality assurance as the standard compounds. Therefore, these compounds are considered to be tentatively identified and their concentrations are estimated by the laboratory.) Three compounds were tentatively identified in sample no. ATD1W-2: 3 methyl benzoil, caprolactam, and 2,5-dimethyl benzonebulanoic were estimated to be in the sample at concentrations of 17 ppb, 29 ppb, and 140 ppb, respectively. These compounds are typically found in fabrics and perfumes (Tate, 1991). Seven compounds were tentatively identified to be present in sample no. ATD2W-2: 2-hydroxyethyl dodecanamide, tetradecanoic acid, pentadecanoic acid, 1-hexadecanol, 9-hexadecanoic acid, 1,11-dodecadiene, and cholesterol were estimated to be in the sample at concentrations of 110 ppb, 250 ppb, 47 ppb, 25 ppb, 230 ppb, 3,500 ppb, and 88 ppb, respectively. These compounds are typical of those associated with decaying animal matter.

The seven soil samples collected during the second phase of the field investigation were analyzed for SVOCs in general accordance with EPA Method No. 8270. SVOCs were reported or tentatively identified in all seven of the soil samples (Table 2). However, one of the SVOCs, di-n-butylphthalate, was reported in the method blank and may be considered a laboratory artifact in the soil samples in which it was reported. Excluding di-n-butylphthalate,

SVOCs were reported in six of the seven soil samples. Up to 10 SVOCs were reported in the soil (sample no. HA5-1) and up to 12 SVOCs were tentatively identified in the soil (sample no. HA3-1).

According to Ms. Cynthia Tate, organics laboratory manager at CKY, SVOCs reported in sample nos. HA5-1, HA5-2, and HA6-1 are typically associated with heavier fractions of petroleum hydrocarbons, including fuels and oils (Tate, 1991). In the judgment of Applied Geosciences Inc., these SVOCs may have leached from the asphaltic material into the soils beneath the site. If the SVOCs have leached from the asphaltic material, it is likely that the regulatory agencies, including the ACHCSA and the RWQCB, would consider the asphaltic material a hazardous material and therefore may require remediation.

Also according to Tate (1991), other SVOCs tentatively identified in sample nos. HA3-1, HA5-1, and HA5-2 are typical of TPHg or a slightly heavier petroleum hydrocarbon (Tate, 1991).

Volatile Organic Compounds (VOCs)

Three water samples (ATD3W-1, ATD4W-1, and ATD6W-1) and two soil samples (ATD4-3 and ATD6-2) were analyzed during the initial phase of the field investigation for VOCs in general accordance with EPA Method Nos. 624 and 8240 for water and soil, respectively. The samples from ATD6 were analyzed for VOCs because readings on the Hnu organic volatile meter (OVM) indicated the presence of VOCs (Appendix C.2). Sample no. ATD3W-1 was analyzed for VOCs because of its proximity to the Chevron-Emeryville Terminal facility, under which VOCs have been reported in the groundwater. Sample nos. ATD4W-1 and ATD4-3 were analyzed for VOCs because of the other potentially hazardous materials reported in the immediate vicinity of monitoring well ATD4 during the previous subsurface investigation conducted on the site by Earth Metrics (1988b).

As previously mentioned, BTEX were reported in groundwater sample no. ATD6W-1; the concentration of benzene (6 ppb) exceeded the State and Federal regulatory guidelines for drinking water (Table 2). The two other groundwater samples were reported to contain VOC concentrations below the reporting limits (BRL) for the analytical method utilized (Table 2).

Soil sample no. ATD6-2 was analyzed for VOCs because of the high reading indicated for this sample on the Hnu OVM (Appendix C.2). This soil sample was reported to contain eight tentatively identified compounds that are typical of petroleum hydrocarbon products (Table 2).

Based on the reported results of sample no. ATD6-2 and the type of compounds reported in the soil sample, it is the judgment of Applied Geosciences Inc. that the VOCs reported in soil sample no. ATD6-2 are related to the TPHg or a slightly heavier fraction of a petroleum hydrocarbon reported in the same soil sample.

Asbestos

Due to the former presence on the site of a roofing material manufacturer and the common use of asbestos in the manufacturing of roofing products, six shallow soil grab samples were collected in various areas on the site (GS1 through GS6 in Figure 2) and analyzed for asbestos. The areas, along the former railroad spur, along the present railroad right-of-way, and near the former concrete holding tank were chosen due to the increased likelihood of finding asbestos in the soil at these locations. The laboratory reported all six soil samples to contain concentrations below the reporting limits for asbestos (Appendix D). Based on the absence of asbestos in the soil samples, it is the judgment of Applied Geosciences Inc. that there is a very low likelihood asbestos is present in the shallow soils on the site.

8.4 Compendium

Based on the file review of the immediate site vicinity facilities that have had releases of potentially hazardous materials to the groundwater and the laboratory analysis results of the upgradient wells, it is the judgment of Applied Geosciences Inc. that there is a low likelihood that potentially hazardous materials reported in the groundwater in the immediate vicinity of the site have impacted the subsurface of the site. It is also our judgment that there is a very high likelihood that potentially hazardous materials reported in the subsurface of the site are present from past uses of the site.

Concentrations of potentially hazardous materials reported in the soil, including TPHg, TPHd, metals, and oil and grease, exceed current regulatory guidelines or limits in 10 of the 12 borings that were installed during the first phase of the investigation on the site and in 2 of the 5 borings that were drilled during the second phase of the investigation. Samples collected from the shallow groundwater were reported to contain concentrations of VOCs and chromium that exceed current regulatory limits, and oil and grease. Based on the above information, it is the judgment of Applied Geosciences Inc. that any soil and shallow groundwater that is removed from the subsurface of the site should be handled as hazardous until proven to be otherwise. The wastes should be analyzed for potentially hazardous constituents and disposed of according to current regulatory guidelines. It is also our judgment that it is likely that potentially hazardous materials present in the subsurface of the site are more extensive than currently reported.

9.0 CONCLUSIONS

Based on the information presented in this report, current regulatory guidelines, and professional judgment, Applied Geosciences Inc. concludes as follow:

- The site is not considered by ACHCSA or the RWQCB to be a part of The Marketplace investigation.
- There is a low likelihood that potentially hazardous materials have migrated to the subsurface of the site from reported releases of potentially hazardous materials in the immediate vicinity of the site.
- The shallow aquifer beneath the site is perched and discontinuous. Additionally, lithologies encountered in the subsurface consisted predominantly of fill material. It is likely that potentially hazardous materials reported in the groundwater may migrate laterally and vertically within the perched aquifer.
- Asbestos, PCBs, and organochlorine pesticides were reported to be below the reporting limits for the analytical methods used. There is a low likelihood that these potentially hazardous materials are present in the shallow subsurface of the site.
- Stained soil was limited to the upper 9 feet of the subsurface during the field investigation. It was concluded by Applied Geosciences Inc. that this stained soil was caused by the asphalt material.
- Oil and grease exceeding 1,000 ppm, total petroleum hydrocarbons as diesel (TPHd) exceeding 100 ppm, and total petroleum hydrocarbons as gasoline (TPHg) exceeding 100 ppm were reported in the some of the soil samples collected from beneath the site. Typically, regulatory agencies address the respective petroleum hydrocarbon concentrations on a case by case basis. Often the aforementioned concentrations require mitigation. Additionally, there is a very high likelihood oil and grease has impacted the shallow groundwater beneath the site.
- Various heavy metals were reported in concentrations exceeding regulatory guidelines for a waste in four soil samples. Elevated concentrations of chromium were reported in the shallow groundwater beneath the site. The concentration of this potentially hazardous material exceeded State regulatory guidelines. The elevated concentration of chromium reported in the groundwater may have been anomalous.

- Elevated concentrations of various VOCs, including benzene, toluene, ethylbenzene, and xylenes (BTEX), were reported in some of the groundwater samples collected from the monitoring wells. The concentration of benzene exceeded State and Federal regulatory guidelines for drinking water. It is likely that the source of the VOCs and TPHg is on-site.

- Various SVOCs were reported in soil samples. Various SVOCs were tentatively identified in groundwater samples collected from the site ("tentatively identified" is defined on page 26 of this report). It is likely that some of these SVOCs have been leached from the asphaltic material (oil and grease) reported in the subsurface of the site.

10.0 RECOMMENDATION

Based on the data contained in this report, current regulatory guidelines, and professional judgment, Applied Geosciences Inc. recommends that personnel or representatives of the owner meet with personnel of the Alameda County Health Services Agency (ACHCSA) and/or the Regional Water Quality Control Board to discuss options regarding the potentially hazardous materials reported in the subsurface of the site.

It should be understood that one previously recommended mitigation option--removal and off-site disposal of soils containing elevated concentrations of CAM metals (Tenera, 1990a; 1990b) has been accepted by ACHCSA. Given data obtained during this investigation, this alternative is likely to be relatively high in cost (between $250,000 and $1,000,000) and may not be necessary. The written acceptance of this alternative by ACHCSA will need to be reversed if the impacted soil is to be left in place.

A possible option that should be considered is a risk assessment of the potentially hazardous materials reported in soil samples obtained from beneath the site. The risk assessment should consider the possible environmental hazards and potential contacts that would occur if the potentially hazardous materials were left in place. It should be noted that a risk assessment should justify either leaving in place or removing soils and groundwater impacted with potentially hazardous material.

TABLE 1
GROUNDWATER ELEVATION DATA(1)

MONITORING WELL NO.(2)	CASING ELEVATION(3)	DEPTH TO GROUNDWATER(4) 5 AUG 1991	DEPTH TO GROUNDWATER(4) 17 OCT 1991	GROUNDWATER ELEVATION 5 AUG 1991	GROUNDWATER ELEVATION 17 OCT 1991
ATD1	8.54	3.31	3.35	5.23	5.19
ATD2	9.37	3.99	4.35	5.38	5.02
ATD3	8.21	3.53	3.75	4.68	4.46
ATD4	7.7	(5)	3.55	(5)	4.15
ATD5	7.56	4	4.25	3.56	3.31
ATD6	7.87	5.43	5.67	2.44	2.2
ATD7	7.95	5.15	5.2	2.8	2.75

Notes:

(1) Groundwater elevation data have been obtained during August and October 1991 by personnel of Applied Geosciences Inc.

(2) The locations of the monitoring wells are presented in Figure 2.

(3) Casing elevations were measured by Mission Engineers of Santa Clara, California during August 1991.

(4) Depth to groundwater measurements were obtained by personnel of Applied Geosciences Inc. on the respective dates.

(5) Depth to groundwater was not obtained from monitoring well ATD4 on 5 August 1991. Therefore, a groundwater elevation could not be obtained for this date.

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TABLE 2

SAMPLE ANALYSIS RESULTS[1]

Sample Number[2]	Depth[3]	Analytical Methods[4]	Reported Results[5]
ATD1W-1	GW	8080 413.2 TPHd	BRL[6] 1 ppm BRL
ATD1W-2	GW	8270 TPHg	(7) BRL
ATD2W-1	GW	413.2 TPHd	3 ppm BRL
ATD2W-2	GW	8270 TPHg	(8) BRL
ATD3W-1	GW	624 413.2 TPHd	BRL 1 ppm BRL
ATD3W-2	GW	8270 TPHg	BRL BRL
ATD4W-1	GW	624 413.2 TPHd	BRL 2 ppm BRL
ATD4W-2	GW	8270 TPHg	BRL BRL
ATD5W-1	GW	8080 413.2 TPHd	BRL 2 ppm BRL
ATD5W-2	GW	8270 TPHg	BRL BRL
ATD6W-1	GW	624 413.2 TPHd	(9) 4 ppm BRL
ATD6W-2	GW	8270 TPHg	BRL BRL
ATD7W-1	GW	413.2 TPHd	3 ppm BRL

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TABLE 2 (Page 2 of 7)

SAMPLE ANALYSIS RESULTS

Sample Number	Depth	Analytical Methods	Reported Results
ATD7W-2	GW	8270 TPHg	BRL BRL
ATD8W-1[10]	GW	413.2 TPHd	4 ppm BRL
ATD1-1	2.5	8080 413.2 TPHd	BRL 7500 ppm 36 ppm
ATD1-2	5	413.2 TPHd	1300 ppm 14 ppm
ATD1-3	7.5	413.2 TPHd	BRL BRL
ATD1-4	10	413.2 TPHd	BRL BRL
ATD1-5	15	413.2 TPHd	BRL 6 ppm
ATD2-1	2.5	8080 413.2 TPHd	BRL 8 ppm BRL
ATD2-4	10	8080 413.2 TPHd	BRL 8 ppm BRL
ATD3-1	2.5	8080 413.2 TPHd	BRL 140 ppm BRL
ATD3-2	5	413.2 TPHd	BRL BRL
ATD3-3	7.5	413.2 TPHd	BRL BRL
ATD3-4	10	413.2 TPHd	BRL BRL

TABLE 2 (Page 3 of 7)

SAMPLE ANALYSIS RESULTS

Sample Number	Depth	Analytical Methods	Reported Results
ATD4-1	2.5	413.2 TPHd	2500 ppm 42 ppm
ATD4-2	5	413.2 TPHd	BRL 7 ppm
ATD4-3	7.5	8240 413.2 TPHd	BRL BRL 7 ppm
ATD4-4	10	413.2 TPHd	BRL 6 ppm
ATD5-1	2.5	413.2 TPHd	6100 ppm 230 ppm
ATD5-3	7.5	413.2 TPHd	9 ppm BRL
ATD5-4	10	413.2 TPHd	160 ppm 6 ppm
ATD6-1	2.5	413.2 TPHd	35 ppm BRL
ATD6-2	5	8240 8270 TPHg 413.2 TPHd	(11) (12) 160 ppm 240 ppm 11 ppm
ATD6-3	7.5	TPHg 413.2 TPHd	0.62 ppm 38 ppm BRL
ATD6-4	10	413.2 TPHd	24 ppm BRL
ATD7-1	2.5	413.2 TPHd	3900 ppm 130 ppm
ATD7-2	5	413.2 TPHd	360 ppm 11 ppm

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TABLE 2 (Page 4 of 7)

SAMPLE ANALYSIS RESULTS

Sample Number	Depth	Analytical Methods	Reported Results
ATD7-3	7.5	413.2 TPHd	10 ppm 21 ppm
ATD7-4	10	413.2 TPHd	BRL BRL
HA1-1	1.5	8080 TPHd	BRL BRL
HA1-2	3	8080 TPHd	BRL BRL
HA2-1	1.5	8080 TPHd	BRL BRL
HA2-1D[13]	1.5	8080 TPHd	BRL BRL
HA3-1	2.5	8270 TPHg	(14) 2.7 ppm
HA4-1	2.5	8270 TPHg	(15) BRL
HA5-1	2.5	8270 TPHg	(14, 16) 45 ppm
HA5-2	4.5	8270 TPHg	(14, 16) 37 ppm
HA6-1	2.5	8270 TPHg	(16) BRL
HA8-1	2.5	8270 TPHg	(14) BRL
HA8-2	4.5	8270 TPHg	(14) BRL
B1-1	1.5	8080 413.2 TPHd	BRL 18 ppm 5 ppm

TABLE 2 (Page 5 of 7)

SAMPLE ANALYSIS RESULTS

Sample Number	Depth	Analytical Methods	Reported Results
B1-2	3.5	413.2 TPHd	BRL BRL
B2-1	1.5	413.2 TPHd	2000 ppm 14 ppm
B2-2	3.5	413.2 TPHd	70 ppm 6 ppm
B3-1	1.5	8080 413.2 TPHd	BRL 5100 ppm 16 ppm
B3-2	3.5	413.2 TPHd	BRL 6 ppm
B4-1	1.5	413.2 TPHd	3400 ppm 16 ppm
B4-2	3.5	413.2 TPHd	8 ppm 14 ppm
B5-1	1.5	413.2 TPHd	230 ppm 12 ppm
B5-2	3.5	413.2 TPHd	6 ppm 7 ppm

Notes:

1. Sample analysis performed on the given samples with the exception of California Assessment Manual (CAM) metals analysis. CAM metals analysis has been included as Table 3.

2. The first alphanumeric combination in the sample number (e.g. ATD1) is the sample location designation shown in Figure 2.

3. Approximate depth in feet below the ground surface (BGS) except for groundwater samples, which are indicated "GW".

TABLE 2 (Page 6 of 7)

SAMPLE ANALYSIS RESULTS

Notes (cont.):

4. Analyses performed in general accordance with the EPA methods whose numbers or analytes are listed. An explanation of the analytical methods employed is presented as Table 4.

5. For water samples, results are reported in milligrams per liter (mg/L), which is approximately equivalent to parts per million (ppm), or in micrograms per liter (µg/L), which is approximately equivalent to parts per billion (ppb). For soil samples, results are reported in milligrams per kilogram (mg/kg), which is equivalent to ppm, or in micrograms per kilogram (µg/kg), which is equivalent to ppb.

6. BRL = below the reporting limits for the analytical method utilized.

7. Caprolactam, 2,5-dimethyl benzonebulanoic, and 3 methyl benzoil were tentatively identified at concentrations of 29 ppb, 140 ppb, and 17 ppb, respectively, in sample no. ATD1W-2. The tentatively identified compounds are typical of fabric and perfume.

8. Seven semivolatile organic compounds (SVOCs) were tentatively identified in sample no. ATD2W-2. The tentatively identified compounds are typical of decaying animal matter. The estimated concentrations of the tentatively identified compounds ranged from 25 ppb (1-hexadecanol) to 3500 ppb (1,11-dodecadiene).

9. Benzene, toluene, ethylbenzene, and total xylenes (BTEX) were reported in sample no. ATD6W-1 at concentrations of 6 ppb, 5 ppb, 3 ppb, and 5 ppb, respectively. The Maximum Contaminant Level (MCL) of benzene for primary drinking water, as promulgated in Title 22, Division 4, Chapter 15, Article 5.5 of the California Code of Regulations (CCR), is 1 ppb. Four volatile organic compounds (VOCs) were tentatively identified in sample no. ATD6W-1. The tentatively identified compounds are typical of a petroleum hydrocarbon product. The estimated concentrations of the tentatively identified compounds ranged from 9 ppb (2-pentane) to 39 ppb (methyl cyclopentane).

10. Sample no. ATD8W-1 is a duplicate of sample no. ATD4W-1.

TABLE 2 (Page 7 of 7)

SAMPLE ANALYSIS RESULTS

Notes (cont.):

11. Eight volatile organic compounds (VOCs) were tentatively identified in sample no. ATD6-2. The tentatively identified compounds are typical of a petroleum hydrocarbon product. The estimated concentrations of the tentatively identified compounds ranged from 4 ppm (1,2,3-trimethyl cyclopentane) to 8.5 ppm (2,6-dimethyl 2-octane).

12. Five semivolatile compounds (SVOCs) were reported and an additional seventeen SVOCs were tentatively identified in sample no. ATD6-2. Naphthalene, 2-methylnaphthalene, phenanthrene, di-n-butylphthalate, and bis(2-ethylhexyl) phthalate were reported at concentrations of 0.11 ppm, 0.35 ppm, 0.15 ppm, 0.19 ppm, and 0.33 ppm, respectively. The tentatively identified compounds are typical of a petroleum hydrocarbon product. The estimated concentrations of the tentatively identified compounds ranged from 0.33 ppm (1,4,5-trimethyl naphthalene) to 2.5 ppm (octacasane).

13. Sample no. HA2-1D was obtained directly beneath sample no. HA2-1 and was considered an approximate duplicate soil sample. It is not possible to obtain a true duplicate soil sample due to the inherently homogeneous nature of soil.

14. Di-n-butylphthalate (160 ppb) was reported and 12 other compounds were tentatively identified in sample no. HA3-1. Di-n-butylphthalate was also reported in the method blank and may have been a laboratory artifact. The tentatively identified compounds are typical of petroleum hydrocarbon products. The tentatively identified compounds, and other related compounds, were also tentatively identified in sample nos. HA5-1, HA5-2, HA8-1, and HA8-2.

15. Di-n-butylphthalate was reported in sample no. HA4-1 at a concentration of 980 ppb. Di-n-butylphthalate was also reported in the method blank and may have been a laboratory artifact in this sample. No other compounds were reported or tentatively identified in sample no. HA4-1.

16. Eight SVOCs were reported in sample no. HA5-1. The concentrations of the SVOCs ranged from 110 ppb (phenanthrene) to 260 ppb (chrysene). The reported SVOCs are typically related to oil products. The reported compounds, and other related compounds, were also reported in sample nos. HA5-2 and HA6-1.

TABLE 3
CALIFORNIA ASSESSMENT MANUAL (CAM) METALS SAMPLE ANALYSIS RESULTS[1]

Sample Number[2]	Depth[3]	Analyte[4]	Reported Results[5]	10X STLC[6]	TTLC / MCL[7]
ATD1W-1	GW	CAM metals	Low[8]	-	-
ATD2W-1	GW	CAM metals	Low	-	-
ATD3W-1	GW	CAM metals	Low	-	-
ATD4W-1	GW	CAM metals	Low	-	-
ATD5W-1	GW	Chromium	80 ppb	-	50 ppb
ATD6W-1	GW	CAM metals	Low	-	-
ATD7W-1	GW	CAM metals	Low	-	-
ATD1-1	2.5	CAM metals	Low	-	-
ATD1-2	5	Copper Lead	460 ppm 200 ppm	250 ppm 50 ppm	2,500 ppm 1,000 ppm
ATD1-3	7.5	CAM metals	Low	-	-
ATD1-4	10	CAM metals	Low	-	-
ATD1-5	15	CAM metals	Low	-	-
ATD2-1	2.5	CAM metals	Low	-	-
ATD2-4	10	CAM metals	Low	-	-
ATD3-1	2.5	Lead	270 ppm	50 ppm	1,000 ppm
ATD3-2	5	CAM metals	Low	-	-
ATD3-3	7.5	CAM metals	Low	-	-
ATD3-4	10	CAM metals	Low	-	-
ATD4-1-2	2.5	Copper Lead Mercury	970 ppm 750 ppm 15 ppm	250 ppm 50 ppm 2 ppm	2,500 ppm 1,000 ppm 20 ppm
ATD4-2-2	5	CAM metals	Low	-	-
ATD4-3-2	7.5	CAM metals	Low	-	-

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TABLE 3 (Page 2 of 4)
CAM METALS SAMPLE ANALYSIS RESULTS

Sample Number	Depth	Analyte	Reported Results	10X STLC	TTLC / MCL
ATD4-4-2	10	CAM metals	Low	-	-
ATD5-1-2	2.5	Lead	190 ppm	50 ppm	1,000 ppm
		Mercury	4.7 ppm	2 ppm	20 ppm
ATD5-3-2	7.5	CAM metals	Low	-	-
ATD5-4-2	10	CAM metals	Low	-	-
ATD6-1-2	2.5	CAM metals	Low	-	-
ATD6-2-2	5	CAM metals	Low	-	-
ATD6-3-2	7.5	CAM metals	Low	-	-
ATD6-4-2	10	CAM metals	Low	-	-
ATD7-1-2	2.5	Lead	290 ppm	50 ppm	1,000 ppm
		Mercury	57 ppm	2 ppm	20 ppm
ATD7-2-2	5	CAM metals	Low	-	-
ATD7-3-2	7.5	CAM metals	Low	-	-
ATD7-4-2	10	CAM metals	Low	-	-
HA1-1	1.5	CAM metals	Low	-	-
HA1-2	3	CAM metals	Low	-	-
HA2-1	1.5	CAM metals	Low	-	-
HA2-1D[9]	1.5	Lead	110 ppm	50 ppm	1,000 ppm
B1-1-2	1.5	CAM metals	Low	-	-
B1-2-2	3.5	CAM metals	Low	-	-
B2-1-2	1.5	Lead	62 ppm	50 ppm	1,000 ppm
B2-2-2	3.5	CAM metals	Low	-	-
B3-1-2	1.5	Lead	110 ppm	50 ppm	1,000 ppm

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TABLE 3 (Page 3 of 4)

CAM METALS SAMPLE ANALYSIS RESULTS

Sample Number	Depth	Analyte	Reported Results	10X STLC	TTLC / MCL
B3-2-2	3.5	CAM metals	Low	-	-
B4-1-2	1.5	Lead	63 ppm	50 ppm	1,000 ppm
B4-2-2	3.5	CAM metals	Low	-	-
B5-1-2	1.5	Copper	5,200 ppm	250 ppm	2,500 ppm
		Lead	1,200 ppm	50 ppm	1,000 ppm
		Mercury	4.6 ppm	2 ppm	20 ppm
B5-2-2	3.5	CAM metals	Low	-	-

SOLUBLE CAM METALS SAMPLE ANALYSIS RESULTS

HA3-1[10]	2.5	CAM Metals	Low	-	-
HA4-1[10]	2.5	CAM Metals	Low	-	-
HA5-1[10]	2.5	Chromium	15 ppm	-	5 ppm
		Lead	8 ppm	-	5 ppm
		Mercury	1.6 ppm	-	0.2 ppm
HA5-2[10]	4.5	Lead	4.6 ppm	-	5 ppm
HA6-1[10]	2.5	CAM Metals	Low	-	-
HA8-1[10]	2.5	CAM Metals	Low	-	-
HA8-2[10]	4.5	Cadmium	0.76 ppm	-	1 ppm
		Chromium	5 ppm	-	5 ppm
		Copper	56 ppm	-	25 ppm
		Lead	130 ppm	-	5 ppm
		Mercury	0.18 ppm	-	0.2 ppm
		Zinc	270 ppm	-	250 ppm

Notes:

1. Sample analysis for metals regulated in the California Code of Regulations (CCR). CAM metals analysis is conducted in general accordance with EPA Method Nos. 3005, 6010, and 7000, depending on the metal.

TABLE 3 (Page 4 of 4)

CAM METALS SAMPLE ANALYSIS RESULTS

Notes (cont.):

2. The first alphanumeric combination in the sample number (e.g. ATD1) is the sample location designation shown in Figure 2.

3. Approximate depth in feet below the ground surface (BGS) except for groundwater samples, which are indicated "GW".

4. A specific analyte is listed when the reported results of the analyte exceeded current regulatory guidelines.

5. For water samples, results are reported in milligrams per liter (mg/L), which is approximately equivalent to parts per million (ppm). For soil samples, results are reported in milligrams per kilogram (mg/kg), which is equivalent to ppm or micrograms per kilogram (µg/kg), which is equivalent to parts per billion (ppb).

6. 10X STLC = 10 times the Soluble Threshold Limit Concentration (STLC). Samples that are reported to contain concentrations exceeding 10X STLC have the potential to have a soluble fraction that exceeds the STLC, as promulgated in CCR, Title 22, Division 4.5, Chapter 10.

7. TTLC = Total Threshold Limit Concentration (for waste soils) as promulgated in CCR, Title 22, Division 4.5, Chapter 10. MCL = Maximum Contaminant Level (for primary drinking water) as promulgated in CCR, Title 22, Chapter 15, Article 5.5.

8. "Low" means that the 17 metals analyzed in the sample were reported in concentrations judged to be at background or slightly elevated levels.

9. Sample no. HA2-1D was obtained directly beneath sample no. HA2-1 and was considered an approximate duplicate soil sample. It is not possible to obtain a true duplicate soil sample due to the inherently homogeneous nature of soil.

10. Sample nos. HA3-1, HA4-1, HA5-1, HA5-2, HA6-1, HA8-1, and HA8-2 were analyzed for soluble CAM metals. The regulatory limits listed under the TTLC/MCL column are STLC as promulgated in CCR, Title 22, Division 4.5, Chapter 10.

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TABLE 4

IDENTIFICATION AND EXPLANATION OF ANALYTICAL METHODS

Analytical Method[1]	Compounds Detected
EPA Method No. 8015 (Mod.)[2]	Total petroleum hydrocarbons as diesel (TPHd)
EPA Method No. 413.2[3]	Oil and grease
EPA Method No. 5030/M8015[4]	Total petroleum hydrocarbons as gasoline (TPHg)
EPA Method No. 8080[5]	Organochlorine pesticides, polychlorinated biphenyls (PCBs)
EPA Method No. 8240/624[6]	Volatile organic compounds (VOCs)
EPA Method No. 8270[7]	Semivolatile organic compounds

Notes:

1. Analyses were conducted in general accordance with the methods listed.

2. Analysis for total petroleum hydrocarbons as diesel (TPHd) was performed on most of the samples obtained during the field investigation because of the grayish-black staining of the upper soils.

3. Analysis for oil and grease was performed on most of the samples because of the reported presence of asphalt in the subsurface of the site. The analysis for oil and grease includes the asphalt fraction of petroleum hydrocarbons.

4. Analysis for total petroleum hydrocarbons as gasoline (TPHg) was performed on samples that were noted to have gasoline odors during the field investigation.

5. Analysis in general accordance with EPA Method No. 8080 was performed because past investigations have reported PCBs in the soil and groundwater in the immediate vicinity of the site.

6. Included in the analysis for VOCs conducted in general accordance with EPA Method No. 8240 for soil and EPA Method No. 624 for water is the ability to detect solvents.

7. Analysis for semivolatile organic compounds was performed due to the leaching products of the asphaltic material.

Copy No. _____

22 May 1990

PRELIMINARY SITE ASSESSMENT
ANOTHER TREE DEVELOPMENT
EMERYVILLE, CALIFORNIA

Prepared for:

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Project No. A901749

02.9.2

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PRELIMINARY SITE ASSESSMENT
ANOTHER TREE DEVELOPMENT
EMERYVILLE, CALIFORNIA

1.0 INTRODUCTION

This report presents the results of a preliminary site assessment conducted on Another Tree Development (ATD), a parcel of land located on Shellmound Street at the junction of Shellmound Street and the Powell Street overpass (site) in the City of Emeryville, California (Figure 1). The work was conducted by Applied Geosciences Inc. during the period 13 March 1990 to 22 May 1990 in general accordance with Attachment 11 to the contract dated 1 April 1988 between Applied Geosciences Inc. and Union Bank. The work was conducted at the request and by the authorization of Ms. Susan McCormack of Union Bank. It is the understanding of Applied Geosciences Inc. that the site is approximately 2.1 acres in size, that the site is currently undeveloped, with the exception of asphaltic paving covering approximately 40 percent of the site, that the site is underlain by imported fill, that a portion of the site was formerly occupied by a restaurant, and that the other portion of the site was occupied by a paint and roofing material manufacturing facility. It is also the understanding of Applied Geosciences Inc. that Union Bank intends to foreclose on this property.

2.0 OBJECTIVE

The objective of this investigation was to assess the likelihood that potentially hazardous materials may be present at the site, or in the subsurface of the site, from past and/or present uses of the site and of the immediate site vicinity.

3.0 APPROACH

The approach used to meet the objective consisted of a site reconnaissance, review of readily available regulatory agency data, review of historical aerial photographs of the site and site vicinity, and compilation of readily available information pertaining to present and former site and site vicinity uses.

4.0 SCOPE OF WORK

The scope of work was developed and this assessment conducted in general accordance with the guidelines promulgated by Union Bank in the document titled "Revised Scope of Work for Preliminary Site Assessment for Union Bank," dated 27 June 1989. The scope of work included the following:

- Review of readily available background data concerning the site and immediate site vicinity;

- Review of selected readily available records maintained by government agencies related to the presence of potentially hazardous materials on-site or in the immediate vicinity of the site, including:
  - Environmental Protection Agency (EPA) National Priority List (NPL);
  - EPA Comprehensive Environmental Response, Compensation, and Liability Information List (CERCLIS);
  - California Waste Management Board (CWMB) list of active, inactive, and closed landfills;
  - Regional Water Quality Control Board (RWQCB) fuel leak list for Alameda County;
  - RWQCB North Bay Toxic Sites Report;
  - Department of Health Services (DOHS) Hazardous Substance Cleanup Bond Expenditure Plan (BEP);
  - DOHS Abandoned Site Program Information System (ASPIS);
  - California Division of Oil and Gas (CADOG) Wildcat map;
  - Cortese List; and
  - Assembly Bill (AB) 1803;
- Review of files and personal communications with personnel at various governmental agencies including:
  - RWQCB;
  - City of Emeryville Building Department; and
  - City of Emeryville Fire Department, Hazardous Materials Division;
- Review of readily available topographic maps and historical aerial photographs of the site and site vicinity to assess historical land use and property development;
- Performance of a site reconnaissance to observe present site conditions related to the presence of potentially hazardous materials at the site and in the immediate vicinity of the site;
- Review of readily available building plans and reports prepared by others for the site; and,
- Data evaluation and report preparation.

Applied Geosciences Inc. also reviewed reports on The MarketPlace, a shopping center adjacent to the site, which were made available to Applied Geosciences Inc. by Union Bank. These reports included environmental data concerning the site and the properties (Garrett Freight Lines and The MarketPlace) north of the site.

5.0 SITE DATA

In the following discussion, reference to the "site" includes the property within the approximate boundaries shown in Figure 2. The site boundaries were obtained from information provided to us by Union Bank. The "immediate site vicinity" includes properties with a common property boundary with the site. The "site vicinity" includes the area within an approximate one-mile radius of the site, as shown in Figure 1. The term "hazardous" is used in a manner that is generally consistent with that promulgated in Title 22, Division 4, Chapter 30, Articles 9 and 11 of the California Code of Regulations (CCR). The terms "material" and "waste" are used interchangeably, and no legal distinction is implied between the two terms as used herein. Generally, materials and wastes are considered to be hazardous if they are ignitable, corrosive, toxic, or reactive.

5.1 Site Setting

The site (Figure 2) occupies approximately 2.1 acres of partially developed land on the 5800 block of Shellmound Street in the city of Emeryville, California at the junction of Shellmound Street and the Powell Street overpass. This parcel of land is bound on the north by The MarketPlace (a shopping center), on the east by a Southern Pacific Railroad right-of-way, on the south by the Powell Street overpass, and on the west by Shellmound Street. Land surface elevation of this parcel is approximately 8 feet above mean sea level (USGS, 1980). Light-to-heavy industrial activities have historically been conducted in the vicinity of the site. Development of this area as an industrial hub occurred prior to the onset of World War II. Based upon the experience of Applied Geosciences Inc. in the site vicinity, Fuller Paint Company, a paint manufacturer formerly located in the vicinity of the site, used to dump paint waste products indiscriminately in various undocumented areas in the vicinity of the site. Most of the dumping occurred in the marina area, which is located approximately 0.4 mile west of the site. During the conduct of the site reconnaissance on 27 March 1990 drilling activities were observed east of the site, across the Southern Pacific Railroad right-of-way, at the former Chevron-Emeryville Terminal facility. There is a high likelihood that these drilling activities were in conjunction with one of the on-going remedial investigations in the immediate site vicinity.

Figure 4a is a photoprint taken from the southeast corner of the subject site. This photoprint shows a parcel across the railroad right-of-way; this parcel contains a warehouse (at the corner of Powell and Peladeau Streets), tentatively identified as the

Chevron-Emeryville Terminal (discussed in Section 6.4). Approximately 23 55-gallon drums (painted blue) were scattered at three locations on this site. Although most of these drums are obscured from view in Figure 4a, some are visible and are indicated by an arrow on the photoprint. Applied Geosciences Inc. had no access onto this facility at the time of this assessment; hence, the contents of these drums is not known.

5.2 Geologic Setting

The site is within an area dominated by deposition during Recent geologic time. It is located within the San Francisco Bay as the shoreline existed in 1850 (Helley et al., 1979). The site is in the immediate vicinity of a mapped contact between bay mud and fine-grained alluvium. Bay mud has been described as unconsolidated, plastic and silty clay rich in organic material. It is saturated, and the thickness ranges from 120 feet underneath the bay to less than 3 feet along the fringe of the bay. Fine-grained alluvium has been described as unconsolidated, plastic, moderately-to-poorly sorted silty clay, rich in organic material. It is seasonally saturated, irregularly bedded, and is generally less than 10 feet thick.

Potential geologic hazards on the site and in the site vicinity may include periodic flooding, poorly drained seasonal standing water, and potential liquefaction where confined saturated sand beds exist. Strong ground-motion amplification and possible ground failure during earthquakes are characteristic of areas underlain by these deposits (Helley et al., 1979). The site has been mapped as having a generally moderate, but locally high, liquefaction potential. The local high-liquefaction-potential areas are present where clean granular layers of earth materials are present in bay mud (Borcherdt, 1975). Liquefaction is defined as the loss of soil shear strength and the temporary transformation of the soil into a fluid mass.

5.3 Hydrogeologic Setting

The site is located on the East Bay Plain within the east-central portion of the San Francisco Bay depression. The San Francisco Bay depression is an irregular downwarp feature that has been altered by faulting related to the San Andreas Fault System, by erosion, and by deposition. Sediments in the East Bay Plain include older alluvium, Merritt Sand, bay mud, interfluvial basin deposits, fluvial deposits, and younger alluvium. Collectively, these unconsolidated deposits make up the groundwater reservoir of the East Bay Plain area (ACFC and WCD, 1988).

Groundwater occurs in both confined and unconfined conditions. Water-bearing sediments have a maximum thickness of over 1,100 feet. The major water-bearing unit of the unconsolidated sediments is older alluvium of Pleistocene age. This aquifer unit consists of a heterogeneous mixture of poorly consolidated to unconsolidated clay, silt, sand, and gravel. These sediments were deposited primarily from coalescing alluvial fans derived

from the Diablo Range. Some marine and estuarine deposits interfinger with the aquifer sediments near the bay. Groundwater is reported to flow west, toward the bay, in the vicinity of the site (ACFC and WCD, 1988).

Groundwater from this area is utilized primarily for irrigation and industrial purposes. There are a number of water quality problems with the shallow aquifers in the vicinity of the site, including high concentrations of nitrates, saltwater intrusion, and contamination from bacteria and toxic wastes (ACFC and WCD, 1988). Shallow groundwater is approximately 5 to 7 feet below the ground surface of the site.

Within a one-mile radius of the site, there are two groundwater wells. These wells are located approximately 0.7 mile to the south of the site, which is reported to be in the crossgradient direction from the site. Shallow wells in the vicinity of the site are reportedly used for agricultural and industrial purposes; the shallow groundwater quality is such that it is not fit for human consumption (ACFC and WCD, 1988).

5.4 Historical Review

A interpretation of historical aerial photographs of the site and site vicinity was performed to assess historical land use and to attempt to identify any areas of potentially hazardous material usage, or areas exhibiting tonal differences or abnormal vegetative patterns that may indicate a historic release of potentially hazardous materials. Aerial photographs from Pacific Aerial Survey of Oakland, California (photograph pairs AV-337-06-25 and -26 and AV-3268-6-19 and -20, and individual photographs AV-995-04-17 and AV-1193-06-17 dated 3 July 1959, 30 March 1988, 19 May 1971, and 19 May 1975, respectively) were reviewed.

As observed in the 1959 photographs, the site vicinity was primarily industrial. A portion of a large facility was present on the site and another large facility was present east of the railroad tracks. The large manufacturing facility occupied most of the site at this time. The manufacturing facility that was present in this photograph on the site was bound on the east by the railroad right-of-way, on the south by Powell Street, on the west by what is now Interstate 580, and on the north by 64th Street, occupying an area of approximately six city blocks. A dark discoloration of the soil was apparent throughout this facility, particularly in the northeast corner of the property where there were apparently 18 aboveground storage tanks.

I believe this connects w. Garrett Trucking

In the 1959 photograph, a railroad spur bisected the site at a 45-degree angle, trending southeast to northwest. A catwalk, or what appears to be a conveyer belt, originated from the manufacturing facility and crossed over the spur to the south side of the site to a small building, or holding tank. This area was apparently where railroad cars were loaded and unloaded. Eight railroad cars were present to the northeast of this holding tank. West of this unloading area, numerous small, light-colored

objects were present. These objects appeared to have been the size of pallets; this area could have been used to store manufacturing constituents or finished goods. Southwest of these objects, in the southwest corner of the site, was a building that did not, in our judgment, appear to have been related to the manufacturing facility. This judgment is based upon the position of the building facing the street and the presence of a small parking lot in front of the building. Eight cars were parked in front of this building at the time of the photograph. The purpose of this building was not apparent in the photograph.

In the 1971 photograph, much of the manufacturing facility had been removed. However, the holding tank and the railroad spur located on the site were still present, as were the apparent pallets. The building on the southwest corner of the site also was present, but had undergone a slight structural modification; it appeared to be slightly smaller than what was observed in the 1959 photograph. Shellmound Street had been extended from south of Powell Street to in front of the site. The Powell Street overpass had also been constructed prior to the 1971 photograph.

In the 1975 photograph, the remaining portions of the manufacturing facility had been removed. The area that is now The MarketPlace had been constructed and the parking lot, including the site, had been paved. A building, where Sherwin-Williams Paints is now located, had been constructed on the corner of Shellmound Street, west of the site. The railroad spur that had bisected the site had been removed. The building on the corner of the site and the holding tank were still present.

In the 1988 photographs, structures that had been present on the site in the photograph from 1975, including the building formerly on the southwest corner of the site and the holding tank, had been removed. Pavement located on and near the site appeared to be covered or in a state of disrepair. The immediate site vicinity appeared much as it does today: industrialized, with various other commercial buildings present.

5.5 Site Conditions

Present site conditions were assessed and recorded by personnel of Applied Geosciences Inc. during a site reconnaissance and conduction of field activities on 27 March 1990. Locations of relevant features noted and discussed in this section are illustrated in Figures 2 and 3. Photodocumentation of these features is presented in Figures 4 through 9; the features are discussed in Sections 5.5.2 through 5.5.4.

The site appears to be gently sloping to the west. Currently, approximately 40 percent of the site is paved with asphalt. The asphalt does not appear to have been oiled in recent years. There are several areas within the asphaltic paved area that appear to have been constructed for plants.

5.5.1 Site Structures

No structures suitable for human occupancy, or otherwise, were currently present on-site. Although the review of historical aerial photographs revealed the historic presence of structures, there was no evidence of the former structures observed on the site during the site reconnaissance.

5.5.2 Assorted Debris

Figure 4b is a view of the area approximately 40 feet southeast of the photoprint in Figure 4a. The large trash container located in this photoprint is discussed in Section 5.5.3. There were approximately 40 polyvinyl chloride (PVC) pipes of assorted lengths and diameters gathered at this location at the time of the site reconnaissance. The site appeared to be an abandoned area where construction materials were dumped. Other than the two pipes shown in Figure 5b, no other usage of PVC pipes was observed in the area. Figure 5a, taken with the camera panned right 15 degrees, shows the collection of garbage and stagnant water, with greenish algae, along the wire fence. In addition to the plastics seen in the center of the photoprint, rusty crushed drums, two mattresses, and two tires were observed along the run of the fence on the site.

5.5.3 Trash Bin

Figures 6a and 6b show the inside outside, respectively, of a large trash container that is located on the east central portion of the site and is shown in the background of Figure 4b. This trash container has a volume of approximately 900 cubic feet. As seen in Figure 6a, wooden pallets and paper were observed inside the container. The label shown in Figure 6b reads, "No hazardous wastes."

5.5.4 Other Materials

Figure 5b is a view from the site assessment area of The MarketPlace (see Figure 2), the office tower adjacent to The MarketPlace, and the theater located to the right (east) of the palm trees. This photograph was taken from the same location as that of Figure 4a; however, the camera was panned approximately 20 degrees to the south for Figure 5b. In the foreground are two vertical PVC pipes. One of the pipes has a 1-inch diameter and the other, a 2-inch diameter. Both of these pipes are sealed; the purpose of these pipes is unclear; however, the pipe in the foreground of the photoprint has been tentatively identified as a monitoring well that was constructed for the on-going remedial investigation at The MarketPlace. These pipes are located approximately 50 feet north of the northern extent of the site.

The southeast corner of the site is shown in Figures 7a and 7b. The structure in the background in both figures is the Powell Street overpass. The asphaltic pavement in the photoprints

appears to be well-maintained and shows no cracks or depressions (e.g., potholes). (This is true also of areas in the northeast corner, where most of the construction materials and debris are placed.)

Close up photoprints of the eastern side of the site (Figures 8a through 9b) show various features located on the site. In the background of Figure 8a, two large concrete Christy boxes are located adjacent to two electrical switching boxes. In the foreground of Figure 8a there are ten 55-gallon drums. At the time of the site reconnaissance, two of the drums were filled with an unidentified liquid; the other drums were observed to be empty. There were no identifiable markings on one of the the filled drums; the other filled drum was labeled "non-hazardous hand cleaner." It was not clear whether or not this product was the liquid present in the drum. Near the drums was a 5-gallon gasoline container with less than approximately one cup of liquid in it.

Figure 8b shows numerous aluminum studdings for interior walls and other assorted aluminum beams. These materials are most likely abandoned construction materials from the development of The MarketPlace and adjacent office buildings.

The photoprint in Figure 9a shows 12 palm trees that had been rooted up (or never planted on the site) and were lying on their sides. (During a subsequent site visit, it was observe that an irrigation system had been installed at the roots of the trees.)

The last of the photoprints (Figure 9b) shows construction debris and 4-inch concrete cores which were scattered next to the palm trees. The concrete cores were probably generated by Earth Metrics, Inc., for the installation of soil borings on the site during a previous investigation (discussed in Section 5.6).

5.6 Previous Investigations

An environmental investigation by Earth Metrics, Inc. (Earth Metrics), and a geotechnical study by Geomatrix Consultants, Inc. (Geomatrix), were conducted previously at the The MarketPlace (Figure 2). The subject site was considered a part of The MarketPlace during these investigations.

An appraisal report for the suitability of hotel development on the site was prepared by Mr. Mark Corsa, an Appraisal Officer of Union Bank. Applied Geosciences Inc. has reviewed this appraisal report; however, it contains no information on environmental concerns. Hence, its contents are not summarized herein. Earth Metrics, Inc., was retained by the Alameda County Hazardous Materials Unit, whereas Geomatrix Consultants, Inc., was retained by The Martin Company of Pleasanton, California.

5.6.1 Earth Metrics, Inc., Report

A report titled "Soils and Groundwater Contaminant Investigation for the Former Nielsen Freight Lines Site in Emeryville, California" (Earth Metrics, Inc., 1988) and dated 26 January 1988 was reviewed by personnel of Applied Geosciences Inc. for this assessment. This report reviewed the site history and earlier studies performed on The MarketPlace site, of which the former Nielsen Freight Lines (also known as Garrett Freight Lines) site is a part. These earlier studies were performed by Woodward-Clyde Consultants and Brown and Caldwell; no references referring to these aforementioned reports were contained in the copy of the Earth Metrics report used for this assessment. Reportedly, based upon the reviews of these reports, Earth Metrics (EM) installed eight exploratory borings (EM1 through EM8) in the vicinity of the former Nielsen Freight Lines site (including The MarketPlace and the subject site), which was situated north of The MarketPlace (Figures 2 and 3). Boring EM8 was the only boring from this investigation which was located on the subject site. A total of 20 soil samples from these borings further assessed the extent of total petroleum hydrocarbon concentrations, as well as oil and grease concentrations, in the areas covered in Figures 2 and 3.

According to information contained in the Earth Metrics report, a company involved in the manufacturing of paint and roofing products began operations in the early 1900s on a 30-acre lot on the present-day site of The MarketPlace, which includes ATD and the former Nielsen Freight Lines. Present on-site during the period this facility operated were four large aboveground storage tanks, a building, and a storage yard. Additionally, historic industrial activities of environmental concern believed to be associated with the operation of this facility at and in the vicinity of The MarketPlace site were investigated by Earth Metrics. Earth Metrics investigated the extent of soils containing elevated concentrations of oil and grease. The areas in the immediate vicinity of the subject site containing elevated concentrations of oil and grease are presented in Figure 10. Earth Metrics suggested that the oil and grease present on the site originated from petrochemical roofing products, such as roofing tar, from the former roofing material manufacturing facility.

Based upon an isopach map prepared by Earth Metrics, thicknesses of asphaltic material (the oil and grease discussed in the previous paragraph) in the soil range from 0 to 7 feet below the ground surface. (This isopach map is presented as Figure 10). According to the information presented on the isopach map, the thickness of the asphaltic material underneath the site was 2 feet. Maximum thickness of asphaltic material in the soil was located at the northeast corner of the main building of The (present-day) Market Place. It was unclear to Earth Metrics how asphaltic material accumulated in this area, due to the location of the refinery for roofing materials at the southeastern corner of The (present-day) Market Place site. Earth Metrics speculated

that refined asphalt may have leaked from six aboveground tanks located due east of the building. (Potential sources of this asphaltic material located in the subsurface of the subject site are discussed in Section 7.0).

In the 1960s, a portion of the manufacturing facility, located approximately 500 feet north of the subject site, was converted to a trucking facility (Garrett Freight Lines) where underground storage tanks for diesel, gasoline, and motor oils were present. The capacities of the tanks used for the storage of gasoline and diesel were reportedly 10,000 gallons per tank; the capacities of the tanks used for the storage of waste oil and lube oil were reportedly 500 gallons per tank.

In addition to the environmental concerns of the underground storage tanks on the former trucking facility, environmental problems due to surface storage of solvents and degreasers and buried gasoline and fuel manifolds were addressed by Earth Metrics. The removal and disposal of tanks and pipelines located on the former trucking facility property was reportedly supervised by Woodward-Clyde Consultants and observed by representatives from the Emeryville Fire Department on 7-8 April 1987 (Earth Metrics, 1988). Soil samples from tank pits were collected on the same dates and tested for total fuel hydrocarbons (TFH). Analytical results from these soil samples reported concentrations of less than 100 parts per million (ppm) of TFH.

Earth Metrics reported that fuel hydrocarbons remaining in place at the former trucking facility are typically less than 100 ppm in concentration. Additional samples from the reported former tank locations were analyzed for gasoline by Earth Metrics. These samples were reported to contain less than 2 ppm gasoline. The samples were also analyzed for diesel fuel and reported to contain less than 211 ppm in the soil borings, with the exception of boring Nos. E3 and E4, which contained 1736 ppm and 626 ppm, respectively. (Sample locations from the assessment by Earth Metrics are shown in Figures 2 and 3). Oil and grease found in samples taken from these borings were 1,000 ppm and 7,000 ppm, respectively.

Boring EM8, located on the subject site (Figures 2 and 3), reported elevated concentrations of various heavy metals. This included several metals exceeding the Total Threshold Limit Concentration (TTLC), a guideline promulgated in the California Code of Regulations (CCR) and used to assess whether or not a material may be considered hazardous. Metals reported in boring EM8 to exceed the TTLC included copper, mercury, lead, and zinc.

Borings E3 and E4, located approximately 500 feet north of the subject site, were located in an area where a black substance that appeared to be tar was visibly present in the subsurface soil. Tar is a refined petroleum product that contains high boiling point hydrocarbons. Earth Metrics suggested that tar contributed to the elevated diesel fuel concentrations. This

conclusion is based upon the analytical results of water in the tank pit and manifold excavation which show only 2.1 ppm of residual diesel fuel. Hence, the elevated concentration of diesel in the area between The MarketPlace and the former Nielsen Trucking facility (borings E3, E4, and EM1), according to Earth Metrics, is most likely due to the presence of tar. (According to personnel of Anametrix, Inc., of San Jose, California, a State-certified hazardous waste and EPA-contract laboratory, petroleum hydrocarbon components of asphalt are not detected in the diesel analysis they conduct [Schoen, 1990]).

Volatile organic compounds (VOCs) were analyzed for by Earth Metrics in a groundwater sample obtained from well W-4 (Figure 2) in general accordance with EPA Method No. 624. Methylene chloride was reported at a concentration of 23 parts per billion (ppb); methylene chloride was the only VOC reported above the detection limit. Volatile constituents of gasoline, which include benzene, toluene, ethylbenzene, and xylene (BTEX), were not detected for the reporting limit employed in the groundwater sample.

Earth Metrics recommended as a remediation measure the in situ "encapsulation" of the soil that contained the tar-like substance. They suggested that the soil be "encapsulated" by taking one of the following measures:

- asphaltic pavement;
- concrete foundation slabs; or
- 18 inches of clean loam.

These recommended measures, according to Earth Metrics, would cost the least of potential remedial alternatives and are consistent with the nonhazardous classification of the material that contained the elevated concentrations of the petroleum hydrocarbons as promulgated in Title 22, Division 4, Chapter 30 of the CCR (Earth Metrics, 1988). Earth Metrics also recommended the more costly alternative of excavating and disposing a minimum of 1000 cubic yards of material as a potential remedial measure.

Fuel manifolds and product lines located in the north-northwest corner of the trucking facility (Figure 3) were recommended to be rinsed and disposed in general accordance with the State of California underground fuel storage regulations. Excavation spoils from the removal of the underground storage tanks were recommended to be backfilled and recompacted in the tank pits and manifold trenches. Additionally, Earth Metrics recommended further testing of soil remaining in the trenches to assess the presence of TPH.

An oil/water separator was located southwest of the oil tanks (Figure 3). The separated waste oil was stored in a concrete sump prior to transport and disposal. Earth Metrics recommended the sump be cleaned of all residual oil and sludge and closed in

general accordance with the State and local underground storage tank regulations.

Information regarding the implementation of the remedial measures recommended by Earth Metrics was not made available to Applied Geosciences Inc. at the time of this assessment.

5.6.2 Geomatrix Consultants, Inc. Report

A geotechnical study was conducted by Geomatrix Consultants, Inc. (1987), for a then-planned theater building in the vicinity of the area under assessment (Figure 2). The report, titled "Geotechnical Study Movie Theatre, Emeryville, California" and dated 23 June 1987, recommended foundation support and earthwork construction for the planned theatre building. The theatre was subsequently built on the parcel of land formerly occupied by Garrett Freight Lines.

At the time of the geotechnical study, an abandoned concrete water storage tank was located aboveground at the southern edge of the study area. Five exploration borings, drilled to a maximum depth of 31.5 feet, provided information on the tensile strength, density, and other physical characteristics of soils. In boring 5, the upper 13 feet of soil consisted of mixed clayey fill, rock fragments, wood, and other debris. Below this imported fill layer, Geomatrix reported a 3-foot-thick piece of concrete underlain by layers of silty and sandy clay, which became stiffer with depth. Boring 3 also encountered concrete at a depth of 2 feet below the ground surface. The concrete slab at this location was reported to be 12 inches thick. Other borings reported occasional lenses of clayey gravel and rock fragments below the surface fill. Geomatrix considered the heterogeneous fill too variable with regard to strength and density for a firm, uniform support of a concrete masonry building.

6.0 REGULATORY AGENCY REVIEW

Publications, records, and documents from the following agencies were reviewed for this assessment: Environmental Protection Agency; Regional Water Quality Control Board, San Francisco Bay Region; California Waste Management Board; Department of Health Services; California Division of Oil and Gas; and the Emeryville Fire Department. A list of material reviewed is listed under Section 4.0. Locations and a summary of the data for sites located in the vicinity of the subject site that are reported to have been impacted by potentially hazardous materials, as documented in the agency materials reviewed, or in interviews with agency personnel, are presented in Figure 1 and on Tables 1 and 2.

6.1 National Priority List

Information contained in the NPL (EPA, 1989), a listing of sites prioritized by the EPA for cleanup under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act),

indicates no active or proposed NPL sites within an approximate one-mile radius of the site.

6.2 Comprehensive Environmental Response, Compensation, and Liability Information List

The CERCLIS list is a database maintained by the EPA of potential hazardous waste sites that have come to the attention of the EPA. Sites on the CERCLIS list are not necessarily hazardous waste sites, but sites the EPA plans to investigate in the future or has already investigated. There are currently 10 CERCLIS sites within a one-mile radius of the site. Eight of these sites are listed as NFA (no further action). This designation indicates that EPA does not plan to take future action on these sites unless further information that would warrant additional investigation becomes available. The two sites that are still under investigation are Mike Roberts Color Productions and Pacific Gas and Electric-Emeryville.

Information regarding Mike Roberts Color Productions, located approximately 0.6 mile north of and cross-gradient from the site, was requested from the EPA on 13 March 1990. This information had not been made available to Applied Geosciences Inc. at the time of this report (Appendix A). Mike Roberts Color Productions was not listed in any of the other regulatory agency documents reviewed for this assessment.

Pacific Gas and Electric-Emeryville (PG&E) is located at 4525 Hollis Street in Emeryville, approximately 0.3 mile southeast of the site. This facility is potentially in the upgradient groundwater flow direction from the site. Soil at this facility has reportedly been degraded by polychlorinated biphenyls (PCBs) and lead. The second phase of excavation and disposal by Ecology and Environment Inc. of PCB-impacted soil achieved clean up objectives in April 1989. Groundwater under the facility has reportedly been impacted by heavy metals that may have originated from the PG&E site. Remedial actions are reportedly in progress with operation of the remedial system expected to continue for 10 to 15 years.

6.3 California Superfund

Information contained in the State Department of Health Service Expenditure Plan for the Hazardous Substances Cleanup Bond Act of 1984 (BEP) (DOHS, 1989a) reports three California Superfund sites within a one-mile radius of the site: Pacific Gas and Electric - Emeryville; Electro-Coatings; and Westinghouse Electric Company-Emeryville. Pacific Gas and Electric-Emeryville is discussed in Section 6.2.

Electro-Coatings, in the city of Emeryville approximately 0.7 mile south of and cross-gradient from the site, reportedly previously disposed of chromium wastes to shallow on-site wells. Hexavalent chromium has been reported in the soil and groundwater beneath this facility. DOHS reports that the public health

threat posed by this facility is minimal (DOHS, 1989a). Currently, this facility is contained in the backlog of DOHS due to the responsible party declaring bankruptcy and the low public hazard.

Westinghouse Electric Company-Emeryville (Westinghouse) property, the third California Superfund site, occupies approximately two acres of undeveloped land on the Westinghouse facility. Westinghouse is located 0.1 mile east of the site across the Southern Pacific Railroad right-of-way. Soil and groundwater on this property are reported to contain PCBs. Soil and groundwater on the site degraded by PCBs have reportedly been contained with an "engineered cap" and a slurry wall. Subsequent investigation is ongoing because PCB degradation was reported in a building on-site and along a railroad spur between Westinghouse and an adjacent property. Information in the BEP does not indicate the name or location of the adjacent site. Westinghouse is interpreted to be approximately upgradient of the site, based upon the reported direction of shallow groundwater flow in the site vicinity (Section 5.3).

6.4 Abandoned Site Program Information System

ASPIS is a database maintained by the DOHS of inactive and active cases of the site evaluation and/or site survey programs. This database is used as tracking system for present and former sites by the toxics division of DOHS. There are currently 66 sites listed on ASPIS that are within an approximately one-mile radius of the site. Fifty-three of these sites are listed as NFA. This designation indicates that the DOHS does not plan to take further action on these sites unless further information indicating on-site contamination becomes available. The 13 sites not listed as NFA were reviewed. A discussion follows on the sites that in our judgment either have a potential to impact the site or are located in proximity to the site. Three of these sites are listed as SUPRD (Superfund site). These three sites are discussed in Section 6.3.

ITT Grinnell Property, listed as requiring a site inspection by the DOHS, is located on Hollis Street adjacent to the Westinghouse facility mentioned in Section 6.3. Soil at this facility is reported to contain PCBs. DOHS recommended a site investigation due to the lack of records regarding mitigation of the degradation. This facility is possibly the unidentified facility mentioned in the Westinghouse files.

Chevron-Emeryville Terminal, located across the Southern Pacific Railroad right-of-way from the site and bounded on the north and east sides by Westinghouse, is also listed as requiring a site inspection. Site specific information regarding this facility was not available in ASPIS or from the RWQCB.

Pfizer, Inc., located approximately 0.2 mile south of and cross-gradient from the site at 4650 Shellmound Street in Emeryville, is listed as a preliminary discovery, defined as requiring a

subsurface assessment. Pfizer, Inc., reportedly operates as a hazardous waste hauler. Oil and grease have reportedly degraded the soil at this facility. Butanone, hexanone, acetone, and napthalene were reported in the groundwater beneath this site.

Industrial Hard Chrome, located approximately 0.3 mile east of the site, is listed in ASPIS as requiring a site inspection. It is currently pending a change in status to NFA.

6.5 Assembly Bill 1803

Assembly Bill 1803 required the testing of drinking water provided by large municipal water system wells for the presence of volatile organic compounds, and the publication of the analytical results for wells testing "positive" for the presence of such compounds. No large municipal water system wells within the one-mile site-vicinity radius have been reported as "positive" for the presence of volatile organic compounds (VOCs) during the state-wide testing of municipal drinking water supply wells under the AB 1803 program (DOHS, 1986).

6.6 Oil and Gas Drilling

The site is not located within the limits of a producing or abandoned oil or gas field (CADOG, 1984). No records for exploratory wells drilled on the site or in the site vicinity are reported to exist with the CADOG (1987; 1988; 1989). As the site is not within the limits of a reported active or abandoned oil and gas field, and there are no records for exploratory drilling on the site, potential environmental degradation related to oil and gas activity is considered remote.

6.7 Landfills

Based on information contained in "Active Landfills" (CWMB, 1989a) and "Closed and Inactive Landfills" (CWMB, 1989b), there are no landfills, active or inactive, reported to exist within the one-mile radius of the site.

6.8 Cortese List

The Cortese List is compiled by the State DOHS and identifies hazardous waste facilities subjected to correction action pursuant to Section 25187.5 of the Health and Safety Code. The list is updated semi-annually. There are currently 70 sites within a one mile radius of the site (Office of Research and Planning, 1989). Only five of these sites that have not been discussed previously are located in proximity to the site and, hence, are considered to have potential environmental impact on the site. Summaries from the review of site files in the RWQCB Oakland Office are presented below. Alphanumeric references to the type of fuel leak, when a release of petroleum fuel occurred, are defined on Table 2 for these facilities.

Berkeley Farms, located at 1313 53rd Avenue in Emeryville, is listed as a fuel leak site of Priority C by the RWQCB. There were three underground fuel tanks (6,000-, 6,000- and 2,000-gallon) at this location. Analytical results show a maximum soil impact of 2.8 ppm of gasoline. Groundwater was reportedly unaffected.

HFH Limited, located at 6400 Hollis Street in Emeryville (formerly Getz Construction Company), is listed as a fuel leak site of Priority C by the RWQCB. Analytical results show 23 ppm of detectable VOCs in the soil at a depth of 5 feet below the ground surface. There was a 2000-gallon subsurface gasoline tank at this location. Groundwater was not reported to be affected and remediation was not required.

Ransome Company, located at 4030 Hollis Street in Emeryville, is listed as a fuel leak site by the RWQCB. There were no wells reported on the site and, therefore, the impact of potentially hazardous materials on the groundwater is not known.

Henry Horn and Sons, located at 1301 65th Street in Emeryville, is listed as a fuel leak site of Priority A3 by the RWQCB. Maximum soil impact was reported as 35,000 ppb as gasoline at a depth of three feet below the ground surface and groundwater impact was reported as 1,400 ppb as gasoline, respectively. There was a 2000-gallon underground fuel tank at this location from 1952 until its removal in 1988. The tank had passed a leak detection inspection two years prior to its removal. Although groundwater was impacted by the leak(s), no drinking water wells are located within a half-mile radius of the site. One 2-inch, PVC monitoring well was installed to a depth of 26 feet below the ground surface and is presently being monitored on a quarterly basis by Blymyer Engineers, Inc. Total Petroleum Hydrocarbons (TPH) as gasoline was reported at 35,000 ppb in a soil sample obtained at five feet below the ground surface during the installation of the well. Samples at 10 and 15 feet were reported as below the reporting limits for the analytical method employed.

Schwabacher/Frey, located at 5733 Peladeau Street in Emeryville, is listed as a fuel leak site of Priority B3 by the RWQCB. There was a 2000-gallon underground diesel tank removed. Two holes, apparently from corrosion, were observed in the tank during the removal activities. Two soil samples were taken at a depth of 11 feet below the ground surface. Analytical results reported 270 ppm as diesel and 540 ppm as gasoline; groundwater impact was not reported. Reportedly, no remediation action was required.

6.9 North Bay Toxics

Information contained in the RWQCB North Bay Toxics list (RWQCB, 1990) reports nine sites within an approximate one-mile radius of the site that have released potentially hazardous materials to the subsurface. Two of these sites, The MarketPlace and Garrett Freight Lines, are discussed in Section 5.6. Three of these

sites, Westinghouse, Electro-Coatings, and Pacific Gas and Electric, are discussed in Section 6.3. Chevron-Emeryville is discussed in Section 6.4.

Michel and Pelton, located approximately 0.1 mile south of the site, is reported by the RWQCB having soil and groundwater degraded by various potentially hazardous materials. Elevated concentrations of organochlorine pesticides and heavy hydrocarbons were reported in the soil. Groundwater has reportedly been degraded by phenols, 2-methyl napthalene, di-n-octal pthalate, and 1-ethyl,4-methoxy benzene. This site is currently under investigation by the RWQCB.

Due to the distance from the site and the location of the facilities, there is a very low likelihood the two other sites, Del Monte Plant No. 35 and UC Berkeley, have impacted the site.

6.10 RWQCB Fuel Leak List

There are 82 sites listed to be within the one mile radius of the site (RWQCB, 1989). The five sites located in close proximity to the site and hence considered to have potential impact on the site are identical to the five sites discussed in Section 6.8.

6.11 Emeryville Fire Department

Interviews were conducted with two personnel of the Emeryville Fire Department: Mssrs. Frank Alhino and George Warren. Files from the Emeryville Fire Department were also reviewed for information pertaining to potentially hazardous materials on the site.

According to Alhino (1990), there was formerly a restaurant on the site. He suggested that it may have been removed approximately 15 years ago. He also stated that the large manufacturing facility apparent in the historic aerial photographs was Pabco Industries, a linoleum and roofing material manufacturer. He could not recall a spill of potentially hazardous materials on the site since he has been with the fire department (approximately 28 years).

According to Warren (1990), there was a portable restaurant on the site until approximately two years ago. He also remembered concrete holding tanks present on the site adjacent to the Powell Street overpass. He could not recall the contents of the holding tanks. He also stated that during a tank removal approximately 500 feet west of the site, bricks and timber were observed present in the bottom of the tank excavation. To his knowledge, all the land west of the Southern Pacific Railroad right-of-way in the vicinity of the site is underlain by imported fill.

There was no information contained in the files reviewed at the Emeryville Fire Department regarding underground storage tanks.

6.12 Emeryville Building Department

A request for information regarding the site was made to the Emeryville Building Department. Structures have not existed on the site since approximately 1975. Records from the building department in Emeryville were destroyed in 1978 by a flood (Greer, 1990). Any structures built or demolished on the site would have had building department permits issued prior to 1978. Currently, according to Mr. Greer, no records exist at the building department concerning the site.

7.0 DISCUSSION

The site is located in a heavily industrialized area. Currently, the site appears as an outer portion of the parking lot for a shopping center, The MarketPlace. The site may be considered a part of The MarketPlace by regulatory agencies involved with the oversight of assessment/remediation of The MarketPlace.

Review of historical aerial photographs revealed that the site and immediate site vicinity were historically used for industrial purposes. Further investigation indicated that the majority of the site was used for manufacturing roofing materials and floor coverings. The manufacturing processes for these materials utilizes various potentially hazardous materials, including asbestos and petroleum-based products. The other portion of the site, the southwest corner, reportedly was occupied by a small restaurant.

On the subject site, a catwalk, most likely a conveyer used to load railway cars, was observed originating from the manufacturing facility and terminating at the railway spur. Soil on the site where the apparent conveyer system terminates at the railway spur has been reported to be impacted by a tar-like material. In the judgment of Applied Geosciences Inc., there is a high likelihood that this potentially hazardous material was introduced to the subsurface of the site during the loading and unloading of railway cars.

Soil samples obtained during a previous investigation by Earth Metrics, Inc., in the vicinity of the railroad spur and concrete holding tank on-site reported elevated concentrations of various heavy metals. In the judgment of Applied Geosciences Inc., there is a high likelihood that the soil in this area was degraded by these metals from spillage during the loading and unloading of railcars. It is also the judgment of Applied Geosciences Inc. that there is a high likelihood that the soil would be considered a hazardous waste if they were to be removed from the site.

Drilling during the geotechnical investigation by Geomatrix on the parcel north of the site reported debris at depth that appeared to be imported fill. During the removal of an underground storage tank approximately 500 feet west of the site, brick and timber was observed in the bottom of the excavation. Given the proximity of other sites underlain by imported fill and

the similar history of the site, in our judgment there is a very high likelihood that the site is underlain by imported fill as well.

There is a high density of sites in the immediate site vicinity that have come to the attention of various regulatory agencies. These sites are reportedly sources of various hazardous materials to the soil and/or groundwater and are listed as currently undergoing investigation. In the judgment of Applied Geosciences Inc., given the proximity of these sites to the subject site and the reported groundwater degradation from some of these sites, there is a moderate-to-high likelihood that the subsurface of the site has been impacted by potentially hazardous materials from an off-site source.

One of these sites, Westinghouse Electric Company-Emeryville, is listed on the California Superfund list. There is a moderate likelihood that this site has impacted the groundwater under the subject site. Elevated concentrations of petroleum hydrocarbons and PCBs have been reported in the soils on the Westinghouse site. Groundwater quality under the subject site in regards to the potentially hazardous materials present on-site and at Westinghouse is not presently known. If potentially hazardous materials from the site affect the clean-up efforts of any of the regulated sites in the immediate site vicinity, there is a high likelihood that the current owner of the site would be partially responsible for the cost associated with the clean-up of the affected site. Also, if potentially hazardous materials from the site have impacted the groundwater and a regional groundwater remediation program is implemented, the owner of ATD may be responsible for a portion of the cleanup costs. In the judgment of Applied Geosciences Inc., the extent of potentially hazardous materials in the subsurface of the site has not been adequately assessed to evaluate the potential impact on the groundwater beneath the site. It is also the judgment of Applied Geosciences Inc. that an assessment of the soils and groundwater quality under the site should be made prior to initializing any foreclosure procedures.

In general, at sites that have not apparently been used for agricultural purposes, there is a low likelihood that persistent pesticides, particularly organochlorine pesticides, would be present on the site. However, in the judgment of Applied Geosciences Inc., due to the proximity of a railroad right-of-way to the eastern boundary of the property, the former bisection of the site by a railway spur, and the historic usage of pesticides along railway tracks, there is a low-to-moderate likelihood that persistent pesticides are present in the soils on the site. Railroad lines have also been found to be sources of hazardous waste due to spillage and other releases over the many years they have operated. The Southern Pacific Railroad right-of-way lies along the east side of the site (Figures 2 and 3). Due to the proximity of the present tracks and the former bisection of the site by a railway spur, the railroad is judged by Applied

Geosciences Inc. to have a moderate likelihood of having been a source of hazardous materials to the site.

A restaurant was present near the southwest corner of the site until the mid-1970s. There is a high likelihood that this restaurant had a domestic waste disposal system. However, there is a low likelihood that a septic system was used on this site due to the low permeability of the soils on the site and the brackish groundwater, both of which would limit the effectiveness of a septic system. There is a high likelihood that there was some type of off-site disposal, such as a sewer system. Therefore, in the judgment of Applied Geosciences Inc., there is a very low likelihood that hazardous materials have been introduced into the subsurface of the site by a septic system, or other similar means of domestic waste disposal.

Presently, there are two drums that contain liquid on the site. The contents of these drums is not known. It is possible that these drums contain potentially hazardous materials and will need to be handled in a manner that considers the potentially hazardous nature of these materials. Also present on-site is assorted construction debris and trash. This debris may contain hazardous waste and should be disposed in accordance with current regulatory guidelines.

8.0 CONCLUSIONS

Based on the information presented in this report, current regulatory guidelines, and the judgment of Applied Geosciences Inc., it is concluded that:

- The site is located in an area that has historically been used for light-to-heavy industrial purposes;
- The site has historically been used as a roofing material manufacturing facility and a restaurant;
- The site is currently undeveloped;
- Regional groundwater flow is in a westerly direction toward San Francisco Bay;
- There is a very high likelihood that the site is underlain by imported fill material;
- Elevated concentrations of various heavy metals have been reported on the site. There is a high likelihood that these metals were introduced to the subsurface of the site from past uses of the site;
- There are a large number of sites in the site vicinity and in close proximity to the site (within 1000 feet of the site) that have elevated concentrations of potentially hazardous materials in the soil and/or groundwater or that are listed on regulatory agency lists as currently under

investigation. Sites that are in close proximity to the site include, but are not limited to:

- Westinghouse Electric Company-Emeryville;
- Chevron-Emeryville Terminal;
- The MarketPlace;
- Garrett Freight Lines (also known as Nielsen Freight Lines);
- ITT Grinnell; and
- Michel and Pelton;

- o There is a moderate-to-high likelihood that potentially hazardous materials have migrated into the subsurface of the site from off-site sources;

- o There is a very high likelihood that potentially hazardous materials, including asphaltic material and asbestos, have impacted the subsurface of the site from past uses of the site;

- o There are currently two drums located on the site that contain unidentified liquid. There is a moderate likelihood that the liquid contained in these drums is potentially hazardous;

- o There are insufficient data at the present to assess whether or not potentially hazardous materials on-site will affect the clean-up efforts for sites in the immediate site vicinity; and

- o There is a low likelihood that potentially hazardous materials have migrated to the subsurface of the site from current uses of the site.

9.0 RECOMMENDATIONS

Based upon the data and conclusions presented in this report, current regulatory guidelines, and professional judgment of Applied Geosciences Inc., the following recommendations are presented for your consideration:

- o Surface soil samples should be obtained adjacent to the Southern Pacific Railroad right-of-way and analyzed for organochlorine pesticides;

- o Soil samples should be obtained from areas on the site near the former railcar loading area and analyzed for asbestos, selected heavy metals, and total petroleum hydrocarbons. These samples should be obtained in the vicinity of boring EM8, where elevated concentrations of heavy metals were reported previously;

- o Groundwater-quality conditions should be assessed for the presence of potentially hazardous materials reported in the

soils on the site and potentially hazardous materials reported in the groundwater in the immediate site vicinity;

- Information concerning the reported hazardous waste sites in the immediate site vicinity should be reviewed regularly to assess the potential impact on the site;

- The unidentified liquid contained in the two drums on the site should be sampled in order to assess their contents; the liquid should be disposed in general accordance with current regulatory guidelines; and

- The site should be secured from the public to minimize further accumulation of debris and refuse that could contain potentially hazardous materials.

10.0 REFERENCES

ACFC and WCD. See Alameda County Flood Control and Water Conservation District.

Alameda County Flood Control and Water Conservation District (ACFC and WCD), 1988; Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California, 205(J) Report; Report Submitted to California Regional Water Quality Control Board, San Francisco Bay Region; June 1988; 83 p.

Alhino, Frank, 1990; Emeryville Fire Department, oral communication, 3 April 1990.

Borcherdt, R.D. (editor), 1975; Studies for Seismic Zonation of the San Francisco Bay Region: Basis for Reduction of Earthquake Hazards, San Francisco Bay Region, California: USGS PP 941-A, 102 p.

CADOG. See California Division of Oil and Gas.

California Code of Regulations (CCR), 1988; Title 22, Division 4, Environmental Health, Chapter 30, Minimum standards for management of hazardous and extremely hazardous waste, 17 December 1988.

California Division of Oil and Gas, 1989; Department of Conservation Publication No. PR06; 1989; 155 p.

_____, 1988; Regional Wildcat Map W6-1; 7 May 1988.

_____, 1987; Regional Wildcat Map W3-10; 17 October 1987.

_____, 1984; Oil, Gas, and Geothermal Fields in California Map; 1984.

California Department of Health Services (DOHS), 1989a; Expenditure Plan for the Hazardous Substance Cleanup Bond Act of 1984, originally published January 1985, January 1989.

_____, 1989b; Abandoned Site Program Information System (ASPIS), April 1989.

_____, 1986; Final report on a monitoring program for organic chemical contamination of large public water systems in California, Appendix B; April 1986, 22 p.

California Waste Management Board (CWMB), 1989a; Active Landfills, 19 January 1989.

_____, 1989b; Closed and Inactive Landfills, 19 January 1989.

CCR. See California Code of Regulations.

Conwell, Fred, 1990; Applied Geosciences Inc., oral communication, 21 March 1990.

CWMB. See California Waste Management Board.

DOHS. See California Department of Health Services.

Earth Metrics, Inc., 1988; Soils and Groundwater Contaminant Investigation for The Former Nielsen Freight Lines Site, Revised January 26, 1988.

Environmental Protection Agency (EPA), 1989; National Priorities List (NPL), Supplementary Lists, and Supporting Materials, March 1989.

_____, 1988; CERCLIS - List 8: Site/Event Listing, 1 February 1990.

EPA. See Environmental Protection Agency.

Geomatrix Consultants, Inc., 1987; Geotechnical Study Movie Theatre Emeryville, California: 23 June 1987.

Greer, Charles, 1990; Emeryville Building Department, oral communication, 4 April 1990.

Helley, E.J., La Joie, K.R., Spangle, W.E., and Blair, M.L., 1979; Flatland Deposits - Their Geology and Engineering Properties and their importance to Comprehensive Planning: United States Geological Survey Professional Paper 943, 88 pages.

Office of Planning and Research, State of California, 1989; Hazardous Waste and Substances Sites List (Cortese List); June 1989.

Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, 1990; North Bay Toxics; 4 January 1990.

_____, 1989; Fuel Leak list - Alameda County, 18 December 1989.

RWQCB. See Regional Water Quality Control Board.

Schoen, Sarah, 1990; Anametrix, Inc., oral communication, 9 May 1990.

Union Bank, 695 Real Estate Loan Center, 1989, An Appraisal Report: Another Tree Development Corporation Shellmound Street @ Powell Overpass Emeryville, California Alameda County.

United States Geological Survey (USGS), 1980; Oakland West Quadrangle, California, Alameda County, 7.5 Minute Series (topographic), 1961 photorevised 1980.

USGS. See United States Geological Survey.

Warren, George, 1990; Emeryville Fire Department, oral communication, 25 April 1990.

TABLE 1

REPORTED SITE VICINITY NON-FUEL RELEASES[1]

FIGURE 1 DESIGNATION	SITE DESIGNATION	ADDRESS[2]
A	Mike Roberts Color Productions	6707 Bay Street
B	Pacific Gas and Electric - Emeryville	4525 Hollis Street
C	Electro-Coatings	1421 Park Avenue
D	Westinghouse Electric Company - Emeryville	5899 Peladeau
E	ITT Grinnell Property	Hollis Street
F	Chevron-Emeryville Terminal	Landregan and Powell Streets
G	Pfizer, Inc.	4650 Shellmound Street
H	Industrial Hard Chrome	5701 Hollis Street
I	The MarketPlace	64th Street and Lacoste Street
J	Garrett Freight Lines	64th Street and Lacoste Street
K	Michel and Pelton	5743 Landregan Street
L	Del Monte Plant No. 35	1250 Park Avenue
M	UC Berkeley	Murray, 7th, and Folger Streets

Notes:

1. Reported site vicinity non-fuel releases have been obtained from various regulatory agency sources. These potential sources of hazardous materials are discussed in the text of this report.

2. The above listed sites are located in the City of Emeryville, with the exception of UC Berkeley, which is located in the City of Berkeley.

TABLE 2

REPORTED SITE VICINITY FUEL RELEASES

FIGURE 1 DESIGNATION	SITE DESIGNATION[1]	ADDRESS[2]	TYPE[3]
1	Berkeley Farms	1313 53rd Avenue	C
2	HFH Limited	6400 Hollis Street	C
3	Ransome Company	4030 Hollis Street	B3
4	Henry Horn and Sons	1301 65th Street	A3
5	Schwabacher/Frey	5733 Peladeau Street	B3

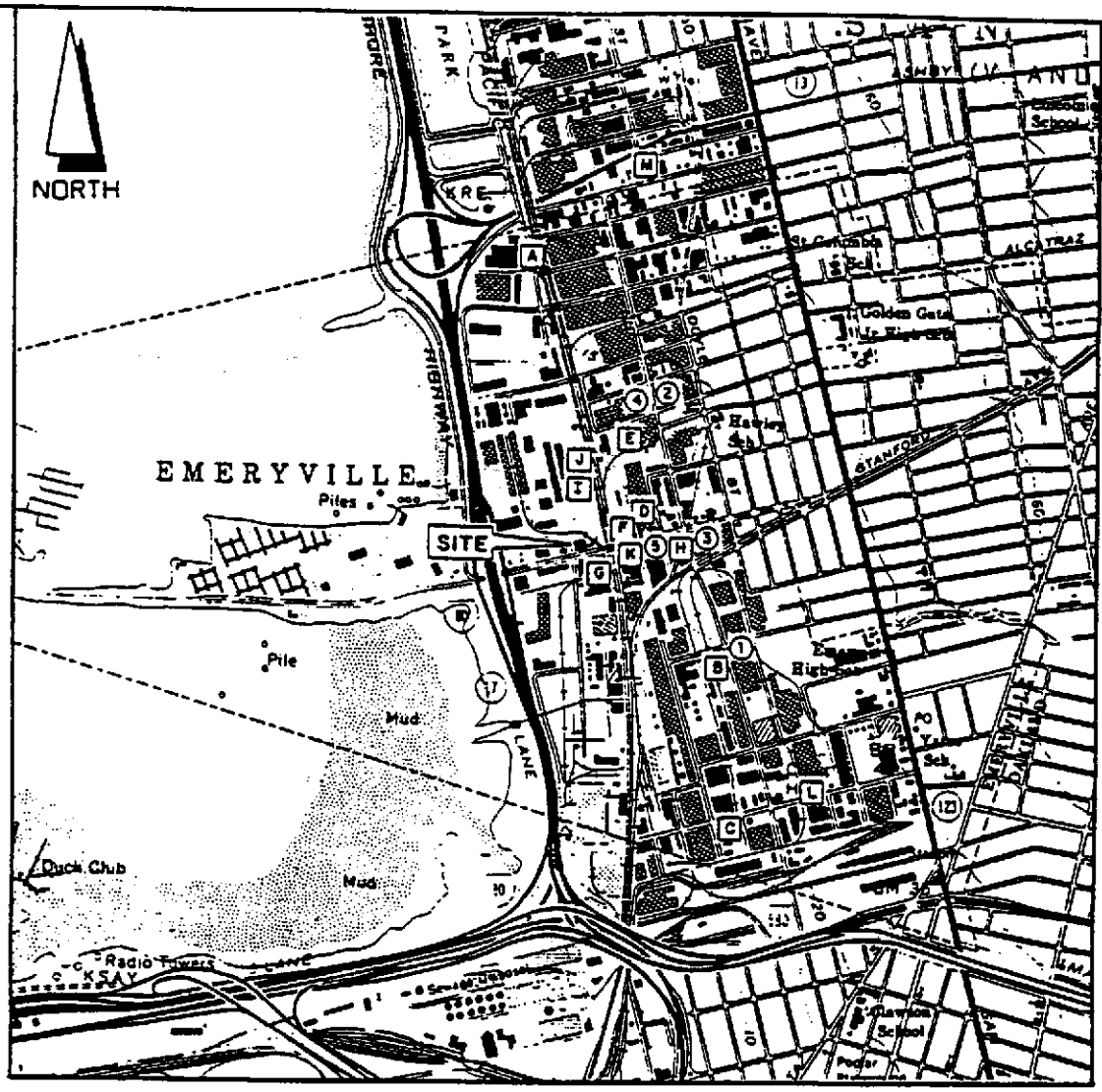
Notes:

1. Site designations were obtained from the RWQCB fuel leak list (RWQCB, 1989b).

2. The above listed sites are located in the City of Emeryville.

3. Alphanumeric designations of type are defined as follows:

   A = identified groundwater impact
   B = identified soil impact with unknown groundwater impact
   C = groundwater quality impacts, threatened impacts, are negligible or non-existent
   1 = groundwater recharge area
   2 = groundwater use area without recharge
   3 = limited groundwater use area



EXPLANATION

[A] POTENTIAL SOURCES OF HAZARDOUS MATERIALS, SEE TABLE 1

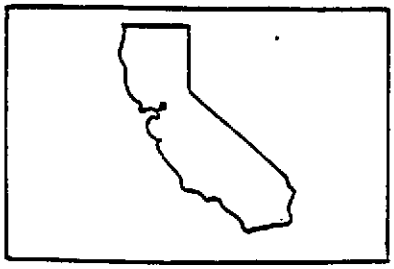
① REPORTED FUEL RELEASE SITES, SEE TABLE 2

NOTES: (1) BASE MAP FROM USGS OAKLAND WEST QUADRANGLE, 7.5 MINUTE SERIES (TOPOGRAPHIC), PHOTOREVISED 1980

(2) ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE

½ 1

SCALE, MILES

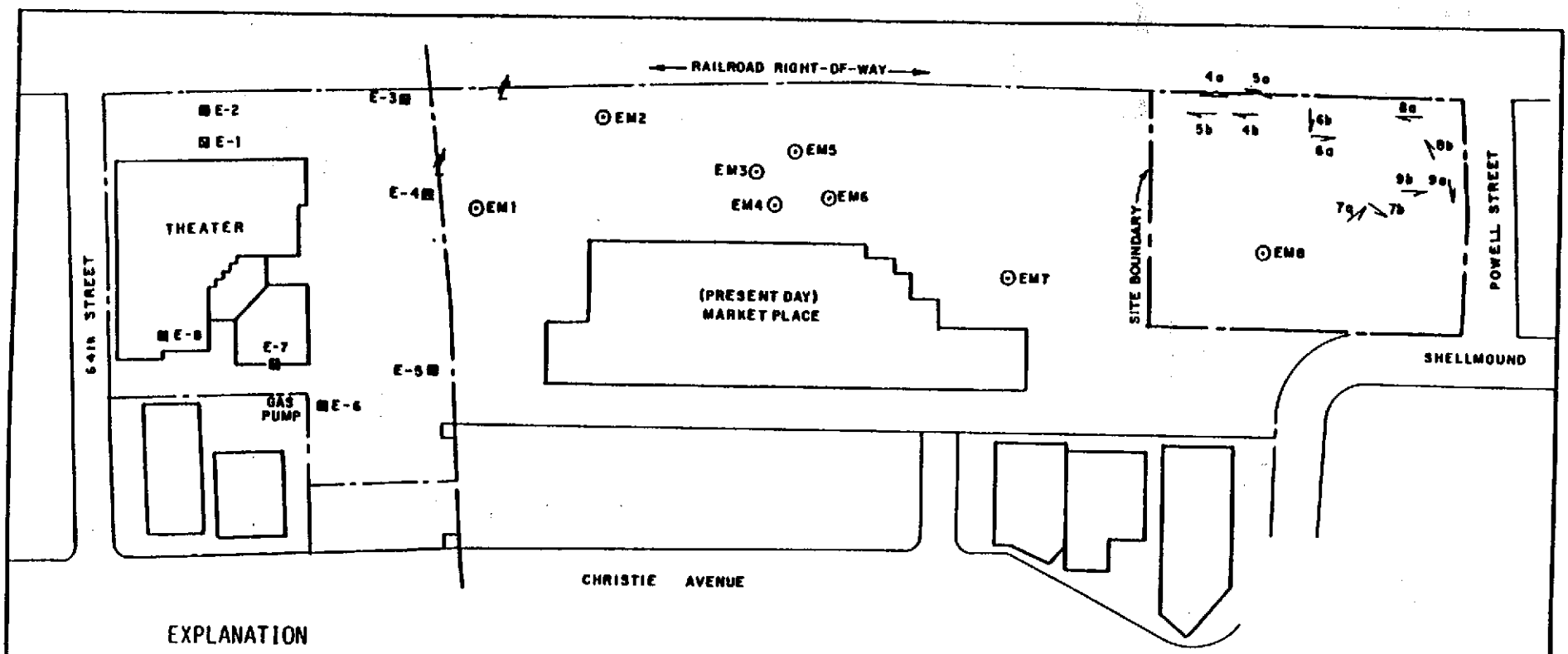


LOCATION OF QUADRANGLES

APPLIED GEOSCIENCES INC.
Engineering Geology and Hazardous Materials Consultants

SITE VICINITY MAP

PROJECT NO. A901749 | FIGURE 1



EXPLANATION

3b — LOCATION AND DIRECTION OF RELEVANT FEATURES IDENTIFIED AND DISCUSSED IN SECTION 5.5

⊙EM5 — SUBSURFACE SOIL BORING INSTALLED BY EARTH METRICS, INCORPORATED, 1988

■E-7 — SOIL BORING INSTALLED BY EARTH METRICS, INCORPORATED, 1987

NOTE: ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE

NORTH

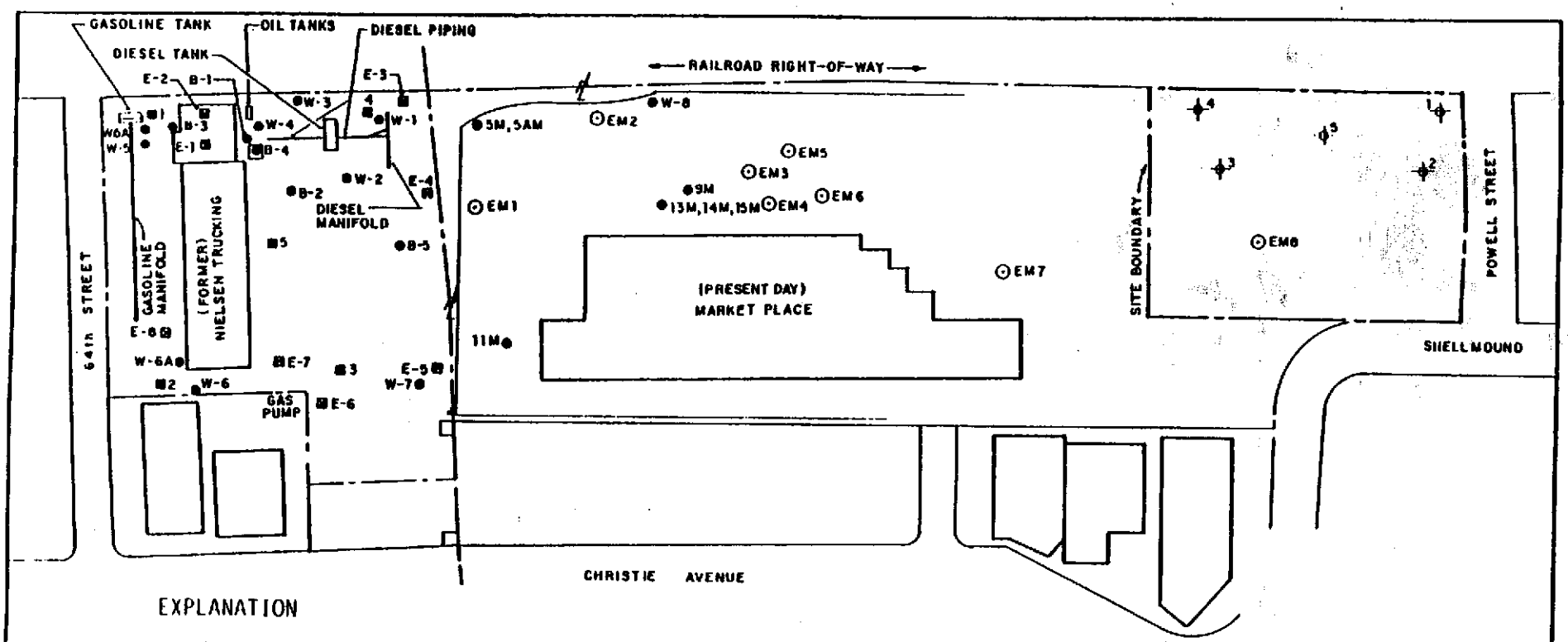
0 50 100 200

SCALE, FEET

APPLIED GEOSCIENCES INC.
Engineering Geology and Hazardous Materials Consultants

SITE PLOT PLAN
WITH
PHOTOGRAPH LOCATIONS

PROJECT NO. A901749 | FIGURE 2



EXPLANATION

- OIL/WATER SEPARATOR
- B-5 SHALLOW BORING INSTALLED BY WOODWARD-CLYDE CONSULTANTS (WITH OR WITHOUT VADOSE ZONE WELL)
- W-7 GROUNDWATER WELL INSTALLED BY WOODWARD-CLYDE CONSULTANTS
- 11M BORING OR GROUNDWATER WELL INSTALLED BY WOODWARD-CLYDE CONSULTANTS, 1982
- GEOTECHNICAL BORING INSTALLED BY GEOMATRIX, 1987
- EM5 SUBSURFACE SOIL BORING INSTALLED BY EARTH METRICS, INCORPORATED, 1988
- E-7 SOIL BORING INSTALLED BY EARTH METRICS, INCORPORATED, 1987

NOTE: ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE

APPLIED GEOSCIENCES INC.
Engineering Geology and Hazardous Materials Consultants

BORING AND
GROUNDWATER MONITORING WELL LOCATIONS
FROM PREVIOUS INVESTIGATIONS

PROJECT NO. A901749 | FIGURE 3

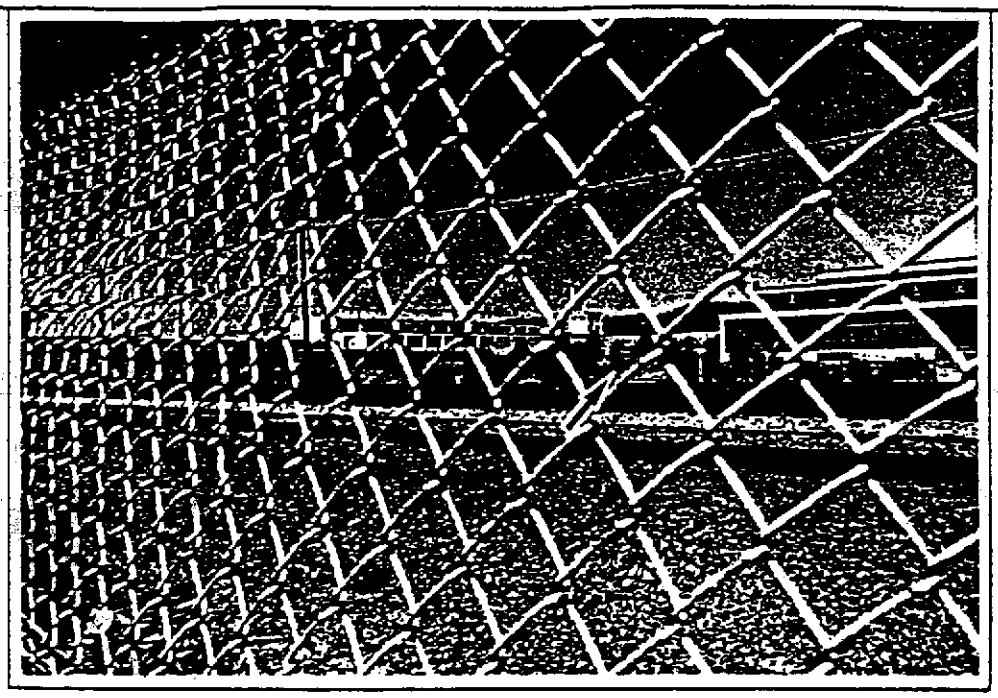


FIGURE 4A. PROPERTY LOCATED EAST ACROSS THE RAILROAD RIGHT-OF-WAY. DRUMS LOCATED AS INDICATED (⟶)

FIGURE 4B. APPROXIMATELY 40 PVC PIPES OF VARIOUS SIZES

FIGURE 4

PHOTOPRINTS OF SITE VICINITY AND PVC PIPES

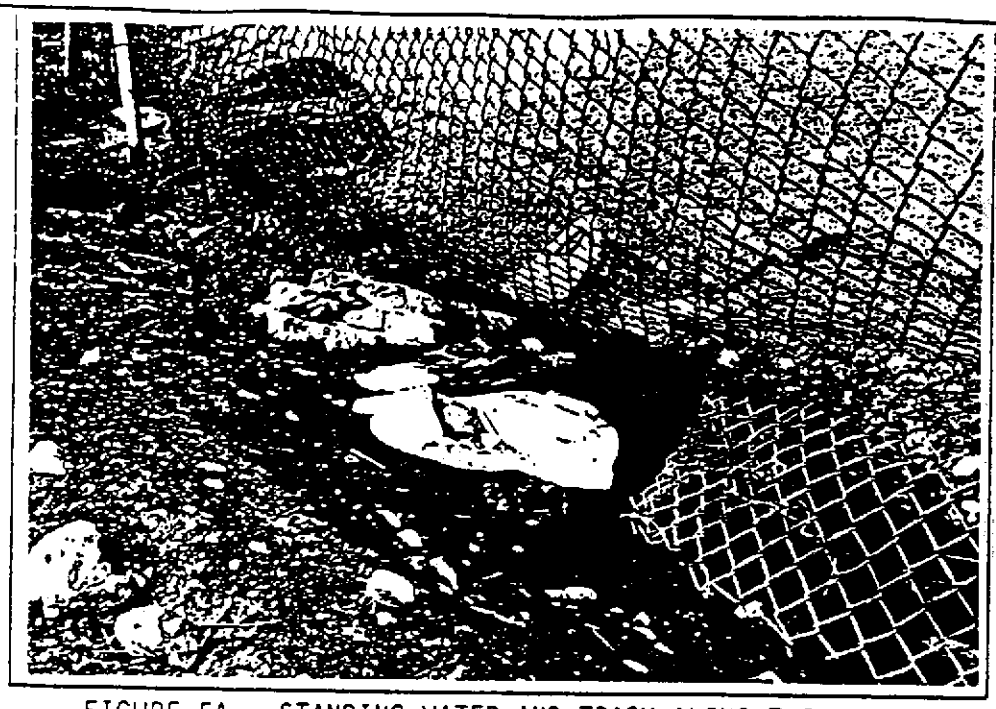


FIGURE 5A. STANDING WATER AND TRASH ALONG THE EAST PROPERTY BOUNDARY

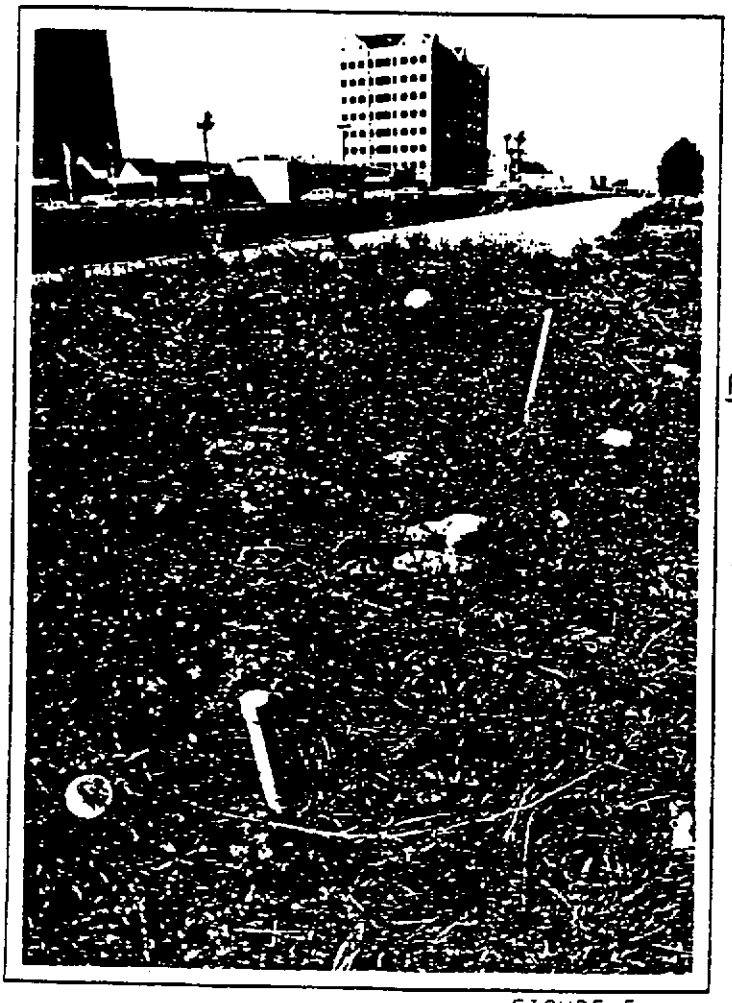


FIGURE 5B. VIEW OF THE MARKETPLACE. PVC PIPES EMANATING FROM THE GROUND

FIGURE 5
PHOTOPRINTS OF EAST BOUNDARY AREA

FIGURE 6A. WOODEN PALLETS AND PAPER INSIDE A TRASH CONTAINER

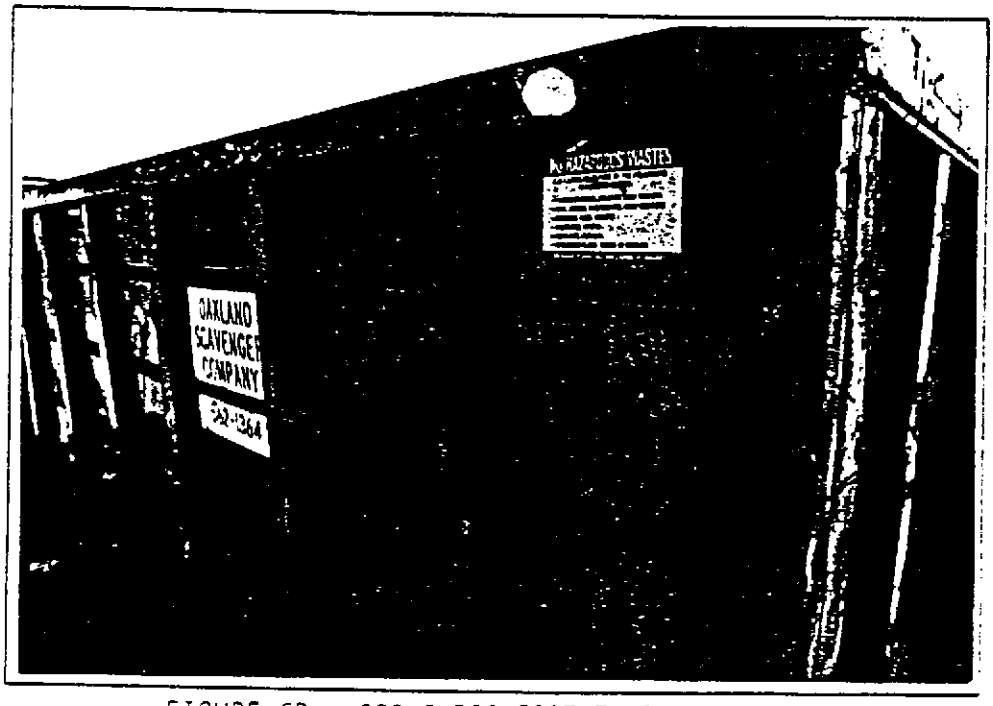


FIGURE 6B. 900 CUBIC FOOT TRASH CONTAINER

FIGURE 6
PHOTOPRINTS OF TRASH CONTAINER LOCATED ON THE EAST CENTRAL PORTION OF THE SITE

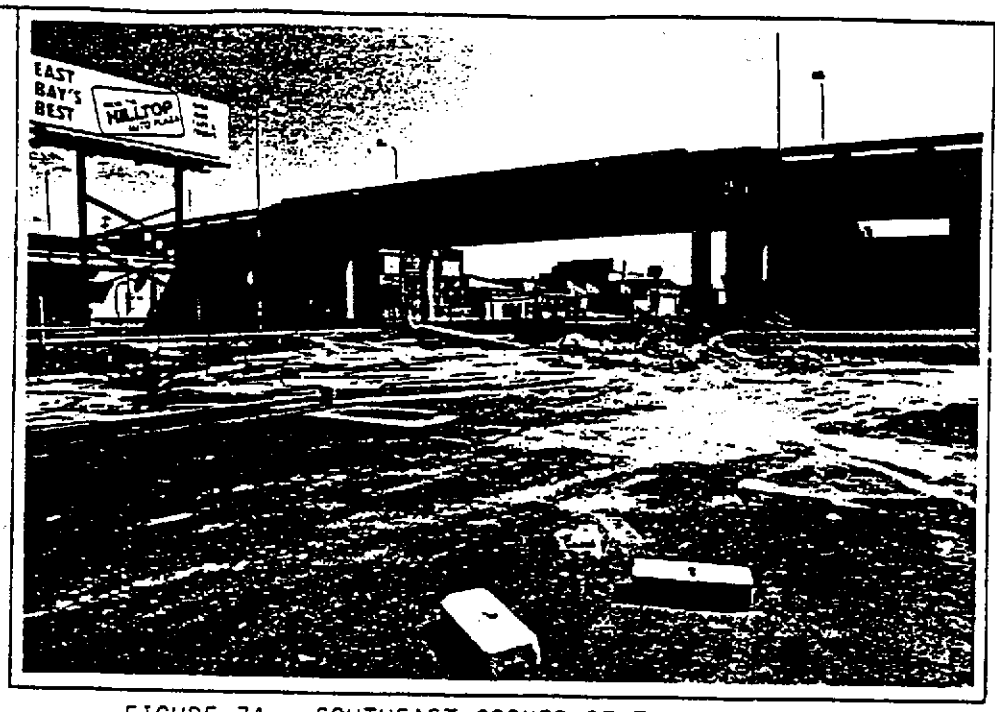


FIGURE 7A. SOUTHEAST CORNER OF THE SITE WITH CONSTRUCTION MATERIALS

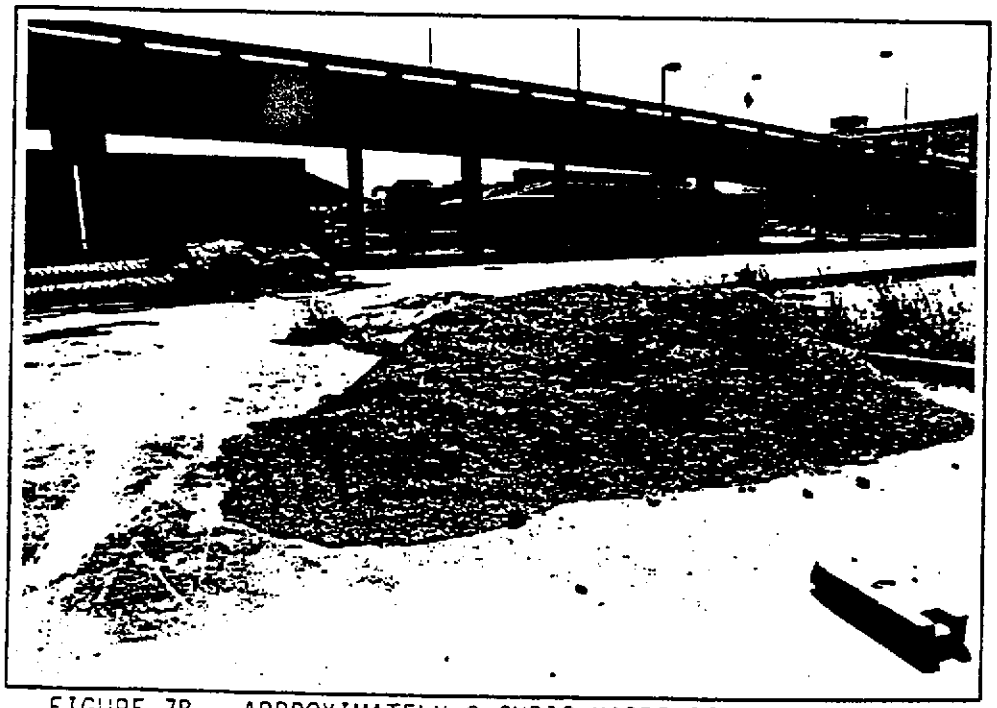


FIGURE 7B. APPROXIMATELY 9 CUBIC YARDS OF REDWOOD MULCH. PALM TREES IN THE BACKGROUND

FIGURE 7
PHOTOPRINTS OF SOUTH SIDE OF SITE

FIGURE 8A. DRUMS LOCATED IN SOUTHEAST CORNER OF THE SITE

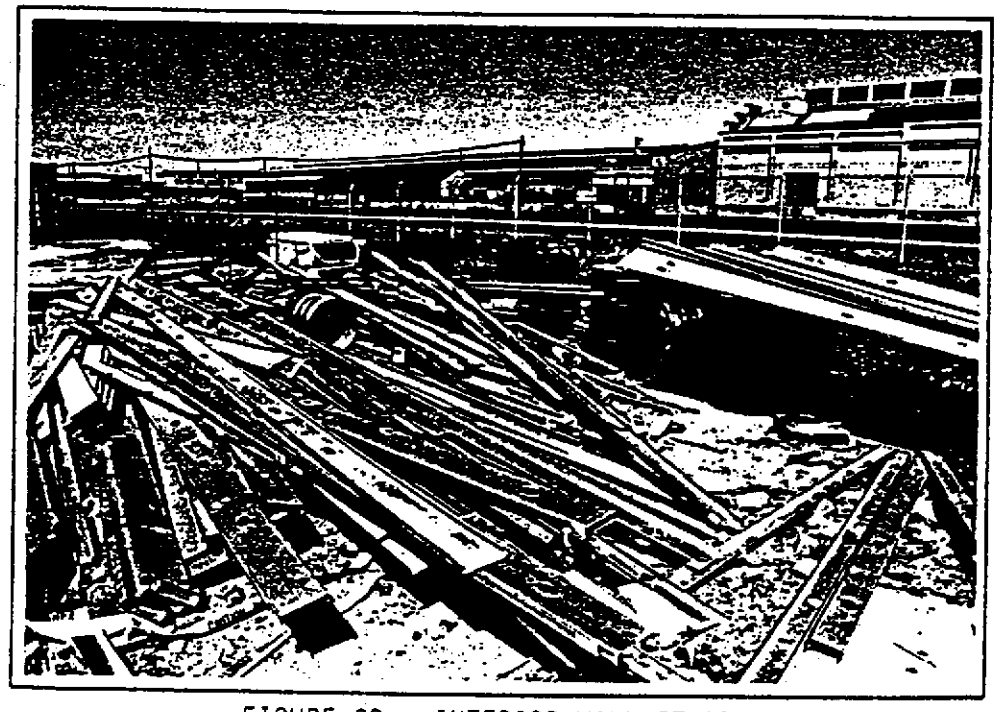


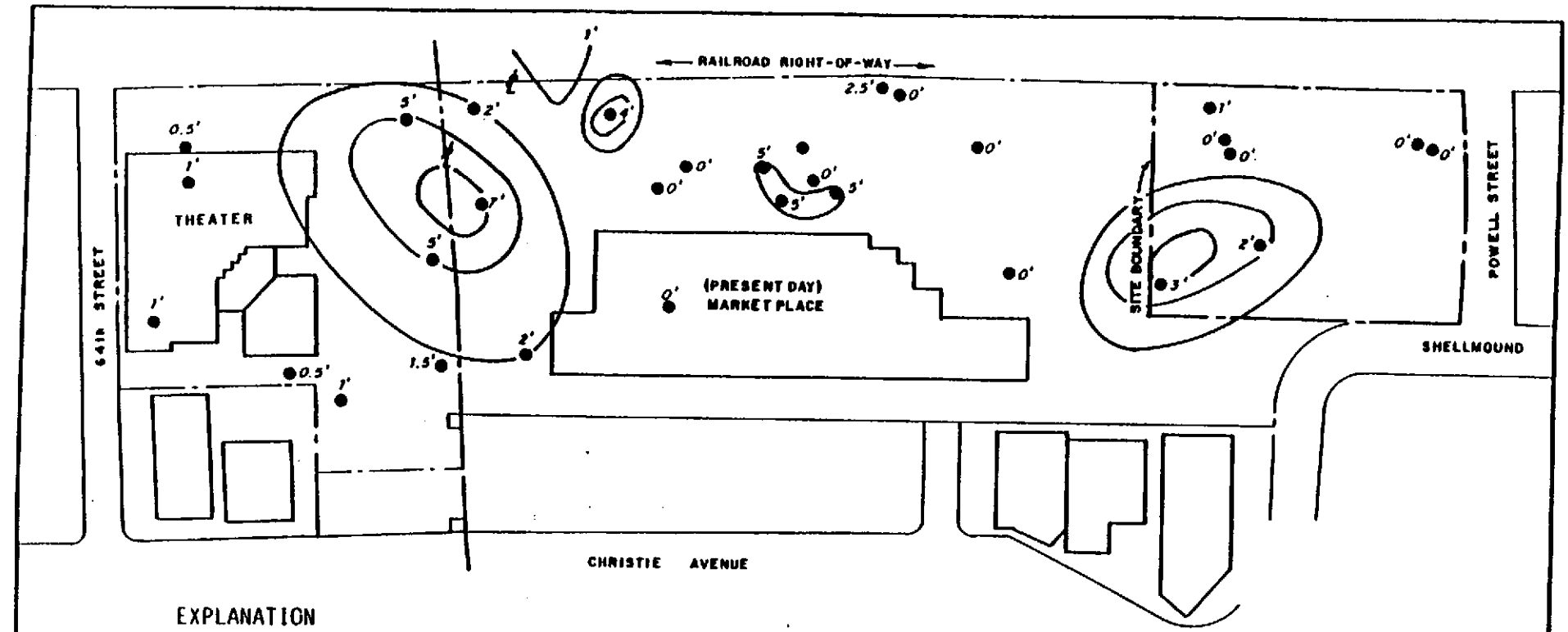
FIGURE 8B. INTERIOR WALL STUDDINGS

FIGURE 8
PHOTOPRINTS OF SOUTHEAST CORNER OF THE SITE

FIGURE 9A. TWELVE PALM TREES LYING ON THE GROUND SURFACE

FIGURE 9B. CONSTRUCTION DEBRIS WITH 4-INCH CONCRETE CORES

FIGURE 9
PHOTOPRINTS OF SOUTH SIDE OF SITE



EXPLANATION

2' — APPROXIMATE THICKNESS OF ASPHALTIC MATERIAL

PREVIOUS BORING

℄ PROPERTY LINE

NOTES: (1) CONTOURS HAVE BEEN OBTAINED FROM EARTH METRICS (1989)

(2) ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE

NORTH

0 50 100 200

SCALE, FEET

APPLIED GEOSCIENCES INC.

Engineering Geology and Hazardous Materials Consultants

SITE PLOT PLAN WITH
ASPHALTIC MATERIAL THICKNESS
CONTOURS

PROJECT NO. A901749 | FIGURE 10

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9
1235 MISSION STREET
SAN FRANCISCO, CA 94103

RECEIVED
APR 26 1990
BY:
Applied Geosciences Inc.

In Reply: H-8-1
Refer to: RIN-9-542-90

Joseph E. Mello, Jr.
Applied Geosciences Inc.
1735 N. First Street
San Jose, CA 95112

APR 23 1990

Dear Mr. Mello :

This is in reply to your Freedom of Information Act request of March 13, 1990 concerning sites in Emeryville, CA.

___ Enclosed is the requested information.

___ The requested information does not exist in our files and therefore we are unable to comply with your request.

___ Enclosed is a CERCLIS printout for the area of your inquiry which may give you needed information.

XX Comments: The files on these sites are currently being used and information is not available. We will place your name on our rererence list and supply information when available.

___ We are currently compiling the RCRA information that you have requested and we will send it shortly, under separate cover.

___ Enclosed is a Bill for Collection requesting payment of fees incurred in providing this information. Payment is due within 30 days.

Sincerely,

for Thomas L. Leahy
Donald C. White, Chief
Field Operations Branch

CONFIDENTIAL AND PRIVILEGED:
Attorney-Client and Work Product
Privileges Asserted

APPENDIX B

REPORTS AND LETTERS REGARDING THE SITE FROM THE FILES OF ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY (ACHCSA)

MAY 18, 1990

CONFIDENTIAL AND PRIVILEGED:
Attorney-Client and Work Product
Privileges Asserted

APPENDIX B.1

TENERA ENVIRONMENTAL SERVICES REPORTS

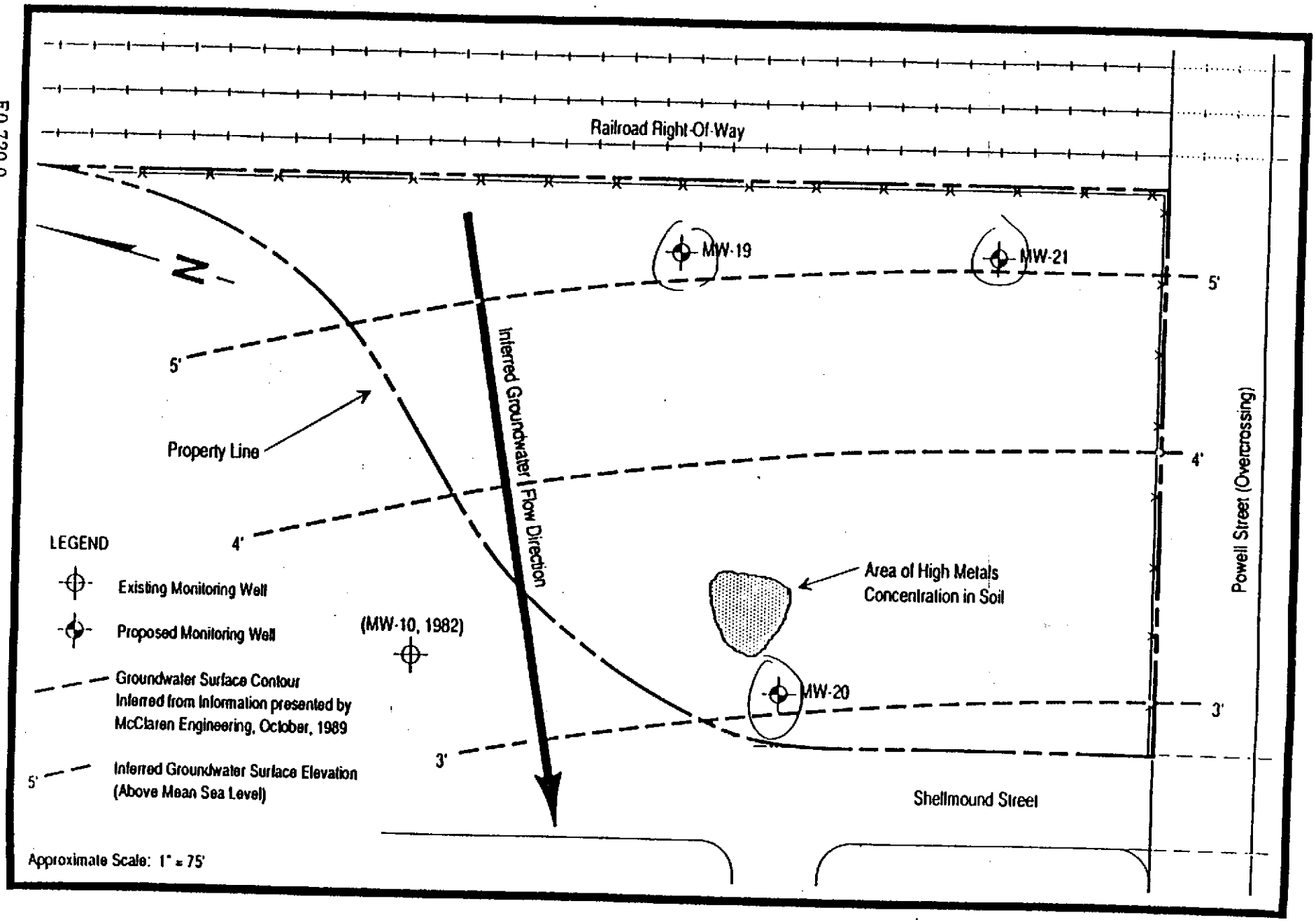


Figure 4-1
Proposed Monitoring Wells
on Site of Another Tree Emeryville Project

Table 4-1

Proposed Analytical Determinations on Samples from New Monitoring Wells
Another Tree Emeryville Project Site

Laboratory Determination	Well MW-19	Well MW-20	Well MW-21
Total Dissolved Solids (TDS)	X	X	X
Electrical Conductivity	X	X	X
Title 22 Inorganics	X	X	X
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Chromium			
Cobalt			
Copper			
Fluoride			
Lead			
Mercury			
Molybdenum			
Nickel			
Silver			
Thallium			
Vanadium			
Zinc			
Total Petroleum Hydrocarbons	X	X	X
Volatile Aromatic Compounds	X	X	X
Benzene			
Toluene			
Ethylbenzene			
Polynuclear Aromatic Hydrocarbons		X	
Purgeable Halocarbons	X		X

APPENDIX B.2

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY (ACHCSA) LETTERS

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

8 June 1990

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

Richard Pritzer
Another Tree Development Corporation
369 Pine Street
Suite 224
San Francisco, CA 94104

Subject: Proposed Remedial Actions to be Implemented at the ATDC Project at Shellmound and Powell Streets, Emeryville.

Dear Mr. Pritzer:

Thank you for the Work Plan prepared by Tenera Environmental Services. This document has been reviewed and the following conclusions have been reached.

1) Approval is granted for the excavation of soils within the area of high metal contamination identified in the report. Within borings EM8, EM8B, EMC, and EM8E, levels of copper, mercury, lead and zinc exceeding the Total Threshold Limitation Concentration established by the State of California were measured. A soil so contaminated constitutes a hazardous waste and will require excavation and proper disposal.

   Upon the conclusion of the soil removal, samples will have to be taken an analyzed for these heavy metal constituents. This action is necessary to demonstrate that the excavation has been sufficiently thorough to ensure that no contamination exceeding the TTLC value remains on the site. Please submit the results of these verification analysis to this office for review.

2) Approval is granted for the ground water monitoring well placement sites suggested in the Work Plan. Please ensure that the construction protocols and screening intervals utilized in these wells conform to those specified by the San Francisco Bay Regional Water Quality Control Board. We suggest that the entire series of analysis specified in the Tenera proposal be conducted on all three wells. Future modifications to the analysis protocol for a given well will be based upon the data derived during the first few sampling periods. Please ensure that all sampling data and well boring logs are submitted to this office for review and inclusion into our records.

3) Further characterization is needed in regards to the asphaltic material underlying part of the ATDC Project site. Specifically, the chemical composition of this material and the physical extent to which it encroaches upon the site in questions need to be defined with greater certainty. In the absence of this information approval cannot be granted for leaving the material in place as suggested in the Tenera Work Plan. Additional soil borings are required in regions in which this material is suspected to be present. In addition, a sample of the asphaltic material must be collected for laboratory analysis.

The sample(s) should be presented to a State certified laboratory and analyzed for Total Petroleum Hydrocarbons (EPA Method GCFID, 3550 and 5030), Benzene, Toluene, Xylene and Ethylbenzene (EPA Method 8020 or 8240), Chlorinated Hydrocarbons (EPA Method 8010 or 8240), Semi Volatile Organics (EPA Method 8270), Total Oil and Grease (EPA Method 503 D&E) and a screen for heavy metals by use of Atomic Absorption. This series of tests will serve to measure the chemical composition of the material. The information so derived will be used to gauge the appropriate mitigation or disposal strategy to be used.

If you have any questions concerning this matter please contact me at (415) 271-4320. The contents of this letter have been discussed with Jim Saucerman of Tenera Environmental Services.

Sincerely,

Dennis J. Byrne
Hazardous Materials Specialist

cc: Gil Jensen, Alameda County District Attorney's Office, Consumer and Environmental Protection Division
Lester Feldman, SFBRWQCB
Howard Hatayama, DOHS
Rafat Shahid, Assistant Director, Alameda County Department of Environmental Health.
Jim Saucerman, Tenera Environmental Services

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

3 August 1990

Richard Pritzer
Another Tree Development Corporation
369 Pine Street
Suite 224
San Francisco, CA 94104

Subject: ATDC Project at Shellmound and Powell Streets, Emeryville.

Dear Mr. Pritzer:

Thank you for the report prepared by Tenera Environmental Services, dated 5 July 1990, and submitted to this office in regards to the project listed above. This office has reviewed the report and the quality of the work performed is deemed adequate.

This agency concurs with the assessment of the oily soil underlying a portion of your property as constituting nonhazardous waste. Consequently, you are under no obligation to physically remove this material for disposal as a condition for the implementation of your proposed development. Please be aware however, that further characterization of this material may be required at some future date should any evidence arise indicating that the data utilized in the classification of this waste was not of a representative quality.

Leaving this material in place will require a reevaluation of the ground water monitoring well placement locations suggested in your proposal dated 18 May 1990. Based upon the anticipated ground water flow direction for this site any ground water quality impacts resulting from the presence of this contaminated soil will not be addressed by the placement locations currently proposed. Assessing any such impacts will require that a well be located within or downgradient of the Northwest portion of your property. Alternatives for addressing this issue could include adding a fourth well to the three currently proposed for installation or reassigning the placement of one of the wells proposed for the Eastern boundary of your property. Please inform this office of your intentions regarding this matter.

Investigating the quality of ground water need not hinder the development of your project. This office will have no objection to the implementation of your development provided a reasonable schedule as to when your ground water investigation will begin is communicated.

The removal of the heavy metal contaminated soil in the vicinity of boring B-8 will have to be completed prior to your development. Please ensure that samples are collected to verify that the excavation is sufficiently thorough and that these analysis and any manifests accounting for the disposal of these wastes are submitted to this office for review and inclusion into our records.

The contents of this letter have been discussed with Jim Saucerman of Tenera Environmental Services. If you have any questions concerning this matter please contact me at (415) 271-4320.

Sincerely,

Dennis J. Byrne
Hazardous Materials Specialist

cc: Gil Jensen, Alameda County District Attorney's Office, Consumer and Environmental Protection Division
Howard Hatayama, DOHS
Lester Feldman, SFBRWQCB
Rafat Shahid, Assistant Director, Alameda County Department of Environmental Health
Jim Saucerman, Tenera Environmental Services

APPENDIX C

BORING PROCEDURES AND LOGS
MONITORING WELL CONSTRUCTION LOGS
AND WELL LOCATION AND ELEVATION SURVEY

APPENDIX C.1

BORING INSTALLATION PROCEDURES

BORING INSTALLATION PROCEDURES

The procedures that were used for drilling borings and collecting soil samples are presented below:

- Soil borings were advanced to depths ranging from approximately 5 to 22 feet below the ground surface (BGS) with an 8-inch-outside-diameter hollow-stem auger.

- Soil descriptions, sample type and depth, and related drilling information were recorded on a boring log under the supervision of a State-certified engineering geologist from Applied Geosciences Inc.

- Soil samples were collected at 2.5-foot intervals from 0 to 10 feet BGS and 5-foot intervals below 10 feet BGS with a California-modified split-barrel sampler.

- The sampler was washed between sample intervals with a bristle brush and an Alconox solution and was given two tap water rinses and a deionized water rinse. The sampler was dried by air or with paper towels prior to each sampling.

- Soil samples were collected in 6-inch-long stainless steel sample tubes inserted inside the samplers. Prior to use, the sample tubes were immersed in a solution of approximately 3 percent sulfuric acid, an Alconox bath, two tap water rinses, and a deionized water rinse. The sample tubes were dried in air prior to use.

- Samplers were driven with a 140-pound hammer dropping approximately 30 inches. The number of blows (blow count) required to advance the sampler 12 inches was recorded on the boring log.

- Following retrieval of the sampler, the middle sample tube was removed from the sampler and the ends covered with aluminum foil and capped with polyvinyl chloride (PVC) end caps. Each sample was labeled with the sample number, the depth of collection, the date, the project number, and the sampler's initials.

- Soil in the lowest sample tube was used to describe the lithology and measure volatile organic compounds (VOCs) as follows: 1) Approximately half of the sample from the bottom sample tube was removed. 2) The tube was then capped with PVC end caps and set aside in approximately isothermal conditions to allow VOCs, if present, to accumulate in the headspace aboye the sampled soil. 3) The headspace was then sampled using an Hnu organic vapor meter (OVM) equipped with a 10.2 eV probe. The probe was inserted through a hole made in the PVC end cap, and the highest measurement encountered on the OVM was recorded on the boring log.

- The resulting VOC concentration measurements were considered

during the selection of soil samples for laboratory analysis. If an insufficient amount of soil was obtained to measure the VOCs in the headspace, a dash (-) was entered in the boring log (Appendix C.2).

- Samples retained for laboratory analyses were placed in Ziploc bags, stored on ice in an insulated chest, and cooled to a temperature of approximately 40 degrees Fahrenheit.

- Samples were delivered to the laboratory within 12 hours of collection. Sample handling, transport, and delivery to the laboratory were performed using chain-of-custody forms.

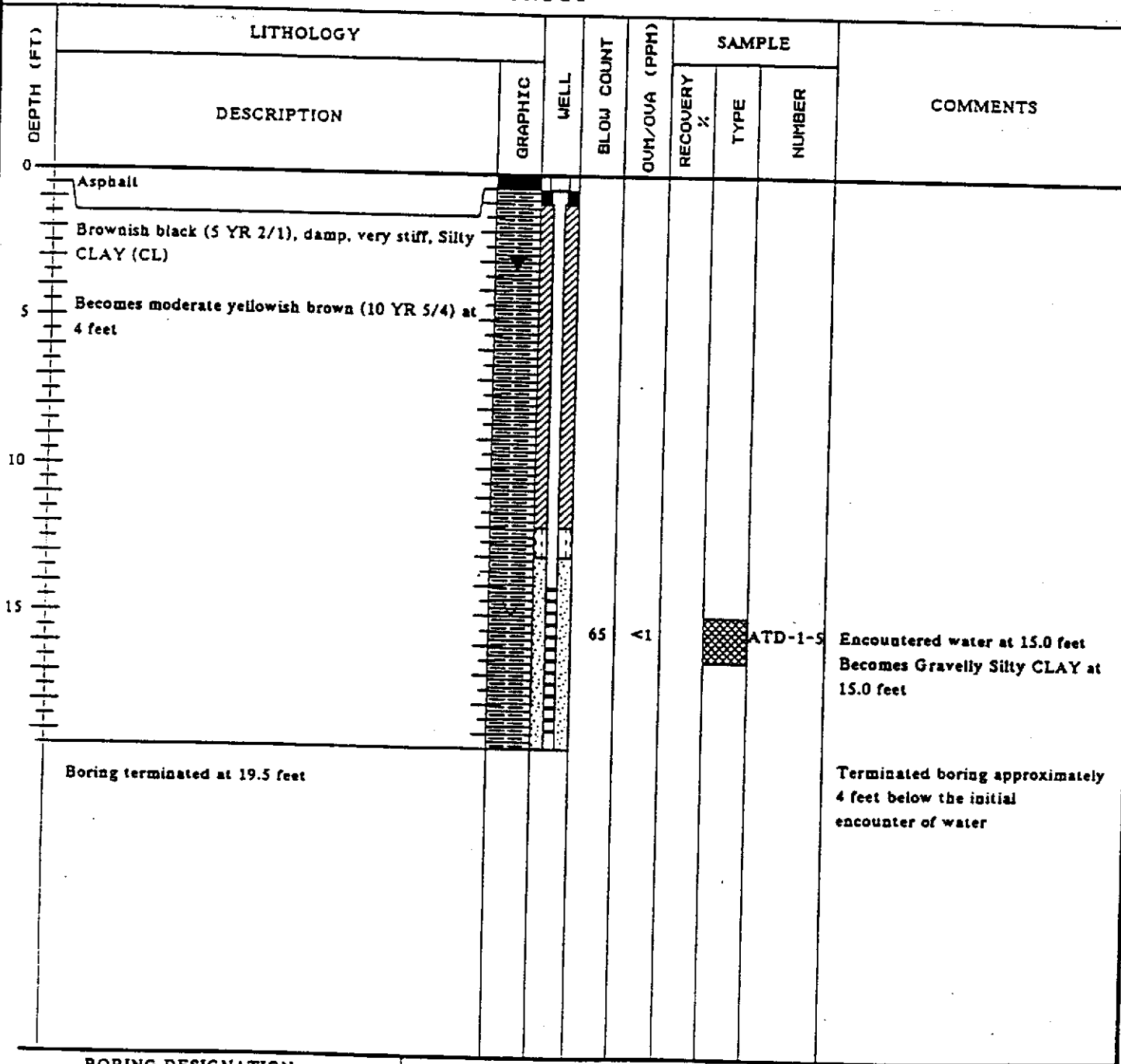
- Soil from the drilling operations was stored on-site in 55-gallon drums. Based on the results of the laboratory analyses, the soil will be disposed of as judged appropriate by Applied Geosciences Inc.

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ MICHAEL MILLER		START DATE ▷ 31 July 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 31 July 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷ 9.1		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ CME-55			
BORING DEPTH (FT) ▷ 11.0	WELL DEPTH (FT) ▷ 19	WATER DEPTH (FT)-Initial: 4.0	Completion:
WELL MATERIALS ▷ No. 3 MONTEREY SAND		WELL SCREEN INTERVAL (FT) ▷ 14 TO 19	
WELL CASING ELEVATION (FT-MSL) ▷ 8.54		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE RECOVERY %	SAMPLE TYPE	SAMPLE NUMBER	COMMENTS
0	Asphalt								Roots at 1.0 feet
	Brownish black (5 YR 2/1), damp, Silty CLAY (CL) with an increase in gravel at 1.5 feet			54	<1			ATD1-1	Very gravelly at 2.0 feet
5	Olive gray (5 Y 4/1), moist, dense, Clayey GRAVEL (GC)				<1			ATD1-2	Cuttings smell like diesel at 2.0 feet (second boring)
	Man-made debris, fill material, wood, concrete, rebar, and large, angular gravels								Very hard drilling. Hit concrete and rebar at 2.5 feet
	Dark greenish gray (5 GY 4/1), moist, Silty CLAY (CL)			25	<1			ATD1-3	Refusal (first boring). Moved boring 3 feet south
10	Becomes light olive brown (5 Y 5/6) at 8 feet								Encountered water at 4.0 feet (second boring)
				37	<1			ATD1-4	Hit concrete debris at 4.0 feet (third boring)
	Boring terminated at 10.5 feet								Very hard drilling at 4.5 feet: rock, debris, and concrete. Refusal (second boring). Moved boring 5 feet east
									Able to drill through concrete debris and collect sample
									Native bay mud at 7.5 feet
									ABANDONED WELL PRIOR TO SETTING GROUT

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
ATD1		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ MICHAEL MILLER		START DATE ▷ 1 August 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 1 August 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷ 9.1		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ CME-55			
BORING DEPTH (FT) ▷ 19.5	WELL DEPTH (FT) ▷	WATER DEPTH (FT)-Initial: 15.0	Completion: 3.3
WELL MATERIALS ▷		WELL SCREEN INTERVAL (FT) ▷	TO
WELL CASING ELEVATION (FT-MSL) ▷		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			



BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
ATD1A		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A
LOGGED BY ▷ MICHAEL MILLER		START DATE ▷ 31 July 1991
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 31 July 1991
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷ 9.7		DRILLING COMPANY ▷ SPECTRUM EXPLORATION
DRILLING EQUIPMENT ▷ CME-55		
BORING DEPTH (FT) ▷ 11.0	WELL DEPTH (FT) ▷ 9.5	WATER DEPTH (FT)-Initial: 4.0 Completion: 4.0
WELL MATERIALS ▷ No. 3 MONTEREY SAND		WELL SCREEN INTERVAL (FT) ▷ 4 TO 9
WELL CASING ELEVATION (FT-MSL) ▷ 9.37		OVM/OVA ▷ Hnu with 10.2 eV PROBE
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT		

DEPTH (FT)	LITHOLOGY DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE RECOVERY %	SAMPLE TYPE	SAMPLE NUMBER	COMMENTS
0	Asphalt								
	Light olive gray (5 Y 5/2), damp, Silty SAND (SM)			12	<1			ATD-2-1	
5	Light olive gray (5 Y 5/2), moist, stiff, Silty CLAY (CL)			53	-			ATD-2-2	Encountered water at 4.0 feet Lost sample no. ATD-2-2 due to presence of gravels
	Becomes gravelly fill at 5 feet			54	-			ATD-2-3	Encountered debris (concrete, metal) at 5.0 feet Lost sample no. ATD-2-3 due to presence of gravels
	Light olive brown (5 Y 5/6), wet, stiff, Gravelly Silty CLAY (CL)								Very hard drilling at 7.5 feet No debris observed below 8 feet
10	Boring terminated at 10 feet			12	<1			ATD-2-4	Terminated boring approximately 6 feet below the initial encounter of water

BORING DESIGNATION		PAGE NUMBER	FIGURE NUMBER
ATD2	BORING LOG	1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ MICHAEL MILLER		START DATE ▷ 31 July 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 31 July 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷ 8.8		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ CME-55			
BORING DEPTH (FT) ▷ 22.0	WELL DEPTH (FT) ▷ 22	WATER DEPTH (FT)-Initial: 18.5	Completion: 3.5
WELL MATERIALS ▷ No. 3 MONTEREY SAND		WELL SCREEN INTERVAL (FT) ▷ 16.5 TO 21.5	
WELL CASING ELEVATION (FT-MSL) ▷ 8.21		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY: DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE: RECOVERY %	SAMPLE: TYPE	SAMPLE: NUMBER	COMMENTS
0	Asphalt								
	Dark yellow brown (10 YR 4/2), moist, medium dense, Silty GRAVEL (GM)			12	<1			ATD-3-1	
5	Dark yellow brown (10 YR 4/2), moist, stiff, Silty CLAY (CL)			11	<1			ATD-3-2	
	Becomes moderate yellow brown (10 YR 5/4) at 7 feet			22	<1			ATD-3-3	
10				38	<1			ATD-3-4	
15									
	Increase in gravel at 18.5 feet			29	<1			ATD-3-5	Water encountered at 18.5 feet
20									
	Boring terminated at 22 feet								Terminated boring approximately 3 feet below the initial encounter of water

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
ATD3		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 1 August 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 1 August 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷ 8.1		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2			
BORING DEPTH (FT) ▷ 11.5	WELL DEPTH (FT) ▷ 11.5	WATER DEPTH (FT)-Initial: 5.0	Completion: 4.0
WELL MATERIALS ▷ No. 3 MONTEREY SAND		WELL SCREEN INTERVAL (FT) ▷ 4.5 TO 9.5	
WELL CASING ELEVATION (FT-MSL) ▷ 7.70		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY: DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE: RECOVERY %	SAMPLE: TYPE	SAMPLE: NUMBER	COMMENTS
0	Mottled grayish black (N2) and grayish blue green (5 BG 5/2), dense, moist, Clayey SILT (ML) with some sand			12	-	40		ATD4-1	First two boring attempts terminated at 1.5 feet due to the presence of concrete Brick fragments at 2.5 feet Hnu sample not obtained at 2.5 feet
5	Grayish blue green (5 BG 5/2), saturated, firm, CLAY (CH)			7	<1	70		ATD4-2	
	Becomes mottled grayish blue green (5 BG 5/2) and light brown (5 YR 5/6) at 7.5 feet			9	<1	65		ATD4-3	
10	Becomes mottled light brown (5 YR 5/6) and dusky yellow (5 Y 6/4) at 10.5 feet			26	<1	70		ATD4-4	
	Boring terminated at 11.5 feet								Terminated boring approximately 6.5 feet below the initial encounter of water

BORING DESIGNATION		PAGE NUMBER	FIGURE NUMBER
ATD4	BORING LOG	1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 31 July 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 31 July 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷ 7.9		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2			
BORING DEPTH (FT) ▷ 11.5	WELL DEPTH (FT) ▷ 11.5	WATER DEPTH (FT)-Initial: 5.0	Completion: 4.0
WELL MATERIALS ▷ No. 3 MONTEREY SAND		WELL SCREEN INTERVAL (FT) ▷ 4.0 TO 9.0	
WELL CASING ELEVATION (FT-MSL) ▷ 7.56		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE RECOVERY %	SAMPLE TYPE	SAMPLE NUMBER	COMMENTS
0	Asphalt								
	Light brown (5 Y 5/6), dry, very stiff, Sandy Clayey SILT (ML) with some fine gravels			17	-	40		ATD5-1	Hnu sample not obtained at 2.5 or 5 feet
5	Becomes black (N1) and saturated at 5 feet			100	-	15		ATD5-2	Hnu<1 part per million downhole at 5 feet
	Black (N1), saturated, stiff, very fine Sandy SILT (ML) with some shell fragments			12	<1	95		ATD5-3	Unable to obtain a sample at 5 feet Slight odor (petroleum hydrocarbons?)
10	Mottled light olive brown (5 Y 5/6), light brown (5 YR 5/6), and light olive (10 Y 5/4), saturated, dense, Clayey Silty Sandy GRAVEL (GM)			30	<1	65		ATD5-4	Some shell fragments in the sample at 8.5 feet
	Boring terminated at 11.5 feet								Terminated boring approximately 6.5 feet below the initial encounter of water

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
ATD5		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 31 July 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 31 July 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷ 8.3		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2			
BORING DEPTH (FT) ▷ 11.5	WELL DEPTH (FT) ▷ 11.5	WATER DEPTH (FT)-Initial: 5.0	Completion: 5.4
WELL MATERIALS ▷ No. 3 MONTEREY SAND		WELL SCREEN INTERVAL (FT) ▷ 4.0	TO 9.0
WELL CASING ELEVATION (FT-MSL) ▷ 7.87		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE RECOVERY %	SAMPLE TYPE	SAMPLE NUMBER	COMMENTS
0	Asphalt								
	Grayish black (N2), damp, stiff, Clayey SILT (ML) with trace fine sand			11	78	75		ATD6-1	Diesel odor noted in the sample obtained at 2.5 feet
5	Mottled grayish blue (5 PB 5/2) and light brown (5 YR 5/6), saturated, firm, CLAY (CH)			7	94	70		ATD6-2	Analyze a sample from this boring for VOCs
	Moderate yellowish brown (10 YR 5/4), saturated, medium dense, Silty fine Sandy GRAVEL (GM) with minor clay			25	9	70		ATD6-3	Hnu = 28 parts per million downhole at 5 feet
10				27	1	85		ATD6-4	Gasloine odor noted in the sample obtained at 7.5 feet
	Boring terminated at 11.5 feet								Terminated boring approximately 6.5 below the initial encounter of water

BORING DESIGNATION		PAGE NUMBER	FIGURE NUMBER
ATD6	BORING LOG	1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 31 July 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 31 July 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷ 8.2		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2			
BORING DEPTH (FT) ▷ 11.5	WELL DEPTH (FT) ▷ 11.5	WATER DEPTH (FT)-Initial: 4.5	Completion: 5.2
WELL MATERIALS ▷ No. 3 MONTEREY SAND		WELL SCREEN INTERVAL (FT) ▷ 4.0 TO 9.0	
WELL CASING ELEVATION (FT-MSL) ▷ 7.95		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE RECOVERY %	SAMPLE TYPE	SAMPLE NUMBER	COMMENTS
0	Asphalt								
	Light brown (5 YR 5/6), slightly damp, stiff SILT (ML)			9	<1	65		ATD7-1	Some organic matter, some oxidation (fill material!)
5	Becomes mottled light brown (5 YR 5/6) and dusky yellow (5 Y 6/4), moist, Clayey SILT with some coarse sands at 2 feet			2	<1	75		ATD7-2	Water initially encountered at 4.5 feet
	Bluish black (5 B 3/1), saturated, very soft, Silty CLAY (CL)			4	<1	70		ATD7-3	Bay mud at 5 feet Hnu <1 part per million downhole at 5 feet
10	Mottled light brown (5 YR 5/6) and bluish black (5 B 3/1), saturated, stiff CLAY (CH)			12	<1	70		ATD7-4	Some debris observed in the bay mud. Bay mud used for fill?
	Boring terminated at 11.5 feet								Terminated boring approximately 7 feet below the initial encounter of water

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
ATD7		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 1 August 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 1 August 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2			
BORING DEPTH (FT) ▷ 5.0	WELL DEPTH (FT) ▷	WATER DEPTH (FT)-Initial:	Completion:
WELL MATERIALS ▷		WELL SCREEN INTERVAL (FT) ▷	TO
WELL CASING ELEVATION (FT-MSL) ▷		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY: DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE: RECOVERY %	SAMPLE: TYPE	SAMPLE: NUMBER	COMMENTS
0	Asphalt/Baserock								
	Grayish black (N2), damp, stiff, Clayey SILT (ML)			14	-	45		B1-1	No Hnu sample at 1.5 feet
				12	<1	70		B1-2	
5	Gravish black (N2), damp, stiff, Silty CLAY (CH)								
	Boring terminated at 5.0 feet								Boring terminated at predetermined depth

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
B1		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 1 August 1991
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 1 August 1991
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷		DRILLING COMPANY ▷ SPECTRUM EXPLORATION
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2		
BORING DEPTH (FT) ▷ 5.0	WELL DEPTH (FT) ▷	WATER DEPTH (FT)-Initial: Completion:
WELL MATERIALS ▷		WELL SCREEN INTERVAL (FT) ▷ TO
WELL CASING ELEVATION (FT-MSL) ▷		OVM/OVA ▷ Hnu with 10.2 eV PROBE
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT		

DEPTH (FT)	LITHOLOGY: DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE: RECOVERY %	SAMPLE: TYPE	SAMPLE: NUMBER	COMMENTS
0	Asphalt/Baserock								
	Moderate yellowish brown (10 YR 5/4), damp, stiff, Clayey SILT (ML)			13	<1	70		B2-1	Some gravels at 1.5 feet
				6	<1	75		B2-1	
5	Becomes grayish black (N2) and wet at 4.0 feet								
	Boring terminated at 5.0 feet								Boring terminated at predetermined depth

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
B2		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 1 August 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 1 August 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2			
BORING DEPTH (FT) ▷ 5.0	WELL DEPTH (FT) ▷	WATER DEPTH (FT)-Initial:	Completion:
WELL MATERIALS ▷		WELL SCREEN INTERVAL (FT) ▷	TO
WELL CASING ELEVATION (FT-MSL) ▷		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY: DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE: RECOVERY %	SAMPLE: TYPE	SAMPLE: NUMBER	COMMENTS
0	Asphalt								
	Light olive brown (5 Y 5/6), moist, very stiff, Clayey SILT (ML) with trace fine gravel			17	<1			B3-1	
				11	<1			B3-2	
5	Grayish black (N2), damp, stiff, Silty CLAY (CH)								
	Boring terminated at 5.0 feet								Boring terminated at predetermined depth

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
B3		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 1 August 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 1 August 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2			
BORING DEPTH (FT) ▷ 5.0	WELL DEPTH (FT) ▷	WATER DEPTH (FT)-Initial:	Completion:
WELL MATERIALS ▷		WELL SCREEN INTERVAL (FT) ▷	TO
WELL CASING ELEVATION (FT-MSL) ▷		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY: DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE: RECOVERY %	SAMPLE: TYPE	SAMPLE: NUMBER	COMMENTS
0	Olive gray (5 Y 3/2), dry, Silty Sandy GRAVEL (GM)			64	-	35		B4-1	Refusal at 2.5 feet. No Hnu sample
	Grayish black (N2), moist, firm Clayey SILT (ML)			6	<1	85		B4-2	
5	Boring terminated at 5.0 feet								Boring terminated due to increase in moisture at 5.0 feet

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
B4		1 OF 1	

PROJECT ▷ ANOTHER TREE	APPLIED GEOSCIENCES INC.	PROJECT NUMBER ▷ A901749A	
LOGGED BY ▷ JOSEPH MELLO		START DATE ▷ 1 August 1991	
CHECKED BY ▷ FRED R. CONWELL		COMPLETION DATE ▷ 1 August 1991	
GROUND SURFACE ELEVATION DATUM (FT-MSL) ▷		DRILLING COMPANY ▷ SPECTRUM EXPLORATION	
DRILLING EQUIPMENT ▷ ACKER DRILLING CO. AD-2			
BORING DEPTH (FT) ▷ 5.0	WELL DEPTH (FT) ▷	WATER DEPTH (FT)-Initial:	Completion:
WELL MATERIALS ▷		WELL SCREEN INTERVAL (FT) ▷	TO
WELL CASING ELEVATION (FT-MSL) ▷		OVM/OVA ▷ Hnu with 10.2 eV PROBE	
BACKFILL MATERIAL ▷ CEMENT-BENTONITE GROUT			

DEPTH (FT)	LITHOLOGY: DESCRIPTION	GRAPHIC	WELL	BLOW COUNT	OVM/OVA (PPM)	SAMPLE: RECOVERY %	SAMPLE: TYPE	SAMPLE: NUMBER	COMMENTS
0	Olive gray (5 Y 3/2), dry, Silty Sandy GRAVEL (GM)			39	<1			B5-1	
	Grayish black (N2), moist, firm Clayey SILT (ML)			7	<1			B5-2	Bottom of sample wet
5	Boring terminated at 5.0 feet								Sample saturated Boring terminate due to increase in moisture

BORING DESIGNATION	BORING LOG	PAGE NUMBER	FIGURE NUMBER
B5		1 OF 1	

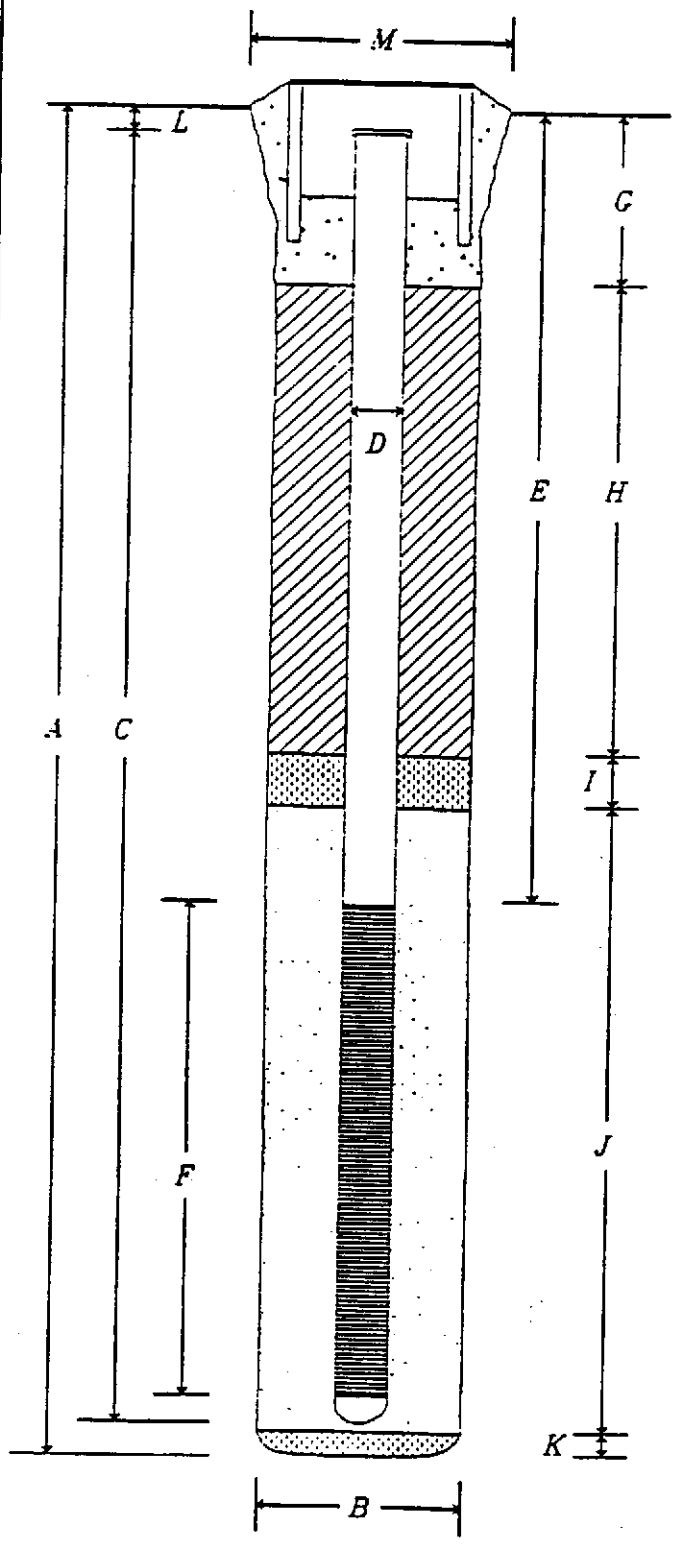
APPENDIX C.3

MONITORING WELL CONSTRUCTION LOGS

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: A901749A
PROJECT NAME: MARKETPLACE II
COUNTY: ALAMEDA
WELL PERMIT NO.:

BORING/WELL NO.: ATD1
TOP OF CASING ELEV.: 8.54
GROUND SURFACE ELEV.: 9.14
DATUM: MEAN SEA LEVEL



EXPLORATION BORING

A. Total Depth: 19.0 ft.
B. Boring Diameter: 10 in.
Drilling Method: HOLLOW-STEM AUGER

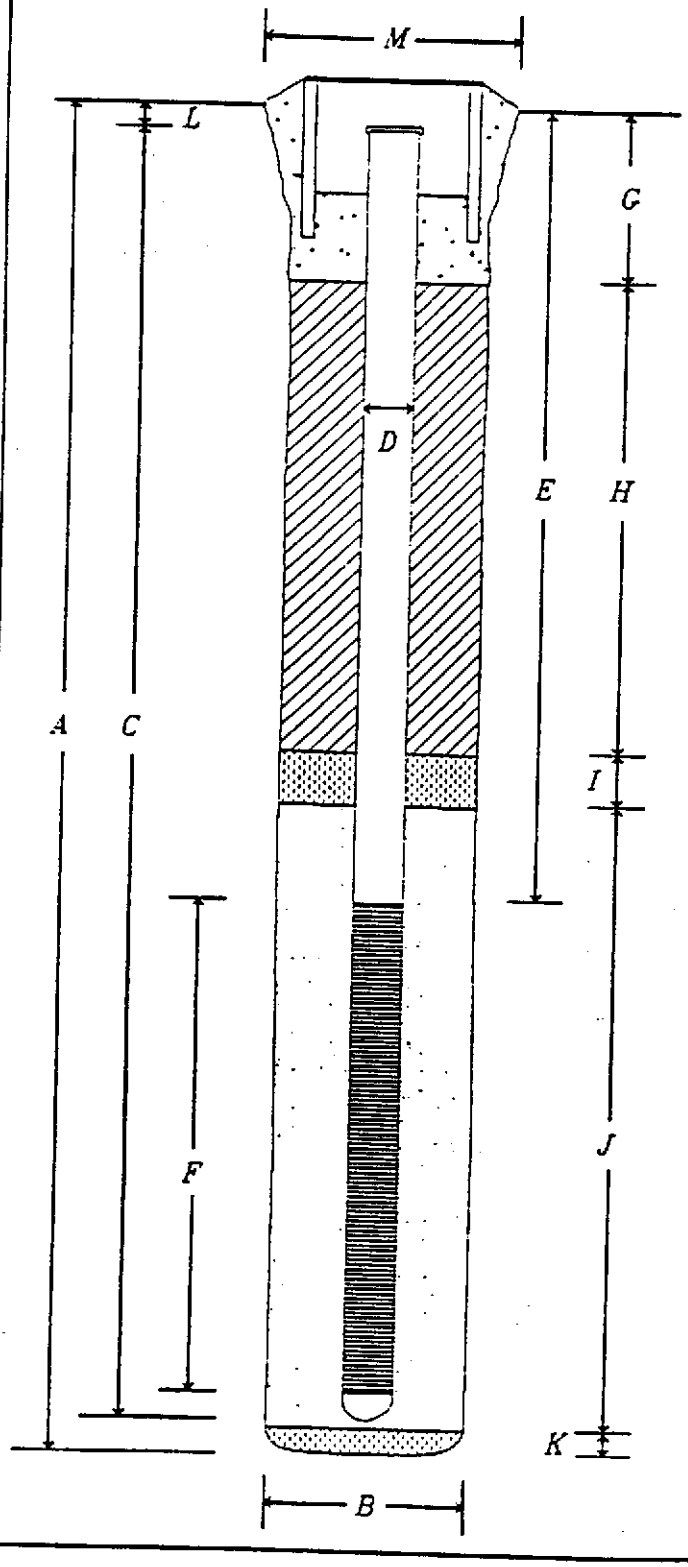
WELL CONSTRUCTION

C. Casing Length: 18.5 ft.
Material: SCHEDULE 40 PVC
D. Diameter: 4 in.
E. Depth to Top of Perforations: 14.0 ft.
F. Perforated Length: 5.0 ft.
Perforated Interval from 13.5 to 18.5 ft.
Perforation Type: MACHINE SLOT
Perforation Size: 0.020 INCH
G. Surface Seal: 2.0 ft.
Seal Material: CEMENT
H. Backfill: 11.5 ft.
Backfill Material: CEMENT GROUT
I. Seal: 1.0 ft.
Seal Material: BENTONITE PELLETS
J. Gravel Pack: 6.0 ft.
Material: NO.3 LONESTAR SAND
K. Bottom Seal: 0 ft.
Material: NONE
L. Top of Casing Depth: 6 in.
M. Protective Cover Diameter: 12.25 in.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: A901749A
PROJECT NAME: MARKETPLACE II
COUNTY: ALAMEDA
WELL PERMIT NO.:

BORING/WELL NO.: ATD2
TOP OF CASING ELEV.: 9.37
GROUND SURFACE ELEV.: 9.65
DATUM: MEAN SEA LEVEL



EXPLORATION BORING

A. Total Depth: 9.5 ft.
B. Boring Diameter: 10 in.
Drilling Method: HOLLOW-STEM AUGER

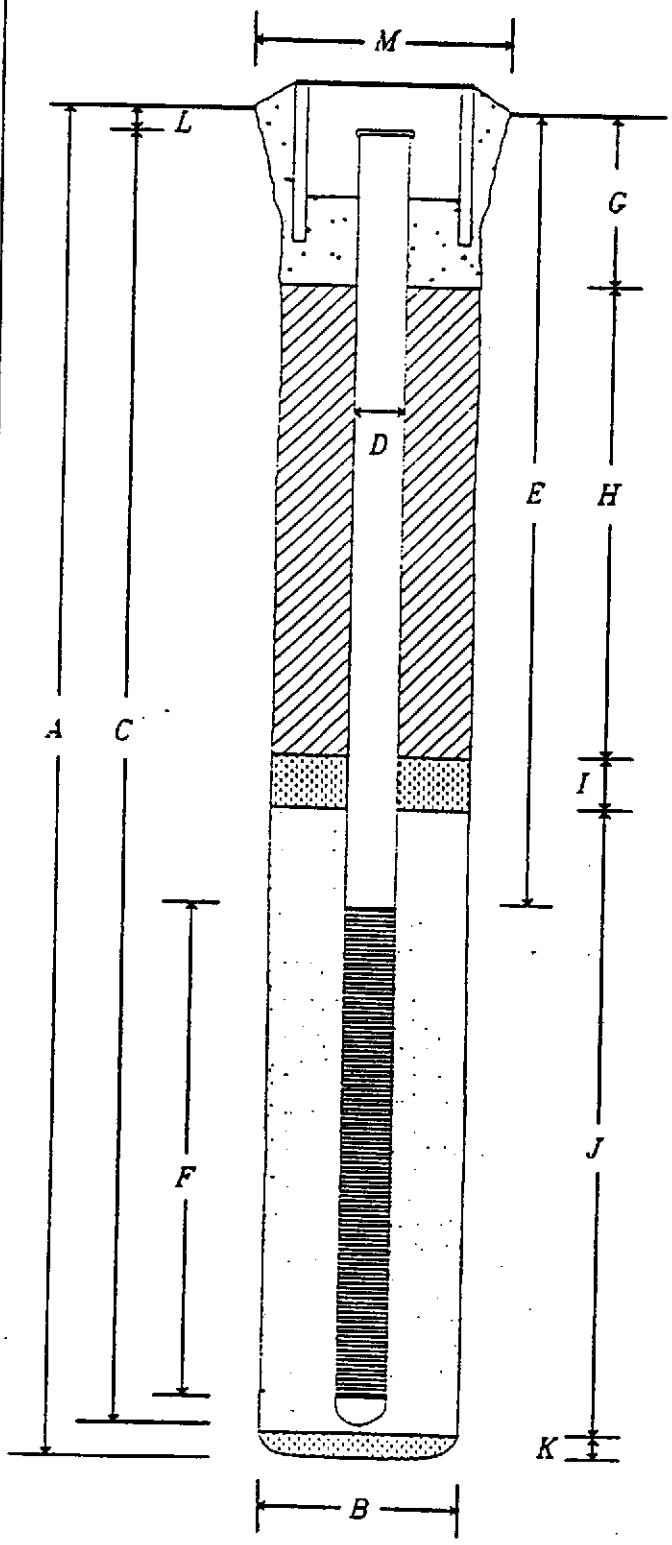
WELL CONSTRUCTION

C. Casing Length: 9.0 ft.
Material: SCHEDULE 40 PVC
D. Diameter: 4 in.
E. Depth to Top of Perforations: 4.0 ft.
F. Perforated Length: 5.0 ft.
Perforated Interval from 4.0 to 9.0 ft.
Perforation Type: MACHINE SLOT
Perforation Size: 0.020 INCH
G. Surface Seal: 1.0 ft.
Seal Material: CEMENT GROUT
H. Backfill: 2.0 ft.
Backfill Material: CEMENT GROUT
I. Seal: 0.5 ft.
Seal Material: BENTONITE PELLETS
J. Gravel Pack: 6.0 ft.
Material: NO.3 LONESTAR SAND
K. Bottom Seal: 0 ft.
Material: NONE
L. Top of Casing Depth: 6 in.
M. Protective Cover Diameter: 12.25 in.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: A901749A
PROJECT NAME: MARKETPLACE II
COUNTY: ALAMEDA
WELL PERMIT NO.: _____

BORING/WELL NO.: ATD3
TOP OF CASING ELEV.: 8.21
GROUND SURFACE ELEV.: 8.80
DATUM: MEAN SEA LEVEL



EXPLORATION BORING

A. Total Depth: 22.0 ft.
B. Boring Diameter: 10 in.
Drilling Method: HOLLOW-STEM AUGER

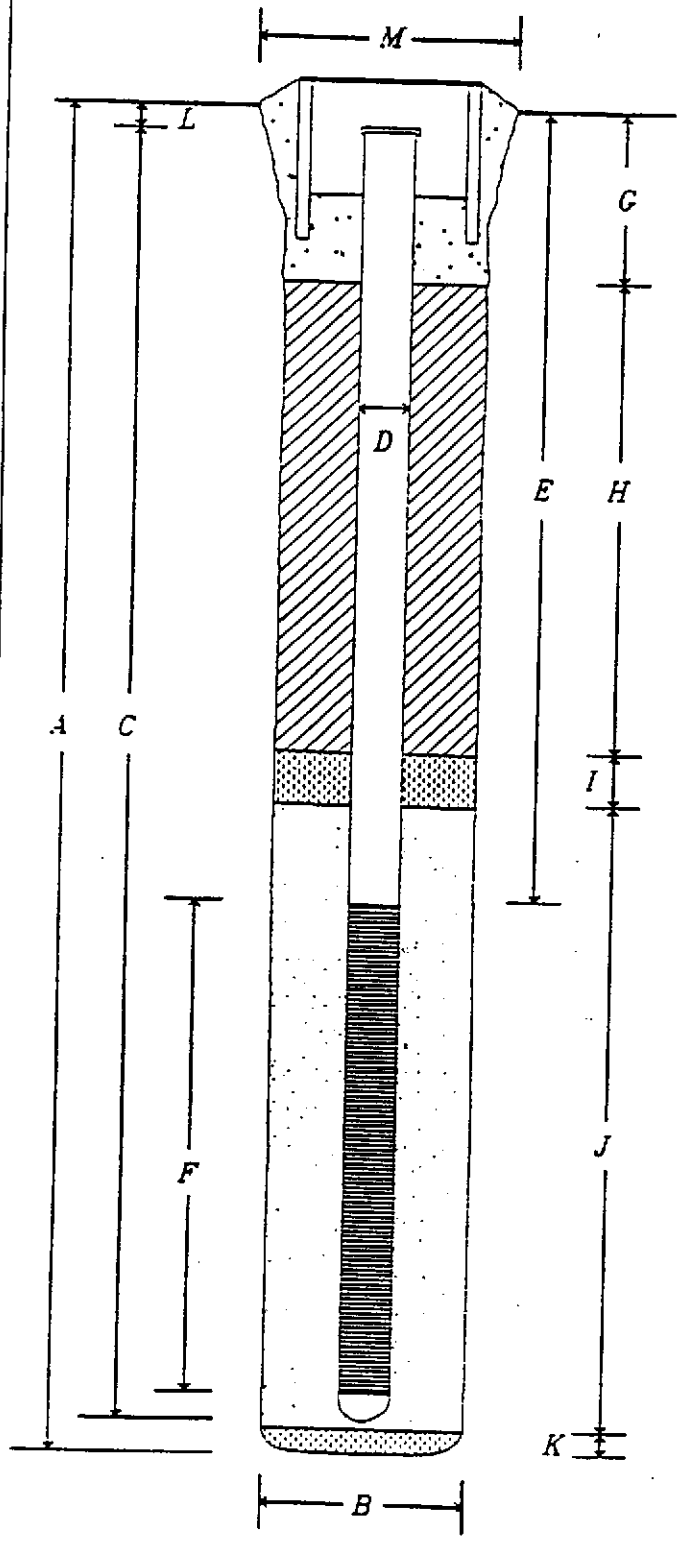
WELL CONSTRUCTION

C. Casing Length: 21.5 ft.
Material: SCHEDULE 40 PVC
D. Diameter: 4 in.
E. Depth to Top of Perforations: 16.5 ft.
F. Perforated Length: 5.0 ft.
Perforated Interval from 16.5 to 21.5 ft.
Perforation Type: MACHINE SLOT
Perforation Size: 0.020 INCH
G. Surface Seal: 2.0 ft.
Seal Material: CEMENT GROUT
H. Backfill: 12.5 ft.
Backfill Material: CEMENT GROUT
I. Seal: 1.0 ft.
Seal Material: BENTONITE PELLETS
J. Gravel Pack: 6.0 ft.
Material: NO.3 LONESTAR SAND
K. Bottom Seal: 0 ft.
Material: NONE
L. Top of Casing Depth: 6 in.
M. Protective Cover Diameter: 12.25 in.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: A901749A
PROJECT NAME: MARKETPLACE II
COUNTY: ALAMEDA
WELL PERMIT NO.: _____

BORING/WELL NO.: ATD4
TOP OF CASING ELEV.: 7.70
GROUND SURFACE ELEV.: 8.09
DATUM: MEAN SEA LEVEL



EXPLORATION BORING

A. Total Depth 11.5 ft.
B. Boring Diameter 10 in.
Drilling Method HOLLOW-STEM AUGER

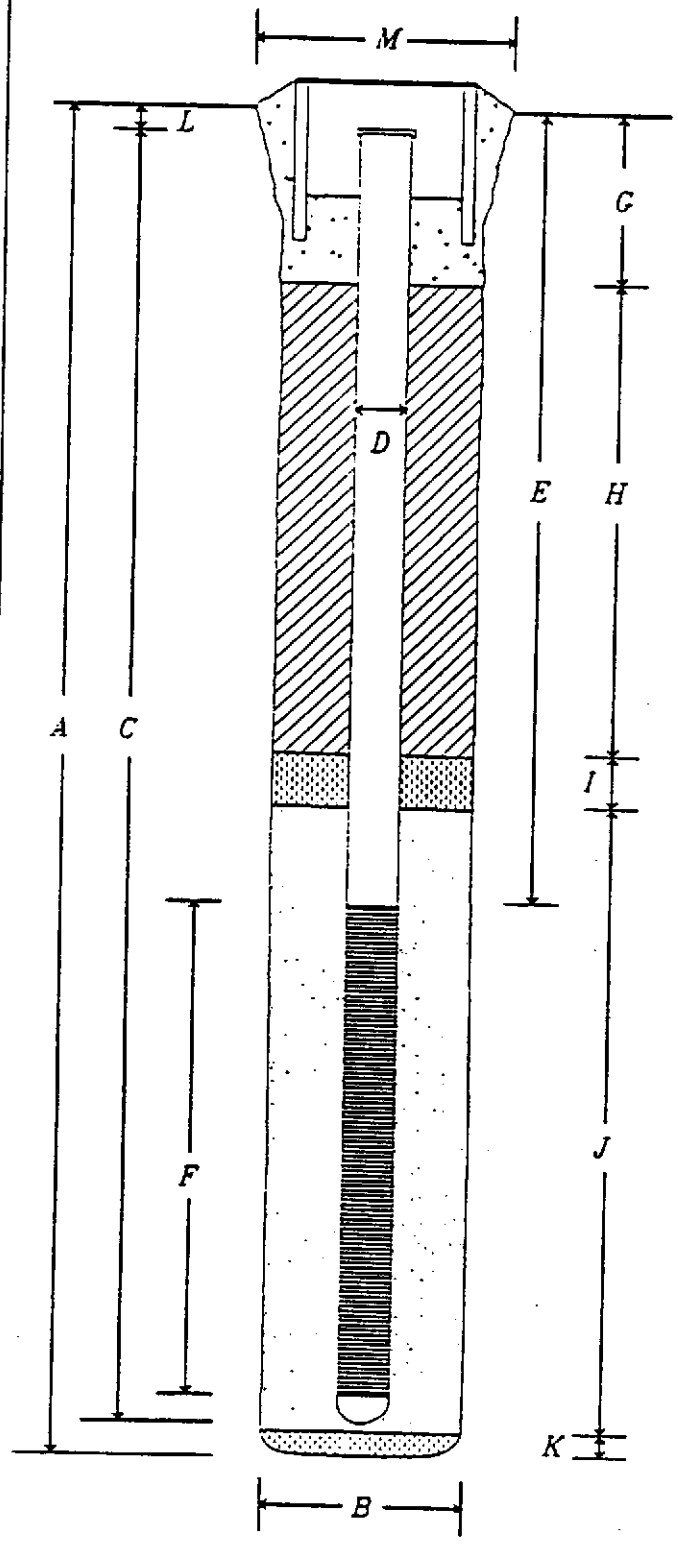
WELL CONSTRUCTION

C. Casing Length 10.0 ft.
Material SCHEDULE 40 PVC
D. Diameter 4 in.
E. Depth to Top of Perforations 4.5 ft.
F. Perforated Length 5.0 ft.
Perforated Interval from 4.5 to 9.5 ft.
Perforation Type MACHINE SLOT
Perforation Size 0.020 INCH
G. Surface Seal 1.0 ft.
Seal Material CONCRETE
H. Backfill 2.5 ft.
Backfill Material CEMENT-BENTONITE
I. Seal 0.5 ft.
Seal Material BENTONITE PELLETS
J. Gravel Pack 6.0 ft.
Material NO.3 LONESTAR SAND
K. Bottom Seal 0 ft.
Material NONE
L. Top of Casing Depth 0 in.
M. Protective Cover Diameter 12.25 in.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: A901749A
PROJECT NAME: MARKETPLACE II
COUNTY: ALAMEDA
WELL PERMIT NO.:

BORING/WELL NO.: ATDS
TOP OF CASING ELEV.: 7.56
GROUND SURFACE ELEV.: 7.89
DATUM: MEAN SEA LEVEL



EXPLORATION BORING

A. Total Depth 11.5 ft.
B. Boring Diameter 10 in.
Drilling Method HOLLOW-STEM AUGER

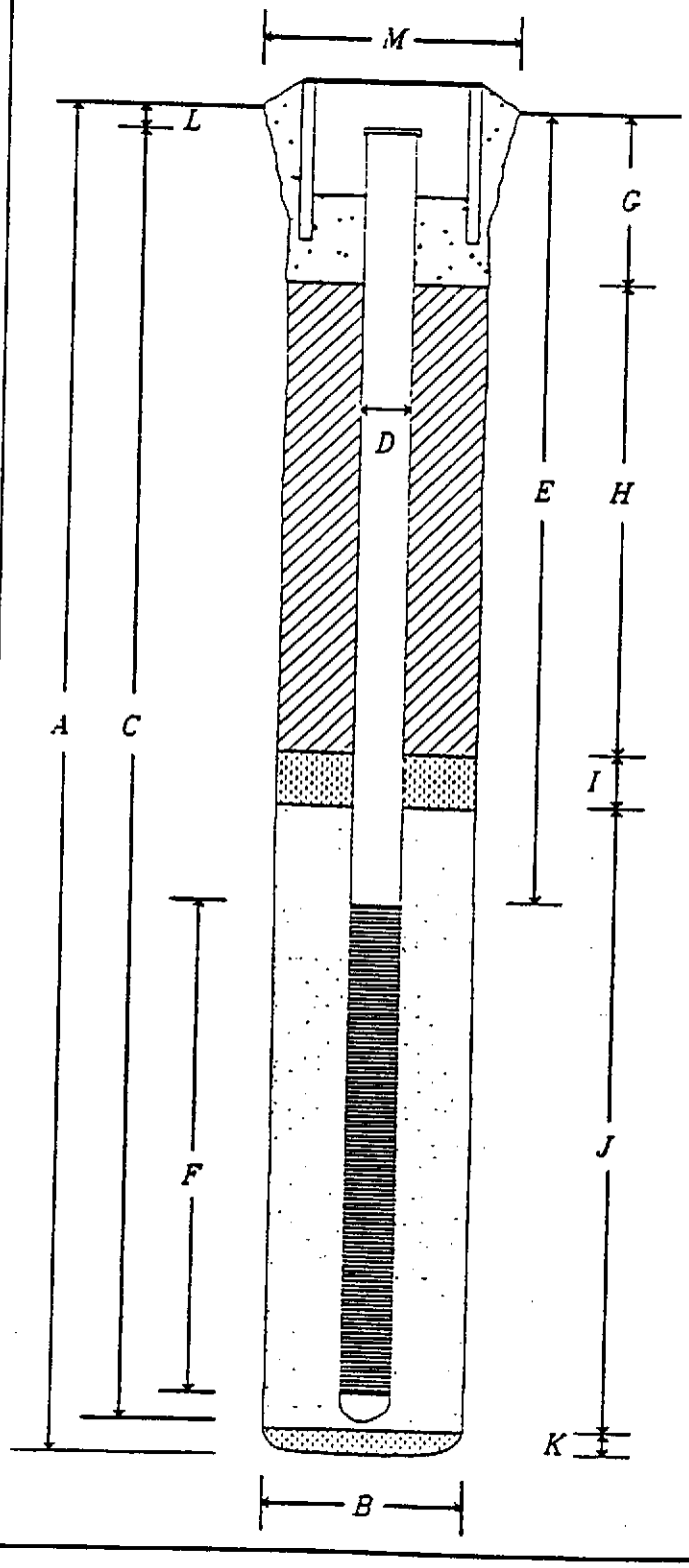
WELL CONSTRUCTION

C. Casing Length 9.5 ft.
Material SCHEDULE 40 PVC
D. Diameter 4 in.
E. Depth to Top of Perforations 4.0 ft.
F. Perforated Length 5 ft.
Perforated Interval from 4.0 to 9.0 ft.
Perforation Type MACHINE SLOT
Perforation Size 0.020 INCH
G. Surface Seal 1.0 ft.
Seal Material CONCRETE
H. Backfill 2.0 ft.
Backfill Material CEMENT-BENTONITE
I. Seal 0.5 ft.
Seal Material BENTONITE PELLLETS
J. Gravel Pack 8.0 ft.
Material NO.3 LONESTAR SAND
K. Bottom Seal 0 ft.
Material NONE
L. Top of Casing Depth 0 in.
M. Protective Cover Diameter 12.25 in.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: A901749A
PROJECT NAME: MARKETPLACE II
COUNTY: ALAMEDA
WELL PERMIT NO.: _____

BORING/WELL NO.: ATD6
TOP OF CASING ELEV.: 7.87
GROUND SURFACE ELEV.: 8.28
DATUM: MEAN SEA LEVEL



EXPLORATION BORING

A. Total Depth 11.5 ft.
B. Boring Diameter 10 in.
Drilling Method HOLLOW-STEM AUGER

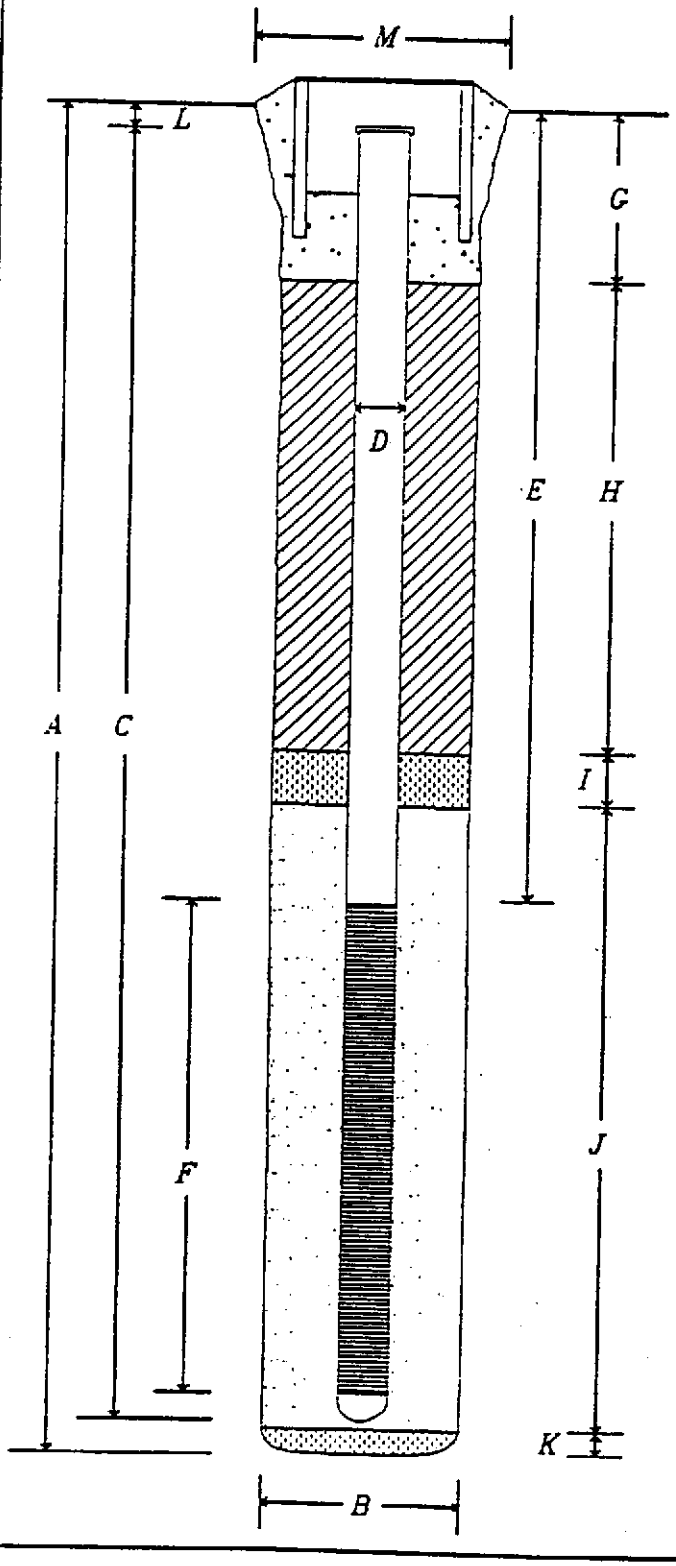
WELL CONSTRUCTION

C. Casing Length 9.5 ft.
Material SCHEDULE 40 PVC
D. Diameter 4 in.
E. Depth to Top of Perforations 4.0 ft.
F. Perforated Length 5.0 ft.
Perforated Interval from 4.0 to 9.0 ft.
Perforation Type MACHINE SLOT
Perforation Size 0.020 INCH
G. Surface Seal 1.0 ft.
Seal Material CONCRETE
H. Backfill 2.0 ft.
Backfill Material CEMENT-BENTONITE
I. Seal 0.5 ft.
Seal Material BENTONITE PELLETS
J. Gravel Pack 8.0 ft.
Material NO.3 LONESTAR SAND
K. Bottom Seal 0 ft.
Material NONE
L. Top of Casing Depth 0 in.
M. Protective Cover Diameter 12.25 in.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: A901749A
PROJECT NAME: MARKETPLACE II
COUNTY: ALAMEDA
WELL PERMIT NO.: _____

BORING/WELL NO.: ATD7
TOP OF CASING ELEV.: 7.95
GROUND SURFACE ELEV.: 8.17
DATUM: MEAN SEA LEVEL



EXPLORATION BORING

A. Total Depth 11.5 ft.
B. Boring Diameter 10 in.
Drilling Method HOLLOW-STEM AUGER

WELL CONSTRUCTION

C. Casing Length 9.5 ft.
Material SCHEDULE 40 PVC
D. Diameter 4 in.
E. Depth to Top of Perforations 4.0 ft.
F. Perforated Length 5.0 ft.
Perforated Interval from 4.0 to 9.0 ft.
Perforation Type MACHINE SLOT
Perforation Size 0.020 INCH
G. Surface Seal 1.0 ft.
Seal Material CONCRETE
H. Backfill 2.0 ft.
Backfill Material CEMENT-BENTONITE
I. Seal 0.5 ft.
Seal Material BENTONITE PELLETS
J. Gravel Pack 8.0 ft.
Material NO.3 LONESTAR SAND
K. Bottom Seal 0 ft.
Material NONE
L. Top of Casing Depth 0 in.
M. Protective Cover Diameter 12.25 in.

APPENDIX C.4

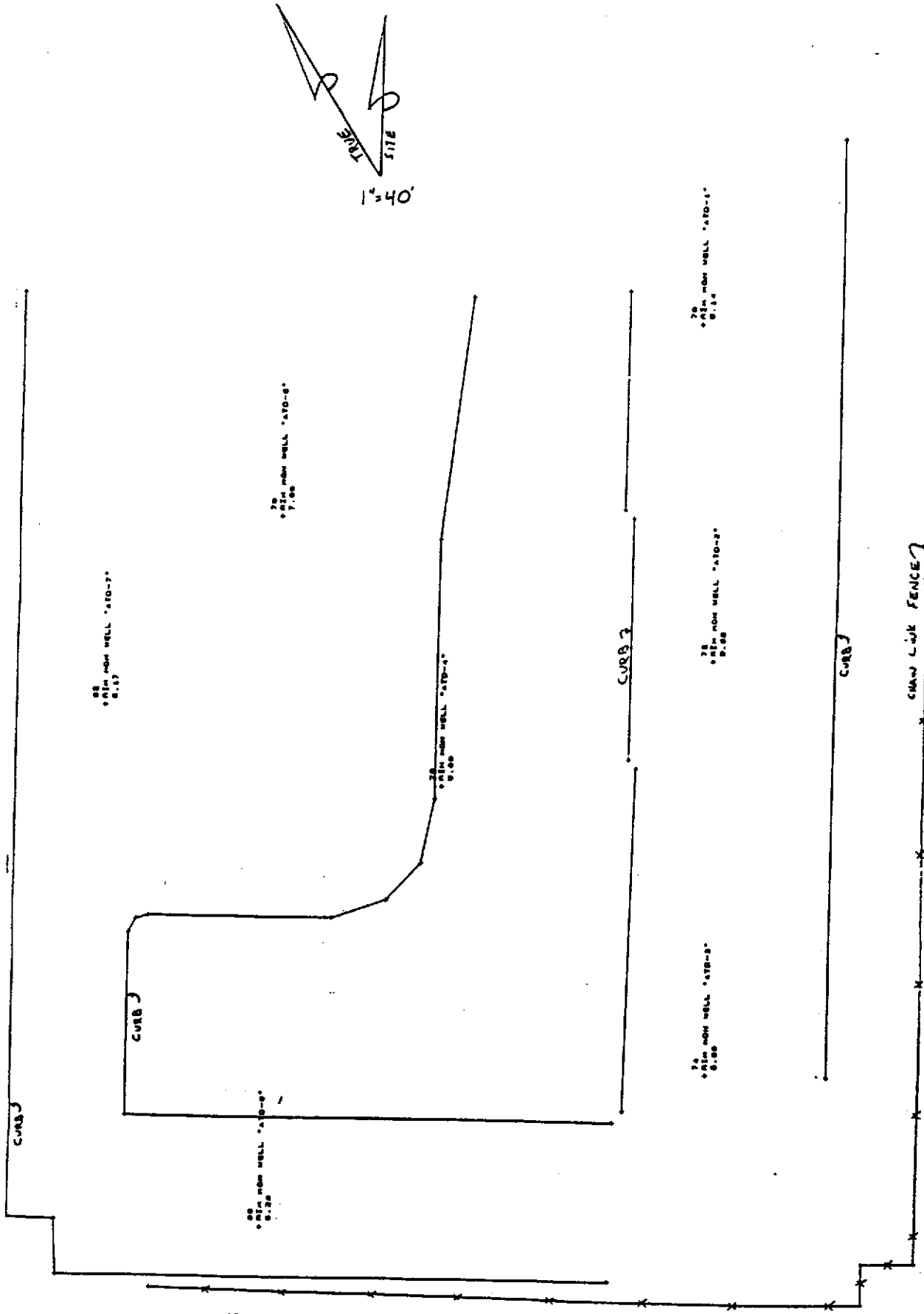
WELL LOCATION AND ELEVATION SURVEY

MISSION ENGINEERS, INC.
2285 MARTIN AVENUE, SUITE A
SANTA CLARA, CALIFORNIA 95050
(408)727-8263 FAX(408)727-8285

Date: 08-06-91
Time: 12:38:08
Page: 1

Coordinate File: ALL.CRD
List of Coordinate Points
* Denotes Contouring Masspoint

Point ID	NORTH	EAST	ELEV	Descriptor
1	5000.00	2000.00	8.51	CONTROL POINT
20	4754.44	2009.06	11.82	CITY BENCHMARK "2-A"
70	5164.93	2224.21	9.14	RIM MON WELL "ATD-1"
71	5164.74	2223.89	8.54	TOP CASING "ATD-1"
72	5079.76	2133.35	9.65	RIM MON WELL "ATD-2"
73	5079.61	2133.12	9.37	TOP CASING "ATD-2"
74	4979.73	2015.98	8.80	RIM MON WELL "ATD-3"
75	4979.38	2015.52	8.21	TOP CASING "ATD-3"
76	5121.23	2034.54	8.09	RIM MON WELL "ATD-4"
77	5121.00	2034.32	7.70	TOP CASING "ATD-4"
78	5231.03	2072.24	7.89	RIM MON WELL "ATD-5"
79	5230.86	2071.96	7.56	TOP CASING "ATD-5"
80	5063.50	1869.87	8.28	RIM MON WELL "ATD-6"
81	5063.19	1869.68	7.87	TOP CASING "ATD-6"
82	5231.86	1978.48	8.17	RIM MON WELL "ATD-7"
83	5231.62	1978.32	7.95	TOP CASING "ATD-7"



MONITOR WELL LOCATIONS FOR APPLIED GEOSCIENCES, INC.
@ SOUTH-EAST CORNER of PARKING LOT @ 5800 SHELLMOUND ST.
EMERYVILLE, CA

MISSION ENGINEERS, INC.
Results
2285 Martin Ave. Suite A-1, Santa Clara, Calif 95050 (408) 727-8262

SCALE	1"=40'
DWG.	FB 91-2 '378
DATE	8-06-91
DWN.	KA
CHKD.	
JOB NO	91370
DWG NO	SL-7914

APPENDIX D

CHAIN-OF-CUSTODY FORMS
AND LABORATORY ANALYSES RESULTS

C K Y incorporated
Analytical Laboratories

Date: 08/14/91
910801

Applied Geosciences, Inc.
1735 No. First St., Suite 305
San Jose CA 95112

Attn: Mr. Joseph Mello

Subject: Laboratory Report
Project: Market Place II

Enclosed is the laboratory report for samples received on 08/01/91. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported includes:

Method	No. of Analysis
EPA 6010	21 Soils
EPA 413.2	21 Soils
Modified 8015	21 Soils
EPA 8080	4 Soils
EPA 8240	1 Soil
EPA 8270	1 Soil
EPA 5030/M8015	2 Soils

The results are summarized on twenty-four pages.

Please feel free to call if you have any questions concerning these results.

Sincerely,

Dr. Kam Pang
Laboratory Director

630 Maple Ave., Torrance, Calif. 90503 • Telephone 213-618-8889 • Fax: 213-618-0818

EPA 3050/6010
CAM METALS BY ICP

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/02/91
CONTROL NO:	910801	DATE ANALYZED:	08/05/91
MATRIX:	Soil		

SAMPLE ID:	ATD-1-1	ATD-1-2	ATD-1-3	ATD-1-4	ATD-2-1	
CONTROL NO:	-1	-2	-3	-4	-5	
PARAMETERS	RESULTS (mg/kg)					DETECTION LIMIT (mg/kg)
Antimony	ND	7.4	ND	6.4	7.9	5.0
Arsenic	7.6	ND	ND	ND	ND	5.0
Barium	110	130	65	210	110	0.50
Beryllium	ND	ND	ND	0.69	ND	0.50
Cadmium	3.2	4.4	2.8	7.6	5.6	0.50
Chromium - Total	25	28	29	46	39	0.50
Cobalt	6.3	8.3	5.2	18	13	0.50
Copper	19	460	11	23	24	0.50
Lead	22	200	21	24	22	1.0
Mercury	.38	.40	.01	.10	.01	0.01
Molybdenum	3.7	ND	ND	1.1	1.4	0.50
Nickel	26	30	17	110	51	1.0
Selenium	ND	ND	ND	ND	ND	5.0
Silver	ND	ND	ND	ND	ND	0.50
Thallium	ND	ND	ND	ND	ND	10
Vanadium	28	34	41	72	47	0.50
Zinc	45	380	27	44	65	0.50

EPA 3050/6010
CAM METALS BY ICP

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/02/91
CONTROL NO:	910801	DATE ANALYZED:	08/05/91
MATRIX:	Soil		

SAMPLE ID:	ATD-2-4	ATD-5-1-2	ATD-5-3-2	ATD-5-4-2	ATD6-1-2	
CONTROL NO:	-6	-7	-8	-9	-10	
PARAMETERS	RESULTS (mg/kg)					DETECTION LIMIT (mg/kg)
Antimony	ND	6.8	5.9	ND	5.4	5.0
Arsenic	ND	ND	ND	ND	ND	5.0
Barium	73	110	140	120	180	0.50
Beryllium	ND	ND	ND	ND	ND	0.50
Cadmium	2.7	4.2	4.1	5.2	3.9	0.50
Chromium - Total	30	39	36	43	31	0.50
Cobalt	5.8	8.6	5.1	10	11	0.50
Copper	12	220	17	45	18	0.50
Lead	15	190	20	31	18	1.0
Mercury	.04	4.7	.06	.57	.91	0.01
Molybdenum	ND	0.80	ND	1.3	0.86	0.50
Nickel	53	52	31	53	39	1.0
Selenium	ND	ND	ND	ND	ND	5.0
Silver	ND	ND	ND	ND	ND	0.50
Thallium	ND	ND	ND	ND	ND	10
Vanadium	31	29	38	41	32	0.50
Zinc	32	320	37	150	54	0.50

EPA 3050/6010
CAM METALS BY ICP

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/02/91
CONTROL NO:	910801	DATE ANALYZED:	08/05/91
MATRIX:	Soil		

SAMPLE ID:	ATD-6-2-2	ATD-6-3-2	ATD-6-4-2	ATD-7-1-2	ATD 7-2-2	
CONTROL NO:	-11	-12	-13	-14	-15	
PARAMETERS	RESULTS (mg/kg)					DETECTION LIMIT (mg/kg)
Antimony	ND	ND	ND	5.6	ND	5.0
Arsenic	5.5	ND	ND	ND	ND	5.0
Barium	200	190	150	260	77	0.50
Beryllium	ND	ND	ND	ND	ND	0.50
Cadmium	2.8	4.8	4.5	6.0	4.8	0.50
Chromium - Total	26	34	29	53	41	0.50
Cobalt	11	12	4.0	8.6	8.9	0.50
Copper	19	21	25	110	110	0.50
Lead	14	21	14	290	40	1.0
Mercury	.06	0.3	.03	57	1.2	0.01
Molybdenum	ND	1.2	1.5	1.2	1.9	0.50
Nickel	31	82	34	39	33	1.0
Selenium	ND	ND	ND	ND	ND	5.0
Silver	1.0	ND	ND	ND	ND	0.50
Thallium	ND	ND	ND	ND	ND	10
Vanadium	32	39	36	34	36	0.50
Zinc	75	63	55	390	480	0.50

EPA 3050/6010
CAM METALS BY ICP

CLIENT:	Applied Geosciences	**DATE REC'D:**	08/01/91
PROJECT:	Market Place II	**DATE EXTRACTED:**	08/02/91
CONTROL NO:	910801	**DATE ANALYZED:**	08/05/91
MATRIX:	Soil		

SAMPLE ID:	ATD-7-3-2	ATD-7-4-2	ATD-3-1	ATD-3-2	ATD3-3	
CONTROL NO:	-16	-17	-18	-19	-20	
PARAMETERS	RESULTS (mg/kg)					DETECTION LIMIT (mg/kg)
Antimony	7.2	ND	9.6	ND	ND	5.0
Arsenic	ND	ND	ND	ND	ND	5.0
Barium	65	94	210	80	99	0.50
Beryllium	ND	ND	ND	ND	ND	0.50
Cadmium	3.2	3.1	2.8	4.1	3.0	0.50
Chromium - Total	34	35	25	39	27	0.50
Cobalt	6.6	7.1	11	3.2	9.0	0.50
Copper	19	14	22	16	12	0.50
Lead	40	19	270	23	17	1.0
Mercury	1.7	.04	1.5	.57	.01	0.01
Molybdenum	ND	0.97	ND	.80	ND	0.50
Nickel	33	22	29	35	38	1.0
Selenium	ND	ND	ND	ND	ND	5.0
Silver	ND	ND	ND	ND	ND	0.50
Thallium	ND	ND	ND	ND	ND	10
Vanadium	33	33	26	35	33	0.50
Zinc	60	33	120	40	35	0.50

EPA 3050/6010
CAM METALS BY ICP

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/02/91
SAMPLE ID:	ATD3-4	DATE ANALYZED:	08/05/91
CONTROL NO:	910801-21	MATRIX:	Soil

PARAMETERS	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Antimony	ND	5.0
Arsenic	ND	5.0
Barium	100	0.50
Beryllium	ND	0.50
Cadmium	3.1	0.50
Chromium - Total	27	0.50
Cobalt	13	0.50
Copper	13	0.50
Lead	18	1.0
Mercury	.01	0.002
Molybdenum	1.0	0.50
Nickel	36	1.0
Selenium	ND	5.0
Silver	ND	0.50
Thallium	ND	10
Vanadium	35	0.50
Zinc	38	0.50

EPA METHOD 413.2
OIL AND GREASE

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/04/91
CONTROL NO:	910801	DATE ANALYZED:	08/05/91
MATRIX:	Soil		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
ATD-1-1	910801-1	7500	200
ATD-1-2	910801-2	1300	100
ATD-1-3	910801-3	ND	5
ATD-1-4	910801-4	ND	5
ATD-2-1	910801-5	8	5
ATD-2-4	910801-6	8	5
ATD-5-1-2	910801-7	6100	500
ATD-5-3-2	910801-8	9	5
ATD-5-4-2	910801-9	160	5
ATD-6-1-2	910801-10	35	5
ATD-6-2-2	910801-11	240	5
ATD-6-3-2	910801-12	38	5
ATD-6-4-2	910801-13	24	5
ATD-7-1-2	910801-14	3900	100
ATD-7-2-2	910801-15	360	50
ATD-7-3-2	910801-16	10	5
ATD-7-4-2	910801-17	ND	5
ATD-3-1	910801-18	140	5
ATD-3-2	910801-19	ND	5
ATD-3-3	910801-20	ND	5
ATD-3-4	910801-21	ND	5

EPA METHOD Mod. 8015
TOTAL PETROLEUM HYDROCARBONS

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/06/91
CONTROL NO:	910801	DATE ANALYZED:	08/06/91
MATRIX:	Soil		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/kg)	H-C RANGE	%SURROGATE
Method Blank	910801	ND	N.A.	97
ATD1-1	910801-1	36	C14-C20	97
ATD1-2	910801-2	14	C14-C18	91
ATD1-3	910801-3	ND	N.A.	105
ATD1-4	910801-4	ND	N.A.	99
ATD2-1	910801-5	ND	N.A.	89
ATD2-4	910801-6	ND	N.A.	91
ATD5-1-2	910801-7	230	C12-C20	118
ATD5-3-2	910801-8	ND	N.A.	97
ATD5-4-2	910801-9	6	C14-C18	93
ATD6-1-2	910801-10	ND	N.A.	101
ATD6-2-2	910801-11	11	C12-C20	95
ATD6-3-2	910801-12	ND	N.A.	111
ATD-6-4-2	910801-13	ND	N.A.	93
ATD7-1-2	910801-14	130	C14-C22	105
ATD7-2-2	910801-15	11	C14-C20	103
ATD7-3-2	910801-16	21	C14-C20	102
ATD7-4-2	910801-17	ND	N.A.	113
ATD3-1	910801-18	ND	N.A.	112
ATD3-2	910801-19	ND	N.A.	94
ATD3-3	910801-20	ND	N.A.	93
ATD3-4	910801-21	ND	N.A.	96

DETECTION LIMIT: 5 mg/kg

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	ATD-1-1	DATE ANALYZED:	08/07/91
CONTROL NO:	910801-1	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:	
Dibutylchorendate	79
2,4,5,6-Tetrachloro-m-xylene	158

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	ATD2-1	DATE ANALYZED:	08/07/91
CONTROL NO:	910801-5	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:

Dibutylchorendate	92
2,4,5,6-Tetrachloro-m-xylene	144

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	ATD-2-4	DATE ANALYZED:	08/07/91
CONTROL NO:	910801-6	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:	
Dibutylchorendate	94
2,4,5,6-Tetrachloro-m-xylene	137

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	ATD3-1	DATE ANALYZED:	08/07/91
CONTROL NO:	910801-18	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:	
Dibutylchorendate	96
2,4,5,6-Tetrachloro-m-xylene	156

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	Method Blank	DATE ANALYZED:	08/07/91
CONTROL NO:	910801	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:	
Dibutylchorendate	90
2,4,5,6-Tetrachloro-m-xylene	130

QUALITY CONTROL DATA

CLIENT: Applied Geosciences
PROJECT: Market Place II
CONTROL NO: 910801

METHOD: EPA 8270
MATRIX: Soil

SAMPLE ID: 910744-13

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Phenol	ND	75	47	58	21
2-Chlorophenol	ND	75	48	60	22
1,4-DCB	ND	50	46	58	23
N-Nitroso-di-n propylamine	ND	50	54	68	23
1,2,4-TCB	ND	50	46	55	18
4-Chloro-3-methylphenol	ND	75	44	60	31
Acenaphthene	ND	50	48	60	22
4-Nitrophenol	ND	75	26	41	44
2,4-Dinitrotoluene	ND	50	33	50	42
Pentachlorophenol	ND	75	52	71	31
Pyrene	ND	50	65	74	13

QUALITY CONTROL DATA

CLIENT: Applied Geosciences
PROJECT: Market Place II
CONTROL NO: 910801

METHOD: EPA 413.2
MATRIX: Soil

SAMPLE ID: 910801-5

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
TROG	8	150	107	105	2

METHOD: EPA 413.2
MATRIX: Soil

SAMPLE ID: 910801-20

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
TROG	ND	150	102	103	1

APPLIED GEOSCIENCES INC.
Engineering Geology and Hazardous Materials Consultants
1735 No. First St., Suite 305
San Jose, CA 95112
(408) 452-0262
FAX (408) 452-0265

11098

SHIPMENT NO. _____
PAGE 1 OF 2
DATE 21 NOV, 1991

CHAIN OF CUSTODY RECORD

PROJECT NAME: Market Place II
PROJECT NO.: A901749A
CONTACT: Joseph Nello

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
ATD-1-1	ATD1	Soil	Grab	4 oz. Tube	4°C	ICE	CAM, TOG, TPHd
ATD-1-2	"	"	"	"	"	"	CAM TOG TPHd
ATD-1-3	"	"	"	"	"	"	"
ATD-1-4	"	"	"	"	"	"	HOLD
ATD-2-1	ATD2	"	"	"	"	"	CAM, TOG, TPHd
ATD-2-4	"	"	"	"	"	"	"
ATD5-1-2	ATD5	"	"	"	"	"	CAM, TOG, TPHd
ATD5-2-2	"	"	"	"	"	"	"
ATD5-4-2	"	"	"	"	"	"	"
ATD6-1-2	ATD6	"	"	"	"	"	"
ATD6-2-2	"	"	"	"	"	"	" 8240+
ATD6-3-2	"	"	"	"	"	"	CAM TOG TPHd
ATD6-4-2	"	"	"	"	"	"	HOLD
ATD7-1-2	ATD7	"	"	"	"	"	CAM TOG TPHd
ATD7-2-2	"	"	"	"	"	"	"
ATD7-3-2	"	"	"	"	"	"	"
ATD7-4-2	"	"	"	"	"	"	HOLD
ATD8-1	ATD8	"	"	"	"	"	CAM, TOG, TPHd
ATD8-2	"	"	"	"	"	"	CAM TOG TPHd
ATD8-3	"	"	"	"	"	"	"

Total Number of Samples Shipped: 21 | Sampler's Signature: [signature]

Relinquished By:
Signature [signature]
Printed Name Joseph E. Nello Jr.
Company [illegible]
Reason [illegible]

Received By:
Signature [signature]
Printed Name [illegible]
Company [illegible]
Date 11/21/91
Time [illegible]

Relinquished By:
Signature _____
Printed Name _____
Company _____
Reason _____

Received By:
Signature [signature]
Printed Name [illegible]
Company _____
Date 11/21/91
Time 2:30

Relinquished By:
Signature [signature]
Printed Name [illegible]
Company [illegible]
Reason [illegible]

Received By:
Signature _____
Printed Name _____
Company _____
Date 11/21/91
Time [illegible]

Relinquished By:
Signature _____
Printed Name _____
Company _____
Reason _____

Received By:
Signature _____
Printed Name _____
Company _____
Date / /
Time _____

Special Shipment / Handling / Storage Requirements:
ATD6-2-2 8240, 8270, TPHg, TPHd, CAM, TOG

* Note – This does not constitute authorization to proceed with analysis

APPLIED GEOSCIENCES INC.
Engineering Geology and Hazardous Materials Consultants
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FAX (408) 452-0265

#01

SHIPMENT NO. ______
PAGE 1 OF 2
DATE 31/3/1991

CHAIN OF CUSTODY RECORD

PROJECT NAME: Market Place I
PROJECT NO.: A90-049 A
CONTACT: Joseph Noble

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required*
		Material	Method		Temp	Chemical	
MW-4	AT 5'	Soil	Drive	SS Tube	4°C	Ice	HOLD
			NOTHING	FOLLOWS			

Total Number of Samples Shipped: | Sampler's Signature:

Relinquished By:	Received By:	Date / Time
Signature / Printed Name / Company / Reason	Signature / Printed Name / Company	/ /
Signature / Printed Name / Company / Reason	Signature / Printed Name / Company	/ /
Signature / Printed Name / Company / Reason	Signature / Printed Name / Company	/ /
Signature / Printed Name / Company / Reason	Signature / Printed Name / Company	/ /

Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis

C K Y incorporated
Analytical Laboratories

Date: 08/15/91
910806

Applied Geosciences, Inc.
1735 No. First St., Suite 305
San Jose CA 95112

Attn: Mr. Joseph Mello

Subject: Laboratory Report
Project: A901749A/Market Place II

Enclosed is the laboratory report for samples received on 08/02/91. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported includes:

Method	No. of Analysis
EPA 6010	15 Soils
EPA 413.2	15 Soils
Modified 8015	15 Soils
EPA 8240	1 Soil
EPA 8080	2 Soils

The results are summarized on twelve pages.

Please feel free to call if you have any questions concerning these results.

Sincerely,

Kam Pang

Dr. Kam Pang
Laboratory Director

630 Maple Ave., Torrance, Calif. 90503 • Telephone 213-618-8889 • Fax: 213-618-0818

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	Applied Geosciences	**DATE REC'D:**	08/02/91
PROJECT:	Market Place II	**DATE EXTRACTED:**	08/05/91
CONTROL NO:	910806	**DATE ANALYZED:**	08/06/91
MATRIX:	Soil		

SAMPLE ID:	ATD4-1-2	ATD4-2-2	ATD4-3-2	ATD-4-42	B1-1-2	
CONTROL NO:	-1	-2	-3	-4	-5	
PARAMETERS	**RESULTS (mg/kg)**					**DETECTION LIMIT (mg/kg)**
Antimony	7.6	ND	ND	ND	36	5.0
Arsenic	ND	ND	ND	ND	ND	5.0
Barium	140	190	81	110	190	0.50
Beryllium	ND	ND	ND	ND	ND	0.50
Cadmium	6.8	1.6	2.2	3.7	1.9	0.50
Chromium - Total	39	22	22	25	19	0.50
Cobalt	6.3	1.6	2.8	5.6	9.3	0.50
Copper	970	8.8	9.7	18	15	0.50
Lead	750	17	12	16	30	1.0
Mercury	15	0.10	.02	.16	.02	0.01
Molybdenum	1.6	ND	ND	0.95	ND	0.50
Nickel	27	10	44	52	19	1.0
Selenium	ND	ND	ND	ND	ND	5.0
Silver	ND	ND	ND	ND	ND	0.50
Thallium	ND	ND	ND	ND	ND	10
Vanadium	27	21	17	33	25	0.50
Zinc	920	24	29	48	38	0.50

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	Applied Geosciences	DATE REC'D:	08/02/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/05/91
CONTROL NO:	910806	DATE ANALYZED:	08/06/91
MATRIX:	Soil		

SAMPLE ID:	B1-2-2	B2-1-2	B2-2-2	B3-1-2	B3-2-2	
CONTROL NO:	-6	-7	-8	-9	-10	
PARAMETERS	RESULTS (mg/kg)					DETECTION LIMIT (mg/kg)
Antimony	ND	ND	ND	ND	ND	5.0
Arsenic	ND	ND	ND	12	6.4	5.0
Barium	59	45	97	82	76	0.50
Beryllium	ND	ND	ND	ND	ND	0.50
Cadmium	2.3	4.9	3.1	4.5	3.7	0.50
Chromium - Total	25	7.5	35	200	44	0.50
Cobalt	3.1	8.0	3.1	10	2.8	0.50
Copper	16	74	18	110	13	0.50
Lead	16	62	25	110	26	1.0
Mercury	.02	1.2	.05	.18	ND	0.01
Molybdenum	0.62	0.53	ND	4.4	0.52	0.50
Nickel	17	8.9	17	100	21	1.0
Selenium	ND	ND	ND	ND	ND	5.0
Silver	ND	ND	ND	ND	ND	0.50
Thallium	ND	ND	ND	ND	ND	10
Vanadium	26	41	36	34	37	0.50
Zinc	28	79	36	150	34	0.50

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	Applied Geosciences	DATE REC'D:	08/02/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/05/91
CONTROL NO:	910806	DATE ANALYZED:	08/06/91
MATRIX:	Soil		

SAMPLE ID:	B4-1-2	B4-2-2	B5-1-2	B5-2-2	ATD1-5	
CONTROL NO:	-11	-12	-13	-14	-15	
PARAMETERS	RESULTS (mg/kg)					DETECTION LIMIT (mg/kg)
Antimony	ND	30	8.1	53	ND	5.0
Arsenic	ND	ND	ND	ND	ND	5.0
Barium	75	130	250	160	140	0.50
Beryllium	ND	ND	ND	ND	ND	0.50
Cadmium	3.7	1.5	9.6	1.6	3.9	0.50
Chromium - Total	3.0	21	9.7	19	30	0.50
Cobalt	5.6	11	12	13	11	0.50
Copper	53	9.3	5200	12	16	0.50
Lead	63	23	1200	15	17	1.0
Mercury	.18	.02	4.6	.03	.02	0.01
Molybdenum	ND	0.61	2.6	0.54	0.57	0.50
Nickel	1.3	16	12	16	34	1.0
Selenium	ND	ND	ND	ND	ND	5.0
Silver	ND	ND	1.0	ND	ND	0.50
Thallium	ND	ND	ND	ND	ND	10
Vanadium	25	28	63	26	32	0.50
Zinc	68	19	2100	23	40	0.50

EPA METHOD - 8240
VOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	N/A
SAMPLE ID:	ATD6-2-2	DATE ANALYZED:	08/02/91
CONTROL NO:	910801-11	MATRIX TYPE:	Soil

PARAMETERS (8240)	RESULTS (ug/kg)	DETECTION LIMIT (ug/kg)
Acetone	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	10
Bromomethane	ND	50
2-Butanone (MEK)	ND	100
Carbon Disulfide	ND	5
Carbon Tetrachloride	ND	5
Chlorobenzene	ND	5
Chlorodibromomethane	ND	50
Chloroethane	ND	50
2-Chloroethyl vinyl ether	ND	50
Chloroform	ND	5
Chloromethane	ND	50
Dibromoethane	ND	5
Dichlorodiflouromethane	ND	50
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
2-Hexanone	ND	50
Methylene chloride	ND	50
4-Methyl-2-pentanone (MIBK)	ND	10
Styrene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Acetate	ND	50
Vinyl Chloride	ND	50
Xylene (total)	ND	5
% SURROGATE RECOVERY		
1,2 Dichloroethane-d_4	102	70-121
Toluene -d_8	154*	81-117
Bromofluorobenzene	106	74-121

Dilution Factor: 10

ND = Not Detected

* Matrix interference

METHOD: EPA 8240

SAMPLE ID: ATD6-2-2

CONTROL NO: 910801-11

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (ug/kg)
Cyclopentane, 1,2-dimethyl-trans	6,500
Cyclohexane, methyl	8,000
Cyclopentane, 1,2,3-trimethyl	4,000
Heptane, 2-methyl	5,500
Cyclopentane, 1-ethyl-3-methyl	6,500
Cyclohexane, 1,2-dimethyl-trans	7,500
Hexane, 2,3,5-trimethyl	6,000
2-octane, 2,6-dimethyl	8,500

EPA METHOD - 8240
VOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	N/A
SAMPLE ID:	Method Blank	DATE ANALYZED:	08/02/91
CONTROL NO:	910801	MATRIX TYPE:	Soil

PARAMETERS (8240)	RESULTS (ug/kg)	DETECTION LIMIT (ug/kg)
Acetone	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	10
Bromomethane	ND	50
2-Butanone (MEK)	ND	100
Carbon Disulfide	ND	5
Carbon Tetrachloride	ND	5
Chlorobenzene	ND	5
Chlorodibromomethane	ND	50
Chloroethane	ND	50
2-Chloroethyl vinyl ether	ND	50
Chloroform	ND	5
Chloromethane	ND	50
Dibromoethane	ND	5
Dichlorodiflouromethane	ND	50
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
2-Hexanone	ND	50
Methylene chloride	ND	50
4-Methyl-2-pentanone (MIBK)	ND	10
Styrene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Acetate	ND	50
Vinyl Chloride	ND	50
Xylene (total)	ND	5
% SURROGATE RECOVERY		
1,2 Dichloroethane-d_4	108	70-121
Toluene -d_8	98	81-117
Bromofluorobenzene	102	74-121

ND = Not Detected

METHOD: 8270

SAMPLE ID: ATD6-2-2

CONTROL NO: 910801-11

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (mg/kg)
Undecane	0.87
Undecane, 3, 6 dimethyl	0.67
Octane, 2,3,7-trimethyl	1.0
Tridecane	1.7
Tetradecane	1.3
Naphthalene, 1,,5-dimethyl	0.47
Pentadecane	0.53
Naphtalene, 1,4,5-trimethyl	0.33
Napthalene, 1,4,6-trimethyl	0.47
Undecane, 3,5,-dimethyl	0.8
Octacasane	2.5
Dodecane, 2,7,10-trimethyl	1.7
Heptadecane	1.7
Hexadecane	2.3
Eicosane, 7-hexyl	1.9
Docasane	1.8
Tridecane, 6-propyl	1.2

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/05/91
SAMPLE ID:	ATD6-2-2	DATE ANALYZED:	08/05/91
CONTROL NO:	910801-11	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	0.15 (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	0.19 (0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	ND (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	ND (0.1)
Naphthalene	0.11 (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	ND (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	0.33 (0.1)
2-Methylnaphthalene	0.35 (0.1)	Chrysene	ND (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	ND (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	ND (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	65	25-121
Phenol - d_5	95	24-113
Nitrobenzene - d_5	85	23-120
2-Fluorobiphenyl	100	30-115
2,4,6 Tribromophenol	20	19-122
Terphenyl - d_{14}	92	18-137

* Dilution Factor: 2

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/01/91
SAMPLE ID:	Method Blank	DATE ANALYZED:	08/11/91
CONTROL NO:	910801	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	ND (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	2.5 (0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	ND (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	ND (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	ND (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	0.5 (0.1)
2-Methylnaphthalene	ND (0.1)	Chrysene	ND (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	ND (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	ND (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	80	25-121
Phenol - d_5	86	24-113
Nitrobenzene - d_5	70	23-120
2-Fluorobiphenyl	73	30-115
2,4,6 Tribromophenol	80	19-122
Terphenyl - d_{14}	85	18-137

EPA METHOD 5030/Mod. 8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

CLIENT:	Applied Geosciences	DATE REC'D:	08/01/91
PROJECT:	Market Place II	DATE EXTRACTED:	N/A
CONTROL NO:	910801	DATE ANALYZED:	08/05/91
MATRIX:	Soil		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
ATD-6-2-2	910801-11	160	0.1
ATD-6-3-2	910801-12	0.62	0.1

QUALITY CONTROL DATA

CLIENT: Applied Geosciences
PROJECT: Market Place II
CONTROL NO: 910801

METHOD: EPA M8015
MATRIX: Soil

SAMPLE ID: 910802-7

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Diesel	ND	100	80	80	0

METHOD: EPA M8015
MATRIX: Soil

SAMPLE ID: 910802-8

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Diesel	ND	100	81	76	6

METHOD: EPA M8015
MATRIX: Soil

SAMPLE ID: 910802-9

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Diesel	ND	100	80	87	8

QUALITY CONTROL DATA

CLIENT: Applied Geosciences
PROJECT: Market Place II
CONTROL NO: 910801

METHOD: EPA 5030/M8015
MATRIX: Soil

SAMPLE ID: 910807-1

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Gasoline	ND	1	106	94	12

METHOD: EPA 8240
MATRIX: Soil

SAMPLE ID: 910806-3

COMPOUND	SAMPLE RESULTS (ug/kg)	AMOUNT SPIKED (ug/kg)	% REC.	DUP. % REC.	RPD
1,1 DCE	ND	50	96	90	7
Benzene	ND	50	104	96	8
TCE	ND	50	94	90	4
Toluene	ND	50	92	100	8
Chl. Benzene	ND	50	108	106	2

QUALITY CONTROL DATA

CLIENT: Applied Geosiences
PROJECT: Market Place II
CONTROL NO: 910801

METHOD: EPA 3050/6010
MATRIX: Soil

SAMPLE ID: 910801-1

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Cadmium	3.2	100	74	79	6
Chromium	25	100	66	75	9
Cobalt	6.3	100	75	79	5
Copper	19	100	70	72	2
Lead	22	100	70	73	3

METHOD: EPA 3050/6010
MATRIX: Soil

SAMPLE ID: 910801-17

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Cadmium	3.1	100	89	82	8
Chromium	35	100	82	72	9
Cobalt	7.1	100	89	83	7
Copper	14	100	84	84	0
Lead	19	100	89	76	13

EPA METHOD 413.2
OIL AND GREASE

CLIENT:	Applied Geosciences	DATE REC'D:	08 02/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/04/91
CONTROL NO:	910806	DATE ANALYZED:	08/06/91
MATRIX:	Soil		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
ATD4-1-2	910806-1	2500	100
ATD4-2-2	910806-2	ND	5
ATD4-3-2	910806-3	ND	5
ATD4-4-2	910806-4	ND	5
B1-1-2	910806-5	18	5
B1-2-2	910806-6	ND	5
B2-1-2	910806-7	2000	50
B2-2-2	910806-8	70	5
B3-1-2	910806-9	5100	100
B3-2-2	910806-10	ND	5
B4-1-2	910806-11	3400	100
B4-2-2	910806-12	8	5
B5-1-2	910806-13	230	5
B5-2-2	910806-14	6	5
ATD1-5	910806-15	ND	5

EPA METHOD Mod. 8015
TOTAL PETROLEUM HYDROCARBONS

CLIENT:	Applied Geosciences	**DATE REC'D:**	08/02/91
PROJECT:	Market Place II	**DATE EXTRACTED:**	08/06/91
CONTROL NO:	910806	**DATE ANALYZED:**	08/06/91
MATRIX:	Soil		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/kg)	H-C RANGE	%SURROGATE
Method Blank	910806	ND	N.A.	97
ATD4-1-2	910806-1	42	C14-C22	101
ATD4-2-2	910806-2	7	C14-C18	104
ATD4-3-2	910806-3	7	C14-C18	91
ATD4-4-2	910806-4	6	C14-C18	90
B1-1-2	910806-5	5	C14-C18	96
B1-2-2	910806-6	ND	N.A.	94
B2-1-2	910806-7	14	C14-C20	104
B2-2-2	910806-8	6	C14-C18	100
B3-1-2	910806-9	16	C14-C20	93
B3-2-2	910806-10	6	C14-C18	102
B4-1-2	910806-11	16	C14-C20	102
B4-2-2	910806-12	14	C14-C20	89
B5-1-2	910806-13	12	C14-C20	112
B5-2-2	910806-14	7	C14-C18	109
ATD1-5	910806-15	6	C14-C20	100

DETECTION LIMIT: 5 mg/kg

EPA METHOD - 8240
VOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/02/91
PROJECT:	A901749A/Market Place II	DATE EXTRACTED:	N/A
SAMPLE ID:	ATD4-3-2	DATE ANALYZED:	08/02/91
CONTROL NO:	910806-3	MATRIX TYPE:	Soil

PARAMETERS (8240)	RESULTS (ug/kg)	DETECTION LIMIT (ug/kg)
Acetone	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	10
Bromomethane	ND	50
2-Butanone (MEK)	ND	100
Carbon Disulfide	ND	5
Carbon Tetrachloride	ND	5
Chlorobenzene	ND	5
Chlorodibromomethane	ND	50
Chloroethane	ND	50
2-Chloroethyl vinyl ether	ND	50
Chloroform	ND	5
Chloromethane	ND	50
Dibromoethane	ND	5
Dichlorodiflouromethane	ND	50
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
2-Hexanone	ND	50
Methylene chloride	ND	50
4-Methyl-2-pentanone (MIBK)	ND	10
Styrene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Acetate	ND	50
Vinyl Chloride	ND	50
Xylene (total)	ND	5
% SURROGATE RECOVERY		
1,2 Dichloroethane-d_4	108	70-121
Toluene -d_8	128	81-117
Bromofluorobenzene	104	74-121

ND = Not Detected

EPA METHOD - 8240
VOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/02/91
PROJECT:	A901749A/Market Place II	DATE EXTRACTED:	N/A
SAMPLE ID:	Method Blank	DATE ANALYZED:	08/02/91
CONTROL NO:	910806	MATRIX TYPE:	Soil

PARAMETERS (8240)	RESULTS (ug/kg)	DETECTION LIMIT (ug/kg)
Acetone	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	10
Bromomethane	ND	50
2-Butanone (MEK)	ND	100
Carbon Disulfide	ND	5
Carbon Tetrachloride	ND	5
Chlorobenzene	ND	5
Chlorodibromomethane	ND	50
Chloroethane	ND	50
2-Chloroethyl vinyl ether	ND	50
Chloroform	ND	5
Chloromethane	ND	50
Dibromoethane	ND	5
Dichlorodiflouromethane	ND	50
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
2-Hexanone	ND	50
Methylene chloride	ND	50
4-Methyl-2-pentanone (MIBK)	ND	10
Styrene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Acetate	ND	50
Vinyl Chloride	ND	50
Xylene (total)	ND	5
% SURROGATE RECOVERY		
1,2 Dichloroethane-d_4	90	70-121
Toluene -d_8	102	81-117
Bromofluorobenzene	112	74-121

ND = Not Detected

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/02/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/14/91
SAMPLE ID:	B-1-1-2	DATE ANALYZED:	08/14/91
CONTROL NO:	910806-5	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:

Dibutylchorendate	104
2,4,5,6-Tetrachloro-m-xylene	108

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/02/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/14/91
SAMPLE ID:	B3-1-2	DATE ANALYZED:	08/14/91
CONTROL NO:	910806-9	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:

Dibutylchorendate	113
2,4,5,6-Tetrachloro-m-xylene	101

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/02/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/14/91
SAMPLE ID:	Method Blank	DATE ANALYZED:	08/14/91
CONTROL NO:	910806	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:	
Dibutylchorendate	84
2,4,5,6-Tetrachloro-m-xylene	91

QUALITY CONTROL DATA

CLIENT: Applied Geosciences
PROJECT: A901749A/Market Place II
CONTROL NO: 910806

METHOD EPA 8240
MATRIX: Soil

SAMPLE ID: 910806-3

COMPOUND	SAMPLE RESULTS (ug/kg)	AMOUNT SPIKED (ug/kg)	% REC.	DUP. % REC.	RPD
1,1 DCE	ND	50	96	90	7
Benzene	ND	50	104	96	8
TCE	ND	50	94	90	4
Toluene	ND	50	92	100	8
Chl. Benzene	ND	50	108	106	2

METHOD EPA 413.2
MATRIX: Soil

SAMPLE ID: 910806-15

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
TROG	ND	150	104	103	1

METHOD EPA 3050/6010
MATRIX: Soil

SAMPLE ID: 910806-9

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Cobalt	10	100	86	85	1
Copper	110	100	52	90	21
Lead	110	100	64	90	14
Zinc	150	100	80	100	8

QUALITY CONTROL DATA

CLIENT: Applied Geosciences
PROJECT: Market Place II
CONTROL NO: 910806

METHOD EPA M8015
MATRIX: Soil

SAMPLE ID: 910802-11

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Diesel	ND	100	82	80	2

METHOD EPA 8080
MATRIX: Soil

SAMPLE ID: Method Blank

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.
g-BHC	ND	5	106
Hetpachlor	ND	10	109
Aldrin	ND	20	106
Dieldrin	ND	10	106
Endrin	ND	10	114
DDT	ND	20	110

APPLIED GEOSCIENCES INC.
Engineering Geology and Hazardous Materials Consultants
1735 No. First St., Suite 305
San Jose, CA 95112
(408) 452-0262
FAX (408) 452-0265

SHIPMENT NO. _____
PAGE 1 OF 1
DATE 1 May 1991

CHAIN OF CUSTODY RECORD

PROJECT NAME: Market Place II
PROJECT NO.: A901749A
CONTACT: Joseph Wells

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
AT04-1-2	AT04	Soil	Drive	2.5 Tube	4°C	ICE	CAM Tog, Total,
AT04-2-2	"	"	"	"	"		8 "
AT04-3-2	"	"	"	"	"	"	[illegible]
AT04-4-2	"	"	"	"	"	"	[illegible]
B1-1-2	B1	"	"	"	"	"	+ 80
B1-2-2	"	"	"	"	"	"	CAM, Tog, TPH
B2-1-2	B2	"	"	"	"	"	"
B2-2-2	"	"	"	"	"	"	"
B3-1-2	B3	"	"	"	"	"	+ 80
B3-2-2	"	"	"	"	"	"	CAM, Tog, TPH
B4-1-2	B4	"	"	"	"	"	"
B4-2-2	"	"	"	"	"	"	"
B5-1-2	B5	"	"	"	"	"	"
B5-2-2	"	"	"	"	"	"	"
AT01-5	AT01	"	"	"	"	"	"
				[illegible]	[illegible]	[illegible]	

Total Number of Samples Shipped: 15 | Sampler's Signature: [signature]

Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time

Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis

C K Y incorporated
Analytical Laboratories

Date: 08/20/91
910817

Applied Geosciences, Inc.
1735 No. First St., suite 305
San Jose, CA 95112

Attn: Mr. Joseph Mello

Subject: Laboratory Report
Project: Market Place II

Enclosed is the laboratory report for samples received on 08/06/91. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported includes:

Method	No. of Analysis
EPA 413.1	8 Water
EPA 608/8080	2 Water/4 Soils
EPA 6010	7 Water/4 Soils
Modified 8015	8 Water/4 Soils
EPA 624	3 Water

The results are summarized on twenty-one pages.

Please feel free to call if you have any questions concerning these results.

Sincerely,

Dr. Kam Pang
Laboratory Director

630 Maple Ave., Torrance, Calif. 90503 • Telephone 213-618-8889 • Fax: 213-618-0818

EPA METHOD 413.2
OIL AND GREASE

CLIENT:	Applied Geosciences	**DATE REC'D:**	08/06/9
PROJECT:	Market Place II	**DATE ANALYZED:**	08/13/91
CONTROL NO:	910817	**MATRIX TYPE:**	Water

SAMPLE ID:	CONTROL NO:	RESULTS (mg/L)	DETECTION LIMIT (mg/L)
ATD1W-1	910817-1	1	1
ATD2W-1	910817-2	3	1
ATD3W-1	910817-3	1	1
ATD4W-1	910817-4	2	1
ATD5W-1	910817-5	2	1
ATD6W-1	910817-6	4	1
ATD7W-1	910817-7	3	1
ATD8W-1	910817-8	4	1

EPA METHOD 608 - PESTICIDES & PCB

CLIENT:	Applied Geosciences	**DATE REC'D:**	08/06/91
PROJECT:	Market Place II	**DATE ANALYZED:**	08/07/91
SAMPLE ID:	ATD1W-1	**MATRIX TYPE:**	Water
CONTROL NO:	910817-1		

PARAMETERS (608)	RESULTS (ug/L)	DETECTION LIMIT (ug/L)
Aldrin	ND	0.05
Alpha-BHC	ND	0.05
Beta-BHC	ND	0.05
Gamma-BHC	ND	0.05
Sigma-BHC	ND	0.05
Chlordane	ND	0.5
4,4'-DDD	ND	0.1
4,4'-DDE	ND	0.1
4,4'-DDT	ND	0.1
Dieldrin	ND	0.1
Endosulfan I	ND	0.05
Endosulfan II	ND	0.1
Endosulfan Sulfate	ND	0.1
Endrin	ND	0.1
Endrin Aldehyde	ND	0.1
Heptachlor	ND	0.05
Heptachlor Epoxide	ND	0.05
Methoxychlor	ND	0.5
Toxaphene	ND	1.0
Aroclor - 1016	ND	1.0
Aroclor - 1221	ND	1.0
Aroclor - 1232	ND	1.0
Aroclor - 1242	ND	1.0
Aroclor - 1248	ND	1.0
Aroclor - 1254	ND	1.0
Aroclor - 1260	ND	1.0

% Surrogate Recovery

Dibutylchlorendate	89
2,4,5,6-Tetrachloro-m-xylene	143

EPA METHOD 608 - PESTICIDES

CLIENT:	Applied Geosciences	**DATE REC'D:**	08/06/91
PROJECT:	Market Place II	**DATE ANALYZED:**	08/07/91
SAMPLE ID:	ATD5W-1	**MATRIX TYPE:**	Water
CONTROL NO:	910817-5		

PARAMETERS (608)	RESULTS (ug/L)	DETECTION LIMIT (ug/L)
Aldrin	ND	0.05
Alpha-BHC	ND	0.05
Beta-BHC	ND	0.05
Gamma-BHC	ND	0.05
Sigma-BHC	ND	0.05
Chlordane	ND	0.5
4,4'-DDD	ND	0.1
4,4'-DDE	ND	0.1
4,4'-DDT	ND	0.1
Dieldrin	ND	0.1
Endosulfan I	ND	0.05
Endosulfan II	ND	0.1
Endosulfan Sulfate	ND	0.1
Endrin	ND	0.1
Endrin Aldehyde	ND	0.1
Heptachlor	ND	0.05
Heptachlor Epoxide	ND	0.05
Methoxychlor	ND	0.5
Toxaphene	ND	1.0
Aroclor - 1016	ND	1.0
Aroclor - 1221	ND	1.0
Aroclor - 1232	ND	1.0
Aroclor - 1242	ND	1.0
Aroclor - 1248	ND	1.0
Aroclor - 1254	ND	1.0
Aroclor - 1260	ND	1.0

% Surrogate Recovery

Dibutylchlorendate	87
2,4,5,6-Tetrachloro-m-xylene	118

EPA METHOD 608 - PESTICIDES

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE ANALYZED:	08/07/91
SAMPLE ID:	Method Blank	MATRIX TYPE:	Water
CONTROL NO:	910817		

PARAMETERS (608)	RESULTS (ug/L)	DETECTION LIMIT (ug/L)
Aldrin	ND	0.05
Alpha-BHC	ND	0.05
Beta-BHC	ND	0.05
Gamma-BHC	ND	0.05
Sigma-BHC	ND	0.05
Chlordane	ND	0.5
4,4'-DDD	ND	0.1
4,4'-DDE	ND	0.1
4,4'-DDT	ND	0.1
Dieldrin	ND	0.1
Endosulfan I	ND	0.05
Endosulfan II	ND	0.1
Endosulfan Sulfate	ND	0.1
Endrin	ND	0.1
Endrin Aldehyde	ND	0.1
Heptachlor	ND	0.05
Heptachlor Epoxide	ND	0.05
Methoxychlor	ND	0.5
Toxaphene	ND	1.0
Aroclor - 1016	ND	1.0
Aroclor - 1221	ND	1.0
Aroclor - 1232	ND	1.0
Aroclor - 1242	ND	1.0
Aroclor - 1248	ND	1.0
Aroclor - 1254	ND	1.0
Aroclor - 1260	ND	1.0

% Surrogate Recovery

Dibutylchlorendate	82
2,4,5,6-Tetrachloro-m-xylene	92

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	HA1-1	DATE ANALYZED:	08/07/91
CONTROL NO:	910817-9	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:	
Dibutylchorendate	86
2,4,5,6-Tetrachloro-m-xylene	131

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	HA1-2	DATE ANALYZED:	08/07/91
CONTROL NO:	910817-10	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:

Dibutylchorendate	85
2,4,5,6-Tetrachloro-m-xylene	129

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	HA2-1	DATE ANALYZED:	08/07/91
CONTROL NO:	910817-11	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:

Dibutylchorendate	87
2,4,5,6-Tetrachloro-m-xylene	142

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	HA2-1D	DATE ANALYZED:	08/07/91
CONTROL NO:	910817-12	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:

Dibutylchorendate	79
2,4,5,6-Tetrachloro-m-xylene	141

EPA METHOD 8080 - PESTICIDES & PCBs

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/07/91
SAMPLE ID:	Method Blank	DATE ANALYZED:	08/07/91
CONTROL NO:	910817	MATRIX:	Soil

PARAMETERS (8080)	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
Aldrin	ND	0.02
Alpha-BHC	ND	0.01
Beta-BHC	ND	0.02
Delta-BHC	ND	0.02
Gamma-BHC (Lindane)	ND	0.01
Chlordane	ND	.05
4,4'-DDD	ND	.02
4,4'-DDE	ND	.02
4,4'-DDT	ND	.02
Dieldrin	ND	.02
Endosulfan I	ND	.02
Endosulfan II	ND	.05
Endosulfan Sulfate	ND	.05
Endrin	ND	.02
Endrin Aldehyde	ND	.05
Heptachlor	ND	.02
Heptachlor Epoxide	ND	.02
Methxychlor	ND	.1
Toxaphene	ND	.1
Aroclor - 1016	ND	.1
Aroclor - 1221	ND	.1
Aroclor - 1232	ND	.1
Aroclor - 1242	ND	.1
Aroclor - 1248	ND	.1
Aroclor - 1254	ND	.1
Aroclor - 1260	ND	.1

% Recovery:

Dibutylchorendate	90
2,4,5,6-Tetrachloro-m-xylene	130

EPA 3005/6010/7000
CAM METALS BY ICP/AAS

CLIENT:	Applied Geosciences Inc.	DATE REC'D:	08/06/91
PROJECT:	A901749A	DATE ANALYZED:	08/12/91
CONTROL NO:	910817	MATRIX TYPE:	Water

SAMPLE ID:	ATD1W-1	ATD2W-1	ATD3W-1	ATD4W-1	
CONTROL NO:	-1	-2	-3	-4	
PARAMETERS	RESULTS (mg/L)				DETECTION LIMI (mg/L)
Antimony	ND	ND	ND	ND	0.50
Arsenic	ND	ND	ND	ND	0.50
Barium	ND	ND	0.15	0.29	0.05
Beryllium	ND	ND	ND	ND	0.05
Cadmium	ND	ND	ND	ND	0.05
Chromium - Total	ND	ND	ND	ND	0.05
Cobalt	ND	ND	ND	ND	0.05
Copper	ND	ND	ND	ND	0.05
Lead	ND	ND	ND	ND	0.10
Mercury	ND	ND	ND	ND	0.005
Molybdenum	ND	ND	ND	ND	0.05
Nickel	ND	ND	ND	ND	0.10
Selenium	ND	ND	ND	ND	0.50
Silver	ND	ND	ND	ND	0.05
Thallium	ND	ND	ND	ND	1.0
Vanadium	ND	ND	ND	ND	0.05
Zinc	0.08	0.10	0.08	ND	0.05

EPA 3005/6010/7000
CAM METALS BY ICP/AAS

CLIENT:	Applied Geosciences Inc.	DATE REC'D:	08/06/91
PROJECT:	A901749A	DATE ANALYZED:	08/12/91
CONTROL NO:	910817	MATRIX TYPE:	Water

SAMPLE ID:	ATD5W-1	ATD6W-1	ATD7W-1	
CONTROL NO:	-5	-6	-7	
PARAMETERS	RESULTS (mg/L)			DETECTION LIMIT (mg/L)
Antimony	ND	ND	ND	0.50
Arsenic	ND	ND	ND	0.50
Barium	0.15	0.16	0.13	0.05
Beryllium	ND	ND	ND	0.05
Cadmium	ND	ND	ND	0.05
Chromium - Total	0.08	ND	ND	0.05
Cobalt	ND	ND	ND	0.05
Copper	0.34	ND	ND	0.05
Lead	ND	ND	ND	0.10
Mercury	ND	ND	ND	0.005
Molybdenum	ND	ND	ND	0.05
Nickel	ND	ND	ND	0.10
Selenium	ND	ND	ND	0.50
Silver	ND	ND	ND	0.05
Thallium	ND	ND	ND	1.0
Vanadium	ND	ND	ND	0.05
Zinc	0.10	ND	ND	0.05

EPA 3005/6010/7000
CAM METALS BY ICP/AAS

CLIENT:	Applied Geosciences Inc.	DATE REC'D:	08/06/91
PROJECT:	A901749A	DATE ANALYZED:	08/12/91
CONTROL NO:	910817	MATRIX TYPE:	Soil

SAMPLE ID:	HA1-1	HA1-2	HA2-1	HA2-1D	
CONTROL NO:	-9	-10	-11	-12	
PARAMETERS	RESULTS (mg/Kg)				DETECTION LIM: (mg/Kg)
Antimony	ND	ND	5.7	7.8	5.0
Arsenic	ND	ND	ND	5.5	5.0
Barium	70	42	160	160	0.50
Beryllium	ND	ND	ND	ND	0.50
Cadmium	2.9	2.8	3.0	3.0	0.50
Chromium - Total	31	27	29	29	0.50
Cobalt	2.6	3.1	11	10	0.50
Copper	11	12	20	260	0.50
Lead	18	16	36	110	1.0
Mercury	0.10	0.09	0.20	0.74	0.002
Molybdenum	ND	ND	0.91	ND	0.50
Nickel	15	22	25	26	1.0
Selenium	ND	ND	ND	ND	5.0
Silver	ND	ND	ND	ND	0.50
Thallium	ND	ND	ND	ND	10
Vanadium	23	21	29	30	0.50
Zinc	27	30	79	230	0.50

EPA METHOD Mod. 8015
TOTAL PETROLEUM HYDROCARBONS

CLIENT:	Applied Geosciences, Inc.	**DATE REC'D:**	08/06/91
PROJECT:	Market Place II	**DATE EXTRACTED:**	08/14/91
CONTROL NO:	910817	**DATE ANALYZED:**	08/15/91
MATRIX:	Soil		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/kg)	%SURROGATE (% Rec.)
HA1-1	910817-9	ND	113
HA1-2	910817-10	ND	119
HA2-1	910817-11	ND	104
HA2-1-D	910817-12	ND	101

DETECTION LIMIT is 5.0 mg/kg.

C K Y incorporated
Environmental Services

RECEIVED
NOV 13 1991
BY:
Applied Geosciences Inc.

Date: 11/01/91
N911004

Applied Geosciences
1735 No. 1st #305
San Jose, CA 95112

Attn: Mr. Joseph Mello

Subject: Laboratory Report
Project: Another Tree Development

Enclosed is the laboratory report for samples received on 10/21/91. The chain-of-custody forms were properly filled out. The data reported includes:

Method	No. of Analysis
EPA 625	7 Water
EPA 8270	6 Soil
Modified 8015 (Gas)	7 Water
Modified 8015 (Gas)	6 Soil
Cam Metals (STLC)	7 Soil

The results are summarized on twenty two pages.

Please feel free to call if you have any questions concerning these results.

Sincerely,

Danny Hoang
Laboratory Director

3942 Valley Avenue, Suite F, Pleasanton, CA 94566 • Telephone 415-846-3188 • Fax: 415-846-1236

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	11/04/91
SAMPLE ID:	Method Blank	DATE ANALYZED:	11/05/91
CONTROL NO:	N911004	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	ND (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	0.26(0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	ND (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	ND (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	ND (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	ND (0.1)
2-Methylnaphthalene	ND (0.1)	Chrysene	ND (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	ND (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	ND (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	109	25-121
Phenol - d_5	117	24-113
Nitrobenzene - d_5	81	23-120
2-Fluorobiphenyl	94	30-115
2,4,6 Tribromophenol	101	19-122
Terphenyl - d_{14}	122	18-137

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	11/04/91
SAMPLE ID:	HA4-1	DATE ANALYZED:	11/05/91
CONTROL NO:	N911004-1	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	ND (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	0.98 (0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	ND (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	ND (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	ND (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	ND (0.1)
2-Methylnaphthalene	ND (0.1)	Chrysene	ND (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	ND (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	ND (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	96	25-121
Phenol - d_5	103	24-113
Nitrobenzene - d_5	70	23-120
2-Fluorobiphenyl	84	30-115
2,4,6 Tribromophenol	94	19-122
Terphenyl - d_{14}	108	18-137

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	11/04/91
SAMPLE ID:	HA3-1	DATE ANALYZED:	11/05/91
CONTROL NO:	N911004-9	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	ND (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	0.16(0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	ND (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	ND (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	ND (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	ND (0.1)
2-Methylnaphthalene	ND (0.1)	Chrysene	ND (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	ND (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	ND (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	94	25-121
Phenol - d_5	101	24-113
Nitrobenzene - d_5	75	23-120
2-Fluorobiphenyl	96	30-115
2,4,6 Tribromophenol	121	19-122
Terphenyl - d_{14}	124	18-137

METHOD: 8270

SAMPLE ID: HA3-1

CONTROL NO: N911004-9

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (mg/kg)
Phenol,2,6-bis(1,1-dimethylethyl)-4-methyl	0.95
Hexadecane	7.5
Octacosane	3.6
Nonadecane	3.1
Heptadecane, 9-octyl-	6.5
Tetracontane	1.0
Heneicosane, 11-(1-ethylpropyl)	8.5
Pentacosane	1.4
Docosane	4.6
Pentatriacontane	4.0
Tetratetracontane	2.2
Heptadecane,2,6,10,15-tetramethyl	1.1

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	11/04/91
SAMPLE ID:	HA5-1	DATE ANALYZED:	11/05/91
CONTROL NO:	N911004-10	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	0.12 (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	0.13 (0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	0.11 (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	0.17 (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	0.12 (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	0.24 (0.1)
2-Methylnaphthalene	1.5 (0.1)	Chrysene	0.18 (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	0.13 (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	0.15 (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	100	25-121
Phenol - d_5	120	24-113
Nitrobenzene - d_5	108	23-120
2-Fluorobiphenyl	108	30-115
2,4,6 Tribromophenol	126	19-122
Terphenyl - d_{14}	128	18-137

METHOD: 8270

SAMPLE ID: HA5-1

CONTROL NO: N911004-10

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (mg/kg)
heptane, 2-methyl	1.3
Cyclohexane, 1,1,3-trimethyl	6.7
Nonane, 3-methyl-	3.2
Nonane, 2,6-dimethyl	3.3
Cyclohexane, 1,1-dimethyl-2-propyl	1.5
Napthalene, decahydro-,cis	1.8
Benzene, 1,2,4,5-tetramethyl	1.7
Dodecane, 6-methyl	1.4
Octane, 2,3,7-trimethyl	1.5
Tridecane, 6-propyl	2.1
Octacosane	2.2

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	11/04/91
SAMPLE ID:	HA5-2	DATE ANALYZED:	11/05/91
CONTROL NO:	N911004-11	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	0.11 (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	0.23 (0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	ND (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	0.16 (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	0.12 (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	0.13 (0.1)
2-Methylnaphthalene	ND (0.1)	Chrysene	0.26 (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	0.19 (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	0.23 (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	45	25-121
Phenol - d_5	41	24-113
Nitrobenzene - d_5	45	23-120
2-Fluorobiphenyl	60	30-115
2,4,6 Tribromophenol	60	19-122
Terphenyl - d_{14}	88	18-137

METHOD: 8270

SAMPLE ID: HA5-2

CONTROL NO: N911004-11

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (mg/kg)
heptane, 2-methyl	0.54
Cyclohexane, 1,2-dimethyl-,trans	0.6
Cyclohexane, 1,1,3-trimethyl-	2.6
Cyclohexane, 1-ethyl-4-methyl-,trans	0.86
Cyclohexane, 1-etyl-4-2-methyl-,cis	0.4
Octadecane, 2,6-dimethyl-	0.6

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	11/04/91
SAMPLE ID:	HA6-1	DATE ANALYZED:	11/05/91
CONTROL NO:	N911004-12	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	0.12 (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	0.15 (0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	0.16 (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	0.22 (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	0.11 (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	0.15 (0.1)
2-Methylnaphthalene	ND (0.1)	Chrysene	0.23 (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	0.21 (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	0.12 (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	98	25-121
Phenol - d_5	96	24-113
Nitrobenzene - d_5	82	23-120
2-Fluorobiphenyl	101	30-115
2,4,6 Tribromophenol	101	19-122
Terphenyl - d_{14}	132	18-137

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	11/04/91
SAMPLE ID:	HA8-1	DATE ANALYZED:	11/05/91
CONTROL NO:	N911004-13	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	ND (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	ND (0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	ND (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	ND (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	ND (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	ND (0.1)
2-Methylnaphthalene	ND (0.1)	Chrysene	ND (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	ND (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	ND (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

*% Surrogate Recovery		
2-Fluorophenol	15	25-121
Phenol - d_5	17	24-113
Nitrobenzene - d_5	10	23-120
2-Fluorobiphenyl	14	30-115
2,4,6 Tribromophenol	13	19-122
Terphenyl - d_{14}	20	18-137

* Matrix Interference

METHOD: 8270

SAMPLE ID: HA8-1

CONTROL NO: N911004-13

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (mg/kg)
Dodecane,2,7,10-trimethyl	0.13
Docosane	0.43

EPA METHOD - 8270
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	11/04/91
SAMPLE ID:	HA8-2	DATE ANALYZED:	11/05/91
CONTROL NO:	N911004-14	MATRIX TYPE:	Soil

PARAMETER	RESULTS (mg/kg)	PARAMETER	RESULTS (mg/kg)
Phenol	ND (0.1)	Acenaphthene	ND (0.1)
bis(2-chloroethyl)ether	ND (0.1)	2,4-Dinitrophenol	ND (0.5)
2-Chlorophenol	ND (0.1)	4-Nitrophenol	ND (0.5)
1,3-Dichlorobenzene	ND (0.1)	Dibenzofuran	ND (0.1)
1,4-Dichlorobenzene	ND (0.1)	2,4-Dinitrotoluene	ND (0.1)
Benzyl Alcohol	ND (0.2)	2,6-Dinitrotoluene	ND (0.1)
1,2-Dichlorobenzene	ND (0.1)	Diethylphthalate	ND (0.1)
2-Methylphenol	ND (0.1)	4-Chlorophenyl-phenylether	ND (0.1)
bis(2-chloroisopropyl)ether	ND (0.1)	Fluorene	ND (0.1)
4-Methylphenol	ND (0.1)	4-Nitroaniline	ND (0.5)
N-Nitroso-Di-n-Propylamine	ND (0.1)	4,6-Dinitro-2-Methylphenol	ND (0.5)
Hexachloroethane	ND (0.1)	N-Nitrosodiphenylamine	ND (0.1)
Nitrobenzene	ND (0.1)	4-Bromophenyl-phenylether	ND (0.1)
Isophorone	ND (0.1)	Hexachlorobenzene	ND (0.1)
2-Nitrophenol	ND (0.1)	Pentachlorophenol	ND (0.5)
2,4-Dimethylphenol	ND (0.1)	Phenanthrene	ND (0.1)
Benzoic Acid	ND (0.5)	Anthracene	ND (0.1)
bis-(2-Chloroethoxy)methane	ND (0.1)	Di-n-Butylphthalate	ND (0.1)
2,4-Dichlorophenol	ND (0.1)	Fluoranthene	ND (0.1)
1,2,4-Trichlorobenzene	ND (0.1)	Pyrene	ND (0.1)
Naphthalene	ND (0.1)	Butylbenzylphthalate	ND (0.1)
4-Chloroanline	ND (0.2)	3,3'-Dichlorobenzidine	ND (0.2)
Hexachlorobutadiene	ND (0.1)	Benzo(a)Anthracene	ND (0.1)
4-Chloro-3-Methylphenol	ND (0.2)	bis(2-Ethylhexyl)Phthalate	0.21 (0.1)
2-Methylnaphthalene	ND (0.1)	Chrysene	ND (0.1)
Hexachlorocyclopentadiene	ND (0.1)	Di-n-Octyl Phthalate	ND (0.1)
2,4,6-Trichlorophenol	ND (0.1)	Benzo(b)Fluoranthene	ND (0.1)
2,4,5-Trichlorophenol	ND (0.1)	Benzo(k)Fluoranthene	0.1 (0.1)
2-Chloronaphthalene	ND (0.1)	Benzo(a)Pyrene	ND (0.1)
2-Nitroaniline	ND (0.5)	Indeno(1,2,3-cd)Pyrene	ND (0.1)
Dimethyl Phthalate	ND (0.1)	Dibenz(a,h)Anthracene	ND (0.1)
Acenaphthylene	ND (0.1)	Benzo(g,h,i)Perylene	ND (0.1)
3-Nitroaniline	ND (0.5)		
Diethyl phthalate	ND (0.1)		

ND = Not Detected

*% Surrogate Recovery		
2-Fluorophenol	115	25-121
Phenol - d_5	120	24-113
Nitrobenzene - d_5	108	23-120
2-Fluorobiphenyl	117	30-115
2,4,6 Tribromophenol	127	19-122
Terphenyl - d_{14}	140	18-137

* Matrix Interference

METHOD: 8270

SAMPLE ID: HA8-2

CONTROL NO: N911004-14

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (mg/kg)
Ethane, 1,1,2,2-tetrachloro	0.17
phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl	0.23
Hexadecane	0.4
Heptadecane, 2,6,10,15-tetramethyl	1.2
Tridecane, 6-propyl	0.97
Eicosane	1.0

EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	AGI	**DATE REC'D:**	10/21/91
PROJECT:	Another Tree Development	**DATE EXTRACTED:**	10/21/91
SAMPLE ID:	Blank	**DATE ANALYZED:**	10/25/91
CONTROL NO:	N911004-Blank	**MATRIX:**	Water

PARAMETER	RESULTS (ug/L)	PARAMETER	RESULTS (ug/L)
Phenol	ND (10)	Acenaphthene	ND (10)
bis(2-chloroethyl)ether	ND (10)	2,4-Dinitrophenol	ND (50)
2-Chlorophenol	ND (10)	4-Nitrophenol	ND (50)
1,3-Dichlorobenzene	ND (10)	Dibenzofuran	ND (10)
1,4-Dichlorobenzene	ND (10)	2,4-Dinitrotoluene	ND (10)
Benzyl Alcohol	ND (10)	2,6-Dinitrotoluene	ND (10)
1,2-Dichlorobenzene	ND (10)	Diethylphthalate	ND (10)
2-Methylphenol	ND (10)	4-Chlorophenyl-phenylether	ND (10)
bis(2-chloroisopropyl)ether	ND (10)	Fluorene	ND (10)
4-Methylphenol	ND (10)	4-Nitroaniline	ND (50)
N-Nitroso-Di-n-Propylamine	ND (10)	4,6-Dinitro-2-Methylphenol	ND (50)
Hexachloroethane	ND (10)	N-Nitrosodiphenylamine	ND (10)
Nitrobenzene	ND (10)	4-Bromophenyl-phenylether	ND (10)
Isophorone	ND (10)	Hexachlorobenzene	ND (10)
2-Nitrophenol	ND (10)	Pentachlorophenol	ND (10)
2,4-Dimethylphenol	ND (10)	Phenanthrene	ND (10)
Benzoic Acid	ND (50)	Anthracene	ND (10)
bis-(2-Chloroethoxy)methane	ND (10)	Di-n-Butylphthalate	ND (10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND (10)
1,2,4-Trichlorobenzene	ND (10)	Pyrene	ND (10)
Naphthalene	ND (10)	Butylbenzylphthalate	ND (10)
4-Chloroanline	ND (20)	3,3'-Dichlorobenzidine	ND (20)
Hexachlorobutadiene	ND (10)	Benzo(a)Anthracene	ND (10)
4-Chloro-3-Methylphenol	ND (20)	bis(2-Ethylhexyl)Phthalate	ND (10)
2-Methylnaphthalene	ND (10)	Chrysene	ND (10)
Hexachlorocyclopentadiene	ND (10)	Di-n-Octyl Phthalate	ND (10)
2,4,6-Trichlorophenol	ND (10)	Benzo(b)Fluoranthene	ND (10)
2,4,5-Trichlorophenol	ND (10)	Benzo(k)Fluoranthene	ND (10)
2-Chloronaphthalene	ND (10)	Benzo(a)Pyrene	ND (10)
2-Nitroaniline	ND (50)	Indeno(1,2,3-cd)Pyrene	ND (10)
Dimethyl Phthalate	ND (10)	Dibenz(a,h)Anthracene	ND (10)
Diethyl phthalate	ND (10)	Benzo(g,h,i)Perylene	ND (10)
Acenaphthylene	ND (10)		
3-Nitroaniline	ND (50)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	60	21-100
Phenol - d_5	64	10-94
Nitrobenzene - d_5	38	35-114
2-Fluorobiphenyl	30	43-116
2,4,6 Tribromophenol	38	10-123
Terphenyl - d_{14}	40	18-137

EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	AGI	DATE REC'D:	10/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/21/91
SAMPLE ID:	ATD1W-2	DATE ANALYZED:	10/25/91
CONTROL NO:	N911004-1	MATRIX:	Water

PARAMETER	RESULTS (ug/L)	PARAMETER	RESULTS (ug/L)
Phenol	ND (10)	Acenaphthene	ND (10)
bis(2-chloroethyl)ether	ND (10)	2,4-Dinitrophenol	ND (50)
2-Chlorophenol	ND (10)	4-Nitrophenol	ND (50)
1,3-Dichlorobenzene	ND (10)	Dibenzofuran	ND (10)
1,4-Dichlorobenzene	ND (10)	2,4-Dinitrotoluene	ND (10)
Benzyl Alcohol	ND (10)	2,6-Dinitrotoluene	ND (10)
1,2-Dichlorobenzene	ND (10)	Diethylphthalate	ND (10)
2-Methylphenol	ND (10)	4-Chlorophenyl-phenylether	ND (10)
bis(2-chloroisopropyl)ether	ND (10)	Fluorene	ND (10)
4-Methylphenol	ND (10)	4-Nitroaniline	ND (50)
N-Nitroso-Di-n-Propylamine	ND (10)	4,6-Dinitro-2-Methylphenol	ND (50)
Hexachloroethane	ND (10)	N-Nitrosodiphenylamine	ND (10)
Nitrobenzene	ND (10)	4-Bromophenyl-phenylether	ND (10)
Isophorone	ND (10)	Hexachlorobenzene	ND (10)
2-Nitrophenol	ND (10)	Pentachlorophenol	ND (10)
2,4-Dimethylphenol	ND (10)	Phenanthrene	ND (10)
Benzoic Acid	ND (50)	Anthracene	ND (10)
bis-(2-Chloroethoxy)methane	ND (10)	Di-n-Butylphthalate	ND (10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND (10)
1,2,4-Trichlorobenzene	ND (10)	Pyrene	ND (10)
Naphthalene	ND (10)	Butylbenzylphthalate	ND (10)
4-Chloroanline	ND (20)	3,3'-Dichlorobenzidine	ND (20)
Hexachlorobutadiene	ND (10)	Benzo(a)Anthracene	ND (10)
4-Chloro-3-Methylphenol	ND (20)	bis(2-Ethylhexyl)Phthalate	ND (10)
2-Methylnaphthalene	ND (10)	Chrysene	ND (10)
Hexachlorocyclopentadiene	ND (10)	Di-n-Octyl Phthalate	ND (10)
2,4,6-Trichlorophenol	ND (10)	Benzo(b)Fluoranthene	ND (10)
2,4,5-Trichlorophenol	ND (10)	Benzo(k)Fluoranthene	ND (10)
2-Chloronaphthalene	ND (10)	Benzo(a)Pyrene	ND (10)
2-Nitroaniline	ND (50)	Indeno(1,2,3-cd)Pyrene	ND (10)
Dimethyl Phthalate	ND (10)	Dibenz(a,h)Anthracene	ND (10)
Diethyl phthalate	ND (10)	Benzo(g,h,i)Perylene	ND (10)
Acenaphthylene	ND (10)		
3-Nitroaniline	ND (50)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	84	21-100
Phenol - d_5	82	10-94
Nitrobenzene - d_5	62	35-114
2-Fluorobiphenyl	50	43-116
2,4,6 Tribromophenol	69	10-123
Terphenyl - d_{14}	64	18-137

METHOD: 625

SAMPLE ID: ATD1W-2

CONTROL NO: N911004-1

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (ug/L)
3 Methyl Benzoil	17
Carprolactane	29
Benzonebulanoic, 2,5-Dimethyl	140

EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	AGI	**DATE REC'D:**	10/21/91
PROJECT:	Another Tree Development	**DATE EXTRACTED:**	10/21/91
SAMPLE ID:	ATD2W-2	**DATE ANALYZED:**	10/25/91
CONTROL NO:	N911004-2	**MATRIX:**	Water

PARAMETER	RESULTS (ug/L)	PARAMETER	RESULTS (ug/L)
Phenol	ND (10)	Acenaphthene	ND (10)
bis(2-chloroethyl)ether	ND (10)	2,4-Dinitrophenol	ND (50)
2-Chlorophenol	ND (10)	4-Nitrophenol	ND (50)
1,3-Dichlorobenzene	ND (10)	Dibenzofuran	ND (10)
1,4-Dichlorobenzene	ND (10)	2,4-Dinitrotoluene	ND (10)
Benzyl Alcohol	ND (10)	2,6-Dinitrotoluene	ND (10)
1,2-Dichlorobenzene	ND (10)	Diethylphthalate	ND (10)
2-Methylphenol	ND (10)	4-Chlorophenyl-phenylether	ND (10)
bis(2-chloroisopropyl)ether	ND (10)	Fluorene	ND (10)
4-Methylphenol	ND (10)	4-Nitroaniline	ND (50)
N-Nitroso-Di-n-Propylamine	ND (10)	4,6-Dinitro-2-Methylphenol	ND (50)
Hexachloroethane	ND (10)	N-Nitrosodiphenylamine	ND (10)
Nitrobenzene	ND (10)	4-Bromophenyl-phenylether	ND (10)
Isophorone	ND (10)	Hexachlorobenzene	ND (10)
2-Nitrophenol	ND (10)	Pentachlorophenol	ND (10)
2,4-Dimethylphenol	ND (10)	Phenanthrene	ND (10)
Benzoic Acid	ND (50)	Anthracene	ND (10)
bis-(2-Chloroethoxy)methane	ND (10)	Di-n-Butylphthalate	ND (10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND (10)
1,2,4-Trichlorobenzene	ND (10)	Pyrene	ND (10)
Naphthalene	ND (10)	Butylbenzylphthalate	ND (10)
4-Chloroanline	ND (20)	3,3'-Dichlorobenzidine	ND (20)
Hexachlorobutadiene	ND (10)	Benzo(a)Anthracene	ND (10)
4-Chloro-3-Methylphenol	ND (20)	bis(2-Ethylhexyl)Phthalate	ND (10)
2-Methylnaphthalene	ND (10)	Chrysene	ND (10)
Hexachlorocyclopentadiene	ND (10)	Di-n-Octyl Phthalate	ND (10)
2,4,6-Trichlorophenol	ND (10)	Benzo(b)Fluoranthene	ND (10)
2,4,5-Trichlorophenol	ND (10)	Benzo(k)Fluoranthene	ND (10)
2-Chloronaphthalene	ND (10)	Benzo(a)Pyrene	ND (10)
2-Nitroaniline	ND (50)	Indeno(1,2,3-cd)Pyrene	ND (10)
Dimethyl Phthalate	ND (10)	Dibenz(a,h)Anthracene	ND (10)
Diethyl phthalate	ND (10)	Benzo(g,h,i)Perylene	ND (10)
Acenaphthylene	ND (10)		
3-Nitroaniline	ND (50)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	47	21-100
Phenol - d_5	50	10-94
Nitrobenzene - d_5	39	35-114
2-Fluorobiphenyl	34	43-116
2,4,6 Tribromophenol	42	10-123
Terphenyl - d_{14}	21	18-137

METHOD: 625

SAMPLE ID: ATD2W-2

CONTROL NO: N911004-2

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (ug/L)
Dodecanamide,N,N-bb (2-hydroxyethyl)	110
Tetradecanoic acide	250
Pentadecanoic acid	47
1-hexadecanol	25
9-hexadecanoic acid	230
1,11-dodecadiene	3500
cholesterol	88

EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	AGI	**DATE REC'D:**	11/21/91
PROJECT:	Another Tree Development	**DATE EXTRACTED:**	10/29/91
SAMPLE ID:	ATD3W-2	**DATE ANALYZED:**	10/31/91
CONTROL NO:	N911004-3	**MATRIX:**	Water

PARAMETER	RESULTS (ug/L)	PARAMETER	RESULTS (ug/L)
Phenol	ND (10)	Acenaphthene	ND (10)
bis(2-chloroethyl)ether	ND (10)	2,4-Dinitrophenol	ND (50)
2-Chlorophenol	ND (10)	4-Nitrophenol	ND (50)
1,3-Dichlorobenzene	ND (10)	Dibenzofuran	ND (10)
1,4-Dichlorobenzene	ND (10)	2,4-Dinitrotoluene	ND (10)
Benzyl Alcohol	ND (10)	2,6-Dinitrotoluene	ND (10)
1,2-Dichlorobenzene	ND (10)	Diethylphthalate	ND (10)
2-Methylphenol	ND (10)	4-Chlorophenyl-phenylether	ND (10)
bis(2-chloroisopropyl)ether	ND (10)	Fluorene	ND (10)
4-Methylphenol	ND (10)	4-Nitroaniline	ND (50)
N-Nitroso-Di-n-Propylamine	ND (10)	4,6-Dinitro-2-Methylphenol	ND (50)
Hexachloroethane	ND (10)	N-Nitrosodiphenylamine	ND (10)
Nitrobenzene	ND (10)	4-Bromophenyl-phenylether	ND (10)
Isophorone	ND (10)	Hexachlorobenzene	ND (10)
2-Nitrophenol	ND (10)	Pentachlorophenol	ND (10)
2,4-Dimethylphenol	ND (10)	Phenanthrene	ND (10)
Benzoic Acid	ND (50)	Anthracene	ND (10)
bis-(2-Chloroethoxy)methane	ND (10)	Di-n-Butylphthalate	ND (10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND (10)
1,2,4-Trichlorobenzene	ND (10)	Pyrene	ND (10)
Naphthalene	ND (10)	Butylbenzylphthalate	ND (10)
4-Chloroanline	ND (20)	3,3'-Dichlorobenzidine	ND (20)
Hexachlorobutadiene	ND (10)	Benzo(a)Anthracene	ND (10)
4-Chloro-3-Methylphenol	ND (20)	bis(2-Ethylhexyl)Phthalate	ND (10)
2-Methylnaphthalene	ND (10)	Chrysene	ND (10)
Hexachlorocyclopentadiene	ND (10)	Di-n-Octyl Phthalate	ND (10)
2,4,6-Trichlorophenol	ND (10)	Benzo(b)Fluoranthene	ND (10)
2,4,5-Trichlorophenol	ND (10)	Benzo(k)Fluoranthene	ND (10)
2-Chloronaphthalene	ND (10)	Benzo(a)Pyrene	ND (10)
2-Nitroaniline	ND (50)	Indeno(1,2,3-cd)Pyrene	ND (10)
Dimethyl Phthalate	ND (10)	Dibenz(a,h)Anthracene	ND (10)
Diethyl phthalate	ND (10)	Benzo(g,h,i)Perylene	ND (10)
Acenaphthylene	ND (10)		
3-Nitroaniline	ND (50)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	58	21-100
Phenol - d_5	60	10-94
Nitrobenzene - d_5	39	35-114
2-Fluorobiphenyl	33	43-116
2,4,6 Tribromophenol	41	10-123
Terphenyl - d_{14}	31	18-137

EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	AGI	DATE REC'D:	11/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/29/91
SAMPLE ID:	ATD4W-2	DATE ANALYZED:	10/31/91
CONTROL NO:	N911004-4	MATRIX:	Water

PARAMETER	RESULTS (ug/L)	PARAMETER	RESULTS (ug/L)
Phenol	ND (10)	Acenaphthene	ND (10)
bis(2-chloroethyl)ether	ND (10)	2,4-Dinitrophenol	ND (50)
2-Chlorophenol	ND (10)	4-Nitrophenol	ND (50)
1,3-Dichlorobenzene	ND (10)	Dibenzofuran	ND (10)
1,4-Dichlorobenzene	ND (10)	2,4-Dinitrotoluene	ND (10)
Benzyl Alcohol	ND (10)	2,6-Dinitrotoluene	ND (10)
1,2-Dichlorobenzene	ND (10)	Diethylphthalate	ND (10)
2-Methylphenol	ND (10)	4-Chlorophenyl-phenylether	ND (10)
bis(2-chloroisopropyl)ether	ND (10)	Fluorene	ND (10)
4-Methylphenol	ND (10)	4-Nitroaniline	ND (50)
N-Nitroso-Di-n-Propylamine	ND (10)	4,6-Dinitro-2-Methylphenol	ND (50)
Hexachloroethane	ND (10)	N-Nitrosodiphenylamine	ND (10)
Nitrobenzene	ND (10)	4-Bromophenyl-phenylether	ND (10)
Isophorone	ND (10)	Hexachlorobenzene	ND (10)
2-Nitrophenol	ND (10)	Pentachlorophenol	ND (10)
2,4-Dimethylphenol	ND (10)	Phenanthrene	ND (10)
Benzoic Acid	ND (50)	Anthracene	ND (10)
bis-(2-Chloroethoxy)methane	ND (10)	Di-n-Butylphthalate	ND (10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND (10)
1,2,4-Trichlorobenzene	ND (10)	Pyrene	ND (10)
Naphthalene	ND (10)	Butylbenzylphthalate	ND (10)
4-Chloroanline	ND (20)	3,3'-Dichlorobenzidine	ND (20)
Hexachlorobutadiene	ND (10)	Benzo(a)Anthracene	ND (10)
4-Chloro-3-Methylphenol	ND (20)	bis(2-Ethylhexyl)Phthalate	ND (10)
2-Methylnaphthalene	ND (10)	Chrysene	ND (10)
Hexachlorocyclopentadiene	ND (10)	Di-n-Octyl Phthalate	ND (10)
2,4,6-Trichlorophenol	ND (10)	Benzo(b)Fluoranthene	ND (10)
2,4,5-Trichlorophenol	ND (10)	Benzo(k)Fluoranthene	ND (10)
2-Chloronaphthalene	ND (10)	Benzo(a)Pyrene	ND (10)
2-Nitroaniline	ND (50)	Indeno(1,2,3-cd)Pyrene	ND (10)
Dimethyl Phthalate	ND (10)	Dibenz(a,h)Anthracene	ND (10)
Diethyl phthalate	ND (10)	Benzo(g,h,i)Perylene	ND (10)
Acenaphthylene	ND (10)		
3-Nitroaniline	ND (50)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	91	21-100
Phenol - d_5	97	10-94
Nitrobenzene - d_5	67	35-114
2-Fluorobiphenyl	55	43-116
2,4,6 Tribromophenol	78	10-123
Terphenyl - d_{14}	64	18-137

EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	AGI	DATE REC'D:	11/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/29/91
SAMPLE ID:	ATD5W-2	DATE ANALYZED:	10/31/91
CONTROL NO:	N911004-5	MATRIX:	Water

PARAMETER	RESULTS (ug/L)	PARAMETER	RESULTS (ug/L)
Phenol	ND (10)	Acenaphthene	ND (10)
bis(2-chloroethyl)ether	ND (10)	2,4-Dinitrophenol	ND (50)
2-Chlorophenol	ND (10)	4-Nitrophenol	ND (50)
1,3-Dichlorobenzene	ND (10)	Dibenzofuran	ND (10)
1,4-Dichlorobenzene	ND (10)	2,4-Dinitrotoluene	ND (10)
Benzyl Alcohol	ND (10)	2,6-Dinitrotoluene	ND (10)
1,2-Dichlorobenzene	ND (10)	Diethylphthalate	ND (10)
2-Methylphenol	ND (10)	4-Chlorophenyl-phenylether	ND (10)
bis(2-chloroisopropyl)ether	ND (10)	Fluorene	ND (10)
4-Methylphenol	ND (10)	4-Nitroaniline	ND (50)
N-Nitroso-Di-n-Propylamine	ND (10)	4,6-Dinitro-2-Methylphenol	ND (50)
Hexachloroethane	ND (10)	N-Nitrosodiphenylamine	ND (10)
Nitrobenzene	ND (10)	4-Bromophenyl-phenylether	ND (10)
Isophorone	ND (10)	Hexachlorobenzene	ND (10)
2-Nitrophenol	ND (10)	Pentachlorophenol	ND (10)
2,4-Dimethylphenol	ND (10)	Phenanthrene	ND (10)
Benzoic Acid	ND (50)	Anthracene	ND (10)
bis-(2-Chloroethoxy)methane	ND (10)	Di-n-Butylphthalate	ND (10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND (10)
1,2,4-Trichlorobenzene	ND (10)	Pyrene	ND (10)
Naphthalene	ND (10)	Butylbenzylphthalate	ND (10)
4-Chloroanline	ND (20)	3,3'-Dichlorobenzidine	ND (20)
Hexachlorobutadiene	ND (10)	Benzo(a)Anthracene	ND (10)
4-Chloro-3-Methylphenol	ND (20)	bis(2-Ethylhexyl)Phthalate	ND (10)
2-Methylnaphthalene	ND (10)	Chrysene	ND (10)
Hexachlorocyclopentadiene	ND (10)	Di-n-Octyl Phthalate	ND (10)
2,4,6-Trichlorophenol	ND (10)	Benzo(b)Fluoranthene	ND (10)
2,4,5-Trichlorophenol	ND (10)	Benzo(k)Fluoranthene	ND (10)
2-Chloronaphthalene	ND (10)	Benzo(a)Pyrene	ND (10)
2-Nitroaniline	ND (50)	Indeno(1,2,3-cd)Pyrene	ND (10)
Dimethyl Phthalate	ND (10)	Dibenz(a,h)Anthracene	ND (10)
Diethyl phthalate	ND (10)	Benzo(g,h,i)Perylene	ND (10)
Acenaphthylene	ND (10)		
3-Nitroaniline	ND (50)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	91	21-100
Phenol - d_5	96	10-94
Nitrobenzene - d_5	64	35-114
2-Fluorobiphenyl	52	43-116
2,4,6 Tribromophenol	71	10-123
Terphenyl - d_{14}	58	18-137

EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	AGI	DATE REC'D:	11/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/29/91
SAMPLE ID:	ATD6W-2	DATE ANALYZED:	10/31/91
CONTROL NO:	N911004-6	MATRIX:	Water

PARAMETER	RESULTS (ug/L)	PARAMETER	RESULTS (ug/L)
Phenol	ND (10)	Acenaphthene	ND (10)
bis(2-chloroethyl)ether	ND (10)	2,4-Dinitrophenol	ND (50)
2-Chlorophenol	ND (10)	4-Nitrophenol	ND (50)
1,3-Dichlorobenzene	ND (10)	Dibenzofuran	ND (10)
1,4-Dichlorobenzene	ND (10)	2,4-Dinitrotoluene	ND (10)
Benzyl Alcohol	ND (10)	2,6-Dinitrotoluene	ND (10)
1,2-Dichlorobenzene	ND (10)	Diethylphthalate	ND (10)
2-Methylphenol	ND (10)	4-Chlorophenyl-phenylether	ND (10)
bis(2-chloroisopropyl)ether	ND (10)	Fluorene	ND (10)
4-Methylphenol	ND (10)	4-Nitroaniline	ND (50)
N-Nitroso-Di-n-Propylamine	ND (10)	4,6-Dinitro-2-Methylphenol	ND (50)
Hexachloroethane	ND (10)	N-Nitrosodiphenylamine	ND (10)
Nitrobenzene	ND (10)	4-Bromophenyl-phenylether	ND (10)
Isophorone	ND (10)	Hexachlorobenzene	ND (10)
2-Nitrophenol	ND (10)	Pentachlorophenol	ND (10)
2,4-Dimethylphenol	ND (10)	Phenanthrene	ND (10)
Benzoic Acid	ND (50)	Anthracene	ND (10)
bis-(2-Chloroethoxy)methane	ND (10)	Di-n-Butylphthalate	ND (10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND (10)
1,2,4-Trichlorobenzene	ND (10)	Pyrene	ND (10)
Naphthalene	ND (10)	Butylbenzylphthalate	ND (10)
4-Chloroanline	ND (20)	3,3'-Dichlorobenzidine	ND (20)
Hexachlorobutadiene	ND (10)	Benzo(a)Anthracene	ND (10)
4-Chloro-3-Methylphenol	ND (20)	bis(2-Ethylhexyl)Phthalate	ND (10)
2-Methylnaphthalene	ND (10)	Chrysene	ND (10)
Hexachlorocyclopentadiene	ND (10)	Di-n-Octyl Phthalate	ND (10)
2,4,6-Trichlorophenol	ND (10)	Benzo(b)Fluoranthene	ND (10)
2,4,5-Trichlorophenol	ND (10)	Benzo(k)Fluoranthene	ND (10)
2-Chloronaphthalene	ND (10)	Benzo(a)Pyrene	ND (10)
2-Nitroaniline	ND (50)	Indeno(1,2,3-cd)Pyrene	ND (10)
Dimethyl Phthalate	ND (10)	Dibenz(a,h)Anthracene	ND (10)
Diethyl phthalate	ND (10)	Benzo(g,h,i)Perylene	ND (10)
Acenaphthylene	ND (10)		
3-Nitroaniline	ND (50)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	76	21-100
Phenol - d_5	82	10-94
Nitrobenzene - d_5	57	35-114
2-Fluorobiphenyl	51	43-116
2,4,6 Tribromophenol	90	10-123
Terphenyl - d_{14}	56	18-137

EPA METHOD Mod. 8015
TOTAL PETROLEUM HYDROCARBONS

CLIENT:	Applied Geosciences, Inc.	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE EXTRACTED:	08/14/91
CONTROL NO:	910817	DATE ANALYZED:	08/15/91
MATRIX:	Water		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/L)	Surrogate (% Rec.)
Method Bl.	910817	ND	99
ATD1W-1	910817-1	ND	112
ATD2W-1	910817-2	ND	109
ATD3W-1	910817-3	ND	119
ATD4W-1	910817-4	ND	114
ATD5W-1	910817-5	ND	118
ATD6W-1	910817-6	ND	130
ATD7W-1	910817-7	ND	115
ATD8W-1	910817-8	ND	114

DETECTION LIMIT is 1.0 mg/L.

EPA METHOD - 624
VOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE ANALYZED:	08/07/91
SAMPLE ID:	ATD3W-1	MATRIX TYPE:	Water
CONTROL NO:	910817-3		

PARAMETERS (624)	RESULTS (ug/L)	DETECTION LIMIT (ug/L)
Benzene	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	5
Carbon Tetrachloride	ND	1
Chlorobenzene	ND	1
Chlorodibromomethane	ND	1
Chloroethane	ND	5
2-Chloroethyl vinyl ether	ND	5
Chloroform	ND	1
Chloromethane	ND	5
1,1-Dichloroethane	ND	1
1,2-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,2-Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethylbenzene	ND	1
Methylene chloride	ND	10
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Toluene	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	5
Vinyl Chloride	ND	10
1,3 Dichlorobenzene	ND	1
1,4 Dichlorobenzene	ND	1
1,2 Dichlorobenzene	ND	1
Xylenes	ND	1
% SURROGATE RECOVERY		
1,2 Dichloroethane-d_4	98	76-114
Toluene -d_8	110	88-110
Bromofluorobenzene	102	86-115

ND - Non Detected

EPA METHOD - 624
VOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE ANALYZED:	08/07/91
SAMPLE ID:	ATD4W-1	MATRIX TYPE:	Water
CONTROL NO:	910817-4		

PARAMETERS (624)	RESULTS (ug/L)	DETECTION LIMIT (ug/L)
Benzene	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	5
Carbon Tetrachloride	ND	1
Chlorobenzene	ND	1
Chlorodibromomethane	ND	1
Chloroethane	ND	5
2-Chloroethyl vinyl ether	ND	5
Chloroform	ND	1
Chloromethane	ND	5
1,1-Dichloroethane	ND	1
1,2-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,2-Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethylbenzene	ND	1
Methylene chloride	ND	10
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Toluene	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	5
Vinyl Chloride	ND	10
1,3 Dichlorobenzene	ND	1
1,4 Dichlorobenzene	ND	1
1,2 Dichlorobenzene	ND	1
Xylenes	ND	1
% SURROGATE RECOVERY		
1,2 Dichloroethane-d_4	102	76-114
Toluene -d_8	102	88-110
Bromofluorobenzene	86	86-115

ND - Non Detected

EPA METHOD - 624
VOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE ANALYZED:	08/07/91
SAMPLE ID:	ATD6W-1	MATRIX TYPE:	Water
CONTROL NO:	910817-6		

PARAMETERS (624)	RESULTS (ug/L)	DETECTION LIMIT (ug/L)
Benzene	6	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	5
Carbon Tetrachloride	ND	1
Chlorobenzene	ND	1
Chlorodibromomethane	ND	1
Chloroethane	ND	5
2-Chloroethyl vinyl ether	ND	5
Chloroform	ND	1
Chloromethane	ND	5
1,1-Dichloroethane	ND	1
1,2-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,2-Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethylbenzene	5	1
Methylene chloride	ND	10
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Toluene	3	1
1,1,1-Trichloroethane	ND	1
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	5
Vinyl Chloride	ND	10
1,3 Dichlorobenzene	ND	1
1,4 Dichlorobenzene	ND	1
1,2 Dichlorobenzene	ND	1
Xylenes	5	1
% SURROGATE RECOVERY		
1,2 Dichloroethane-d_4	110	76-114
Toluene -d_8	102	88-110
Bromofluorobenzene	94	86-115

ND - Non Detected

METHOD: 624

SAMPLE ID: ATD6W-1

CONTROL NO: 910817-6

Tentatively Identified Compounds

COMPOUND NAMES	CONCENTRATION (Estimate) (ug/L)
2-Pentene	9
Cyclopentane, methyl	39
Cyclohexane	30
Cyclohexane, methyl	20

EPA METHOD - 624
VOLATILE ORGANICS BY GC/MS

CLIENT:	Applied Geosciences	DATE REC'D:	08/06/91
PROJECT:	Market Place II	DATE ANALYZED:	08/07/91
SAMPLE ID:	Method Blank	MATRIX TYPE:	Water
CONTROL NO:	910817		

PARAMETERS (624)	RESULTS (ug/L)	DETECTION LIMIT (ug/L)
Benzene	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	5
Carbon Tetrachloride	ND	1
Chlorobenzene	ND	1
Chlorodibromomethane	ND	1
Chloroethane	ND	5
2-Chloroethyl vinyl ether	ND	5
Chloroform	ND	1
Chloromethane	ND	5
1,1-Dichloroethane	ND	1
1,2-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,2-Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethylbenzene	ND	1
Methylene chloride	ND	10
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Toluene	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	5
Vinyl Chloride	ND	10
1,3 Dichlorobenzene	ND	1
1,4 Dichlorobenzene	ND	1
1,2 Dichlorobenzene	ND	1
Xylenes	ND	1
% SURROGATE RECOVERY		
1,2 Dichloroethane-d_4	86	76-114
Toluene -d_8	108	88-110
Bromofluorobenzene	112	86-115

ND - Non Detected

QUALITY CONTROL DATA

CLIENT: Applied Geosciences
PROJECT: Market Place II
CONTROL NO: 910817

METHOD EPA 608
MATRIX: Water

SAMPLE ID: Blank

COMPOUND	SAMPLE RESULTS (ug/L)	AMOUNT SPIKED (ug/L)	% REC.	DUP. % REC.	RPD
g-BHC	ND	10	86	86	0
Heptachlor	ND	20	78	82	5
Aldrin	ND	40	96	102	6
Dieldrin	ND	20	76	83	9
Endrin	ND	20	82	96	16
DDT	ND	40	65	75	14

METHOD EPA 3050/6010
MATRIX: Soil

SAMPLE ID: 910817-12

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Lead	110	100	90	60	16
Cadmium	3.5	100	88	84	5
Chromium	29	100	91	81	9

METHOD EPA 413.2
MATRIX: Water

SAMPLE ID: 910817-3

COMPOUND	SAMPLE RESULTS (mg/L)	AMOUNT SPIKED (mg/L)	% REC.	DUP. % REC.	RPD
TROG	1	150	106	105	1

QUALITY CONTROL DATA

CLIENT: Applied Geosciences, Inc.
PROJECT: Market Place II
CONTROL NO: 910817

METHOD: EPA M8015
MATRIX: Water

SAMPLE ID: D.I. Water

COMPOUND	SAMPLE RESULTS (mg/L)	AMOUNT SPIKED (mg/L)	% REC.
Diesel	ND	100	87

METHOD: EPA M8015
MATRIX: Soil

SAMPLE ID: 910817-10

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.
Diesel	ND	100	92

METHOD: EPA 624
MATRIX: Water

SAMPLE ID: D.I. Water

COMPOUND	SAMPLE RESULTS (ug/L)	AMOUNT SPIKED (ug/L)	% REC.	DUP. % REC.	RPD
1,1 DCE	ND	50	90	92	2
Benzene	ND	50	100	108	8
TCE	ND	50	94	98	4
Toluene	ND	50	110	110	0
Chlorobenzene	ND	50	108	102	6

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SHIPMENT NO. _____
PAGE 1 OF 2
DATE 6/Aug 1991

CHAIN OF CUSTODY RECORD

PROJECT NAME: Market Place II
PROJECT NO.: A9017499A
CONTACT: Joseph Wells

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
ATDIW-1	ATD1	Water	—	1 liter bottle (2)	4°C	ICE	413.1, 601
				1 Liter bottle			CAM
				VOA vial (3)			TPHd
ATD2W-1	ATD2	water		1 liter bottle	4°C	ICE	413.1
				1 liter bottle			AM
				VOA vial (3)			~~413.1~~ TPH
ATD3W-1	ATD3	water		1 liter bottle	4°C	ICE	413.1
				1 liter bottle			CAM
				VOA vial (6)			~~624~~ 624, TP
ATD4W-1	ATD4	Water		1 liter bottle	4°C	ICE	413.1
				1 liter bottle			CAM
				VOA vial (6)			624 TPHd
ATD5W-1	ATD5	water		1 liter bottle	4°C	ICE	413.1 601
				1 Liter bottle			CAM
				VOA vial (3)			TPHd
ATD6W-1	ATD6	water		1 liter bottle	4°C	ICE	413.1
				1 liter bottle			CAM
				VOA vial (6)			TPHd 624
ATD7W-1	ATD7	water		1 liter bottle	4°C	ICE	413.1
				1 liter bottle			CAM

Total Number of Samples Shipped: 12 | Sampler's Signature: [signature]

Relinquished By: Signature [signature] Printed Name Joseph C. Wells IV Company Applied Geosciences Reason Delivery to Lab	**Received By:** Signature [signature] Printed Name [illegible] Company [illegible]	Date 8/6/91 Time 1700
Relinquished By: Signature _____ Printed Name _____ Company _____ Reason _____	**Received By:** Signature _____ Printed Name _____ Company _____	Date / / Time
Relinquished By: Signature _____ Printed Name _____ Company _____ Reason _____	**Received By:** Signature _____ Printed Name _____ Company _____	Date / / Time
Relinquished By: Signature _____ Printed Name _____ Company _____ Reason _____	**Received By:** Signature _____ Printed Name _____ Company _____	Date / / Time

Special Shipment / Handling / Storage Requirements:
Filter metals samples prior to analysis

* Note — This does not constitute authorization to proceed with analysis

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SHIPMENT NO. ____
PAGE 2 OF 2
DATE 10 / Aug / 1991

CHAIN OF CUSTODY RECORD

PROJECT NAME: Marketplace II
PROJECT NO.: 901749 A
CONTACT: Joseph Mello

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
ATI7W-1	ATI7	Water	-	VOA Vial (3)	4°C	ICE	TPHd
ATI2W-1	DUP	Water	—	liter bottle	"	"	413.1
1	1	1	1	VOA Vial (3)	1	1	TPHd
HA1-1	HA1	Soil	Drive	SS Tube	4°C	ICE	8080, TPHd, CA
HA1-2	"	"	"	"	"	"	8080, TPHd, CA
HA2-1	HA2	"	"	"	"	"	8080, TPHd, CA
HA2-1D	"	"	"	"	"	"	8080, TPHd, CA
		Nothing	follows				

Total Number of Samples Shipped: — | Sampler's Signature: —

Relinquished By:	Received By:	Date / Time
Signature / Printed Name / Company / Reason	Signature / Printed Name / Company	Date / / Time
Signature / Printed Name / Company / Reason	Signature / Printed Name / Company	Date / / Time
Signature / Printed Name / Company / Reason	Signature / Printed Name / Company	Date / / Time
Signature / Printed Name / Company / Reason	Signature / Printed Name / Company	Date / / Time

Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis

EPA METHOD - 625
SEMIVOLATILE ORGANICS BY GC/MS

CLIENT:	AGI	DATE REC'D:	11/21/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/29/91
SAMPLE ID:	ATD7W-2	DATE ANALYZED:	10/31/91
CONTROL NO:	N911004-7	MATRIX:	Water

PARAMETER	RESULTS (ug/L)	PARAMETER	RESULTS (ug/L)
Phenol	ND (10)	Acenaphthene	ND (10)
bis(2-chloroethyl)ether	ND (10)	2,4-Dinitrophenol	ND (50)
2-Chlorophenol	ND (10)	4-Nitrophenol	ND (50)
1,3-Dichlorobenzene	ND (10)	Dibenzofuran	ND (10)
1,4-Dichlorobenzene	ND (10)	2,4-Dinitrotoluene	ND (10)
Benzyl Alcohol	ND (10)	2,6-Dinitrotoluene	ND (10)
1,2-Dichlorobenzene	ND (10)	Diethylphthalate	ND (10)
2-Methylphenol	ND (10)	4-Chlorophenyl-phenylether	ND (10)
bis(2-chloroisopropyl)ether	ND (10)	Fluorene	ND (10)
4-Methylphenol	ND (10)	4-Nitroaniline	ND (50)
N-Nitroso-Di-n-Propylamine	ND (10)	4,6-Dinitro-2-Methylphenol	ND (50)
Hexachloroethane	ND (10)	N-Nitrosodiphenylamine	ND (10)
Nitrobenzene	ND (10)	4-Bromophenyl-phenylether	ND (10)
Isophorone	ND (10)	Hexachlorobenzene	ND (10)
2-Nitrophenol	ND (10)	Pentachlorophenol	ND (10)
2,4-Dimethylphenol	ND (10)	Phenanthrene	ND (10)
Benzoic Acid	ND (50)	Anthracene	ND (10)
bis-(2-Chloroethoxy)methane	ND (10)	Di-n-Butylphthalate	ND (10)
2,4-Dichlorophenol	ND (10)	Fluoranthene	ND (10)
1,2,4-Trichlorobenzene	ND (10)	Pyrene	ND (10)
Naphthalene	ND (10)	Butylbenzylphthalate	ND (10)
4-Chloroanline	ND (20)	3,3'-Dichlorobenzidine	ND (20)
Hexachlorobutadiene	ND (10)	Benzo(a)Anthracene	ND (10)
4-Chloro-3-Methylphenol	ND (20)	bis(2-Ethylhexyl)Phthalate	ND (10)
2-Methylnaphthalene	ND (10)	Chrysene	ND (10)
Hexachlorocyclopentadiene	ND (10)	Di-n-Octyl Phthalate	ND (10)
2,4,6-Trichlorophenol	ND (10)	Benzo(b)Fluoranthene	ND (10)
2,4,5-Trichlorophenol	ND (10)	Benzo(k)Fluoranthene	ND (10)
2-Chloronaphthalene	ND (10)	Benzo(a)Pyrene	ND (10)
2-Nitroaniline	ND (50)	Indeno(1,2,3-cd)Pyrene	ND (10)
Dimethyl Phthalate	ND (10)	Dibenz(a,h)Anthracene	ND (10)
Diethyl phthalate	ND (10)	Benzo(g,h,i)Perylene	ND (10)
Acenaphthylene	ND (10)		
3-Nitroaniline	ND (50)		

ND = Not Detected

% Surrogate Recovery		
2-Fluorophenol	103	21-100
Phenol - d_5	111	10-94
Nitrobenzene - d_5	78	35-114
2-Fluorobiphenyl	60	43-116
2,4,6 Tribromophenol	86	10-123
Terphenyl - d_{14}	79	18-137

EPA METHOD 5030/Mod. 8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

CLIENT:	AGI	**DATE REC'D:**	10/18/91
PROJECT:	A901749A	**DATE ANALYZED:**	10/21/91
CONTROL NO:	N911004	**MATRIX:**	Water

SAMPLE ID:	CONTROL NO:	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
ATD1W-2	N911004-01	ND	0.1
ATD2W-2	N911004-02	ND	0.1
ATD3W-2	N911004-03	ND	0.1
ATD4W-2	N911004-04	ND	0.1
ATD5W-2	N911004-05	ND	0.1
ATD6W-2	N911004-06	ND	0.1
ATD7W-2	N911004-07	ND	0.1

EPA METHOD 5030/Mod. 8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

CLIENT:	AGI	**DATE REC'D:**	10/18/91
PROJECT:	Another Tree Development	**DATE ANALYZED:**	10/28/91
CONTROL NO:	N911004	**MATRIX:**	Soil

SAMPLE ID:	CONTROL NO:	RESULTS (mg/kg)	DETECTION LIMIT (mg/kg)
HA4-1	N911004-8	ND	1.0
HA3-1	N911004-9	2.7	1.0
HA5-1	N911004-10	45	1.0
HA5-2	N911004-11	37	1.0
HA6-1	N911004-12	ND	1.0
HA8-1	N911004-13	ND	1.0
HA8-1	N911004-14	ND	1.0

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	AGI	**DATE REC'D:**	10/18/91
PROJECT:	Another Tree Development	**DATE EXTRACTED:**	10/21/91
SAMPLE ID:	HA4-1	**DATE ANALYZED:**	10/28/91
CONTROL NO:	N911004-8	**MATRIX:**	Soil

PARAMETERS	RESULTS (mg/L)	DETECTION LIMIT (mg/L)
Antimony	ND	0.50
Arsenic	ND	0.50
Barium	6.4	0.05
Beryllium	ND	0.05
Cadmium	ND	0.05
Chromium - Total	0.12	0.05
Cobalt	0.14	0.05
Copper	0.52	0.05
Lead	0.20	0.10
Mercury	ND	0.005
Molybdenum	ND	0.05
Nickel	0.37	0.10
Selenium	ND	0.50
Silver	ND	0.05
Thallium	ND	1.0
Vanadium	0.42	0.05
Zinc	0.39	0.05

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	AGI	DATE REC'D:	10/18/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/21/91
SAMPLE ID:	HA3-1	DATE ANALYZED:	10/28/91
CONTROL NO:	N911004-9	MATRIX:	Soil

PARAMETERS	RESULTS (mg/L)	DETECTION LIMIT (mg/L)
Antimony	ND	0.50
Arsenic	ND	0.50
Barium	7.3	0.05
Beryllium	ND	0.05
Cadmium	0.11	0.05
Chromium - Total	0.55	0.05
Cobalt	0.93	0.05
Copper	ND	0.05
Lead	ND	0.10
Mercury	ND	0.005
Molybdenum	ND	0.05
Nickel	1.1	0.10
Selenium	ND	0.50
Silver	ND	0.05
Thallium	ND	1.0
Vanadium	1.5	0.05
Zinc	0.21	0.05

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	AGI	DATE REC'D:	10/18/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/21/91
SAMPLE ID:	HA5-1	DATE ANALYZED:	10/28/91
CONTROL NO:	N911004-10	MATRIX:	Soil

PARAMETERS	RESULTS (mg/L)	DETECTION LIMIT (mg/L)
Antimony	2.4	0.50
Arsenic	ND	0.50
Barium	7.7	0.05
Beryllium	ND	0.05
Cadmium	0.30	0.05
Chromium - Total	15	0.05
Cobalt	0.15	0.05
Copper	3.0	0.05
Lead	8.0	0.10
Mercury	1.6	0.005
Molybdenum	0.07	0.05
Nickel	1.8	0.10
Selenium	ND	0.50
Silver	ND	0.05
Thallium	ND	1.0
Vanadium	0.56	0.05
Zinc	93	0.05

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	AGI	DATE REC'D:	10/18/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/21/91
SAMPLE ID:	HA5-2	DATE ANALYZED:	10/28/91
CONTROL NO:	N911004-11	MATRIX:	Soil

PARAMETERS	RESULTS (mg/L)	DETECTION LIMIT (mg/L)
Antimony	0.55	0.50
Arsenic	ND	0.50
Barium	15	0.05
Beryllium	ND	0.05
Cadmium	0.18	0.05
Chromium - Total	0.96	0.05
Cobalt	0.32	0.05
Copper	0.09	0.05
Lead	4.6	0.10
Mercury	ND	0.005
Molybdenum	ND	0.05
Nickel	0.80	0.10
Selenium	ND	0.50
Silver	ND	0.05
Thallium	ND	1.0
Vanadium	1.2	0.05
Zinc	6.8	0.05

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	AGI	DATE REC'D:	10/18/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/21/91
SAMPLE ID:	HA8-1	DATE ANALYZED:	10/28/91
CONTROL NO:	N911004-13	MATRIX:	Soil

PARAMETERS	RESULTS (mg/L)	DETECTION LIMIT (mg/L)
Antimony	ND	0.50
Arsenic	ND	0.50
Barium	3.7	0.05
Beryllium	ND	0.05
Cadmium	ND	0.05
Chromium - Total	0.18	0.05
Cobalt	0.16	0.05
Copper	0.21	0.05
Lead	0.23	0.10
Mercury	ND	0.005
Molybdenum	ND	0.05
Nickel	0.34	0.10
Selenium	ND	0.50
Silver	ND	0.05
Thallium	ND	1.0
Vanadium	0.17	0.05
Zinc	1.5	0.05

EPA 6010/7000
CAM METALS BY ICP/AAS

CLIENT:	AGI	DATE REC'D:	10/18/91
PROJECT:	Another Tree Development	DATE EXTRACTED:	10/21/91
SAMPLE ID:	HA8-2	DATE ANALYZED:	10/28/91
CONTROL NO:	N911004-14	MATRIX:	Soil

PARAMETERS	RESULTS (mg/L)	DETECTION LIMIT (mg/L)
Antimony	4.0	0.50
Arsenic	ND	0.50
Barium	18	0.05
Beryllium	ND	0.05
Cadmium	0.76	0.05
Chromium - Total	13	0.05
Cobalt	0.20	0.05
Copper	56	0.05
Lead	130	0.10
Mercury	0.18	0.005
Molybdenum	0.16	0.05
Nickel	1.7	0.10
Selenium	ND	0.50
Silver	ND	0.05
Thallium	ND	1.0
Vanadium	0.67	0.05
Zinc	270	0.05

QUALITY CONTROL DATA

CLIENT: Applied Geosciences, Inc
PROJECT: Another Tree Development
CONTROL NO: N911004

METHOD: EPA 8270
MATRIX: Soil

SAMPLE ID: 911028-6

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Phenol	ND	77	63	72	13
2-Chlorophenol	ND	75	60	72	18
1,4-DCB	ND	50	54	66	28
N-Nitroso-di-n propylamine	ND	50	70	80	13
1,2,4-TCB	ND	50	70	84	18
4-Chloro-3-methylphenol	ND	75	83	96	16
Acenaphthene	ND	50	70	80	13
4-Nitrophenol	ND	75	73	81	10
2,4-Dinitrotoluene	ND	50	64	76	17
Pentachlorophenol	ND	75	96	101	5
Pyrene	ND	50	82	88	7

QUALITY CONTROL DATA

CLIENT: AGI
PROJECT: Another Tree Development
CONTROL NO: N911004

METHOD EPA M8015/5030
MATRIX: Water

SAMPLE ID: Blank

COMPOUND	SAMPLE RESULTS (mg/L)	AMOUNT SPIKED (mg/L)	% REC.	DUP. % REC.	RPD
Gasoline	ND	10	87	91	5

METHOD EPA 625
MATRIX: Water

SAMPLE ID: Blank

COMPOUND	SAMPLE RESULTS (mg/L)	AMOUNT SPIKED (mg/L)	% REC.	DUP. % REC.	RPD
Phenol	ND	75	80	68	16
2-Clorophenol	ND	75	85	71	18
1,4 DCB	ND	50	86	71	19
N-Nitroso din-propylamine	ND	50	95	81	16
1,2,4 TCB	ND	50	88	75	16
4-Chloro 3 Methylphenol	ND	75	85	71	18
Acenaphthene	ND	50	81	70	15
4-Nitrophenol	ND	75	80	65	21
2,4 Dinitrotoluene	ND	50	85	71	19
Penta Chloro Phenol	ND	75	77	67	14
Pyrene	ND	50	86	73	16

QUALITY CONTROL DATA

CLIENT: AGI
PROJECT: Another Tree Development
CONTROL NO: N911004

METHOD EPA 8015 (Gas)
MATRIX: Soil

SAMPLE ID: Blank

COMPOUND	SAMPLE RESULTS (mg/kg)	AMOUNT SPIKED (mg/kg)	% REC.	DUP. % REC.	RPD
Gas	ND	1	96	97	1

METHOD EPA 6010/STLC

MATRIX: Soil

SAMPLE ID: N911004-12

COMPOUND	SAMPLE RESULT (mg/L)	DUP. SAMPLE RESULT (mg/L)	RPD %
Barium	5.1	5.4	6
Cadmium	0.10	0.12	18
Chromium	0.26	0.48	59
Cobalt	0.23	0.21	9
Copper	1.4	1.9	30
Lead	3.4	3.6	6
Nickel	0.18	0.24	29
Vanadium	0.41	0.40	2
Zinc	12	19	45

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SHIPMENT NO. ____
PAGE 1 OF 2
DATE 10/17/91

CHAIN OF CUSTODY RECORD

PROJECT NAME: Another Tree Development
PROJECT NO.: A9017149A
CONTACT: Joseph Mello

	Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
1	ATD1W-2	ATD1	Water	—	(2) VOA	4°C	TCE	TPHg
	"	"	"	—	1 L Glass	"	"	8270
	ATD2W-2	ATD2	"	—	(2) VOA	"	"	TPHg
	"	"	"	—	1 L Glass	"	"	8270
	ATD3W-2	ATD3	"	—	(2) VOA	"	"	TPHg
	"	"	"	—	1 L Glass	"	"	8270
	ATD4W-2	ATD4	"	—	(2) VOA	"	"	TPHg
	"	"	"	—	1 L Glass	"	"	8270
	ATD5W-2	ATD5	"	—	(2) VOA	"	"	TPHg
	"	"	"	—	1 L Glass	"	"	8270
	ATD6W-2	ATD6	"	—	(2) VOA	"	"	TPHg
	"	"	"	—	1 L Glass	"	"	8270
	ATD7W-2	ATD7	"	—	(2) VOA	"	"	TPHg
	"	"	"	—	1 L Glass	"	"	8270
8	HA4-1	HA4	SOIL	DRIVE	SS TUBE	"	"	TPHg, 8270, ST
9	HA3-1	HA3	"	"	"	"	"	"
10	HA5-1	HA5	"	"	"	"	"	"
11	HA5-2	HA5	"	"	"	"	"	"
12	HA6-1	HA6	"	"	"	"	"	"
13	HA8-1	HA8	"	"	"	"	"	"

Total Number of Samples Shipped: 21 | Sampler's Signature: Joseph E Mello

Relinquished By: Signature: Joseph E Mello Printed Name: Joseph E. Mello, Jr. Company: Applied Geosciences Reason: Delivery to Lab	Received By: Signature: Harry Hamilton Printed Name: Harry Hamilton Company: E.T.S. Environmental	Date: 10/18/91 Time: 15:15
Relinquished By: Signature: ____ Printed Name: ____ Company: ____ Reason: ____	Received By: Signature: ____ Printed Name: ____ Company: ____	Date: / / Time:
Relinquished By: Signature: ____ Printed Name: ____ Company: ____ Reason: ____	Received By: Signature: ____ Printed Name: ____ Company: ____	Date: / / Time:
Relinquished By: Signature: ____ Printed Name: ____ Company: ____ Reason: ____	Received By: Signature: ____ Printed Name: ____ Company: ____	Date: / / Time:

Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis

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SHIPMENT NO. ____
PAGE 2 OF 2
DATE 8/ocT/91

CHAIN OF CUSTODY RECORD

PROJECT NAME: Another Tree
PROJECT NO.: A9017499A
CONTACT: Barbara Mello

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
HAB-2	HA-B	SOIL	DRIVE	SS Tube	4°C	ICE	8270, TPHg, S
		NOTHING FOLLOWS					

Total Number of Samples Shipped: 1 | Sampler's Signature:

Relinquished By:	Received By:	Date / Time
Signature	Signature	/ /
Printed Name	Printed Name	
Company	Company	
Reason		
Relinquished By:	Received By:	Date / Time
Signature	Signature	/ /
Printed Name	Printed Name	
Company	Company	
Reason		
Relinquished By:	Received By:	Date / Time
Signature	Signature	/ /
Printed Name	Printed Name	
Company	Company	
Reason		
Relinquished By:	Received By:	Date / Time
Signature	Signature	/ /
Printed Name	Printed Name	
Company	Company	
Reason		

Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis

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SHIPMENT NO. ________
PAGE 1 OF 1
DATE 9/5/91

CHAIN OF CUSTODY RECORD

PROJECT NAME: Market Place II
PROJECT NO.: A901749A
CONTACT: Joseph Mello

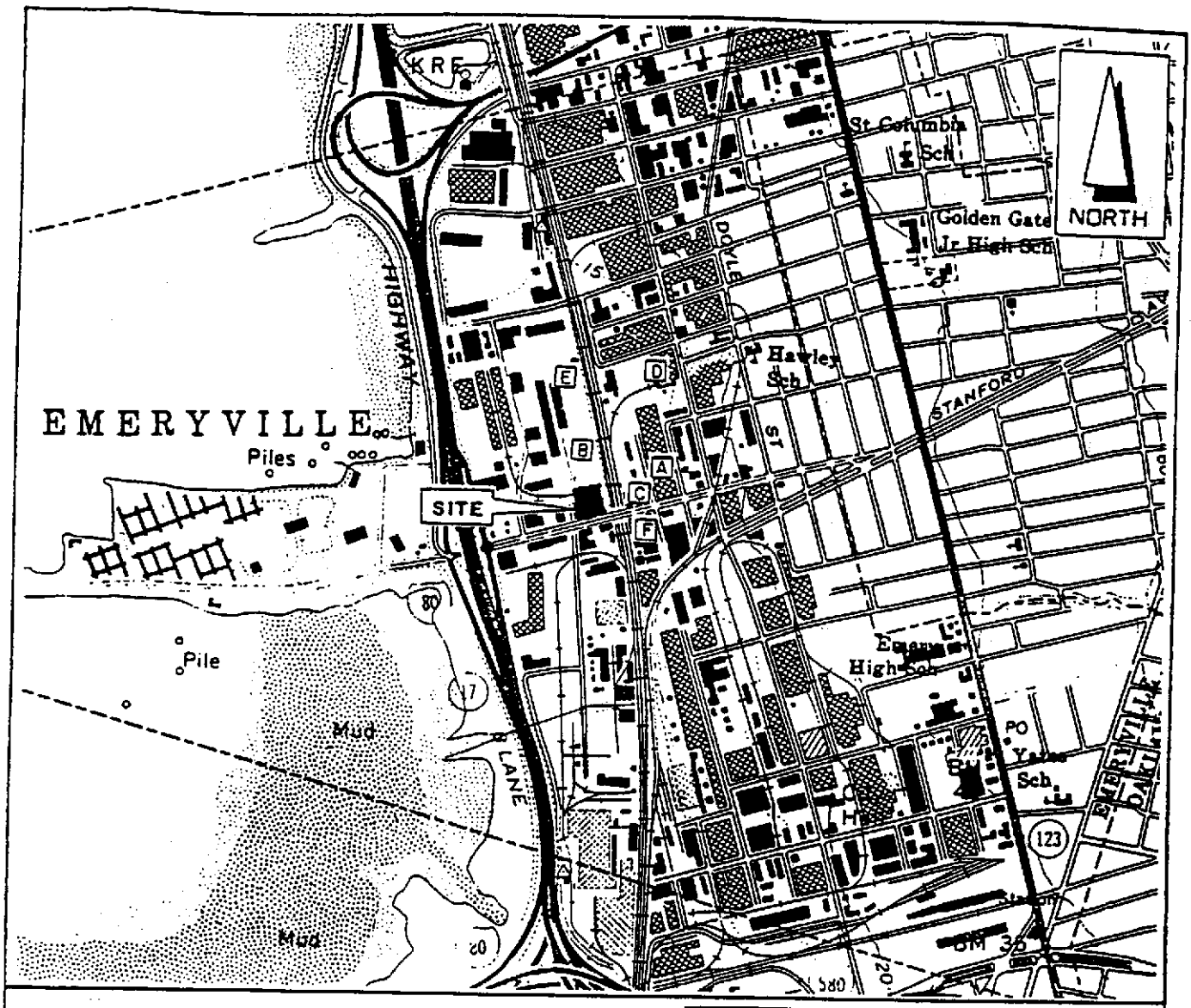
Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required *
		Material	Method		Temp	Chemical	
GS1	GS1	Soil	Grab	Ziploc Plastic Bag	Ambient	None	Bulk Asb[illegible]
GS2	GS2	"	"	"	"	"	"
GS3	GS3	"	"	"	"	"	"
GS4	GS4	"	"	"	"	"	"
GS5	GS5	"	"	"	"	"	"
GS6	GS6	"	"	"	"	"	"
Nothing Follows							

Total Number of Samples Shipped: 6
Sampler's Signature: [illegible]

Relinquished By:	Received By:	Date / Time
Signature [illegible]	Signature [illegible]	Date 9/5/91
Printed Name [illegible]	Printed Name [illegible]	Time 11:35
Company [illegible]	Company	
Reason [illegible]		
Relinquished By:	Received By:	Date / /
Signature	Signature	Time
Printed Name	Printed Name	
Company	Company	
Reason		
Relinquished By:	Received By:	Date / /
Signature	Signature	Time
Printed Name	Printed Name	
Company	Company	
Reason		
Relinquished By:	Received By:	Date / /
Signature	Signature	Time
Printed Name	Printed Name	
Company	Company	
Reason		

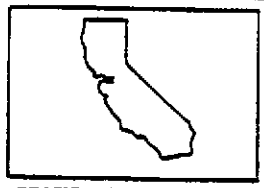
Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis



EXPLANATION

- [A] WESTINGHOUSE ELECTRIC COMPANY - EMERYVILLE
- [B] THE MARKET PLACE
- [C] CHEVRON-EMERYVILLE TERMINAL
- [D] ITT GRINNELL PROPERTY
- [E] NIELSON FREIGHT LINES
- [F] MICHEL AND PELTON



LOCATION OF QUADRANGLE

NOTES: (1) BASE MAP FROM USGS OAKLAND WEST, CALIFORNIA QUADRANGLE, 7.5 MINUTE SERIES (TOPOGRAPHIC). PHOTOREVISED 1980

(2) ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE

0 ½

SCALE, MILES

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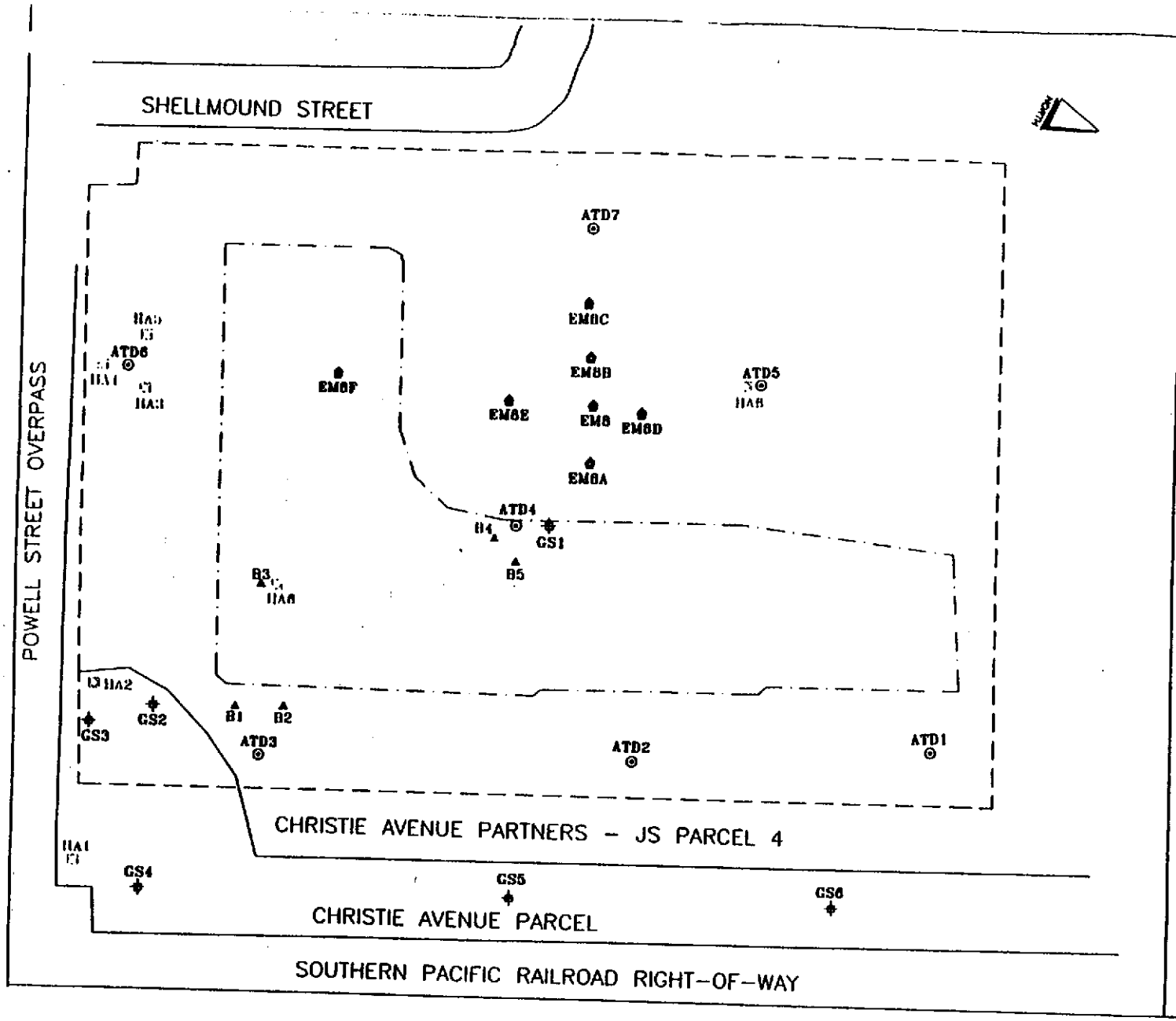
SITE VICINITY MAP

PROJECT NO. A901749A | FIGURE 1



NATION

SITE BOUNDARY

CURB LINE

▲ B5 LOCATION AND DESIGNATION OF SOIL BORING

✱ GS1 LOCATION AND DESIGNATION OF GRAB SOIL SAMPLE

HA1 [illegible]

● EM8 LOCATION AND DESIGNATION OF EARTH METRIC BORINGS

NOTES: (1) ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE

(2) PARCEL BOUNDARY LOCATION OBTAINED FROM INFORMATION SUPPLIED BY UNION BANK

0 25 50 100

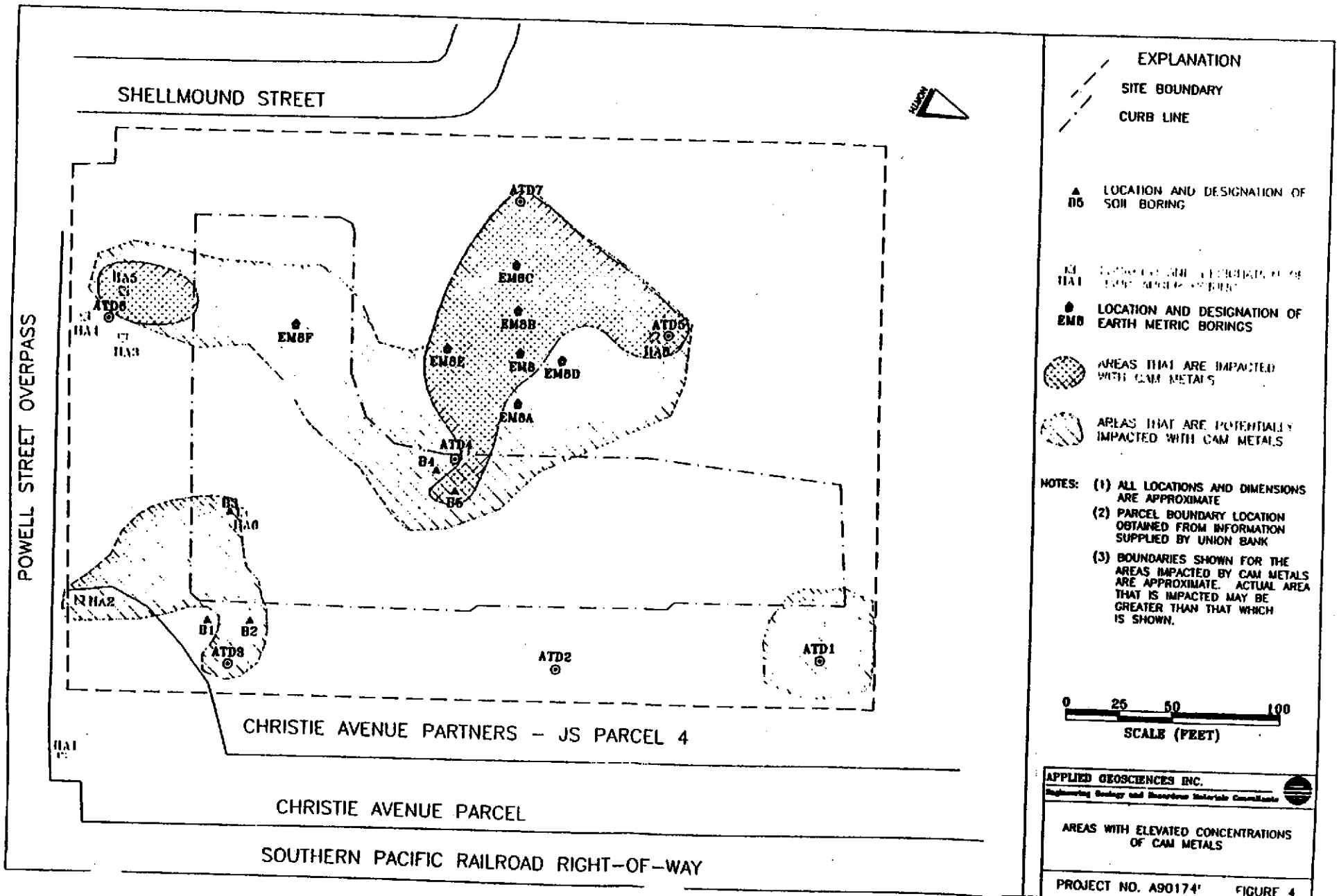
SCALE (FEET)

APPLIED GEOSCIENCES INC.

Engineering Geology and Hazardous Materials Consultants

SITE PLOT PLAN

PROJECT NO. A901749A | FIGURE 2


SHELLMOUND STREET
POWELL STREET OVERPASS
CHRISTIE AVENUE PARTNERS – JS PARCEL 4
CHRISTIE AVENUE PARCEL
SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY
ATD7
EM8C
EM8B
ATD5
EM8F
EM8E
EM8
EM8D
EM8A
ATD4
B4
B5
ATD6
B3
ATD3
B1
B2
ATD2
ATD1
EXPLANATION
SITE BOUNDARY
CURB LINE
LOCATION AND DESIGNATION OF SOIL BORING
LOCATION AND DESIGNATION OF EARTH METRIC BORINGS
AREAS THAT ARE IMPACTED WITH CAM METALS
AREAS THAT ARE POTENTIALLY IMPACTED WITH CAM METALS
NOTES: (1) ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE
(2) PARCEL BOUNDARY LOCATION OBTAINED FROM INFORMATION SUPPLIED BY UNION BANK
(3) BOUNDARIES SHOWN FOR THE AREAS IMPACTED BY CAM METALS ARE APPROXIMATE. ACTUAL AREA THAT IS IMPACTED MAY BE GREATER THAN THAT WHICH IS SHOWN.
0 25 50 100
SCALE (FEET)
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AREAS WITH ELEVATED CONCENTRATIONS OF CAM METALS
PROJECT NO. A90174
FIGURE 4