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PRELIMINARY SITE INVESTIGATION REPORT

**Grand Auto/Super Tire Facilities
4240/4256 East 14th Street
Oakland, California 94621**

J-6077

**HART CROWSER, INC.
November 20, 1992**

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Earth and Environmental Technologies

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November 20, 1992

Alameda County Health Care Services
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Mr. Paul Smith
Senior Hazardous Materials Expert

Reference: Preliminary Site Investigation Report
Grand Auto/Super Tire Facilities
4240/4256 E. 14th Street
Oakland, California (I-6077)

Dear Mr. Smith:

On behalf of PACCAR Automotive, Inc., Hart Crowser, Inc. has prepared the enclosed Preliminary Site Investigation Report to document the subsurface conditions encountered during a site investigation at the above referenced properties. The site investigation plan was outlined in a Sampling and Analysis Plan dated July 6, 1992, that was previously submitted to your office.

If you have any questions on this report please do not hesitate to call me at (415) 391-1885. I will call you within a week to discuss the investigation results and to obtain your office's concurrence with the recommendations contained in our report.

Sincerely,
HART CROWSER, INC.

Patrick G. Lynch, P.E.
Senior Project Engineer

PGL/ah

Enclosure



PRELIMINARY SITE INVESTIGATION REPORT

**GRAND AUTO/SUPER TIRE FACILITIES
OAKLAND, CALIFORNIA**

J-6077

Prepared for:

**PACCAR Automotive, Inc.
7200 Edgewater Drive
Oakland, California 94621**

Prepared by:

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PRELIMINARY SITE INVESTIGATION REPORT
GRAND AUTO / SUPER TIRE FACILITIES
4240 / 4256 E. 14th STREET, OAKLAND, CA.

EXECUTIVE SUMMARY

Hart Crowser has prepared this Preliminary Site Investigation Report for PACCAR Automotive, Inc., (PACCAR) for their Grand Auto and former Super Tire facilities (the site) at 4240 and 4256 East 14th Street in Oakland, California. The site is located at the corner of East 14th Street and High Street in Oakland, California, as shown on the Site Location Map (Figure 1). This Preliminary Report was prepared for PACCAR in accordance with our "Proposal to Provide Environmental Assessment and Restoration Services", dated May 29, 1992.

This preliminary report summarizes the results of a preliminary site investigation undertaken to identify whether former underground fuel storage tanks at the site may have created soil and groundwater contamination that requires remediation. Installation of four soil borings and analyses of ten soil samples from these borings indicates that the former fuel tank locations are not a continuing source of petroleum hydrocarbons and no significant contamination was present in any boring advanced through backfill in the former tank locations.

This preliminary report also presents the results of removal of two hydraulic hoists from the Super Tire facility and the removal of a former car wash sump from the Grand Auto facility. In each of these locations releases of petroleum hydrocarbons to shallow soils was detected. Visible contamination is present in the hoist excavation, but the location within a building prohibits the removal of this soil. In the car wash sump excavation, analysis of a soil sample from a depth of 8 feet below ground surface (BGS) showed Total Petroleum Hydrocarbon as gasoline (TPH-gasoline) levels of 340 parts-per-million (ppm).

A monitoring well was installed at this site on August 28, 1992 to determine the extent of the fuel residues observed during the sump removal at the former Grand Auto facility car wash. Analyses of a groundwater sample from this monitoring well showed the presence of chlorinated hydrocarbons, and TPH-gasoline

This report presents the results of the preliminary investigation and recommends investigation and remediation activities to address the hydraulic hoist and car wash sump areas.

INTRODUCTION

Hart Crowser, Inc. has prepared this Preliminary Report for PACCAR Automotive, Inc., to document the subsurface site conditions encountered during a preliminary site investigation at the Grand Auto and former Super Tire facilities at 4240 and 4256 East 14th Street in Oakland, California. The site is located at the intersection of East 14th Street and High Street as shown in Figure 1. The two properties are currently leased by PACCAR from separate owners.

The following paragraphs include a discussion of the purpose of the preliminary site investigation; a summary of the site background; and the scope of the field activities. The approach and a detailed scope of this preliminary investigation is described in the "Sampling and Analysis Plan, Grand Auto and former Super Tire Facilities, Oakland California," (Hart Crowser, July, 1992).

Purpose of the Preliminary Site Investigation

Both the Grand Auto and the former Super Tire facilities have previously been used for underground storage of petroleum fuels. The main purpose of this preliminary site investigation was to determine if this past fuel storage led to an unauthorized release of petroleum hydrocarbons into soils and/or shallow groundwater. This report contains site specific characterization data collected during the initial field investigation activities to both evaluate the need for environmental restoration and to evaluate future investigation and remediation activities.

In addition to previous underground fuel storage and dispensing activities at the site, the former Super Tire facility performed automotive servicing. A car wash was also operated within the Grand Auto property. At PACCAR's request, two inactive hydraulic hoists and a drainage sump were removed from the Super Tire facility, and a drainage sump was removed from the former car wash area of the Grand Auto site. These activities were performed to remove and evaluate these potential subsurface sources of petroleum hydrocarbons.

Planned activities which were not completed as of the date of this report include the sealing of floor drains which remain in the carwash and service shop area of the Grand Auto building.

Scope of the Field Investigation

The scope of work completed is intended to provide data to satisfy the objectives stated above. The following tasks were performed by Hart Crowser during this initial field investigation:

- Subsurface soil sampling was performed to characterize soil quality in areas of the site which are most likely to have been impacted by the former fuel storage and automotive servicing operations. Monitoring well installation was proposed contingent on the noted presence of petroleum hydrocarbons, as determined by visual field observations and photo-ionization detector (PID) readings during soil sampling. Field observations and soil sample screening did not show the presence of petroleum hydrocarbons and monitoring wells were not installed.
- Sumps and inactive hydraulic hoists were removed from the site. Two hydraulic hoists and a floor sump were removed at the former Super Tire Facility. An additional sump was removed from the former car wash area at the Grand Auto facility. These activities included removal of these objects and sampling of the base of the excavations. As a result of this sampling a boring was conducted and a monitoring well installed adjacent the Grand Auto Car Wash sump.

The scope of each of these tasks is further discussed below.

Site Description/Background

The project site is located on the northern corner of the intersection of East 14th and High Streets in the City of Oakland (Figure 1). It is approximately 2,000 feet north of US Highway 880, and about 4,000 feet north of a tidal canal within San Leandro Bay. The site slopes gently to the southwest, and occupies approximately 1.2 acres. The site is currently leased by PACCAR from two separate land owners.

The approximate 19,000 square foot Grand Auto building occupies the northern corner of the Grand Auto parcel (see Figure 2). The southeastern portion of the building was previously used as a car wash, and is currently used for merchandise storage. The remaining area of the Grand Auto

parcel is paved with asphalt and is primarily used for parking. The Super Tire parcel, which lies nearest to the intersection of East 14th and High Streets, is centrally occupied by an abandoned retail automotive service station.

The Grand Auto facility previously operated a gasoline service station. Three 10,000-gallon underground fuel storage tanks were installed during 1972 and removed during the second half of 1986. No information on the tank removal or any interim remedial actions that were taken at that time are available. A tank integrity test performed prior to tank removal indicated a leak in at least one of the tanks. A drive-through car wash was also formerly operated at the site. A drainage sump from the car wash remained along the southeast wall of the Grand Auto building. This sump collected all of the water and sediment from the washing process, and was connected to a municipal sewer line.

The Super Tire facility was leased by PACCAR in March, 1976. PACCAR never operated the site as a gas station, but did remove two existing underground gasoline storage tanks and a waste oil tank in July 1976. No environmental sampling was done as part of the tank removal, and no information on the condition of the tanks at the time of removal is available.

The existing Grand Auto building was constructed in approximately 1963. From approximately 1953 to 1963 the Grand Auto parcel was occupied by a row of single story shops, apparently performing automobile servicing. A review of historical aerial photographs for the project area show the Super Tire facility was used for retail gasoline sales as early as 1947.

SUBSURFACE ASSESSMENT

Soil Borings

The objectives of the subsurface soil sampling effort were to characterize the nature and extent of potential subsurface contamination. Six borings locations were proposed in the SAP based on the examination of historical aerial photos and maps, as well as the current site configuration. The boring locations are shown on Figure 2.

The following paragraphs describe the rationale for each of the soil boring locations.

- Boring B-1 was drilled through the backfill of the former waste oil tank location along the northern wall of the former Super Tire building. This boring was intended to provide information regarding the extent of petroleum hydrocarbons within the backfill material and the native soils beneath it. This boring was advanced to a depth just below the estimated static water level.
- Two borings (B-2 and B-4) were drilled through backfill of the former fuel tank location at the Grand Auto and former Super Tire facilities. These borings provided information on whether these areas are currently a source of petroleum hydrocarbons (i.e. was contaminated soil replaced in the pit as backfill material following removal of the tanks). These borings were advanced to a depth of 14.5 and 21.5 feet BGS, respectively.
- Two borings B-3 and B-5 were to be placed contingent on the field screening of soils and groundwater conditions in the three previously mentioned borings (B-1, B-2, and B-4, see above). These borings were to be placed to evaluate native site stratigraphy and potential subsurface soil and groundwater contamination. Neither of these borings were drilled for purposes of installing a monitoring well. Boring B-5, however was drilled to verify the results of Boring B-4. In B-4, a clean contact between backfill and native material was not identified.
- Boring B-6 was to be placed north of boring B-1 for the purpose of monitoring well installation if monitoring wells are constructed within borings B-3 and B-5. This boring was not performed and no well was installed at this location.

Four of the proposed six subsurface borings were drilled on the site during the preliminary site investigation on July 16, 1992. No groundwater monitoring wells were installed at this time.

Borings were drilled using a truck-mounted Hollow-Stem Auger (HSA) technique. Each of the borings was backfilled to the surface with cement/bentonite slurry grout. Drill cuttings were stored in a DOT-approved 55-gallon drums pending analytical results. The analytical results will be used to determine the appropriate disposal method.

A detailed lithologic log of each boring was prepared by the Hart Crowser geologist onsite in accordance with the Unified Soil Classification System and standard geologic practice. These logs provide a record of subsurface materials encountered, hydrogeologic information, and results of field screening of soil samples for volatile hydrocarbon compounds. Boring logs are included in Appendix A of this report.

Discrete soil samples were collected at approximate five-foot depth intervals using a California modified split-spoon sampler with stainless steel liners. The deepest tube from each driven sample was immediately sealed with Teflon tape, covered with tight fitting plastic caps, labeled, and placed in refrigerated storage.

A minimum of one sample per boring was submitted for chemical analysis. Samples were selected for analysis based on visual indications of contamination or PID measurements. Strict chain-of-custody procedures were maintained throughout sample acquisition, storage, and transport. A copy of the chain-of-custody record is included in Appendix B of this report.

Subsurface soil samples from Boring B-1 were analyzed for the following parameters related to storage of waste oil:

- TPH-diesel (EPA 8015)
- TPH-gasoline/BTEX (EPA 8015/8020)
- Oil & grease (EPA 5520)
- Chlorinated hydrocarbons (EPA 8010)
- Metals (Cd, Cr, Pb, Ni, Zn) (EPA 6010)
- Organic lead (DHS/LUFT)

Subsurface soil samples from Borings B-2, B-4, and B-5 were analyzed for the following parameters related to petroleum fuel storage:

- TPH-diesel (EPA 8015)
- TPH-gasoline/BTEX (EPA 8015/8020)
- Organic lead (DHS/LUFT)

Sump and Hydraulic Hoist Removal - Super Tire Site

The existing concrete sump (adjacent to a hoist location) and the two existing hydraulic hoists were excavated and removed from within the Super Tire service area. Oil remaining in the hydraulic lift system and the sump was collected in DOT 17H 55-gallon drums to the maximum extent possible. The floor sump was rinsed with a high pressure washer prior to removal. Rinsate from this process was similarly collected and stored in drums onsite. The drums will be sampled and profiled at a local oil recycling facility.

The sump and hydraulic hoists were cleaned onsite and disposed of at Vasco Road Sanitary Landfill in Livermore, California. Visually contaminated soil was excavated to the extent possible. Soil excavation was limited due the potential for undermining the Super Tire building's foundation. The soil is currently being profiled at a disposal facility.

Soil samples are to be collected from beneath the former hydraulic hoists location. These samples will be analyzed for the following parameters, consistent with the hydraulic lifts and sump:

- TPH-diesel (EPA 8015)
- TPH-gasoline/BTEX (EPA 8015/8020)
- Oil & grease (EPA 5520)
- Chlorinated hydrocarbons (EPA 8010)
- Metals (Cd, Cr, Pb, Ni, Zn) (EPA 6010)
- Organic lead (DHS/LUFT)

Sump Removal - Grand Auto Site

An existing reinforced concrete sump along the southeast wall of the Grand Auto building was excavated and removed on August 6, 1992. This dual-chambered sump (420 gallon capacity) appears to have been the sole drainage point for water generated during the operation of the former car wash. Solids remaining in the sump (the sump was filled with a consolidated soil) were collected in DOT 17H 55-gallon drums prior to removal. These drums will be sampled and profiled for disposal.

This sump was cleaned onsite and disposed of at Vasco Road Sanitary Landfill in Livermore, California. Visually contaminated soil was excavated to the lateral extent possible and to a depth of eight feet. The soil excavation was limited due the potential for undermining the Grand Auto building's foundation.

A sample was retrieved from the maximum depth of the excavation and analyzed for the following parameters:

- TPH-diesel (EPA 8015)
- TPH-gasoline/BTEX (EPA 8015/8020)
- Oil & grease (EPA 5520)
- Chlorinated hydrocarbons (EPA 8010)
- Metals (Cd, Cr, Pb, Ni, Zn) (EPA 6010)
- Organic lead (DHS/LUFT)

Monitoring Well Installation

Though not proposed in the SAP a soil boring (B-7) was drilled and a monitoring well (MW-1) was installed on August 28, 1992, adjacent to the location of the removed car wash sump. The purpose of Boring B-7 was to evaluate the extent of fuel residues found at the base of the car wash sump and to determine if an impact to groundwater had occurred in this location. The boring was located approximately eight feet east of the car wash sump.

Boring B-7 was drilled to a depth of 47 feet using the drilling and sampling methods outlined in the SAP. Two soil samples were retrieved from the boring for chemical analyses at 11 and 36 feet BGS. These samples were analyzed for the following parameter:

- TPH-gasoline/BTEX (EPA 8015/8020)

A four-inch PVC monitoring well, MW-1, was constructed in B-7. The well was developed with a truck mounted rig on September 8, 1992 using a surge and block technique. On September 10, 1992, the well was purged of approximately three casing volumes of groundwater using a submersible pump. Groundwater samples were then collected using a disposable bailer. The groundwater sample was analyzed for the following parameters:

- TPH-gasoline/BTEX (EPA 8015/8020)
- Chlorinated hydrocarbons (EPA 8010)

SITE GEOLOGY AND HYDROGEOLOGY

Site-specific geology and hydrogeology are discussed in this section. This information has been developed from onsite soil borings completed at the PACCAR site by Hart Crowser, combined with existing regional data obtained from public agencies and reviewed during this investigation.

Site Geology

The site is located in an area underlain by Quaternary alluvial deposits which consist primarily of unconsolidated clays, silts, sands, and gravels. These deposits are underlain by the Franciscan formation.

Hart Crowser explored the stratigraphy beneath the site by augering four shallow borings on July 16, 1992. An additional soil boring was performed on August 28, 1992. Descriptions of the subsurface materials encountered are provided on the boring logs, included in Appendix A of this report.

Boring logs indicate that the site is underlain by an irregularly layered sequence of silty to gravely sands and silty clay beds up to 47 feet BGS. Since four of the borings were placed through backfill material, full characterization of subsurface soils was not possible during this phase of drilling.

Site Hydrogeology

Free water was not encountered in boring B-4 to the total depth of 21.5 feet BGS during drilling. Unconfined groundwater was encountered in the adjacent boring B-5 at a depth of 37 feet BGS. Unconfined groundwater was also found in Boring B-7 at 37 feet BGS. Regional groundwater flow within the lower aquifer is assumed to be to the southwest.

Perched groundwater was encountered in borings B-1 and B-2 at 14.5 feet and 9.5 feet BGS, respectively, at the time of drilling. The lateral extent and flow characteristics of the perched layer encountered in borings B-1 and B-2 are not known at this time.

Well log information obtained from the Alameda County Public Works Agency and from other consultant's reports for neighboring site investigations indicate that local perching layers are common to this geographic area.

Wells reported to be installed within a one-mile radius of the site include municipal irrigation wells, cathodic protection wells and groundwater monitoring wells. No domestic or municipal supply wells were identified.

RESULTS OF LABORATORY ANALYSES

This section presents the results of laboratory analyses for soil and groundwater samples collected during this investigation. The results of soil samples are summarized in Table 1. Groundwater sample results are summarized in Table 2. Copies of laboratory reports and chain-of-custody records are included in Appendix B of this report. Boring locations are shown in Figure 2.

Grand Auto Site

Former Fuel Tank Location - Both borings B-4 and B-5 were drilled in the location of the former fuel tanks on the Grand Auto property.

Boring B-4 was advanced to a total depth of 21 feet BGS. A soil sample from this boring at 21 feet BGS was analyzed for TPH-gasoline with BTEX and TPH-diesel. All compounds were reported below the limits of detection.

Boring B-5 was advanced to a total depth of 41 feet BGS. Soil samples from depths of 19 feet and 26 feet BGS were submitted for TPH-gasoline with BTEX and TPH-diesel. These samples correspond to the highest PID level measured (at 19 feet) in a soil sample and then next sample collected (at 26 feet BGS). The levels of TPH-gasoline and TPH-diesel were reported below the detection limits of 1.0 ppm and 10.0 ppm, respectively in each sample. Detectable levels of benzene (0.011 ppm) and xylenes (0.003 ppm) were measured in sample B-5 at 19 feet BGS.

Car Wash Sump Location - A sample designated S2C was collected at the base of the excavated car wash drain sump at a depth of approximately 8.5 feet BGS. Analyses performed on this sample included TPH-D, TPH-G with BTEX, oil and grease, metals and volatile organics. Results of the analyses reported 310 ppm of TPH-G. The results also reported 120 ppm of TPH-D though the lab noted that the chromatograph pattern for this sample was not consistent with the lab's diesel standard. The volatile organics toluene, ethyl benzene, xylenes and tetrachloroethylene (PCE) were also present in the sample above their respective detection limits.

how do these compare w/ PRLGs Feb 1995

Total Cr	210 ppm	1600
Pb	130 ppm	1000 ppm
Ni	150	34000
Zn	23000	1,000,000
	Residential	Commercial

Pb and Cr exceed PRLGs

The results of metal analyses of sample S2C also showed the presence of chromium, lead, nickel, and zinc at detectable concentrations. No background metal levels for shallow soils in the vicinity of the site are available to compare with the metal concentrations observed onsite. A comparison of sample results with the cleanup criteria reported in "The Designated Level Methodology for Waste Classification and Cleanup Level Determination," (Marshack, 1987), indicates that the levels of metals observed onsite are below the cleanup criteria for an "average" site. The "average" site cleanup levels for chromium, lead, nickel, and zinc reported in this document are 2,500 ppm, 500 ppm, 134 ppm, and 2,000 ppm, respectively. Therefore the result of metal analysis do not show elevated soil metal levels as a result of onsite activities.

Boring B-7 was placed approximately eight feet to the east of the sump excavation for purposes of constructing MW-1. Samples obtained from this boring at a depth of 11 and 36 feet BGS were submitted for chemical analyses for TPH-gasoline with BTEX. Sample results showed non-detectable concentrations of all compounds.

A groundwater sample was collected from MW-1 and analyzed for TPH-gasoline with BTEX, and chlorinated solvents. Results of this analysis show the presence of several chlorinated solvents and TPH-gasoline in the groundwater. The lab reported TPH-gasoline at a level of 0.15 ppm, with a chromatogram pattern that was not consistent with the lab's gasoline standard. No BTEX compounds were detected. The lab also reported the presence of PCE, trichloroethylene (TCE), cis-1,2-dichloroethene (DCE), and chloroform at levels of 0.31 ppm, 0.026 ppm, 0.011 ppm, and 0.0011 ppm, respectively. The levels of PCE, TCE and 1,2-DCE exceed the state or federal drinking water standards for these compounds. ✓

Super Tire Store

Former Fuel Tank Location - Boring B-2 was placed in the location of the former fuel tanks on the Super Tire facility. The boring was advanced to total depth of 14.5 feet BGS. Samples from depths of 6 and 14 feet BGS were submitted for chemical analyses for TPH-gasoline with BTEX and TPH-diesel. These samples represent those obtained from above the perched water table and from the bottom of the boring (B2-6, and B2-14, respectively). Results showed 40 ppm of diesel range hydrocarbons present in a sample from 6 feet BGS, but the lab noted a non-standard diesel pattern. The volatile organics toluene, ethyl benzene, and xylenes were also present in the sample from 6 feet BGS at levels ranging from 0.003 to 0.01 ppm. These components were non-detectable in the sample from 14 feet BGS.

Former Waste Oil Tank - Boring B-1 was placed in the location of the former waste oil storage tank on the Super Tire facility. The boring was drilled to a total depth of 16 feet BGS. Samples from 11 feet and 16 feet BGS were submitted for analyses for TPH-gasoline with BTEX and TPH-diesel. The shallower sample was also analyzed for chlorinated VOCs and five metals and organic lead. Results showed 430 ppm of oil and grease in the sample from 11 feet. The results of the TPH analyses, and VOC analyses indicate all compounds are present below detection limits. Metal results are similar to those reported for sample S2C, and are not elevated as a result of onsite activities.

Hydraulic Hoist Location - No samples have been retrieved from the hydraulic hoist excavations at this time. Visible staining was noted at the base of each hoist excavation beginning at 8 feet BGS. The Super Tire structure and soil conditions have been reviewed by a California registered civil engineer who indicated that the structure will require reinforcement or demolition to enable the removal of potentially contaminated soil. Perched groundwater has also entered the two excavations. The sump which was removed, was located within the excavation limits of one of the hoist.

DISCUSSION OF RESULTS

Former Fuel Tank Locations

Based on analytical results of soil samples and observation made during drilling, the former storage and dispensing of petroleum fuels does not appear to have impacted the soils and groundwater at the Grand Auto property at levels requiring remediation. It is therefore not anticipated that any further action will be required to investigate or remediate this area of the property.

The single sample from the Super Tire site (Borings B-2 at 6 feet BGS) with a measurable level of TPH-D at 40 ppm was underlain by a sample at 14 feet which had non-detectable concentrations of TPH-D. These results taken together indicate that back-fill material used for the tank excavation may have contained low levels of TPH-D. Since the concentration of TPH-D was below 100 ppm, it is not anticipated that state and local regulatory agencies will require remediation of soils within this area of the site. Although this 100 ppm level is not an official clean-up level, it is used by the Regional Water Quality Control Board (RWQCB) to prioritize case loads and to indicate whether a significant volume of fuel had been

released or discharged. Furthermore, this sample was obtained within a hydrogeologically isolated area (within backfill which is above a shallow perched water bearing zone).

Observations during the site walk indicate that the previous fuel conveyance pipelines and vent pipes still remain at the site. The current regulatory guidance requires that all piping be removed as part of an underground storage tank removal.

Hydraulic Hoists

The removal of the hydraulic hoists revealed soil staining by hydraulic oil beneath the bases of each hoist at a depth of 8 feet BGS. The color and odor of this soil indicate a potential exists that the oil and grease measured in Boring B-1 at a depth of 11 feet is a result of a hydraulic fluid release from the hoist system. Based on this observation, the vertical extent of hydraulic fluid may extend below a depth of 8 feet BGS (a sample from B-1 at 16 feet BGS showed non-detectable levels of oil and grease). Boring B-1 is approximately 15 feet east of the hoist excavations.

In order to address the hydraulic fluid residues in soil, additional excavation will be required. A engineer has reviewed the building foundation and soil conditions and concluded that additional excavation of soil will undermine the existing structure. The engineer suggested that the building be razed if extensive excavation is required. PACCAR is currently negotiating the removal of the structure with the property owner.

Grand Auto Car Wash Sump

The results of soil samples at the base of the sump show elevated levels of gasoline range hydrocarbons. This petroleum residue appears to be the results of a loose fitting where the car wash floor drainage pipe entered the sump at a depth of approximately 2 feet BGS. Soil staining was also observed on the excavation sidewall adjacent to the Grand Auto car wash building. Because of the observed source's proximity to the car wash building, it is possible that contamination extends under the building.

Boring B-7 installed as a groundwater monitoring well was intended to identify whether impacts to groundwater have occurred. Soil samples retrieved from B-7 at 11 and 36 feet BGS showed no detectable

concentrations of TPH-gasoline. These soil sample results indicate that the contamination found at the base of the sump (at eight feet BGS) has not migrated laterally.

The results of groundwater sample analyses however, indicates that the contaminants have migrated vertically. PCE, detected at a low level in the soil sample from the sump excavation, was also found in the groundwater sample from MW-1. Additional investigation will be required to determine the extent of PCE, in groundwater beneath the site. The reported detection of 0.104 ppm of PCE in shallow soils is well below soil cleanup standards used by the RWQCB at other sites in the bay area.

The TPH-gasoline results for the groundwater sample was qualified as a non-standard gasoline pattern. It is likely that chlorinated solvents eluted during the TPH analysis and are being reported by the laboratory as TPH-gasoline. The lack of detection of BTEX in the groundwater sample would supports this conclusion.

RECOMMENDATIONS

Former Fuel Tanks

Underground storage tank guidance documents require the removal of both tanks associated piping. Observations made at the site indicate that fuel conveyance pipelines and vent pipes remain on both the Grand Auto and the Super Tire facilities. These appurtenances should be removed in accordance with the Tri-Regional guidelines for the removal of underground fuel storage tanks.

Removal activities would include excavation and removal of the pipelines. Soil samples would be collected at twenty foot intervals along the excavated pipeline trench. Soil samples would be analyzed for TPH-gasoline and BTEX.

During this investigation no soil or groundwater contamination requiring remediation was identified in the vicinity of the former underground storage tank locations.

Car Wash Sump

Results of groundwater samples from MW-1 indicate that additional investigation and remediation of groundwater at the site is warranted. The following tasks are proposed to completed the investigation:

Task 1 - Sump Excavation Backfill

Hart Crowser proposes to backfill the excavation because the proximity of the excavation to a building limits the ability to excavate impacted soil. The excavation will first be lined with plastic sheeting, and then filled with a clean granular fill material. The area would be compacted and resurfaced. If further investigation reveals that soil remediation in this area is required, an in-situ remediation technique such as vapor extraction could be utilized.

Task 2 - Groundwater Confirmation Sampling

Hart Crowser proposes to resample MW-1 to confirm the results of the initial groundwater sample. The sample will be analyzed by mass spectography to determine if volatile organic compounds other than the four chlorinated solvents previously detected are present. The analysis by EPA Method 8240 should also identify components responsible for the TPH gasoline level measured in the previous groundwater sample. If the contamination is confirmed by the second round of sampling then additional groundwater monitoring wells will be installed as proposed under Task 3 below. If the confirmation samples show non-detectable concentrations of contaminants then the sampling will be reperfomed and based on the results of that third sample an investigation of groundwater will or will not be conducted.

Task 3 - Groundwater Quality Investigation

If a groundwater investigation is required then three additional monitoring wells will be installed at the locations shown in Figure 3. Monitoring Well MW-2 is proposed to determine water quality upgradient of the site. Wells MW-3 and MW-4 are proposed to determine the down gradient extent of groundwater contamination, as well as to allow a determination of the local

groundwater gradient. Following installation, the three proposed wells and the existing well will be surveyed by a licensed surveyor. Well locations have been specified assuming a southwest gradient.

The monitoring wells will be drilled with hollow-stem auger equipment. Soil cuttings will be collected in 55 gallon drums until chemical analyses results determine disposal requirements. The wells will be constructed of 4-inch schedule 40 PVC. If a perched zone is encountered in any of the proposed well locations, the encountered aquaclude penetration will be sealed with a bentonite slurry.

A single soil sample from each boring will be submitted for chemical analyses. In general this sample will be collected at the groundwater depth encountered during drilling. A PID will also be used to screen soil samples for VOCs. If high PID measurements are detected then additional samples may also be submitted for analyses. Soil samples are proposed to be analyzed by EPA Method 8020 for chlorinated hydrocarbon. If additional compounds are detected in groundwater during Task 2, than additional analytical parameter will be added.

Following installation of MW-2, MW-3 and MW-4 each of the wells will be developed by a truck-mounted rig using a surge and block technique until the groundwater produced by the well is reasonably free of sediment.

The well will be sampled a minimum of 24 hours following development. The three proposed and one existing well will be purged of a minimum of three and a maximum of five casing volumes of groundwater, or until the temperature, conductivity, and pH of the produced groundwater reaches a constant value. Samples will be collected in 40 ml vials with teflon lined septa using a disposable bailer for each well. Samples will be stored in a cool ice chest, and transported to a state certified analytical lab under chain of custody documentation. Samples will be analyzed for chlorinated solvents by EPA Method 8010.

A duplicate sample from one well and a trip blank will be submitted with the groundwater samples for quality assurance purposes.

The results of the additional groundwater investigation activities will be summarized in a supplemental site investigation report. The report would include all field data, boring logs, certified analytical reports, and a summary and discussion of the investigation results. Recommendations for on-going site monitoring, additional investigation activities, and corrective action measures will be made as appropriate.

Hydraulic Hoist Excavation

A detailed plan to investigate and/or excavate soils with hydraulic fluid will be made after a decision on the fate of the existing Super Tire structure is made by PACCAR.

LIMITATIONS

It is our opinion that the scope of the investigation reported here was sufficient to reasonably define the nature, extent, composition, and to recommended remediation for contamination that could or would be expected from the former underground fuel storage tanks. In addition, the investigation scope was adequate to define the nature, extent, and composition of contamination of soil and groundwater in, on, under, and about the premises that may have resulted from the tanks. Our detailed recommendations provide complete cleanup and/or remediation all affected soil, subsoil areas, surface water and groundwater, of any contamination in anyway related to the tanks, and render the premises, the adjacent property, lessee and lessor in full compliance with applicable environmental laws related to the work performed.

Work for this project was performed in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work will be performed. This plan has been prepared for PACCAR Automotive, Inc. for specific application to the Grand Auto/Former Super Tire Facilities at 4240/4256 E. 14th Street in Oakland, California. This document are not intended to represent a legal opinion. No other warranty, express or implied, is made.

TABLES

TABLE 1

Summary of Soil Sample Results
 Super Tire/Grand Auto
 Oakland, California
 (in mg/kg)

Analyte	BORING	B-1		B-2		B-4	B-5		B-7		S2C
	Method	Depth (1) 11	16	6	14	21	19	26	11	36	8
TPH as Gasoline	8015 mod.	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND1	310
TPH as Diesel	8015 mod.	ND 10	ND 10	40 (2)	ND 10	ND 10	ND 10	ND 10	NT	NT	120
Oil and Grease	5520	430	ND 50	NT	NT	NT	NT	NT	NT	NT	ND 50
Organic Lead	DHS/LUFT	ND 2.0	ND 2.0	NT	ND 2.0	ND 2.0	NT	ND 2.0	NT	NT	ND 2.0
Aromatic VOC's	8020										
Benzene	*	ND 0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.075
Tolulene	*	ND 0.003	ND 0.003	0.004	ND 0.003	ND 0.003	0.011	ND 0.003	ND 0.003	ND 0.003	0.64
Ethyl Benzene	*	ND 0.003	ND 0.003	0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.003	ND 0.003	0.65
Xylene	*	ND 0.003	ND 0.003	0.007	ND 0.003	ND 0.003	0.003	ND 0.003	ND 0.003	ND 0.003	1.5 (3)
Chlorinated VOC's	8010	ND 0.005	NT	NT	NT	NT	NT	NT	NT	NT	0.104
Metals	6010										
Cadmium	*	ND 1.0	NT	NT	NT	NT	NT	NT	NT	NT	ND 1.0
Chromium	*	35	NT	NT	NT	NT	NT	NT	NT	NT	73
Lead	*	60	NT	NT	NT	NT	NT	NT	NT	NT	9
Nickel	*	40	NT	NT	NT	NT	NT	NT	NT	NT	110
Zinc	*	190	NT	NT	NT	NT	NT	NT	NT	NT	30

NOTES: ND X - Denotes chemical not detected at a level of X.
 NT - Test not performed on sample.
 (1) - Sample Depth in feet below groundwater surface
 (2) - Results not consistent with diesel standard
 (3) - Tetrachloroethylene, only compound detected in sample.

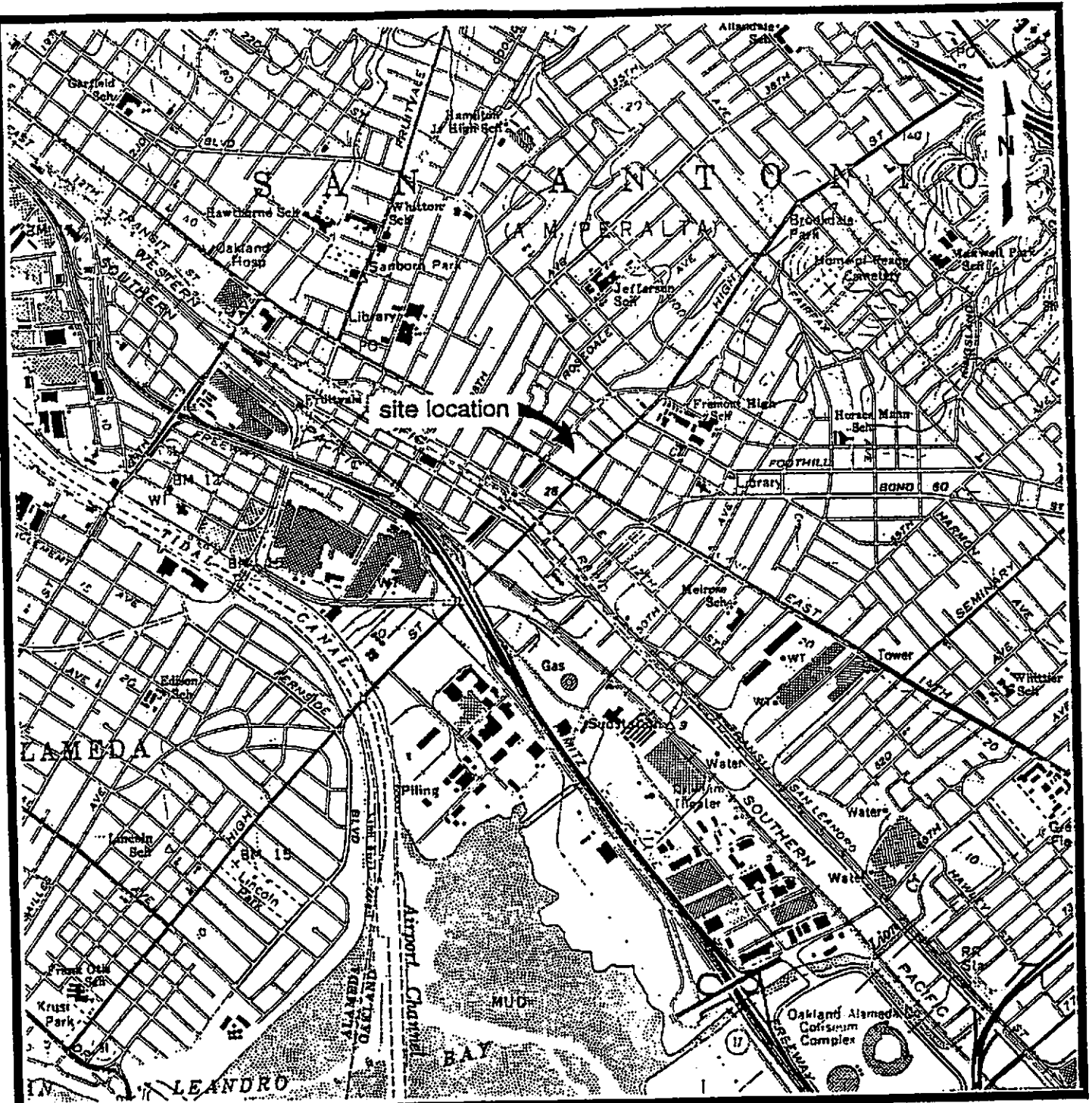
TABLE 2

Summary of Groundwater Sample Results
 Super Tire/Grand Auto
 Oakland, California
 (in µg/L)

<u>Analyte</u>	<u>Method</u>	<u>MW-7</u>
TPH as Gasoline	8015 mod	150
Aromatic VOC's	8020	ND 0.3
Chlorinated VOC's	8010	
Tetrachloroethene		310
Trichloroethene		26
cis 1,2 - dichloroethene		11
Chloroform		1.1
All other compounds		ND 0.5

Note: ND X - Denotes chemical not detected at a level of X.

FIGURES

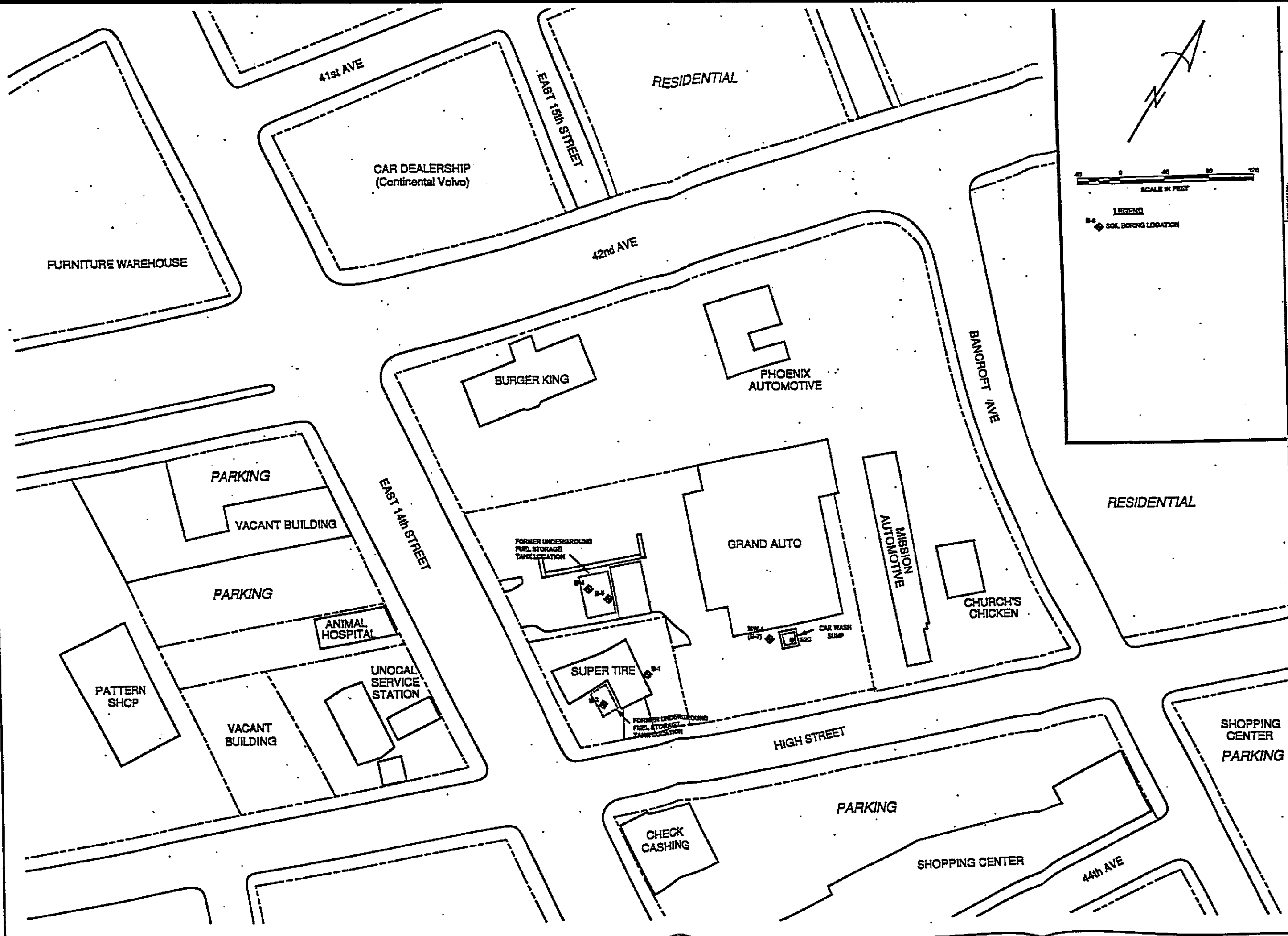


Base Map From USGS Oakland East 7.5 min. Quad

LOCATION MAP

Grand Auto/Former Super Tire Site

Oakland, California

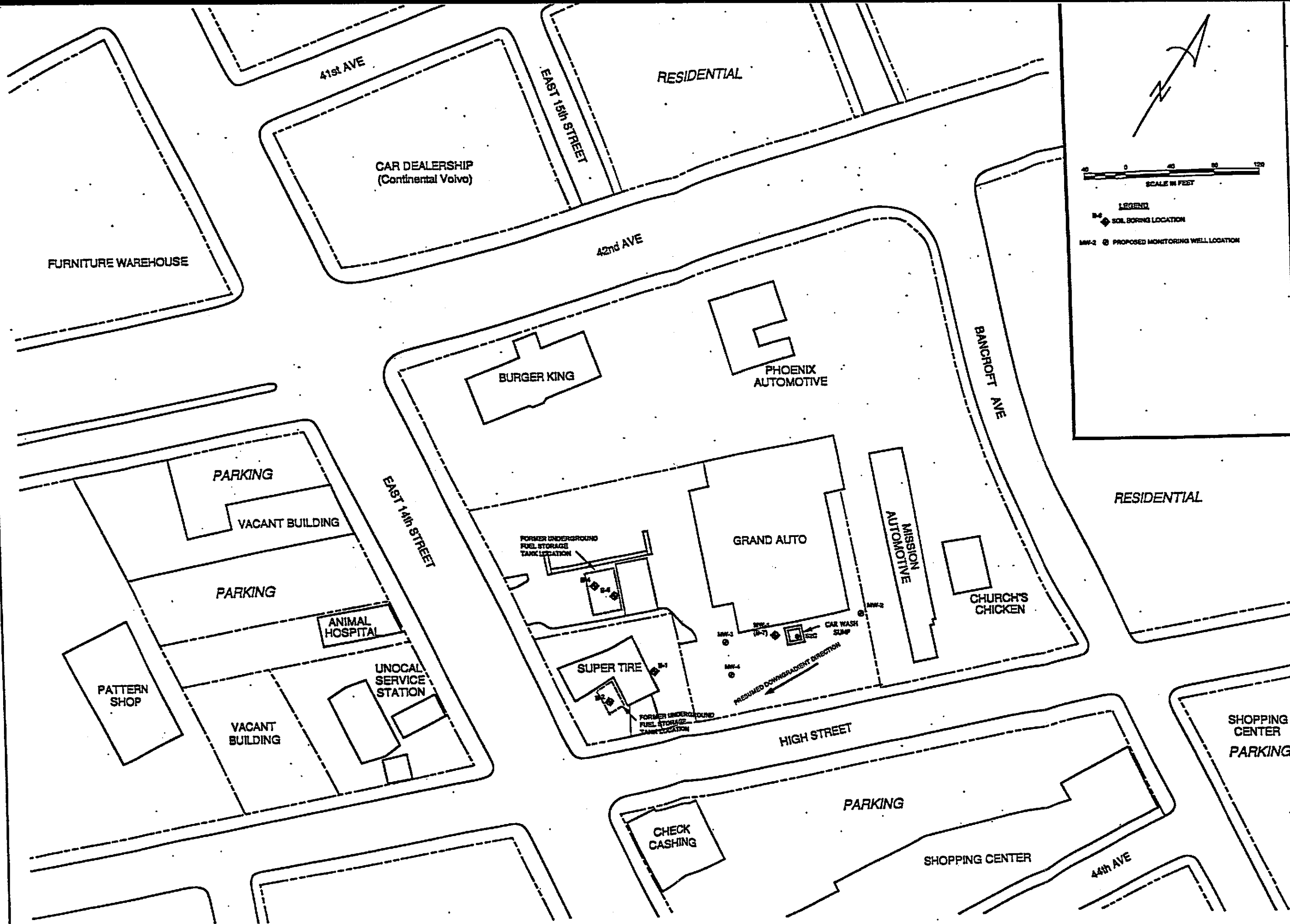


CHECKED BY		DATE	
DRAWN BY		DATE	
SCALE		DATE	
PROJECT		DATE	
SHEET		DATE	

HARTCROWSER
 Hart Crowser, Inc.
 333 Sacramento Street
 San Francisco, CA 94111
 415.397.1885

**BORING LOCATIONS
 GRAND AUTO/SUPER TIRE FACILITIES
 4240/4256 E. 14th Street
 Oakland, California
 FIGURE 2**

TYPE DRAWING	DATE
PRELIMINARY	
CONSTRUCTION	
REVISION	
DATE	
BY	



SCALE IN FEET

0 40 80 120

LEGEND

SB-1 SOIL BORING LOCATION

MW-2 PROPOSED MONITORING WELL LOCATION

REVISIONS:

NO.	DATE	BY	REVISION
1			
2			
3			

DATE: _____

JOB NO. _____

SHEET _____

TYPE OF DRAWING: _____

PREPARED BY: _____

CONST. BY: _____

RECORD BY: _____

DATE: _____

JOB NO. _____

SHEET _____

HART CROWSER, Inc.
533 Sacramento Street
San Francisco, CA 94111
415 391 1985

HART CROWSER

**PROPOSED MONITORING WELL LOCATIONS
GRAND AUTO/SUPER TIRE FACILITIES
4240/4256 E. 14th Street
Oakland, California
FIGURE 3**

APPENDIX A
Boring Logs & Well Construction Detail

Key to Exploration Logs

Sample Descriptions

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates, and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:

Density/consistency, moisture, color, minor constituents, MAJOR CONSTITUENTS, additional remarks.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits is estimated based on visual observation and is presented parenthetically on the test pit logs.

SAND and GRAVEL	Standard Penetration Resistance in Blows/Foot	SILT or CLAY	Standard Penetration Resistance in Blows/Foot	Approximate Shear Strength in TSF
<u>Density</u>		<u>Density</u>		
Very loose	0 - 4	Very soft	0 - 2	<0.125
Loose	4 - 10	Soft	2 - 4	0.125 - 0.25
Medium dense	10 - 30	Medium stiff	4 - 8	0.25 - 0.5
Dense	30 - 50	Stiff	8 - 15	0.5 - 1.0
Very Dense	>50	Very Stiff	15 - 30	1.0 - 2.0
		Hard	>30	>2.0

Moisture

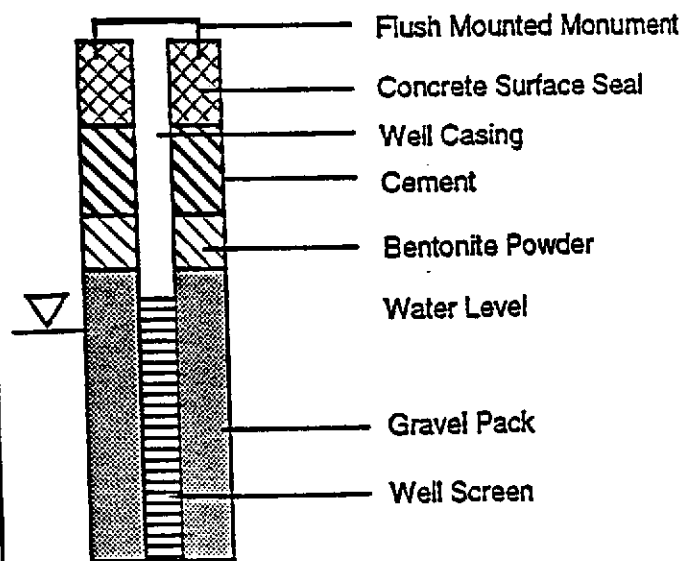
Dry	Little perceptible moisture.
Damp	Some perceptible moisture, probably below optimum.
Moist	Probably near optimum moisture content.
Wet	Much perceptible moisture, probably above optimum.

Minor Constituents

Minor Constituents	Estimated Percentage
Not identified in description	0 - 5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

Legends

Groundwater Observations



Sampling

BORING SYMBOLS

	Spill Spoon
	Shelby Tube
	Cuttings
	Core Run
•	No Sample Recovery
P	Tube Pushed, Not Driven



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Figure A-1

Boring Log B1

Geologic Log

DEPTH
(feet)

Ground Surface
Elevation: not measured

Asphalt (2 in.)

SAND- dark yellowish brown (10YR 4/2), fine, well sorted, micaceous, loose to medium dense, slightly moist, no odor. (backfill)

trace fine gravel

becomes olive brown

GRAVELLY SAND- moderate yellowish brown (10YR 5/4), fine with some fine gravel, medium dense, moist, trace oily residue in cuttings, mild hydrocarbon odor.

grades finer

wet

SILTY SAND- moderate yellowish brown (10YR 5/4), coarse and medium, poorly sorted, dense, wet, no odor.

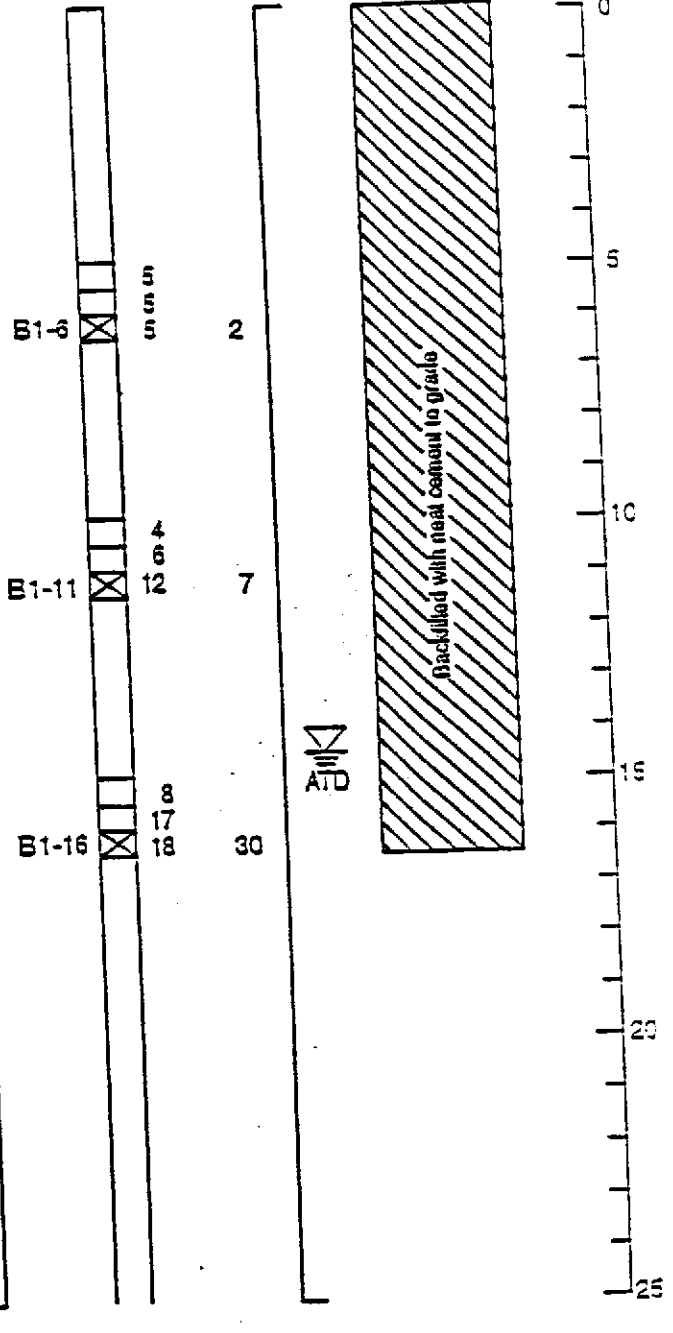
Bottom of Boring 16.5 feet.
Completed 12:00, 7/18/92

SAMPLE #

BLOWS/6"

PID (ppm)

Backfill
Material



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretative and actual changes may be gradual.
3. Groundwater level is at time of drilling (ATD) for data specified. Level may vary with time.



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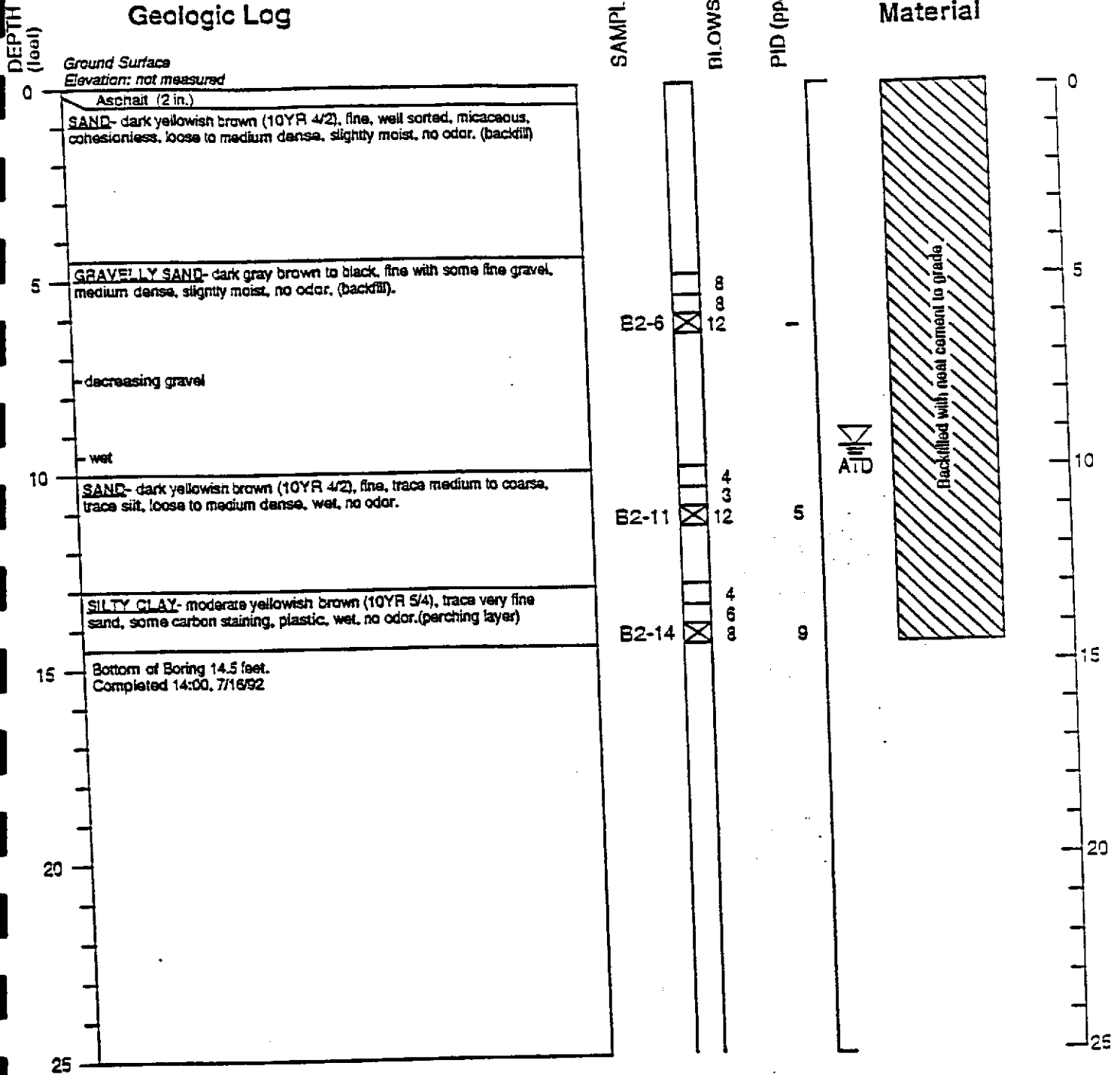
J-6077

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Figure A-2
Page 1 of 1

Boring Log B2

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level is at time of drilling (ATD) for date specified. Level may vary with time.



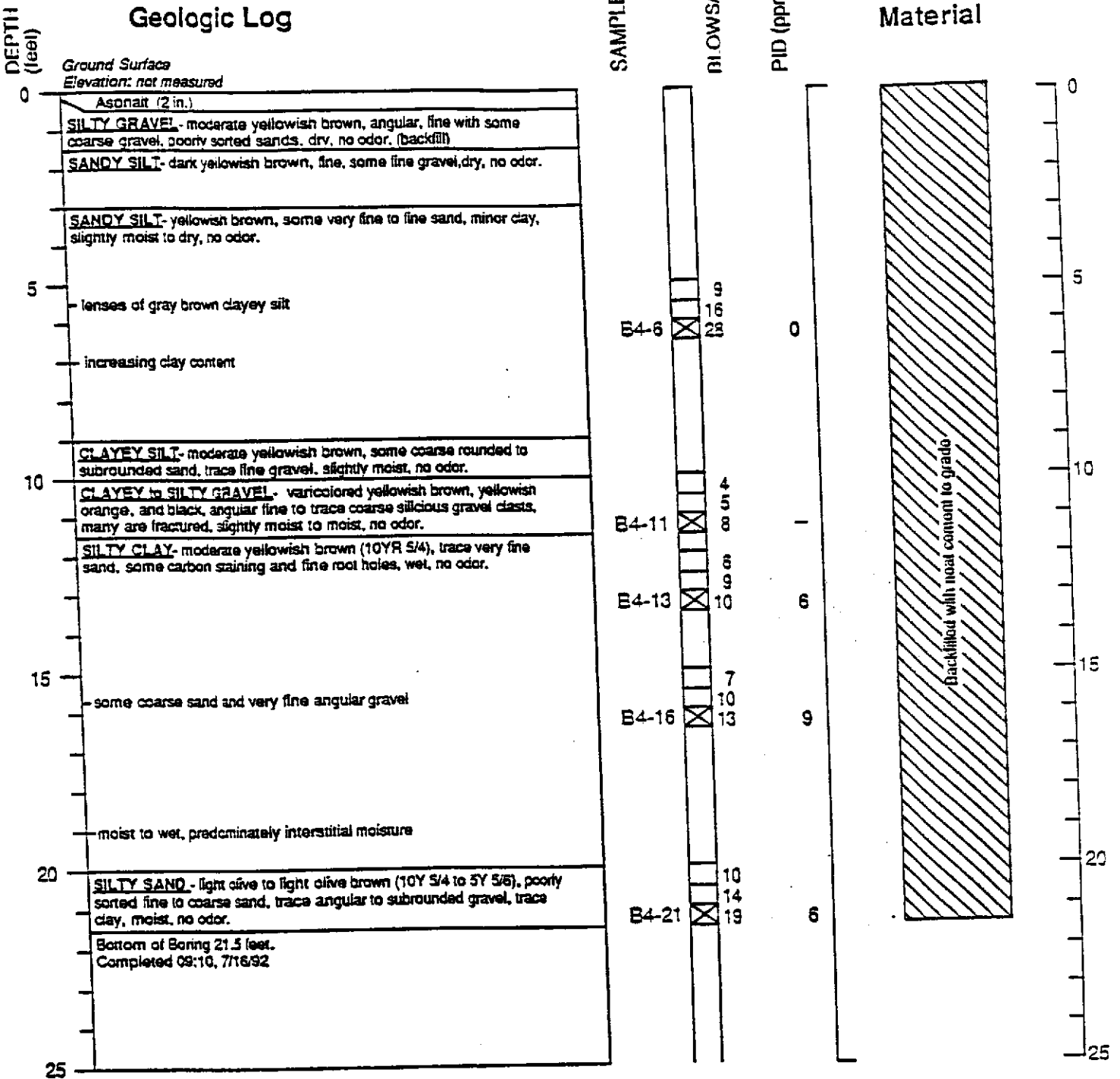
HARTCROWSER

J-6077

7/92

Figure A-3
Page 1 of 1

Boring Log B4



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level is at time of drilling (ATD) for date specified. Level may vary with time.



HARTCROWSER

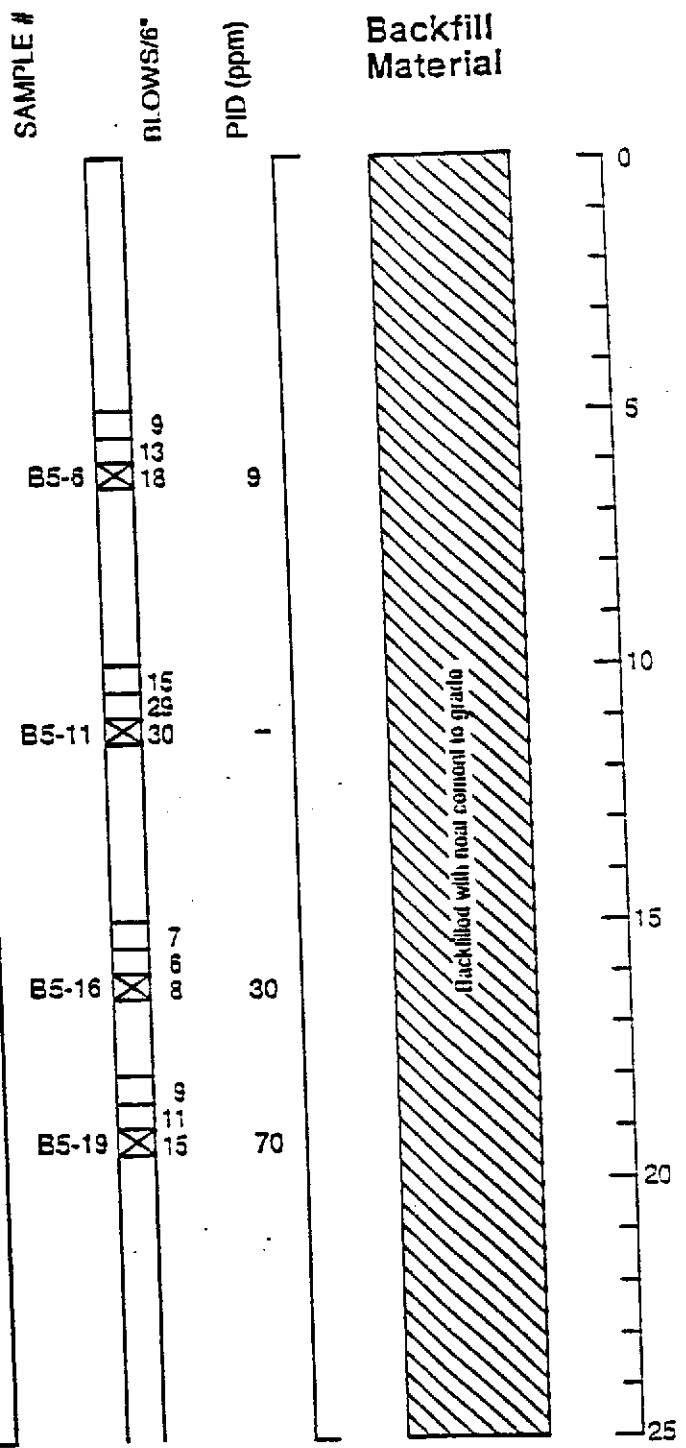
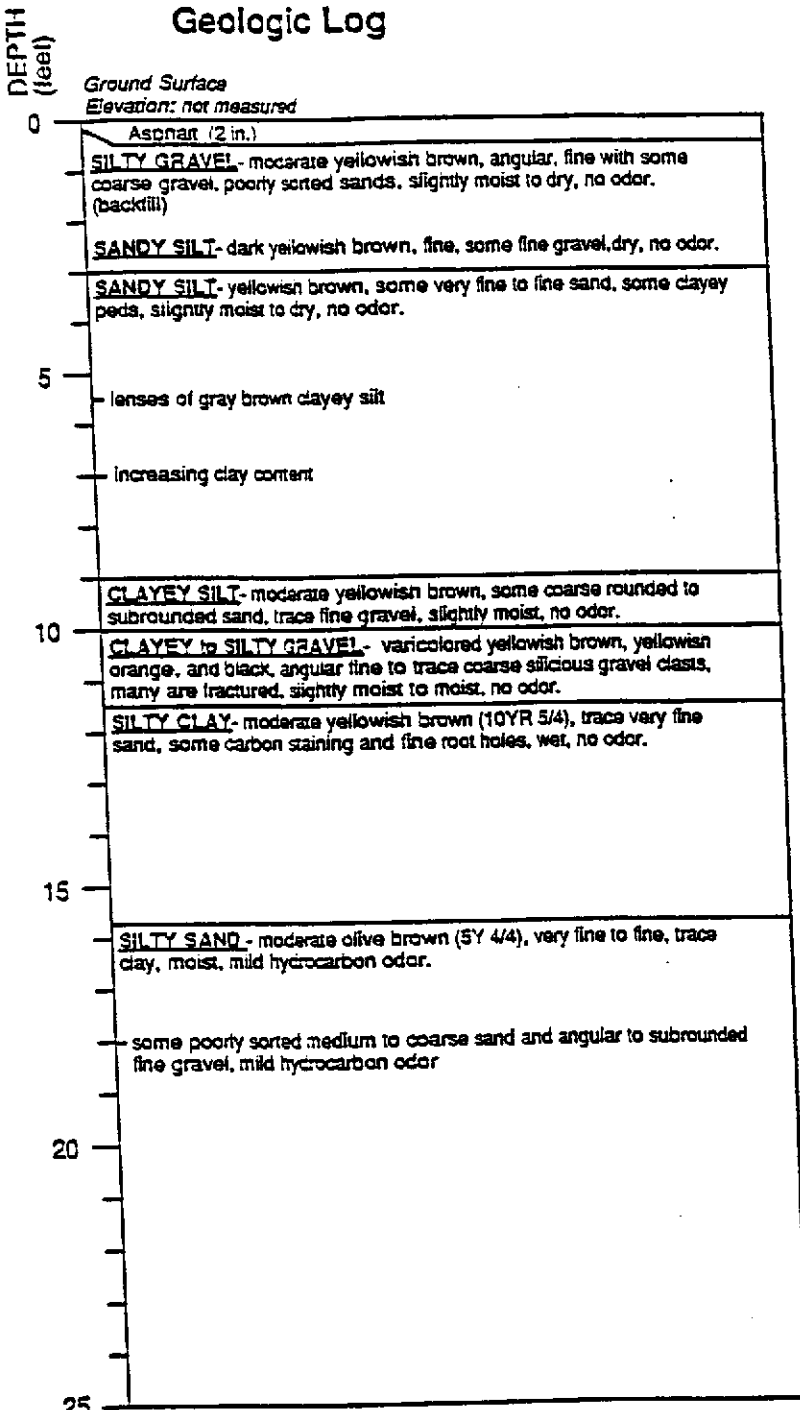
J-6077

7/92

Figure A-4
Page 1 of 1

Boring Log B5

Geologic Log



continued next page

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level is at time of drilling (ATD) for date specified. Level may vary with time.



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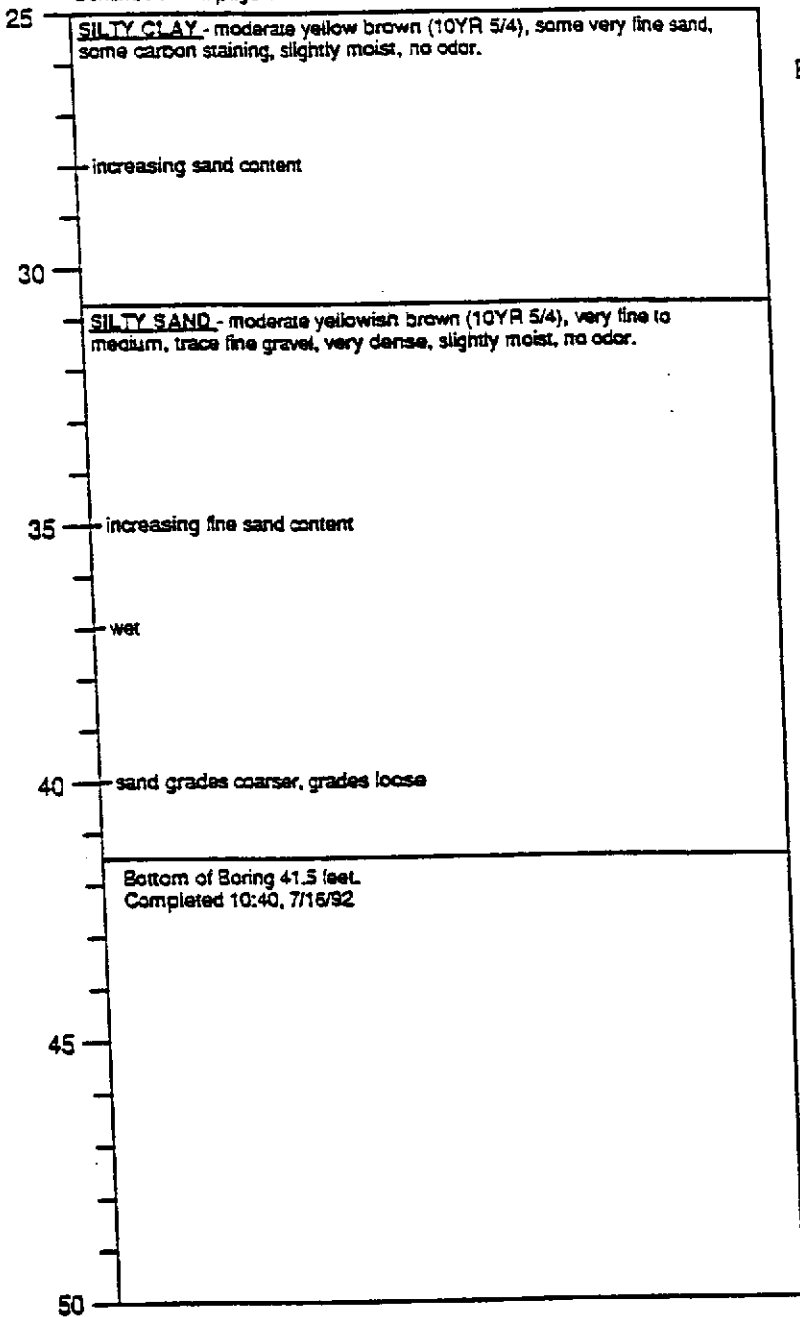
Figure A-5
Page 1 of 2

Boring Log B5

Geologic Log

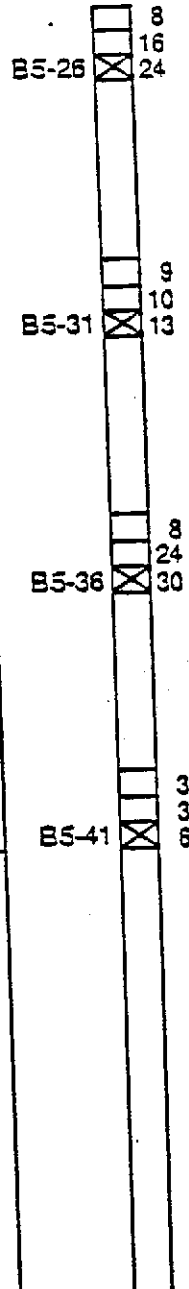
DEPTH
(feet)

Continued from page 1



SAMPLE #

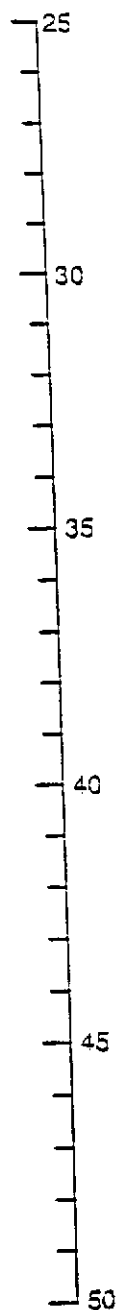
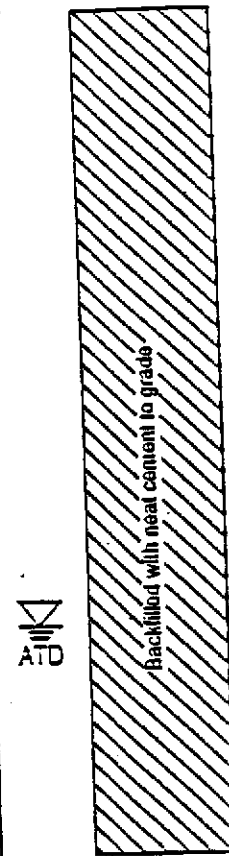
BLOWS/6"



PID (ppm)



Backfill
Material



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level is at time of drilling (ATD) for date specified. Level may vary with time.



HARTCROWSER

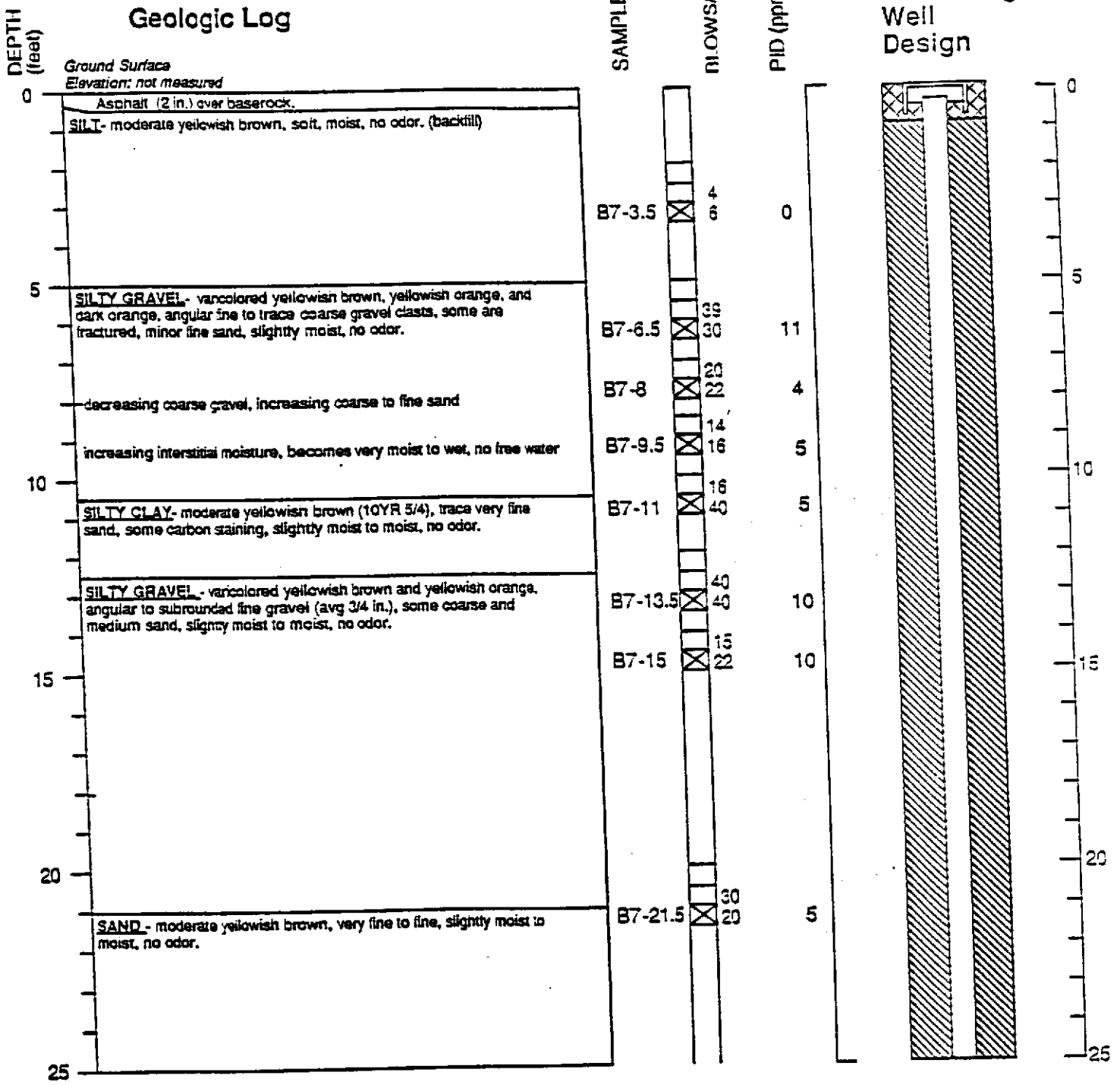
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Figure A-5

Page 2 of 2

Boring Log B7 (MW-1)



continued next page

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level is at time of drilling (ATD) for date specified. Level may vary with time.



HARTCROWSER

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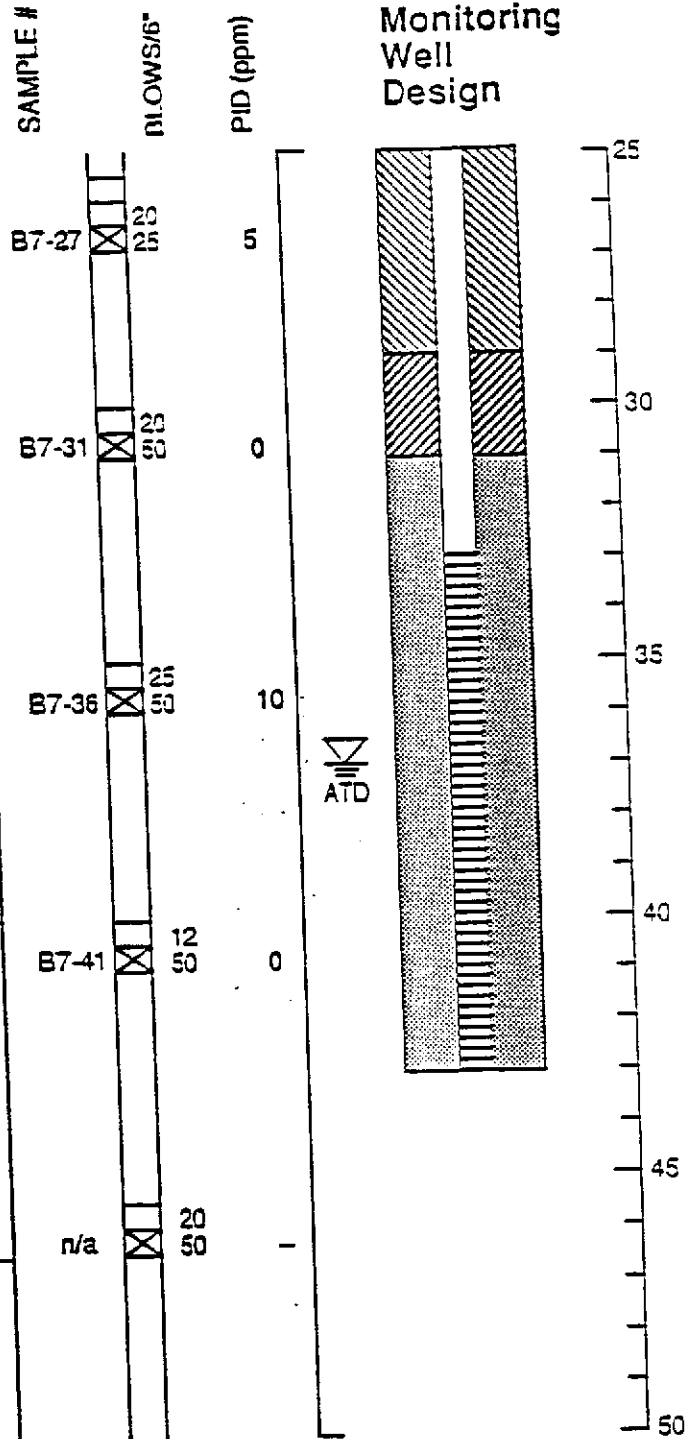
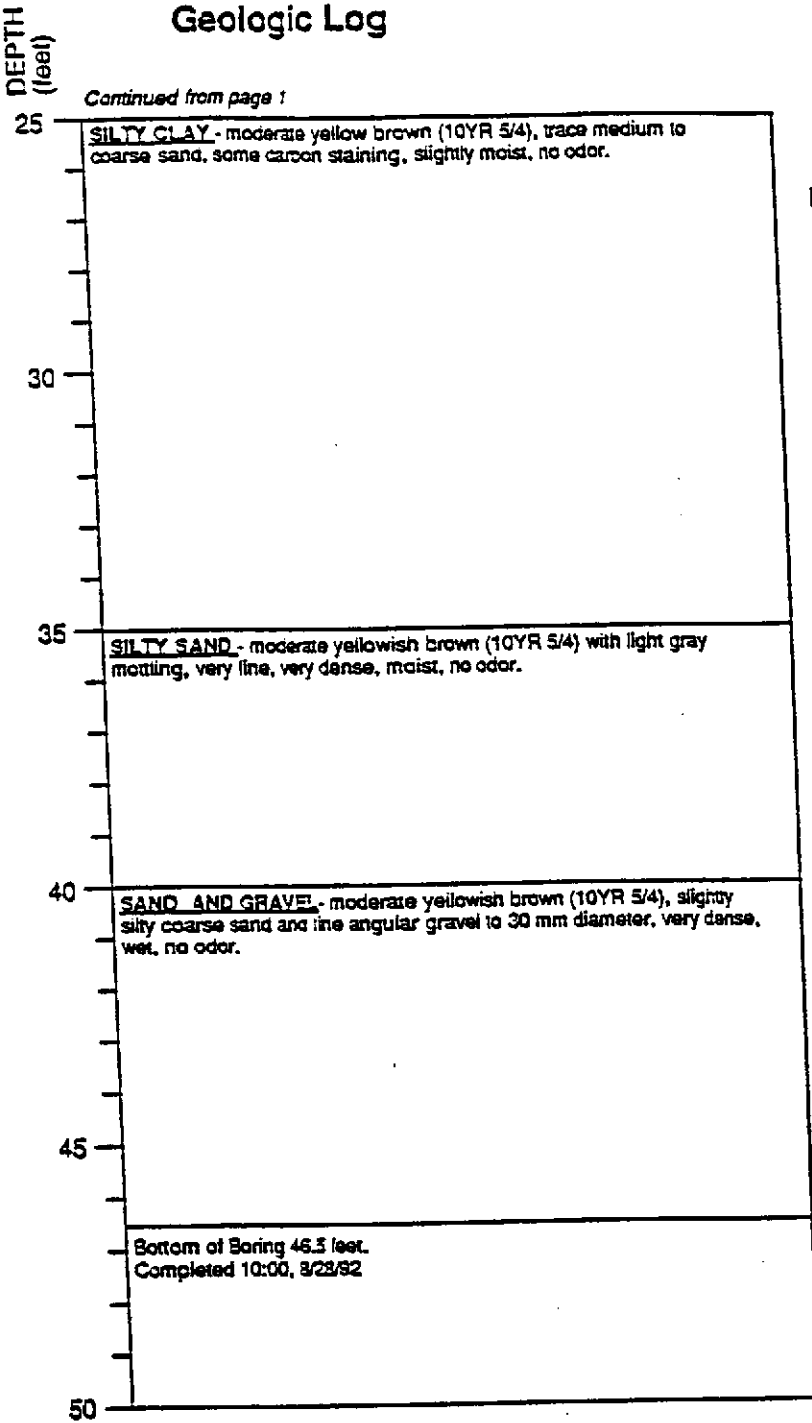
8/92

Figure A-6
Page 1 of 2

Boring Log B7 (MW-1)

Geologic Log

Continued from page 1



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Groundwater level is at time of drilling (ATD) for date specified. Level may vary with time.



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Figure A-6
Page 2 of 2

APPENDIX B
Certified Analytical Reports



Superior Precision Analytical, Inc.

835 Arnold Drive, Suite 106 • Martinez, California 94553 • (510) 229-0166 / fax (510) 229-0916

HARTCROWSER Inc.
Attn: PAT LYNCH

Project 6077
Reported 25-July-1992

EPA METHOD 8010

Sample preparation by Purge and Trap (EPA SW-846 Method 5030) and Chromatographic analysis using an electrolytic conductivity detector (EPA SW-846 Method 8010).

Laboratory Number 86260

Chronology

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
B1-11	07/16/92	07/17/92	/ /	07/22/92		1



HARTCROWSER Inc.
Attn: PAT LYNCH

Project 6077
Reported 25-July-1992

EPA METHOD 8010

Laboratory Number	Sample Identification	Matrix
86260- 1	B1-11	Soil

RESULTS OF ANALYSIS

Laboratory Number: 86260- 1

Chloromethane: ND<5
 Vinyl Chloride: ND<5
 Bromomethane: ND<5
 Chloroethane: ND<5
 Trichlorofluoromethane: ND<5
 1,1-Dichloroethene: ND<5
 Dichloromethane: ND<5
 c-1,2-Dichloroethene: ND<5
 1,1-Dichloroethane: ND<5
 t-1,2-Dichloroethene: ND<5
 Chloroform: ND<5
 1,1,1-Trichloroethane: ND<5
 Carbon tetrachloride: ND<5
 1,2-Dichloroethane: ND<5
 Trichloroethene: ND<5
 1,2-Dichloropropane: ND<5
 Bromodichloromethane: ND<5
 c-1,3-Dichloropropene: ND<5
 t-1,3-Dichloropropene: ND<5
 1,1,2-Trichloroethane: ND<5
 Tetrachloroethene: ND<5
 Dibromochloromethane: ND<5
 Chlorobenzene: ND<5
 Bromoform: ND<5
 1,1,2,2-Tetracl-ethane: ND<5
 1,3-Dichlorobenzene: ND<5
 1,4-Dichlorobenzene: ND<5
 1,2-Dichlorobenzene: ND<5

Concentration: ug/kg



HARTCROWSER Inc.
Attn: PAT LYNCH

Project 6077
Reported 25-July-1992

EPA METHOD 8010

Laboratory Number	Sample Identification	Matrix
86260- 1	B1-11	Soil

RESULTS OF ANALYSIS

Laboratory Number: 86260- 1

4-Chlorotoluene: 70%



Superior Precision Analytical, Inc.

835 Arnold Drive, Suite 106 • Martinez, California 94553 • (510) 229-0166 / fax (510) 229-0916

EPA METHOD 8010

Quality Assurance and Control Data - Soil
Laboratory Number 86260

Compound	Method Blank (ug/kg)	PQL (ug/kg)	Average Spike Recovery (%)	Limits (%)	RPD (%)	Spike Level (ug/kg)
Chloromethane:	ND<5	5				
Vinyl Chloride:	ND<5	5				
Bromomethane:	ND<5	5				
Chloroethane:	ND<5	5				
Trichlorofluoromethane:	ND<5	5				
1,1-Dichloroethene:	ND<5	5				
Dichloromethane:	ND<5	5				
c-1,2-Dichloroethene:	ND<5	5	82%	60-140	9%	100
1,1-Dichloroethane:	ND<5	5				
t-1,2-Dichloroethene:	ND<5	5				
Chloroform:	ND<5	5				
1,1,1-Trichloroethane:	ND<5	5				
Carbon tetrachloride:	ND<5	5				
1,2-Dichloroethane:	ND<5	5	90%	60-140	9%	100
Trichloroethene:	ND<5	5				
1,2-Dichloropropane:	ND<5	5				
1,1-Dichloroethane:	ND<5	5				
c-1,3-Dichloropropene:	ND<5	5				
1,3-Dichloropropene:	ND<5	5				
1,1,2-Trichloroethane:	ND<5	5				
Tetrachloroethene:	ND<5	5				
1,1-Bromochloromethane:	ND<5	5	107%	60-140	13%	100
Chlorobenzene:	ND<5	5				
Bromoform:	ND<5	5				
1,1,2,2-Tetracl-ethane:	ND<5	5				
1,3-Dichlorobenzene:	ND<5	5				
1,4-Dichlorobenzene:	ND<5	5				
1,2-Dichlorobenzene:	ND<5	5	82%		0%	
p-Chlorotoluene:	ND<5	5				

Definitions:

ND = Not Detected
PQL = Practical Quantitation Limit

QC File No. 86260

RPD = Relative Percent Difference

Nancy A. Nelson
Senior Analyst



C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86260
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 07/17/92
DATE REPORTED: 07/25/92

ANALYSIS FOR TOTAL ORGANIC LEAD
by DHS METHOD (LUFT MANUAL)

LAB #	Sample Identification	Concentration (mcg/kg)
1	B1-11	ND<2
2	B1-16	ND<2
4	B2-14	ND<2
6	B4-21	ND<2
8	B5-26	ND<2

mcg/kg - parts per million (ppm)

Method Detection Limit for Organic Lead in Soil: 2 mcg/kg

QAQC Summary: MS/MSD Average Recovery : 104 %
Duplicate RPD : 3

Richard Srna, Ph.D.

Nancy A. Nelson for
Laboratory Director



Superior Precision Analytical, Inc.

835 Arnold Drive, Suite 106 • Martinez, California 94553 • (510) 229-0166 / fax (510) 229-0916

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86260
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 07/17/92
DATE REPORTED: 07/25/92

ANALYSIS FOR CADMIUM, CHROMIUM, LEAD & ZINC
by EPA SW-846 Method 6010

LAB #	Sample Identification	Concentration(mg/kg)			Zinc
		Cadmium	Chromium	Lead	
1	B1-11	ND<1	35	60	193

mg/kg - parts per million (ppm)

Method Detection Limit for Cadmium in Soil: 1 mg/kg
Method Detection Limit for Chromium in Soil: 5 mg/kg
Method Detection Limit for Lead in Soil: 5 mg/kg
Method Detection Limit for Zinc in Soil: 20 mg/kg

QAQC Summary: MS/MSD Average Recovery : 101/104%
Duplicate RPD : 3%

Richard Srna, Ph.D.

Nancy A. Nelson
Laboratory Manager



CERTIFICATE OF ANALYSIS

LABORATORY NO.: 86260
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 07/17/92
DATE REPORTED: 07/25/92

ANALYSIS FOR TOTAL NICKEL
by SW-846 METHOD 6010

LAB #	Sample Identification	Concentration (mg/kg) Total Nickel
1	B1-11	40

mg/kg - parts per million (ppm)

Method Detection Limit for Nickel in Soil: 10 mg/kg

QAQC Summary: MS/MSD Average Recovery : 104/104%
Duplicate RPD : 0%

Richard Srna, Ph.D.

Nancy A. Nelson for
Laboratory Manager



HARTCROWSER Inc.
Attn: PAT LYNCH

Project 6077
Reported 07/25/92

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed Matrix
86260- 1	B1-11	07/16/92	07/21/92 Soil
86260- 2	B1-16	07/16/92	07/21/92 Soil
86260- 3	B2-6	07/16/92	07/24/92 Soil
86260- 4	B2-14	07/16/92	07/24/92 Soil
86260- 6	B4-21	07/16/92	07/24/92 Soil
86260- 7	B5-19	07/16/92	07/24/92 Soil
86260- 8	B5-26	07/16/92	07/24/92 Soil

RESULTS OF ANALYSIS

Laboratory Number: 86260- 1 86260- 2 86260- 3 86260- 4 86260- 6

Oil and Grease:	430	ND<50	NA	NA	NA
Diesel:	ND<10	ND<10	40 *	ND<10	ND<10
Gasoline:	ND<1	ND<1	ND<1	ND<1	ND<1
Benzene:	ND<.003	ND<.003	ND<.003	ND<.003	ND<.003
Toluene:	ND<.003	ND<.003	0.004	ND<.003	ND<.003
Ethyl Benzene:	ND<.003	ND<.003	0.003	ND<.003	ND<.003
Xylenes:	ND<.003	ND<.003	0.007	ND<.003	ND<.003
Concentration:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg

Laboratory Number: 86260- 7 86260- 8

Oil and Grease:	NA	NA
Diesel:	ND<10	ND<10
Gasoline:	ND<1	ND<1
Benzene:	0.011	ND<.003
Toluene:	ND<.003	ND<.003
Ethyl Benzene:	ND<.003	ND<.003
Xylenes:	0.003	ND<.003
Concentration:	mg/kg	mg/kg



CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

Page 2 of 2
QA/QC INFORMATION
SET: 86260

* A non-standard diesel pattern was observed in the chromatogram.

A = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = parts per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg

EPA SW-846 Method 8020/BTEX
Minimum Quantitation Limit in Soil: 0.005mg/kg

ANALYTE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil and Grease:	30 mg	78/71	9%	56-106
Diesel:	200 ng	102/100	2%	70-130
Gasoline:	200 ng	86/100	15%	70-130
Benzene:	200 ng	99/99	0%	70-130
Toluene:	200 ng	98/98	0%	70-130
Ethyl Benzene:	200 ng	99/98	1%	70-130
Xylenes:	600 ng	103/104	1%	70-130

Richard Srna, Ph.D.
Nancy A. Nelson for
Laboratory Director

86260

Hart Crowser, Inc.
353 Sacramento Street, Suite 1140
San Francisco, California 94111

HARTCROWSER

Sample Custody Record

DATE 7-17-92 PAGE 1 OF 1

JOB NUMBER 6077 LAB NUMBER SUPERIOR
PROJECT MANAGER PATRICK LYNCH
PROJECT NAME PACCAR / OAKLAND

SAMPLED BY: B. BJORKLUND

LAB NO.	SAMPLE	TIME	STATION	MATRIX
1	B1-11	7-16-92		SOIL
2	B1-16			
3	B2-6			
4	B2-14			
5	B4-16			
6	B4-21			
7	B5-19			
8	B5-26			

TESTING							NO. OF CONTAINERS
TPH-D (BOIS M)	TPH-G (BOIS M)	BTEX (SO2)	OIL+GREASE (SM502)	ALH. V.OIG (BO10)	METALS: Cd, Cr, Pb, Ni, Zn	CLEANIC LEAD (DIS)	
✓	✓	✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	✓	✓	1

OBSERVATIONS/COMMENTS/
COMPOSITING INSTRUCTIONS

PERFORM BO10 ONLY IF SAMPLE B1-11
TESTS POSITIVE IN BO10

EXPECT ND

HOLD

EXPECT ND

RELINQUISHED BY <u>Alisa Hays</u> SIGNATURE <u>Alisa Hays</u> PRINTED NAME HART CROWSER COMPANY	DATE <u>7/17</u>	RECEIVED BY <u>DAVE CHARISTE</u> SIGNATURE <u>DAVE CHARISTE</u> PRINTED NAME EXXES-IT COMPANY	DATE <u>7/17</u>
RELINQUISHED BY <u>DAVE CHARISTE</u> SIGNATURE <u>DAVE CHARISTE</u> PRINTED NAME EXXES-IT COMPANY	DATE <u>7/17</u>	RECEIVED BY <u>NANCY A. NELSON</u> SIGNATURE <u>NANCY A. NELSON</u> PRINTED NAME SUPERIOR COMPANY	DATE <u>7/19</u>
	TIME <u>1:11</u>	TIME <u>1:10</u>	
	TIME <u>5:00</u>	TIME <u>5:00</u>	

TOTAL NUMBER OF CONTAINERS 8 SOIL

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS
PLEASE RETURN 5 DAY TA

Please Initial: METHOD OF SHIPMENT

Samples Stored In Ice Cooler

Appropriate containers Yes

Samples preserved Yes

VOA's without hold space OK ASAP

Comments:

- DISTRIBUTION:
1. PROVIDE WHITE AND YELLOW COPIES TO LABORATORY
 2. RETURN PINK COPY TO PROJECT MANAGER
 3. LABORATORY TO FILL IN SAMPLE NUMBER AND SIGN FOR RECEIPT
 4. LABORATORY TO RETURN WHITE COPY TO HART CROWSER



Superior Precision Analytical, Inc.

825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

HARTCROWSER Inc.
Attn: PAT LYNCH

Project 6077
Reported 18-August-1992

EPA METHOD 8010

Sample preparation by Purge and Trap (EPA SW-846 Method 5030) and Chromatographic analysis using an electrolytic conductivity detector (EPA SW-846 Method 8010).

Chronology

Laboratory Number 86416

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
S2C-8	08/07/92	08/07/92	/ /	08/17/92	1	1



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HARTCROWSER Inc.
Attn: PAT LYNCH

Project 6077
Reported 18-August-1992

EPA METHOD 8010

Laboratory Number	Sample Identification	Matrix
86416- 1	S2C-8	Soil

RESULTS OF ANALYSIS

Laboratory Number: 86416- 1

Chloromethane: ND<5
 Vinyl Chloride: ND<5
 Bromomethane: ND<5
 Chloroethane: ND<5
 Trichlorofluoromethane: ND<5
 1,1-Dichloroethene: ND<5
 Dichloromethane: ND<5
 c-1,2-Dichloroethene: ND<5
 1,1-Dichloroethane: ND<5
 t-1,2-Dichloroethene: ND<5
 Chloroform: ND<5
 1,1,1-Trichloroethane: ND<5
 Carbon tetrachloride: ND<5
 1,2-Dichloroethane: ND<5
 Trichloroethene: ND<5
 1,2-Dichloropropane: ND<5
 Bromodichloromethane: ND<5
 c-1,3-Dichloropropene: ND<5
 t-1,3-Dichloropropene: ND<5
 1,1,2-Trichloroethane: ND<5
 Tetrachloroethene: 104
 Dibromochloromethane: ND<5
 Chlorobenzene: ND<5
 Bromoform: ND<5
 1,1,2,2-Tetracl-ethane: ND<5
 1,3-Dichlorobenzene: ND<5
 1,4-Dichlorobenzene: ND<5
 1,2-Dichlorobenzene: ND<5

Concentration: ug/kg



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HARTCROWSER Inc.
Attn: PAT LYNCH

Project 6077
Reported 18-August-1992

EPA METEOD 8010

Laboratory Number	Sample Identification	Matrix
86416- 1	S2C-8	Soil

RESULTS OF ANALYSIS

Laboratory Number: 86416- 1

4-Chlorotoluene: 123%



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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86416
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 08/07/92
DATE REPORTED: 08/17/92
DATE SAMPLED : 08/07/92

ANALYSIS FOR TOTAL OIL AND GREASE by STANDARD METHODS 5520F

LAB #	Sample Identification	Concentration (mg/kg) Oil & Grease
1	S2C-8	ND<50

mg/kg - parts per million (ppm)

Method Detection Limit for Oil and Grease in Soil: 50 mg/kg

QA/QC Summary: MS/MSD Average Recovery: 79%
Duplicate RPD : 2%

Richard Srna, Ph.D.

Nancy A. Nelson
Laboratory Director



Superior Precision Analytical, Inc.

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86416
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 08/07/92
DATE REPORTED: 08/17/92
DATE SAMPLED : 08/07/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration (ug/kg)			
		Benzene	Toluene	Ethyl Benzene	Xylenes
1	S2C-8	ND<75	640	650	1500

ug/kg - parts per billion (ppb)

Method Detection Limit in Soil: 3 ug/kg

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15%
MS/MSD Average Recovery = 106% : Duplicate RPD = 3%

Richard Srna, Ph.D.

Nancy A. Nelson for
Laboratory Director



Superior Precision Analytical, Inc.

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86416
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 08/07/92
DATE REPORTED: 08/17/92
DATE SAMPLED : 08/07/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 8015

LAB #	Sample Identification	Concentration (mg/kg) Diesel Range
1	S2C-8	120 *

* Diesel range concentration reported. The pattern observed in the chromatogram was more typical of hydrocarbons that are lighter than diesel.

mg/kg - parts per million (ppm)

Method Detection Limit for Diesel in Soil: 10 mg/kg

QAQC Summary:

Daily Standard run at 200mg/L: RPD Diesel = 1%
MS/MSD Average Recovery = 105% : Duplicate RPD = 5%

Richard Srna, Ph.D.

Nancy A. Nelson
Laboratory Director



C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86416
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 08/07/92
DATE REPORTED: 08/17/92
DATE SAMPLED : 08/07/92

ANALYSIS FOR TOTAL ORGANIC LEAD
by DHS METHOD (LUFT MANUAL)

LAB #	Sample Identification	Concentration (ug/kg)
1	S2C-8	ND<2

mg/kg - parts per million (ppm)

Method Detection Limit for Organic Lead in Soil: 2 mg/kg

QAQC Summary: MS/MSD Average Recovery : 93%
Duplicate RPD : 4%

Richard Srna, Ph.D.

Nancy A. Nelson
Laboratory Director



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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86416
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 08/07/92
DATE REPORTED: 08/17/92
DATE SAMPLED : 08/07/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by MODIFIED EPA SW-846 METHOD 5030 and 8015

LAB #	Sample Identification	Concentration (mg/kg) Gasoline Range
1	S2C-8	310

mg/kg - parts per million (ppm)

Method Detection Limit for Gasoline in Soil: 1 mg/kg

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery = 90% : Duplicate RPD = 4%

Richard Srna, Ph.D.

Nancy A. Nelson
Laboratory Director



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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86416
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 08/07/92
DATE REPORTED: 08/17/92
DATE SAMPLED: 08/07/92

ANALYSIS FOR CADMIUM, CHROMIUM, LEAD & ZINC
by EPA SW-846 Method 6010

LAB #	Sample Identification	Concentration (mg/kg)			Zinc
		Cadmium	Chromium	Lead	
1	S2C-8	ND<1	73	9	30

mg/kg - parts per million (ppm)

Method Detection Limit for Cadmium in Soil: 1 mg/kg
Method Detection Limit for Chromium in Soil: 5 mg/kg
Method Detection Limit for Lead in Soil: 5 mg/kg
Method Detection Limit for Zinc in Soil: 20 mg/kg

QAQC Summary: MS/MSD Average Recovery : 84%
Duplicate RPD : 2%

Richard Srna, Ph.D.

Nancy A. Nelson for
Laboratory Manager



Superior Precision Analytical, Inc.

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 86416
CLIENT: HARTCROWSER Inc.
CLIENT JOB NO.: 6077

DATE RECEIVED: 08/07/92
DATE REPORTED: 08/17/92
DATE SAMPLED : 08/07/92

ANALYSIS FOR TOTAL NICKEL
by SW-846 METHOD 6010

LAB #	Sample Identification	Concentration (mg/kg) Total Nickel
1	S2C-8	110

mg/kg - parts per million (ppm)

Method Detection Limit for Nickel in Soil: 10 mg/kg

QAQC Summary: MS/MSD Average Recovery : 91%
Duplicate RPD : 7%

Richard Srna, Ph.D.

Nancy A. Nelson
Laboratory Manager



Superior Precision Analytical, Inc.

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EPA METHOD 8010

Quality Assurance and Control Data - Soil
Laboratory Number 86416

Compound	Method Blank (ug/kg)	PQL (ug/kg)	Average Spike Recovery (%)	Limits (%)	RPD (%)	Spike Level (ug/kg)
Chloromethane:	ND<5	5				
Vinyl Chloride:	ND<5	5				
Bromomethane:	ND<5	5				
Chloroethane:	ND<5	5				
Trichlorofluoromethane:	ND<5	5				
1,1-Dichloroethene:	ND<5	5	87%	60-140	14%	100
Dichloromethane:	ND<5	5				
c-1,2-Dichloroethene:	ND<5	5				
1,1-Dichloroethane:	ND<5	5				
t-1,2-Dichloroethene:	ND<5	5				
Chloroform:	ND<5	5				
1,1,1-Trichloroethane:	ND<5	5				
Carbon tetrachloride:	ND<5	5				
1,2-Dichloroethane:	ND<5	5	102%	60-140	24%	100
Trichloroethene:	ND<5	5				
1,2-Dichloropropane:	ND<5	5				
Bromodichloromethane:	ND<5	5				
c-1,3-Dichloropropene:	ND<5	5				
t-1,3-Dichloropropene:	ND<5	5				
1,1,2-Trichloroethane:	ND<5	5				
Tetrachloroethene:	ND<5	5				
Dibromochloromethane:	ND<5	5	101%	60-140	15%	100
Chlorobenzene:	ND<5	5				
Bromoform:	ND<5	5				
1,1,2,2-Tetracl-ethane:	ND<5	5				
1,3-Dichlorobenzene:	ND<5	5				
1,4-Dichlorobenzene:	ND<5	5				
1,2-Dichlorobenzene:	ND<5	5				
p-Chlorotoluene:	113%	8				

Definitions:

ND = Not Detected
PQL = Practical Quantitation Limit

File No. 86416

RPD = Relative Percent Difference

Nancy A. Nelson
Senior Analyst

RECEIVED SEP 11 1992



Superior Precision Analytical, Inc.

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 55473
CLIENT: HARTCROWSER Inc
CLIENT JOB NO.: 6077

DATE RECEIVED: 09/01/92
DATE REPORTED: 09/09/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration (mg/kg)			
		Benzene	Toluene	Ethyl Benzene	Xylenes
1	B7-11	ND<.003	ND<.003	ND<.003	ND<.003
2	B7-36	ND<.003	ND<.003	ND<.003	ND<.003

ug/kg - parts per million (ppm)

Method Detection Limit in Soil: 0.003 mg/kg

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15%
MS/MSD Average Recovery = 93%: Duplicate RPD = 2.8

Richard Srna, Ph.D.

Laboratory Manager

CSJ
9/10/92



Superior Precision Analytical, Inc.

1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 55473
CLIENT: HARTCROWSER Inc
CLIENT JOB NO.: 6077

DATE RECEIVED: 09/01/92
DATE REPORTED: 09/09/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (mg/kg) Gasoline Range
1	B7-11	ND<1
2	B7-36	ND<1

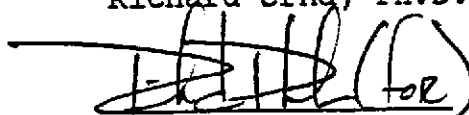
mg/kg - parts per million (ppm)

Method Detection Limit for Gasoline in Soil: 1 mg/kg

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15
MS/MSD Recovery = 92%: Duplicate RPD = 1.8

Richard Srna, Ph.D.


Laboratory Manager

CS
9/10/92

58173

HARTCROWSER

RECEIVED SEP 11 1992
Hart Crowser, Inc.
353 Sacramento Street, Suite 1140
San Francisco, California 94111

Sample Custody Record

DATE 8/28/92 PAGE 1 OF 1

P.2

JOB NUMBER <u>6099</u> LAB NUMBER _____					TESTING										NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
PROJECT MANAGER <u>LYNCH</u>																
PROJECT NAME <u>DACCAR OAKLAND</u>					<u>TPH-G 4/BTEX</u> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>										1	Please Initial: _____ Samples Stored in Ice. _____ Appropriate containers. _____ Samples preserved. _____ VOA's without headspace. _____ Comments: _____
SAMPLED BY: <u>BRIAN BJORKLUND</u>																
LAB NO.	SAMPLE	TIME	STATION	MATRIX												
<u>8/28</u>	<u>B7-11</u>			<u>SOIL</u>	<input checked="" type="checkbox"/>											
	<u>B7-36</u>			<u>1</u>	<input checked="" type="checkbox"/>											
RELINQUISHED BY			DATE	RECEIVED BY			DATE	TOTAL NUMBER OF CONTAINERS			METHOD OF SHIPMENT					
SIGNATURE				SIGNATURE				2			COURIER					
PRINTED NAME			TIME	PRINTED NAME			TIME	SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS								
COMPANY				COMPANY												
RELINQUISHED BY			DATE	RECEIVED BY			DATE	DISTRIBUTION: 1. PROVIDE WHITE AND YELLOW COPIES TO LABORATORY 2. RETURN PINK COPY TO PROJECT MANAGER 3. LABORATORY TO FILL IN SAMPLE NUMBER AND SIGN FOR RECEIPT 4. BORATORY TO RETURN WHITE COPY TO HART CROWSER								
SIGNATURE				<u>[Signature]</u>			<u>9/1/92</u>									
PRINTED NAME			TIME	PRINTED NAME			TIME									
COMPANY				PRINTED NAME			<u>2 PM</u>									

SEP 01 '92 03:16PM HART CROWSER 415-391-2216



Superior Precision Analytical, Inc.

1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 55523-1
CLIENT: HartCrowser Inc.
JOB NO.: 56077

DATE SAMPLED: 09/10/92
DATE RECEIVED: 09/10/92
DATE ANALYZED: 09/23/92

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-1

Compound	MDL (ug/L)	RESULTS (ug/L)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
cis-1,2-Dichloroethene	0.5	11
Chloroform	0.5	1.1
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	26
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	50	310
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND

MDL = Method Detection Limit

ug/L = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD =< 15%

MS/MSD average recovery = 84 % :MS/MSD RPD = 6 %

Richard Srna, Ph.D.

Cecilia G. Jorgensen (for)
Laboratory Director



Superior Precision Analytical, Inc.

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C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 55523
CLIENT: HARTCROWSER Inc
CLIENT JOB NO.: 56077

DATE RECEIVED: 09/10/92
DATE REPORTED: 09/23/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (ug/L) Gasoline Range
1	MW-1	150*

ug/L - parts per billion (ppb)

* - Gasoline range concentration. The pattern observed in the chromatogram was not typical of gasoline.

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15
MS/MSD Recovery = 89%: Duplicate RPD = 4%

Richard Srna, Ph.D.

Cecilia Y. Jorgensen (for)
Laboratory Manager



Superior Precision Analytical, Inc.

1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 55523
 CLIENT: HARTCROWSER Inc
 CLIENT JOB NO.: 56077

DATE RECEIVED: 09/10/92
 DATE REPORTED: 09/23/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
 by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/L)			
		Benzene	Toluene	Ethyl Benzene	Xylenes
1	MW-1	ND<0.3	ND<0.3	ND<0.3	ND<0.3

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15%
 MS/MSD Average Recovery =93%: Duplicate RPD = 2%

Richard Srna, Ph.D.

Cecilia G. Jongqui (for)
 Laboratory Manager

Checklist for Proper Chain of Custody Completion

Section I: Consultant Information

- Consultant Firm Information correct (ie. name, location, fax number, etc.)
 * samples cannot be processed without project number
- Project Manager name included
 * the final report will go to this person
- Alternate Contact listed
 * someone who has knowledge of the project, other than the project manager if unavailable

Method	Common Name	PQL	Containers/Preservati
8010	Halogenated Volatile Organics	W: 0.5 - 4ppb S: 0.005- 0.01ppm	3x40mL VOA/HCL 100g/none
8015	Total Petro. Hydrocarbons as Gasoline and Diesel	W: 0.5ppm S: 1ppm	3x40mL VOA/HCL 60g/none
8015	Total Petro. Hydrocarbons as Low Level Diesel	W: 50ppb S: 1ppm	2x1L bottle/none 100g/none
*8015	Total Petro. Hydrocarbons as Gasoline	W: 50ppb S: 1ppm	3x40mL VOA/HCL 60g/none
*8020	Aromatic Volatiles (BTXE)	W: 0.5ppb S: 5ppb	3x40mL VOA/HCL 60g/none
8240	Volatile Organics by GC/MS	W: 2 - 20ppb S: 0.01- 0.1ppm	3x40mL VOA/HCL 60g/none
7000 Series	Metals	W: 0.01- 0.5ppm S: 0.2-10ppm	1x500mL bottle/HNO ₃ 100g/none
DHS-LUFT	Organic Lead	W: 2ppm S: 4ppm	1x40mL VOA/none 10g/none
5520	Oil & Grease	W: 5ppm S: 50ppm	1x1L bottle/HCL 100g/none
9040	pH	W: N/A S: N/A	1x1L bottle/none 100g/none
1020	Flashpoint	W: N/A S: N/A	1x1L bottle/none 50g/none
TDS	Total Dissolved Solid	W: 10ppm	1x1L bottle/none
418.1	Oil & Grease/IR	W: 0.5ppm S: 50ppm	1x1L bottle/HCL 100g/none
TCLP	Toxicity Characteristic Leaching Procedure	S: as stated in method	100g/none
STLC	Soluble Threshold Limit Concentration	S: as stated in method	50g soil/none

* May be run in series or as separate analyses.

- Desired Analyses Marked and Correct
- Sample Identification Correct
 * identification which is pertinent to the consultant
- Metals for analysis have been designated (i.e., Pb, Cd, CAM17, etc.)
- If full data deliverables are required, please note on front of C.O.C.

Section III: Further Sample Information

- Number of Containers and Sample Preservation noted
- Date Sample was collected
 * necessary for calculating holding times

Tips for working with the laboratory.

- Do not use electricians tape
- When in doubt, re-sample
- pack in ice
- Use waterproof markers
- 2 trip blanks are required
- use only approved containers

