

93 JUN 11 PM 2:01

**AMENDMENT 1**

**TO**

**WORKPLAN FOR SOIL DISPOSAL, OVEREXCAVATION,  
AND GROUND WATER MONITORING WELL INSTALLATION  
(13 January 1993)**

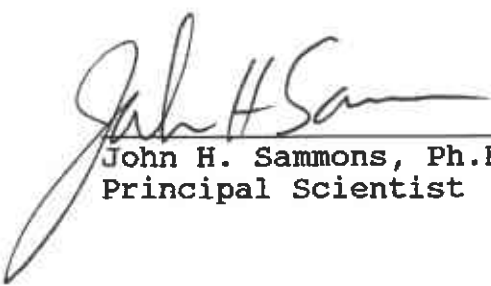
**SITE LOCATION:**

706 Harrison Street  
Oakland, California


**Prepared For:**

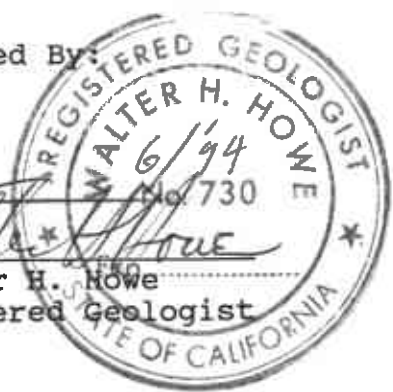
Mr. Bo K. Gin  
Oakland Auto Parts  
288 Eleventh Street  
Oakland, California

**Prepared By:**

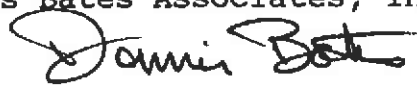
  
John H. Sammons, Ph.D.  
Principal Scientist

**Reviewed By:**

  
Walter H. Howe  
Registered Geologist



Dennis Bates Associates, Inc



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7 June 1993

## I. INTRODUCTION

### A. Scope of Work

The scope of work included in this amendment to the 13 January 1993 workplan encompasses the installation of three groundwater monitoring wells, the installation of two vapor recovery wells, the installation of two soil borings in the vicinity of the main tank excavation, the evaluation of the pump island area adjacent to Seventh Street for lead contamination, the performance of a Soil Performance Test (SPT), the sampling of stockpiled soil on site and, the preparation of a summary technical report.

### B. Site Location

The Site is a vacant lot located at the southeast corner of the intersection of Seventh and Harrison Streets in the City of Oakland, California. It is located in a highly congested area of downtown Oakland with emphasis on commercial use. PLATE 1.

### C. Background

The Site was operated by Mr. Gin as a service station with two pump islands from 1963 to 1985 when retail operations ceased (Plate 1). All tanks were removed in January of 1991.

### D. Site History

The site is presently a vacant lot. The previously existing service station buildings were demolished and seven (7) Underground Storage Tanks (UST's) were excavated and removed in January of 1991.

The site contained two 6000 gallon UST's and four 1000 gallon single wall steel UST's which were used to store Supreme Unleaded, Regular Unleaded, and Regular gasolines. PLATE 2 shows the approximate locations of the buildings, UST's, Waste Oil Tank and pump islands.

## II. SITE DESCRIPTION

### A. Hydrology

#### Geologic setting

San Francisco Bay lies in a low area in the Coast Range province, a region of northwest trending faults, hills and valleys. The site itself is situated on the flatlands, approximately 3500 feet from the eastern edge of the present Bay (Alameda Harbor). The Bay is a drowned valley which is thought to have originally formed by erosion of the ancestral Sacramento River (Jenkins, 1951) and subsequently widened by subsidence and a rise in sea level. Sediments deposited in Pleistocene and recent time, in what is now the Bay, include both shallow marine and continental deposits.

The youngest surficial deposit is known as "Bay Mud" which occurs in areas adjacent to the Bay. Bay Mud is generally composed of unconsolidated, olive gray, blue gray or black silty clay. Bay Mud has been deposited in the Bay for almost 10,000 years (Helley et al., 1979) and continues to be deposited today.

In the Oakland area, several other sedimentary units are noted by Radbruch and Case (1967). The upper two units, the Merritt Sand and the San Antonio Formation, lie within 100 feet below ground surface; this was documented at Clay and 12th Streets approximately 3/4 mile north of the site, by Woodward-Clyde (1987). A deeper sedimentary formation (the Alameda Formation) is also present and is assumed to overlie Jurassic/Cretaceous bedrock known as the Franciscan Formation. The Franciscan Formation is a complex assemblage of deformed and altered sediments and volcanic rocks which commonly form bedrock in the San Francisco Bay region.

#### Site Hydrogeology

The geologic materials observed in the existing excavations consist of relatively clean to clay-rich sands. The sandy unit consisted of fine-grained brown sand with varying proportions of clay.

The sandy unit may be equivalent to the Merritt Sands which were deposited as dune and beach sediment. The clay in this locality probably represents Bay Mud interfingering with the sand. Porosity and permeability is reduced by the presence of the clay fraction.

Ground water levels are estimated to be between 25 and 30 feet below ground surface.

Ground water can be considered essentially non-potable in this area. These factors are important in evaluating this site because maximum contaminant levels (MCLs) set by the Department of Health Services generally apply to drinking water aquifers.

**B. Existing soil contamination and excavation results.**

DBA supervised the attempt to overexcavate and resample the main tank excavation on 10 February 1993. This work was planned to remove, to the extent, possible petroleum hydrocarbon containing soil remaining in the subsurface beneath the former tank location. Unfortunately the sidewalls of the main tank excavation became so unstable that it was not possible to continue the overexcavation beyond one area where the maximum depth that could be safely reached was 16 feet below land surface. The instability of the excavation required that the excavation be halted and the pit immediately backfilled and compacted to prevent significant damage to 7th Street and adjacent underground utilities.

One soil sample was obtained from the excavator bucket from Excavation 2 (Plate 2A). During the removal of debris from this excavation preparatory to backfilling and compaction the sidewalls begin sloughing into the excavation. This soil sample was obtained from what we believed to be the native soil and, for safety reasons, the excavation was immediately backfilled with on-site materials. Backfill material was placed in two-foot lifts and compacted with a 'sheeps-foot' compactor. This sample contained 93 ug/kg (parts per billion) of Total Petroleum Hydrocarbons as Gasoline. No B, T, E, X fractions were detected in this sample.

Two soil samples were obtained from the excavation prior to the sloughing/caving of the sidewalls. One sample (16 foot) was obtained from the excavator bucket from a depth of 16 feet below land surface and one sidewall sample (SW 10 feet) was obtained hand augering into the sidewall at about 10 feet below land surface.

ok The 16 foot sample contained 4,300,000 ug/kg (parts per billion) Total Petroleum Hydrocarbons as Gasoline, 66,000 ug/kg Benzene, 320,000 ug/kg Toluene, 130,000 ug/kg Ethylbenzene and 730,000 ug/kg Xylenes.

No TPH as Gasoline, Benzene, Toluene, Ethylbenzene or Xylenes were detected in the 10 foot sidewall sample.

### III. PROPOSED SCOPE OF WORK

#### A. Task Summary

DBA proposes the following scope of work and, after client concurrence and appropriate regulatory approvals, will implement the proposed work in a timely manner.

The following is an outline and approximate order of the work to be completed:

- TASK 1. Submit this workplan amendment to the Alameda County Health Department and the SFBRWQCB and obtain approval to proceed with the proposed work.
- TASK 2. Prepare a Site Safety Plan.
- TASK 4. Obtain appropriate permits (drilling, etc.) to install three ground water monitoring wells and two vapor recovery wells. This drilling will be done in conjunction with a geotechnical evaluation of the Site preparatory to construction of a building.
- TASK 5. Characterize and dispose of soil currently stockpiled on site.
- TASK 6. Evaluate the pump island area adjacent to Seventh Street for lead contamination.
- TASK 7. Perform a Vacuum Extraction Feasibility Test (VEFT) preparatory to the design of a Soil Vapor Recovery (SVE) system to remove the remaining hydrocarbons in the vicinity of the old tank excavation.
- TASK 8. Interpret field and laboratory data, including analysis of samples collected from the soil borings and prepare a report documenting field methodology, laboratory analyses results, hydrogeologic setting, conclusions and appropriate recommendations.

#### B. Discussion of Specific Tasks

- TASK 4. Install three groundwater monitoring wells to investigate possible groundwater contamination beneath the Site. Also included in this task will be the installation of two vapor recovery wells into the subsurface in the known contaminated area of the 'old' tank location.

The groundwater monitoring wells will be constructed using 2-inch diameter, threaded PVC casing. No chemical cements, glues or solvents will be used in the construction of the well.

The well annulus will be packed with washed No. 2/12 or 2/16 sand from the bottom of the borehole to about 2 feet above the screened interval. The wells will be screened with 0.02-inch slotted casing from 10 feet below the water table to about 5 feet above the water table. The screened interval will be determined by the on-site geologist. A 1-foot bentonite spacer will be used above the filter pack. The well annulus will then be backfilled to the surface with neat cement. The casing of the wells will be capped at both ends and a "Christi" Box installed to provide surface access. The well head will be provided with a locking cap and seal. Well construction details may be changed by the project geologist to suit field conditions.

One groundwater monitoring well will be installed in the area where the waste oil tank was removed.

The vapor recovery wells will be installed and constructed as described for the groundwater monitoring wells except that the screened interval will not extend into the saturated zone and will be screened only through the hydrocarbon impacted zone.

The water table at this site is estimated to be 20 to 25 feet BLS. Borings for the groundwater monitoring wells will be drilled to an approximate depth of 40 feet below land surface using continuous-flight, hollow-stem augers and a Mobile B-53 (or similar) truck-mounted drill rig. The reason for this depth is that a geotechnical evaluation of the site preparatory to the design of a commercial building will be done at the same time as the soil and groundwater investigation. The auger flights will be steam-cleaned before each use to minimize the possibility of introducing contamination.

★ Drilling will be performed under the guidance of the Registered Geologist. Subsurface materials will be logged as drilled by the Project Geologist, and soil samples will be classified using the Unified Soil Classification System.

Underground Service Alert (USA) will be contacted at least 48 hours before drilling to identify public utility lines crossing the site or in off-site areas where drilling is

scheduled. If feasible, the locations of the proposed monitoring wells will be at least 25 feet away from any sewer line.

Purge water collected during steam-cleaning of augers and drilling equipment will be stored on-site in properly marked drums. *follow up*

During drilling operations, soil samples shall be collected using a California-modified, split-spoon sampler (2-inch inside diameter) equipped with clean brass sleeves. The samples will be collected by advancing the boring to a point just above the sampling depth, then driving the sampler into the native soil through the hollow center of the auger. The sampler will be driven 18 inches with a standard 140-pound hammer dropped 30 inches. The number of blows required to drive the sampler each successive 6 inches will be counted and recorded to provide an indication of soil consistency. These data along with geologic observations will be recorded in the boring logs.

*MW inst.* Samples from wells installed through backfill material shall be collected at five foot intervals beginning at the bottom of the backfill. One soil sample shall be collected at the soil-ground water interface. Ground water in the borings is expected to be encountered at 20 to 25 feet BLS.

After an interval of from 24 to 48 hours the groundwater monitoring wells will be checked for free product using a clear bailer. Provided that no free product is observed, the wells will be developed by swabbing, surge-pumping, or other suitable method until the discharged water is relatively clean and free of suspended sediment. Water brought to the surface during well development and purging will be temporarily stored on-site in DOT 17E, 55-gallon drums and properly labeled as to contents. *follow up*

Groundwater sampling will be done after the developed wells have been allowed to stabilize for a minimum of 24 hours. *good*

Subjective evaluation of a water sample from the well will subsequently be made to check for floating product or sheen. If the observed sample is "clean" then the well will be purged of approximately four wetted well volumes. The well allowed to recharge to about 80 per cent of its static level before sampling. Water level measurements (measured to the nearest 0.01-foot) will be made prior to well sampling. Water samples for laboratory analysis will be obtained using a clean, disposable bailer. Water samples will be carefully decanted into appropriate containers, labeled and placed in a

cooler containing 'Blue Ice'. Samples will be maintained under strict Chain-of-Custody procedures until received by the laboratory.

The well's will be surveyed by a California Licensed Land Surveyor to determine the top-of-casing (TOC) elevation above Mean Sea Level. This data will be used to calculate the groundwater gradient through the site. *good*

Soil cuttings derived from auger drilling will be temporarily placed in DOT approved drums at the site. Once laboratory results are complete, a determination will be made as to whether the soil is hazardous material. Depending upon the level of contamination, the cuttings will either be aerated to non-hazardous levels and sent to a Class III landfill or properly manifested and disposed of by a licensed waste hauler.

Water or rinsate placed in DOT 17E, 55-gallon drums will be removed from the site and transported to an appropriate disposal or reprocessing facility, if required. *yes*

Soil and ground water samples shall be handled in accordance with standard sampling methods as described in the Leaking Underground Fuel Tank (LUFT) - Tri-Regional Guidelines manual. All samples shall be delivered to a laboratory certified by the State of California Department of Health Services (DHS) for testing and analysis of soil and water.

Samples will be analyzed using procedures developed by the Environmental Protection Agency (EPA). Detection limits suitable for the soil and water tests requested and concentrations present will be stated on the laboratory reports. Copies of laboratory reports will be included in the DBA report of work completed for this investigation.

Where Quality Control/Quality Assurance measures are required, the following procedures will be followed:

#### Groundwater Samples

When collecting groundwater or surface water samples a field blank will be used to determine if decontamination procedures are effective. Distilled water will be passed through sample collection equipment and collected in laboratory-cleaned sample vials for analysis. One field blank shall be collected for each 20 water samples, or one blank for each day that samples were collected.



Sample Analyses

Soil samples will be analyzed for:

TPH/gasoline ..... EPA method 5020/8015  
BTEX ..... EPA method 8020  
Total Lead..... Atomic Absorption

*what method?*

For soil samples obtained from the monitoring well installed in the vicinity of the previous waste oil tank TPH as Waste Oil will be substituted for the TPH Gasoline determination. *ok*

Groundwater samples will be analyzed for:

TPH/gasoline ..... EPA method 5020/8015  
BTEX ..... EPA method 602  
Total Lead ..... Atomic Absorption

ONE GROUNDWATER SAMPLE FROM MW-3 WILL BE ANALYZED FOR POLYNUCLEAR AROMATICS USING EPA METHOD 8270. *good*

TASK 5. Characterize soil currently stockpiled on site.

The soil currently stockpiled on site resulted from the 10 February attempt at overexcavation and a remaining small amount of soil from the previous removal of a Waste Oil Tank. It is estimated that there is less than 100 cubic yards of this soil at the site

*method?*

This soil will be characterized by obtaining five samples for each 50 cubic yards of soil to be composited by the laboratory and analyzed for Total Petroleum Hydrocarbons as Waste Oil, Total Petroleum Hydrocarbons as Gasoline with Benzene, Toluene, Ethylbenzene and Xylene distinction and Total Lead. *good*

TASK 6. Evaluate the pump island area adjacent to Seventh Street for lead contamination.

*how many?*

Shallow subsurface soil samples, three feet below land surface, will be obtained using a drill rig or hand auger in this area of the Site. These samples will be collected in stainless-steel sample tubes and analyzed for Total Lead. *good*

TASK 7. Perform a Vacuum Extraction Feasibility Test (VEFT)

The purpose of the VEFT is to evaluate the shallow hydrocarbon impacted soil and to test vacuum extraction as a remediation option for soil and groundwater. groundwater extraction using the drop-pipe technique.

Three separate VEFT's using the proposed monitor and vadose well locations will be done to determine the effectiveness of using vacuum extraction for remediation of soil and groundwater and for the removal of insoluble hydrocarbons (if present). VEFT wells will be selected based on well installation and drilling data. Monitor well testing will consist of both standard vacuum extraction and fitting the well(s) with a drop pipe to conduct dual vapor and groundwater vacuum extraction near the water table surface. Dual extraction will be done using a 1-inch diameter drop pipe with 5 feet of perforations on the bottom section of the pipe. The drop pipe will be inserted into the well until half (2.5 feet) of the screened section is submerged into the water table.

During each VEFT, total volatile hydrocarbon (TVH) levels in the extracted vapors will be monitored continuously with a flame ionization detector (FID). At the end of each well test at two of the three VEFT locations, a 1 liter tedlar bag will be filled with extracted soil gas vapors for laboratory analysis. The tedlar bags will be transported in iced storage under chain-of-custody procedures to a certified laboratory for analysis for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene and total xylenes (BTEX). The laboratory results will be used to help design and size any vapor treatment system that may be used during remediation.

Vacuum extraction will be done with a Sutorbilt Model 3ML positive displacement blower capable of extracting 100 standard cubic feet per minute (scfm) under a vacuum load of 15 inches of mercury (16.995 feet of water). Extracted vapors will be routed through a 55 gallon water accumulator to remove any vaporized water. Prior to discharge to the atmosphere, the extracted vapors will pass through 2 granular activated carbon (GAC) canisters in series. Each canister contains 175 pounds of vapor phase GAC.

The parameters for each test will be determined in the field based on initial flow and vacuum levels.

The capture radius, the distance at which the pressure differential created by a vacuum is measured in the lateral plane, will be determined by recording the vacuum gradient in neighboring wells in inches of water ( " H<sub>2</sub>O) using magnehelic differential pressure gauges. The detection limit for the vacuum gradient will range from 0.01 to 5.0 inches of water. Sample purge rates, vacuum readings and differential pressures will be recorded for further analysis. Any liquid wastes produced during the VEFT will be collected in an

accumulator and transferred to a 55-gallon DOT drum and temporarily stored on-site.

TASK 8. Prepare a report documenting field methodology, laboratory analyses results, hydrogeologic setting, conclusions and appropriate recommendations.

DBA shall submit a technical report to the appropriate agencies upon completion of this work. The report will contain a record of excavation activities, boring and well construction logs, chain-of-custody forms and appropriate recommendations regarding site closure and/or additional investigations as necessary. The report shall include a site plan, all analytical results, and interpretation of data.

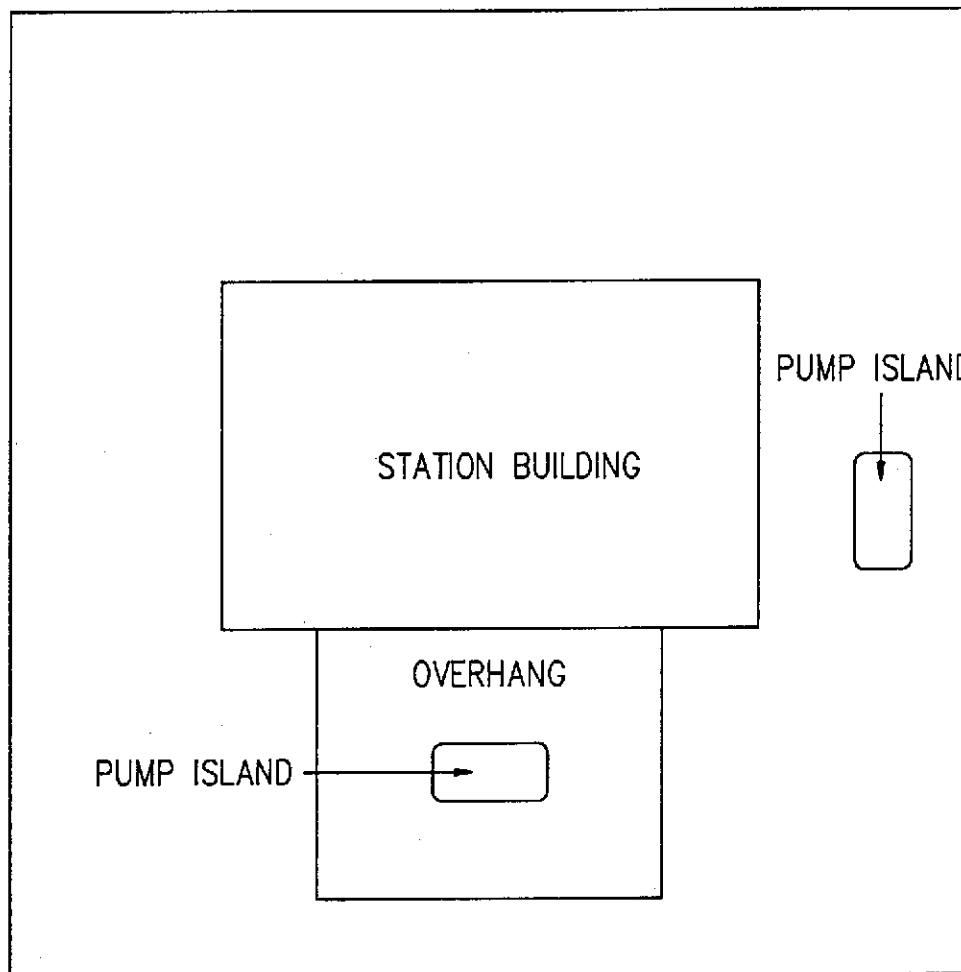
#### IV. TIMETABLE

All work should be completed approximately within three months after approval and funding of this workplan and receipt of all appropriate permits. Jurisdictional staff members will be notified two work days prior to any work on the site.

OK

#### V. SITE SAFETY PLAN

Field work at the site will be conducted in accordance with a prescribed Site Safety Plan (SSP). This plan describes basic safety requirements for the subject environmental investigation. The Site Safety Plan is applicable to consultants and subcontractors. Breaking on the contents of the Site Safety Plan will be conducted by the Site Safety Officer before work begins.



*HARRISON STREET*

*SEVENTH STREET*



TITLE: SITE PLAN - PREVIOUS SERVICE STATION BLDGS.  
 SITE OAKLAND AUTO PARTS  
 ADDRESS: 706 HARRISON STREET, OAKLAND, CA.

SCALE: 1 INCH = 20 FEET  
 PROJECT # 1514N  
 DATE: 16 MARCH 1993

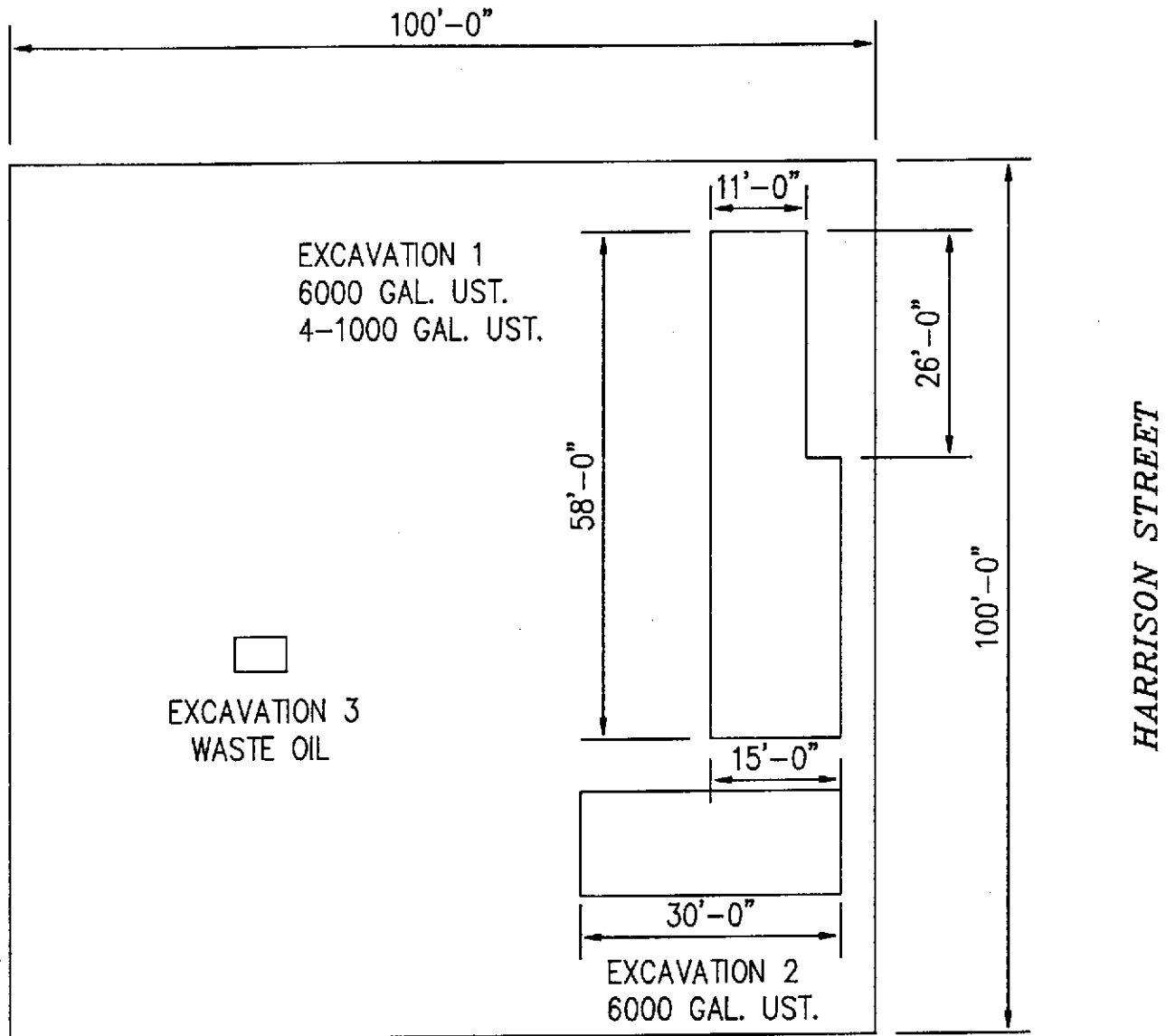
**DENNIS BATES ASSOCIATES, INC.**

494 Alvarado Street, Suite B Monterey, CA. 93940  
 2011 Feliz Road, Novato, CA. 94945

PLATE:

**1**

SEVENTH STREET



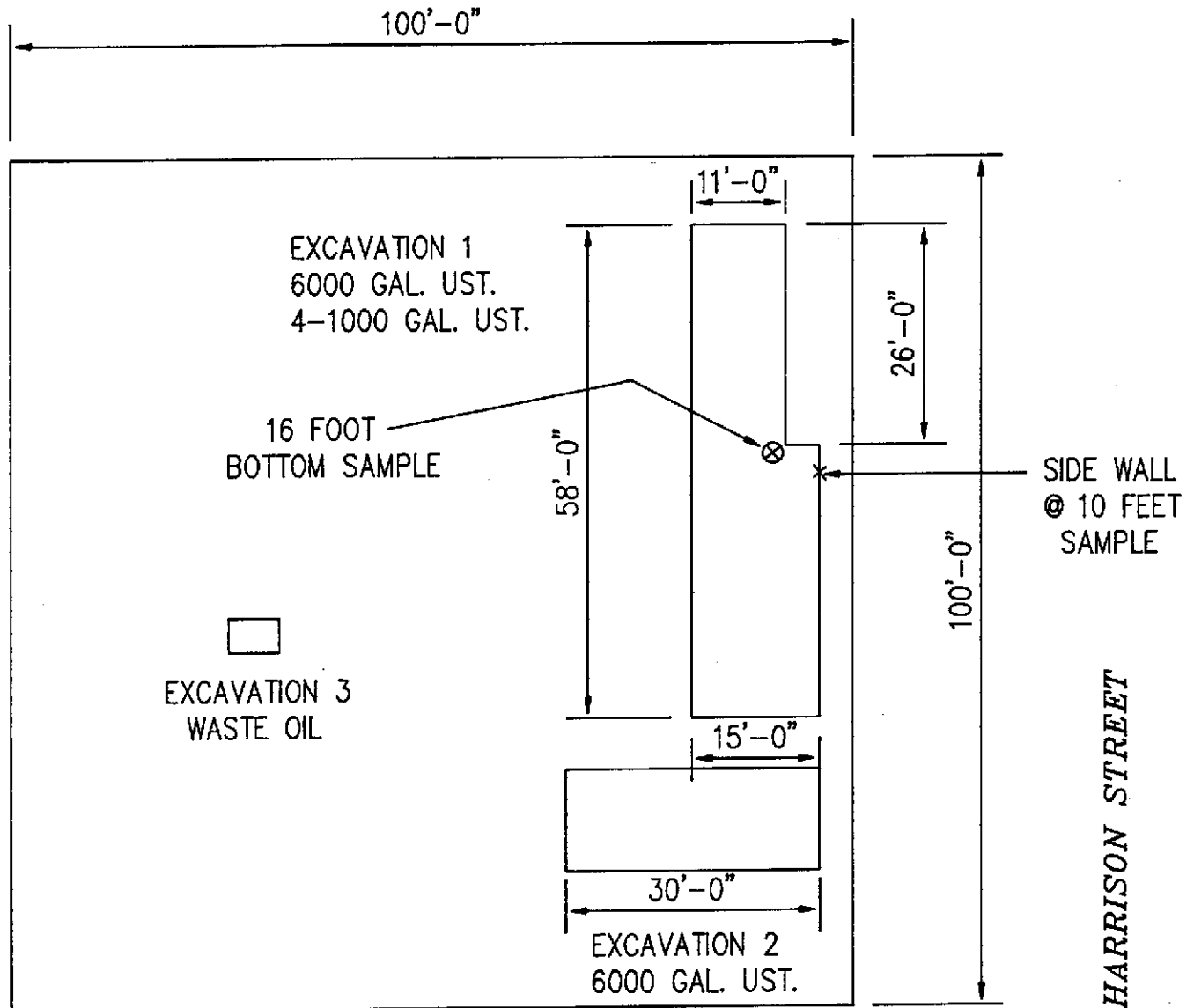
TITLE: SITE PLAN - UGT EXCAVATIONS  
SITE: OAKLAND AUTO PARTS  
ADDRESS: 706 HARRISON STREET, OAKLAND, CA.

SCALE: 1 INCH = 20 FEET  
PROJECT # 1514N  
DATE: 16 MARCH 1993

DENNIS BATES ASSOCIATES, INC.  
494 Alvarado Street, Suite B Monterey, CA. 93940  
2011 Feliz Road, Novato, CA. 94945

PLATE:  
**2**

SEVENTH STREET



TITLE: SITE PLAN - UGT EXCAVATIONS/SAMPLE LOCATIONS SITE: OAKLAND AUTO PARTS ADDRESS: 706 HARRISON STREET, OAKLAND, CA.	SCALE: 1 INCH = 20 FEET
	PROJECT # 1514N
	DATE: 16 MARCH 1993

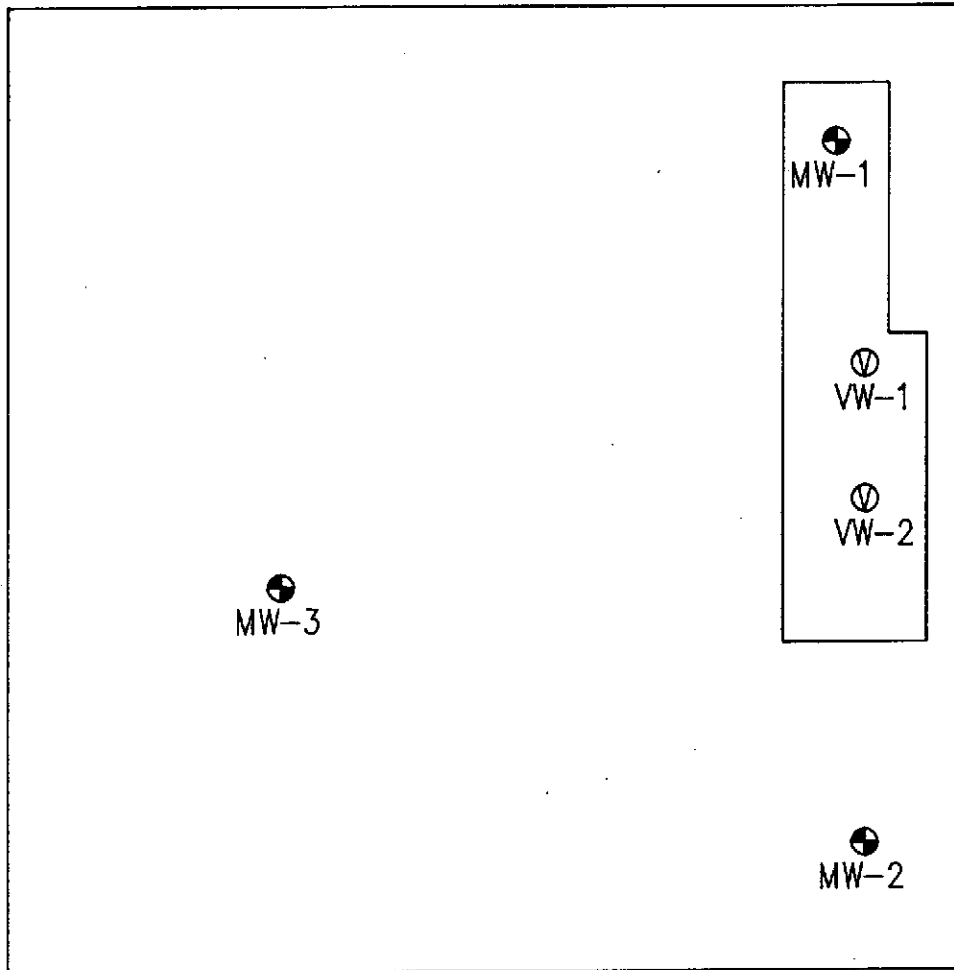
DENNIS BATES ASSOCIATES, INC.

494 Alvarado Street, Suite B Monterey, CA. 93940  
 2011 Feliz Road, Novato, CA. 94945

PLATE:

**2A**

SEVENTH STREET



HARRISON STREET

*show former  
w.o. tank  
+ pump island by  
7th St. w/ sample log*



TITLE: MONITORING WELLS & VAPOR RECOVERY WELL LOCATIONS  
SITE OAKLAND AUTO PARTS  
ADDRESS: 706 HARRISON STREET, OAKLAND, CA.

SCALE: 1 INCH = 20 FEET

PROJECT # 1514N

DATE: 16 MARCH 1993

DENNIS BATES ASSOCIATES, INC.

494 Alvarado Street, Suite B Monterey, CA. 93940  
2011 Feliz Road, Novato, CA. 94945

PLATE:

**3**

KOV. 1514 N

**Trace Analysis Laboratory, Inc.**

Telephone (510) 783-6960  
Facsimile (510) 783-1512

3423 Investment Boulevard, #8 • Hayward, California 94545



March 4, 1993

Mr. John Sammons  
Dennis Bates Associates, Inc.  
294 Alvarado Street, Suite B  
Monterey, California 93940

Dear Mr. Sammons:

Trace Analysis Laboratory received four soil samples on February 11, 1993 for your Project No. 15, Oakland (our custody log number 2939).

These samples were analyzed for Total Petroleum Hydrocarbons as Gasoline, and Benzene, Toluene, Ethylbenzene and Xylenes. Our analytical report and the completed chain of custody form are enclosed for your review.

Trace Analysis Laboratory is certified under the California Environmental Laboratory Accreditation Program. Our certification number is 1199.

If you should have any questions or require additional information, please call me.

Sincerely yours,

Rachel Dolbier  
Project Specialist

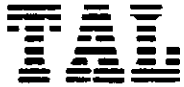
Enclosures



**Trace Analysis Laboratory, Inc.**

3423 Investment Boulevard, #8 • Hayward, California 94545

Telephone (510) 783-6960  
Facsimile (510) 783-1512



LOG NUMBER: 2939  
DATE SAMPLED: 02/10/93  
DATE RECEIVED: 02/11/93  
DATE EXTRACTED: 02/18/93  
DATE ANALYZED: 02/19/93  
DATE REPORTED: 03/04/93

CUSTOMER: Dennis Bates Associates, Inc.

REQUESTER: John Sammons

PROJECT: No. 15, Oakland

Sample Type: Soil

Method and Constituent:	Units	16 Foot		6K Tank		WO Tank	
		Concentration	Reporting Limit	Concentration	Reporting Limit	Concentration	Reporting Limit
DHS Method:							
Total Petroleum Hydrocarbons as Gasoline	ug/kg	4,300,000	2,800	93	500	ND	500
Modified EPA Method 8020 for:							
Benzene	ug/kg	66,000	800	ND	5.0	ND	5.0
Toluene	ug/kg	320,000	690	ND	5.0	ND	5.0
Ethylbenzene	ug/kg	130,000	930	ND	5.0	ND	5.0
Xylenes	ug/kg	730,000	2,400	ND	15	ND	15

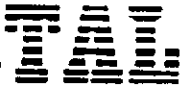
Method and Constituent:	Units	SW 10 ft.		Method Blank	
		Concentration	Reporting Limit	Concentration	Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Gasoline	ug/kg	ND	500	ND	500
Modified EPA Method 8020 for:					
Benzene	ug/kg	ND	5.0	ND	5.0
Toluene	ug/kg	ND	5.0	5.3	5.0
Ethylbenzene	ug/kg	ND	5.0	ND	5.0
Xylenes	ug/kg	ND	15	ND	15

QC Summary:

% Recovery: 150  
% RPD: 0.46

Concentrations reported as ND were not detected at or above the reporting limit.

Louis W. DuPuis  
Quality Assurance/Quality Control Manager  
Founding Member of the Association of California Testing Laboratories



CHAIN OF CUSTODY RECORD

Proj.No. 15		Project Name			No. of Con- tainers	Analyses: <i>TPHG/BTEX</i>					REMARKS
Company Name and Address: <i>Dennis Bates Associates, Inc. 494 Alvarado St., Suite B, Alameda, CA</i>											
Project Manager: <i>John Sammons</i>											
Sample ID	Date	Time	Site Location								
<i>16 foot</i>	<i>2/10/93</i>		<i>soil level</i>	<i>1</i>	<i>X</i>						
<i>GK Tank</i>	<i> </i>		<i> </i>	<i>1</i>	<i>X</i>						
<i>wo tank</i>	<i> </i>		<i> </i>	<i>1</i>	<i>X</i>						
<i>SW 10 ft.</i>	<i>↓</i>		<i>↓</i>	<i>1</i>	<i>X</i>						
Sampled by: (signature) <i>John Sammons, PhD</i>				Date/Time <i>2/10/93</i>	Relinquished by: (signature) <i>Dennis P. Bates</i>				Date/Time <i>2/11/93 2:40 PM</i>		
Received by: (signature)				Date/Time	Relinquished by: (signature)				Date/Time		
Received for Laboratory by: (signature) <i>Karen Lauricella for TAL</i>				Date/Time <i>2/11/93 2:40 pm</i>	TURNAROUND TIME <i>Reg.</i>						
REMARKS <i>walk-in, soil (1) B-T ea, ice, Y-G, Reg-TAT xx</i>											

**SITE SAFETY PLAN  
FOR EXCAVATION AND MONITORING WELL INSTALLATION**

at  
706 Harrison Street  
Oakland, CA  
Site

**INTRODUCTION**

This Site Safety Plan delineates the basic safety requirements for the subsurface investigation project. The provisions set forth in this Plan will apply to the employees of Dennis Bates Associates, Inc. (DBA) and its subcontractors working on the Site. The subcontractors may elect to modify these provisions, but only to upgrade or increase the safety requirements, and only with the concurrence of DBA, as designated and accepted in writing.

This Site Safety Plan will address the expected potential hazards that may be encountered for this project. Field activities are planned to begin two weeks after approval of this workplan and receipt of the appropriate permits, with the duration of the project estimated at two to three weeks. If changes in site or working conditions occur as the activities progress, addenda to this Plan will be provided by DBA.

**AUTHORITY FOR SITE SAFETY**

The employee responsible for the project safety is the Project Supervisor for DBA. The Project Supervisor is responsible for implementing the provisions of this Plan and providing a copy of this Plan to each subcontractor firm working under DBA on the project. The Project Supervisor has the authority to audit site activities for compliance with the provisions of this Plan and may suspend or modify work practices or dismiss contractors whose conduct does not meet the requirements specified in this Plan.

**HAZARD ASSESSMENT**

The major contaminant that may be encountered on the project is gasoline. Inhalation and dermal contact will be the potential exposure pathways of concern. Protective clothing will be mandatory for all field personnel as specified in this Plan. In addition, respiratory protective devices will

be within easy reach should irritating odors or irritation of the respiratory tract become detectable.

Using the National Institute for Occupational Safety and Health Pocket Guide to Chemical Hazards a brief synopsis of the physical characteristics, incompatibilities, toxic effects, routes of entry, and target organs has been summarized below for the major components of the anticipated contaminants to be encountered.

### Benzene

Benzene is a colorless liquid with an aromatic odor. Benzene may potentially create an explosion hazard. Benzene is irritating to the eyes, nose and respiratory system. Prolonged exposure may result in giddiness, headache, nausea, staggering gait, fatigue, bone marrow depression, or abdominal pain. Routes of entry include inhalation, absorption, ingestion, and skin and eye contact. The target organs are blood, the central nervous system (CNS), skin, bone marrow, eyes, and respiratory system. Benzene is a carcinogenic.

### Ethylbenzene

Ethylbenzene is a colorless liquid with an aromatic odor. Ethylbenzene may potentially create an explosion hazard. Ethylbenzene is irritating to the eyes and mucous membranes. Prolonged exposure may result in headaches, dermatitis, narcosis, or coma. Routes of entry include inhalation, ingestion, and skin or eye contact. The target organs are the eyes, upper respiratory system, skin and CNS.

### Toluene

Toluene is a colorless liquid with an aromatic odor. Toluene may potentially create an explosion hazard. Prolonged exposure may result in fatigue, confusion, euphoria, dizziness, headache, dilation of pupils, lacrimation, insomnia, dermatitis or photophobia. Routes of entry are inhalation, absorption, ingestion, and skin or eye contact. The target organs are the CNS, liver, kidneys, and skin.

### Xylene Isomers

Xylene is a colorless liquid with an aromatic odor. Xylene may potentially create an explosion hazard. Xylene is irritating to the eyes, nose and throat. Prolonged exposure may result in dizziness, excitement, drowsiness, staggering gait, corneal vacuolization, vomiting, abdominal pain and

dermatitis. Routes of entry are inhalation, absorption, ingestion, skin or eye contact. The target organs are the CNS, eyes, gastrointestinal tract, blood, liver, kidneys and skin.

#### GENERAL PROJECT SAFETY REQUIREMENTS

Project activities will be conducted in accordance with the following minimum safety requirements:

- o Eating, drinking and smoking will be restricted to a designated area.
- o Gross decontamination and removal of all personal protective equipment will be performed prior to leaving the site. Contaminated clothing will be removed and collected for proper disposal.
- o Prevention of accidental ignition:
  - \* No smoking allowed within delineated work area.
  - \* Reasonable precaution against open flame and sparks shall be taken whenever working on-site.
- o The Project Supervisor will be responsible for taking necessary steps to protect employees from physical hazards, including:
  - \* Falling objects, such as tools or equipment
  - \* Tripping over hoses, pipes, tools, or equipment
  - \* Slipping on wet or oily surfaces
  - \* Insufficient or faulty protective equipment
  - \* Insufficient or faulty equipment or tools.
- o All personnel will be required to wash hands and faces before eating, drinking or smoking in the aforementioned areas.
- o Field operations personnel will be cautioned to inform each other of the non-visual effects of the presence of toxics, such as:
  - \* Headaches
  - \* Dizziness
  - \* Nausea
  - \* Blurred vision
  - \* Cramps
  - \* Irritation of eyes, skin or respiratory tract
  - \* Changes in complexion or skin discoloration
  - \* Changes in apparent motor coordination

- \* Changes in personality or demeanor
  - \* Excessive salivation or changes in pupillary response
  - \* Changes in speech ability or pattern.
- o Alcoholic beverages are not allowed on-site.

#### **PROTECTIVE EQUIPMENT REQUIREMENTS**

Field personnel and visitors are required to wear the following clothing, as a minimum, while at the Site.

- o Appropriate work clothing
- o Steel-toed boots

Field personnel engaged in work operations are required to wear the following additional equipment:

- o Standard Tyvek (when required)
- o Gloves (when required)
- o Respirator (readily available and usable if required)
- o Hard hat (when required)
- o Safety glasses (when required)

#### **WORK ZONES AND SECURITY MEASURES**

The Project Supervisor will contact the Underground Services Alert (USA) and the utilities will be marked before any excavating is performed on site.

The area where drilling is being done will be designated as an Exclusion Zone. Only essential personnel will be allowed into the Exclusion Zone.

Cones, wooden barricades, portable fences or a suitable alternative will be used to deny public access to the Exclusion Zone. The public will not be allowed close to the work area under any conditions. If for any reason the safety of a member of the public may be endangered, work will cease until the situation is remedied. Cones and warning signs will be used when necessary to redirect pedestrians.

#### **DECONTAMINATION PROCEDURES**

Excavating equipment and personal protective equipment will undergo gross decontamination onsite. This gross

decontamination will include the washing of contaminated equipment with a trisodium phosphate (TSP) solution. Steam-cleaning is an acceptable alternative.

**EMERGENCY RESPONSE PROCEDURES**

In the event of an accident resulting in physical injury, first aid will be administered and the injured worker will be transported to the nearest hospital or emergency medical clinic for emergency treatment. A physician's attention is required regardless of the severity of the injury. In the event of a fire, explosion, or property damage, DBA will be immediately notified. If necessary, local fire or response agencies will be called.

**EMERGENCY TELEPHONE NUMBERS**

Fire and Police ..... 911  
Ambulance ..... 911  
Hospital - Summit Medical Center ..... 420-6080  
          350 Hawthorne Avenue, Oakland

Directions

Northeast on Harrison Street to 20 th Street, Left on 20th to Telegraph, Right on Telegraph to Hawthorne, Right on Hawthorne to Webster, Left on Webster to Emergency Room.  
Note: Route is well marked once on Hawthorne.

**ADDITIONAL CONTINGENCY TELEPHONE NUMBERS**

Poison Control Center ..... (800) 523-2222  
Dennis Bates Associates (Dennis Bates)..... (408) 646-0668  
Dennis Bates Associates (John Sammons)..... (415) 892-4131  
Dennis Bates (Mobile) (John Sammons)..... (415) 298-4572

This Site Safety Plan has been reviewed by the following person:

DBA Project Supervisor: -----  
John H. Sammons

DBA Project Geologist: -----  
Glen White

Amendments or modifications to this Plan may be written on a separate page and attached to this Plan. Any amendments or modifications must be reviewed and approved by the personnel named above.

Signatures of on-site workers: