HEALTH AND SAFETY PLAN FOR INVESTIGATION OF TPH-AFFECTED SOILS AND OTHER CONSTRUCTION WORK AT 1421 PARK AVENUE, EMERYVILLE, CALIFORNIA

April 16, 1997

Revised July 18, 1997

Prepared for

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Prepared by

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1.0 INTRODUCTION

This Health and Safety Plan (HSP) addresses the hazards associated with the planned field activities at 1421 Park Avenue, Emeryville, California ("the Site"). It presents baseline health and safety requirements for establishing and maintaining a safe working environment during the course of work. The planned field activities at the Site include: 1) the collection of subsurface soil samples, 2) sampling groundwater using a patented Hydropunch™ groundwater sampling tool or an equivalent technique, and 3) construction activities.

In addition to the procedures and safeguards outlined in this HSP, SOMA Corporation (SOMA) personnel and contractor/subcontractor employees shall follow applicable federal, state, and local regulations. In the event of conflicting requirements, the procedures/practices that provide the highest degree of personnel protection shall be implemented. Deviations from this HSP must be approved by the SOMA Corporate Health and Safety Officer.

If work plan specifications change during or after the preparation of this HSP, or if site conditions differ as the result of more information, the SOMA Corporate Health and Safety Officer shall be informed immediately and appropriate changes shall be made to this HSP.

At a minimum, all of the contractor's and subcontractors' employees who will be working on the site must:

1. Have read and understood the specifications of this HSP.

2. Have completed all training requirements in 29 Code of Federal Regulations (CFR) 1910.120.

3. Provide their own health and safety equipment as indicated in this HSP, and comply with the minimum requirements established by this HSP. If the subcontractor has prepared his/her own HSP, it must minimally meet requirements contained herein and all applicable federal, state, and local health and safety requirements.

This HSP shall be read and approved by the SOMA Corporate Health and Safety Officer, the SOMA Project Manager, and a SOMA Corporate Officer.

A copy of this HSP shall be kept on site during all field activities, easily accessible to all employees and government inspectors, and in SOMA files.

This HSP was prepared using the following documents:

- 29 CFR 1910 -- Occupational Safety and Health Standards.
- 29 CFR 1926 -- Safety and Health Regulations for Construction.
- Title 8, California Code of Regulations, Occupational Safety and Health Standards.
- American Conference of Government Industrial Hygienists (ACGIH), 1988. Threshold Limit Values and Biological Exposure Indices for 1991-1992. Cincinnati, Ohio: ACGIH.
- California Department of Health Services (DHS), Toxic Substances Control Division (TSCD), Technical and Support Unit, Region 3, Los Angeles, California, August 1988. Site Safety Plan Guidance Document.
- National Institute for Occupational Safety and Health (NIOSH); Occupational Safety and Health Administration (OSHA); U.S. Coast Guard (USCG); U.S. Environmental Protection Agency (EPA), October 1985. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Washington D.C.: U.S. Government Printing Office.
- NIOSH/OSHA, 1981. Occupational Health Guidelines for Chemical Hazards. DHHS Publication No. 81-123; 88-118, Supplement 1-OHG; 89-104, Supplement 11-OHG; Washington D.C.: U.S. Government Printing Office.
- Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, California, June 1986. Site Safety Plan Format.
- Sax, N. Irving, 1984. Dangerous Properties of Materials, 6th edition, Van Nostrand Reinhold Company, Inc., New York, New York.
- U.S. EPA, Office of Emergency and Remedial Response, Hazardous Response Support Division, November 1984. Standard Operating Safety Guides.

2.0 SITE CHARACTERISTICS

2.1 Site Description

The property at 1421 Park Avenue was part of a former metal plating facility owned by Electro-Coatings, Inc. ("ECI"). ECI occupied the two adjacent properties at 1421 and 1401 Park Avenue, Emeryville, California (Figure 1). The existing buildings at the project site located at 1421 Park Avenue are presently being used for commercial purposes. The building located along the northeast side of the property is being used as an artist's studio and the warehouse building at the rear of the property along the southeast side of the property is being used by Universal Neon, a business that makes neon light signage fixtures (Figure 2).

The Site was used for metal plating since 1952 when Industrial Hard Chrome Plating Corporation began a chrome plating business. In the late 1950s, Industrial Hard Chrome Plating Corporation began nickel plating. ECI began metal plating operations at the Site in 1963 after buying the assets of Industrial Hard Chrome Plating Corporation. ECI performed hard chrome plating prior to 1989 and nickel plating until 1994.[1]

Industrial Hard Chrome Plating Corporation used trichloroethene (TCE) prior to 1963 for degreasing metal parts prior to plating. ECI used TCE until 1973. In 1992, ECI replaced vapor degreasing with a liquid alkaline soak process.[2]

2.2 Previous Site Investigations and Remedial Activities

Previous site investigations have been conducted at the Site by Geraghty & Miller. The results of those studies are detailed in their Risk Assessment Report of December 1996 and in their Pilot Study Results Report of October 9, 1996. Since 1995, hexavalent chromium has been detected in groundwater at concentrations ranging from 7.5 to 220,000 ug/l; and TCE at concentrations ranging from 0.56 to 17,000 ug/l. In addition, cis-1,2-Dichloroethylene (cis-1,2 DCE), a degradation product of TCE, has been detected at concentrations ranging from <0.5 to 11,000 ug/l.

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1 Geraghty & Miller 1996b.

2 Geraghty & Miller 1996b.

3.0 WORK DESCRIPTION

The future tenant of the property, Mr. Ron Silberman, plans to relocate a 3-story building at 1421 Park Avenue. Two USTs, currently located within the footprint of the proposed building location, will be excavated for disposal at an approved offsite facilty. Following removal of the USTs, the 3-story building will be permanently placed on a mat-type foundation. The permanent placement of the building will involve construction activity that will include compacting the soil, if necessary, construction of a foundation for the building, and installing the utility lines and sanitary sewer lines.

Concurrently, Geraghty & Miller will continue remediation of hexavalent chromium and volatile organic compounds (VOCs) in groundwater. As specified in the Cooperative Agreement between Mr. Silberman, 1421 Park Avenue Associates (property owners), and Electro-Coatings Inc. (current tenant), access to the injection wells be provided for the duration of the remediation project.

The planned activities at the site include the following major tasks:

Task 1: Remove Underground Storage Tanks
Task 2: Soil Sampling
Task 3: Sample Groundwater, if encountered
Task 4: Backfill Excavation

Each of these tasks is described in detail below.

3.1 Task 1: Remove Underground Storage Tanks

Two USTs, approximately 6,000 gallons and 3,000 gallons in capacity, were located on June 28, 1997 following shallow excavation to identify fill port locations. The tank contents were sampled and analyzed for TPH-gas, TPH-diesel, total chromium, hexavalent chromium, benzene, toluene, ethylbenzene, and xylenes, MTBE, and volatile organic compounds. Based on results of the laboratory analyses, the tank contents were classified as non-hazardous waste and removed by a registered transporter for offsite treatment and disposal at Seaport Environmental in Redwood City, California.

The USTs will be removed by a contractor using a backhoe and excavator. Prior to excavation, the contractor will inert the tanks using dry ice. The tank vapor space will be tested using a combustible gas indicator until 20 percent or less of the lower flammable limit of gasoline is obtained. Once excavated, the USTs will be transported offsite on the same day of removal to prevent the accumulation of vapors in the tanks.

3.2 Task 2: Soil Sampling

Surface soil samples from below the ends of each tank (two samples per tank) will be collected using the backhoe bucket. Soil samples will be collected from the backhoe bucket using clean stainless steel or plastic scoops and transferred to clean glass jars. Soil samples will be collected, labeled, and placed in an ice chilled cooler for transport to the analytical laboratory.

3.3 Task 3: Groundwater Sampling

If groundwater is encountered, a ground water sample will be collected from each tank excavation by lowering a stainless steel bailer into the excavation. The ground water in the bailer will then be decanted into the appropriate sample container, labeled, and placed in an ice chilled cooler for transport to an analytical laboratory.

3.4 Task 4: Backfill Excavation

The excavation will be backfilled with soils removed and compacted in lifts using the backhoe bucket, pending approval by ACDEH. If soils cannot be reused at the site due to the presence of elevated chemical concentrations, clean soil will be used to backfill the excavation.

4.0 SITE SAFETY RESPONSIBILITIES

4.1 Site Safety Personnel (SOMA)

Name	Responsibilities
Dr. Norman Ozaki	Project Manager
Mr. Peng Leong	On-Site Health and Safety Coordinator
Dr. Norman Ozaki	Corporate Health and Safety Officer; may inspect site for adherence to HSP, and modify protective measures as deemed necessary.

4.2 SOMA Personnel and Responsibilities

The responsibilities of the SOMA personnel listed in Section 4.1 are outlined below.

4.2.1. SOMA Project Manager

The SOMA Project Manager, Dr. Norman Ozaki, has major responsibility for the health and safety of SOMA personnel on site. As part of his duties, Dr. Ozaki shall be responsible for:

1. The SOMA Corporate Health and Safety Officer and On-Site Health and Safety Coordinator being informed of project developments.

2. SOMA personnel on site receiving the proper training and being informed of potential hazards anticipated at the Site and the recommended procedures/precautions for the Site.

3. Subcontractors being informed of the hazards expected at the Site and appropriate protective measures. (Subcontractors should also be given a copy of SOMA's HSP for review).

4. Resources being available to provide a safe and healthy work environment for SOMA personnel.

4.2.2 SOMA Corporate Health and Safety Officer

The SOMA Corporate Health and Safety Officer has been designated as Dr. Norman Ozaki. Dr. Ozaki shall be responsible for:

1. Assessing the potential health and safety hazards existing on site.

2. Monitoring the health and safety impacts of this project on all SOMA personnel working at the Site.

3. Recommending appropriate safeguard and procedures.

4. Modifying the HSP, when necessary.

5. Approving changes in safeguards or operating procedures for the Site.

The SOMA Corporate Health and Safety Officer shall have the power to:

1. Require that additional safety precautions or procedures be implemented by SOMA staff and/or contractors/subcontractors working at the Site.

2. Order an evacuation of SOMA staff and/or contractor/subcontractors form the Site, or portion(s) of the Site, shut down any sampling operation, if he believes a health or safety hazard exists that has not been adequately addressed by the HSP.

3. Deny unauthorized personnel access to the Site.

4. Require that any worker obtain immediate medical attention.

5. Approve or disallow any proposed modifications to safety precautions or working procedures.

4.2.3 On-Site Health and Safety Coordinator

The On-Site Health and Safety Coordinator (OHSC) has been designated by SOMA as Mr. Peng Leong. Mr. Leong is a registered Professional Engineer and has fulfilled the health and safety training requirements of the Superfund Amendments and Reauthorization Act (SARA), and passed eight-hour supervisory and annual refresher courses. The OHSC, or a trained designated alternate, will be present at the Site during work activities. The OHSC shall be notified of and approve activities in which persons may be reasonably expected to be exposed to contaminated soils and/or ground water.

The OHSC shall be responsible for:

1. Implementing the HSP.

2. Limiting access to those portions of the Site where SOMA staff and/or subcontractors are involved in sampling activities.

3. Reporting unusual or potentially hazardous conditions to the SOMA Corporate Health and Safety Officer and the SOMA Project Manager.

4. Reporting injuries, exposures, or illnesses to the SOMA Corporate Health and Safety Officer and the SOMA Project Manager.

5. Communicating proposed changes in work scope or procedures to the SOMA Corporate Health and Safety Officer for approval.

6. Recommending to the SOMA Corporate Health and Safety and the SOMA Project Manager additional safety procedures or precautions that might be implemented.

The OHSC shall have the power to:

1. Order an evacuation of SOMA staff and/or contractor/subcontractor from the Site, or portion(s) of the Site, shut down any sampling operation, if he believes a health or safety hazard exists that has not been adequately addressed by the HSP.

2. Deny unauthorized personnel access to those portions of the Site where SOMA staff and/or subcontractors are involved in sampling activities.

3. Require that any SOMA worker, including the subcontractors' personnel, obtain immediate medical attention.

5.0 HAZARD ANALYSIS

Potential chemical and physical safety hazards associated with the planned activities outlined in Section 3.0 include the following:

Chemical hazards:
- respiratory

Physical hazards:
- heavy equipment
- noise
- falling equipment and supplies
- fire

Chemical hazards are attributable primarily to residual hexavalent chromium and TCE that remain in on-site groundwater due to past site activities. Physical hazards arise from the proposed sampling activities planned for the Site (i.e., working in proximity to heavy equipment).

5.1 Chemical Hazards

Based on information from previous investigations at the Site and the upcoming field and construction activities at the Site, residual hexavalent chromium, TCE, and 1,2 DCE in groundwater represent the primary sources of potential health hazards. The primary potential route of exposure to TCE and 1,2 DCE is inhalation of airborne vapors. This route of exposure could occur from two different potential exposure pathways. The first pathway is due to the volatilization of TCE and 1,2-DCE from groundwater and vertical migration of TCE and 1,2-DCE vapors through the soil column, eventually breaking through the surface soils and dispersing into the air. This potential exposure pathway is relevant to the construction activities. The construction activities do not involve extensive excavation of soils since the building foundation will be a variation of a slab on grade construction and will

be laid on top of the soil. Due to the relatively low concentrations of TCE and 1,2-DCE in groundwater, it is not anticipated that airborne concentrations in the breathing zone will approach the action levels for TCE and 1,2-DCE when these chemicals migrate through the soil column.

The second pathway occurs during groundwater sampling when groundwater is collected for laboratory analysis. Volatilization and direct release into the air could occur. The hydraulic push techniques that will be used to collect both soil and groundwater samples tend to reduce the potential for TCE and 1,2-DCE vapors in air when compared to the more conventional methods of drilling. Soil and groundwater sampling represents activities where the chance for inhalation and dermal contact exposures are the highest.

In contrast, hexavalent chromium is not volatile and will not migrate as a gas through the soil column. Because the source of the hexavalent chromium is groundwater, it is unlikely that the soils in the area of the UST and the area where Mr. Silberman plans to site the 3-story building are affected with hexavalent chromium. Thus, potential direct dermal contact are a potential concern for soil and groundwater sampling. Since no intrusive activities that involve groundwater are planned for construction work, potential inhalation and dermal contact hazards are not a concern.

5.1.1 Highest Detected Concentrations

The highest TCE and 1,2 DCE concentration detected in groundwater since 1995 are 17,000 ug/l and 11,000 ug/l (April, 1997), respectively. The highest concentration of TCE detected was reported at MW -14 and the highest concentration of 1,2-DCE reported was detected at MW-10. MW-14 is located southeast of the proposed location for the 3-story building. Based on results of the most recent groundwater sampling event in April 1997, the TCE and 1,2-DCE concentrations detected on-site in proximity to the area where the UST is located and the area where the 3-story commercial building will be eventually sited are:

	Chemical Concentrations in ug/l	
Sampling Location	TCE	1,2-DCE *
MW-4	4,000	410
MW-10	660	11,000
MW-13	280	62
MW-14	17,000	ND(<500)
MW-20	3.5	ND (<0.50)

* Although both the cis- and trans- isomers of 1,2-DCE were analyzed and reported by Geraghty & Miller, concentrations of cis-1,2-DCE were consistently higher; values reported are cis-1,2-DCE.

The highest hexavalent chromium concentrations recently reported at the Site by Geraghty & Miller (April 1997) are presented below (Figure 2).

Sampling Location	Hexavalent Chromium Concentration (ug/l)
MW-3A	ND (<5.0)
MW-4	13,000
MW-5	160,000 (April, 1995)**
MW-10	6,500
MW-12	2,000
MW-13	150,000
MW-14	100,000 (September 1996)
MW-16	64,000
MW-17	160,000
MW-20	55

** = Most recent sampling date

5.1.2 Exposure Pathways of Concern

Based on the proposed field and construction activities, the primary potential exposure route of concern for TCE and 1,2-DCE in groundwater is inhalation for construction activities and inhalation and direct dermal contact for soil and groundwater sampling activities. The primary potential route of exposure to hexavalent chromium during groundwater sampling is dermal contact including potential splashing into the eyes. To minimize inhalation hazards, performing field work on the upwind location and observing the OSHA action levels shall be required during planned field activities. The action levels for TCE and 1,2-DCE during the planned field activities is presented in Section 6.3. Due to the relatively low concentrations of TCE and 1,2-DCE encountered in groundwater, concentrations that exceed the occupational inhalation standards are not anticipated.

5.1.3 Description of Chemicals

The following chemical descriptions for TCE, 1,2-DCE, and hexavalent chromium include physical recognition characteristics, effects of short-term, acute exposures, and the Time-Weighted Average (TWA) over an eight-hour period for the PEL.

Trichloroethylene is a halogenated aliphatic hydrocarbon. Its molecular weight is 131.5 and has a vapor pressure of 57.9 mm Hg at 20°C. Its water solubility is 1100 mg/l at 20°C. Its vapor density is 4.53 indicating that TCE is heavier than air and tends to stay close to the ground once it becomes airborne.

Short-term exposure to TCE can cause central nervous system depression resulting in mental confusion, incoordination and insomnia. Animal studies indicate increased liver and kidney weights. Fatal cases of TCE exposure show death due to cardiac arrhythmia.

The Federal OSHA permissible exposure limit (PEL) for TCE is 50 ppm or 270 mg/m^3. California Occupational Safety and Health Administration (Cal OSHA) has identified a PEL for an 8-hour time-weighted average concentration of 25 ppm or 135 ug/m^3.

1,2-DCE is a halogenated aliphatic hydrocarbon with a molecular weight of 96.94. It has a vapor pressure of 200 mm Hg at 35°C and a water solubility is 3.5 g/l. If 1,2-DCE is released to the soil, it is expected to evaporate and leach into groundwater where very slow biodegradation should occur. If released into water, 1,2-DCE will volatilize and therefore, biodegradation and adsorption to sediment would not be expected to be significant.

Exposure to 1,2-DCE results in low acute toxicity but is a narcotic at high concentrations. Symptoms of exposure to 1,2-DCE include irritated eyes and respiratory system and central nervous system depression. In animal studies, 2-hour exposure to 6.5% vapor was lethal to mice.

The Federal OSHA and CalOSHA permissible exposure limit for 1,2-DCE is 200 ppm or 790 mg/m^3 based on an 8-hour time-weighted average concentration.

Hexavalent chromium is the metal chromium in its valence state of +6, and as such exists in various molecular forms. It is classified by the U.S. EPA as a Group A, known human carcinogen by inhalation only. The State of California has also classified hexavalent chromium as a Group A carcinogen by ingestion as well.

The fact that hexavalent chromium in groundwater is the medium of concern, limits the potential exposure routes. Ingestion and dermal contact are the primary routes of concern.

Although hexavalent chromium in groundwater could become airborne as an aerosol, it is highly unlikely at the Site.

Short-term lethal doses to hexavalent chromium can cause systemic toxic effects of hypoactivity, lacrimation, mydriasis (abnormal dilation of the pupil), diarrhea, and changes in body weight. The kidney is a primary target of short-term exposures. Renal damage has been reported in humans exposed to chromium compounds occupationally or by accident.

Federal OSHA does not have a PEL for hexavalent chromium. OSHA does recommend a ceiling (that is, a maximum exposure concentration) of 0.1 ppm for chromates. NIOSH recommends a 10-hour time weighted average recommended exposure limit (REL) for carcinogenic hexavalent chromium of 1 ug/m^3. The American Conference of Governmental Industrial Hygienists (ACGIH) recommend a Threshold Limit Value (TLV) as an 8-hour time weighted average of 0.05 mg/m^3 for water soluble hexavalent chromium.

The California OSHA 8-hour time weighted average PEL for water soluble hexavalent chromium is 0.05 mg/m^3.

5.2 Physical Hazards

The use of heavy equipment for the planned field activities and the nature of the planned field activities pose potential physical hazards at the Site. Heat stress is not considered a significant hazard for the planned activities; the activities are scheduled to be performed during the spring season and no heavy respiratory protection gear is required. However, the OHSC will monitor field personnel for signs of heat stress and take appropriate actions, as necessary (e.g., increased work breaks and fluid consumption), if heat stress symptoms are observed. Section 5.0 presents a complete list of physical hazards. Work procedures to protect workers from chemical and physical hazards are discussed in Section 6.0.

6.0 WORK REQUIREMENTS

6.1 Respiratory Protection

SOMA and subcontractor personnel will not be required to wear respiratory protective equipment in work areas during construction and sampling activities, and may conduct work using Level D respiratory protection. The fact that TCE is heavier than air means that in still air, TCE will tend to be found near ground level. Wind and work activity may cause TCE to disperse and mix into breathing zone air. However, the concentrations found in groundwater are low compared to the State PEL of 25 ppm.

6.2 Personal Protective Equipment

To protect against such potential exposures and the physical hazards listed in Section 5.0, the following personal protective equipment will be worn by all personnel engaged in the work activities described in Section 3.0 while on site:

- Hard hat
- Steel-toed boots (14 inches minimum height) if engaged in drilling operations
- Work boots if the individual is not directly engaged in the drilling operations
- Latex inner and nitrile outer gloves taped to the uncoated-Tyvek coverall sleeve for individuals engaged in soil and groundwater sampling
- Uncoated-Tyvek coveralls (for soil and groundwater sampling), cotton coveralls or equivalent work clothing for construction work

6.3 Action Levels

The OHSC shall impose a temporary stop work order and contact the SOMA Corporate Health and Safety Officer immediately if the following conditions are observed, or if the OHSC believes other conditions exist that may pose a significant threat to personnel at the Site:

- Changes in the general health profile of on-site personnel, including symptoms discussed in Section 5.1.3.

The action level for inhalation of TCE and 1,2-DCE have been calculated by dividing the State PEL by 2. The calculated action level for TCE and 1,2-DCE at the Site is 13 ppm and 100 ppm, respectively (Table 1). Although action levels have been identified for TCE and 1,2-DCE, it is highly unlikely that 13 ppm of airborne TCE and/or 100 ppm 1,2-DCE will be encountered in the breathing zone. If the highest concentration of TCE in groundwater is 17 ppm, it unlikely that this concentration could contribute to an airborne concentration of 13 ppm in the breathing zone despite the fact that "ppm" in air is not equivalent to "ppm" in groundwater. The vapor density of TCE is 4.53 which means that under still conditions, TCE tends to be found close to the ground and will not rise to the breathing zone. The highest concentration of 1,2-DCE detected in groundwater is 11 ppm and it is not likely that this concentration will result in 100 ppm in the breathing zone.

TABLE 1. Action Level for TCE and 1,2-DCE

Highest Observed Concentration in Groundwater (ug/l)	California OSHA PEL (mg/m^3)	California OSHA PEL (ppm)	Action Level (ppm)
17,000 - TCE	135	25	13
11,000 -1,2-DCE	790	200	100

No action level for hexavalent chromium has been identified since airborne concentrations of hexavalent chromium are not anticipated during the groundwater sampling activity.

6.4 Protection Against Physical Hazards

6.4.1 Noise

Noise results primarily from excavation equipment, and other machinery. Workers will wear ear plugs when operating heavy machinery.

6.4.2 Heavy Equipment

All relevant requirements pursuant to 29 CFR 1926.602 and Subpart W, Rollover Protective Structures; Overhead Protection, shall be observed during the course of excavation and earth moving activities. These requirements include but are not limited to the use of seat belts for all earth moving equipment equipped with roll-over protection structures (ROPS) or adequate canopy protection; the installation and proper functioning of service braking systems capable of stopping and holding the equipment fully loaded; roll-over protection structures; the installation and functioning of audible alarms, prevention of obstructed views to the rear from the driver's seat; and the requirement for audible alarms on vehicles that have obstructed views to the rear when using reverse gear.

All field personnel not directly involved in the excavation-related activities will maintain safe distances from areas where heavy equipment are in use. Unauthorized visitors will not be permitted near areas where heavy equipment are in use.

6.4.3 General Safety

SOMA and subcontractor personnel will wear approved head protection while working around heavy equipment at the Site. A first aid kit including at least four 32-ounce bottles of eye wash solution will be kept on site during the field activities. Fire hydrants, electrical and

underground lines and pipes will be identified before excavation operations begin. A 10-pound fire extinguisher, designated for Type ABC classed fires, will be kept on site near ongoing work activities for the duration of the project.

6.5 Work Area Definition

Exclusion zones will not be required for the completion of field work. The Site is completely fenced and site access can be controlled to prevent unauthorized entry. "No-smoking" restrictions will be applied in all areas where active excavation work is being conducted.

In addition, no drinking, eating or smoking will be allowed in the work areas, and personnel will wash their hands before conducting these activities on their breaks.

6.6 Entry Procedure

At a minimum, all visitors entering the Site work area must wear the protective clothing and equipment worn by SOMA and subcontractor personnel, or equivalent personnel protective gear. Permission to approach work areas must be obtained from at least one of the personnel named in Section 4.0, Site Safety Responsibilities. The visitor's name and purpose of visit will be recorded in the field notes.

6.7 Decontamination Procedures

A formal decontamination zone will not be required. An area where all field personnel will remove their personal protective equipment will be identified by the OHSC. All field personnel will remove their protective equipment at that designated location. It is recommended that a shower be taken a the end of the work day upon reaching one's residence.

Disposable gloves, coveralls, and other disposable clothing or equipment worn by SOMA and subcontractor personnel will be placed in a suitable disposal container on site at the end of each work day. Protective clothing and equipment will be replaced if their protective function is compromised through holes or tears. Equipment that comes in contact with on-site soils or ground water will be steam-cleaned or washed with Alconox detergent, and rinsed with distilled deionized or fresh water. Wash water resulting from decontamination procedures associated with sampling activities will be collected and appropriately disposed.

7.0 RECORDING OF HEALTH AND SAFETY PROCEDURES

The OHSC will record field observations of health and safety procedures followed by workers during the planned activities outlined in Section 3.0, including any deviations from the recommended health and safety procedures.

8.0 MEDICAL MONITORING

All SOMA personnel who use or may come in contact with hazardous materials will undergo compulsory routine medical surveillance. All subcontractor employees will be responsible for meeting all training and medical monitoring requirements associated with this project. The SOMA medical monitoring program includes the following:

- A one-time baseline medical history and physical exam, chest X-ray, pulmonary function test, audiogram, EKG, CBC, chemistry panel, and urinalysis.
- Annual medical examination.
- Exit physical examination upon termination of employment.

9.0 EMERGENCY PROCEDURES

9.1 General Injury

- Step 1: Use first aid kit on site, if appropriate.
- Step 2: Use off-site medical help and/or assistance if appropriate.
- Step 3: Notify OHSC, Project Manager, and Corporate Health and Safety Officer.

9.2 Specific Treatments

- Eye Exposure: Flush eye with eye wash, contact ambulance.
- Fire (localized): Use fire extinguisher and activate alarm system, if appropriate.
- Fire (uncontrolled): Call Fire Department.
- Chemical Spill: Contact Fire Department and National Response Center for Toxic Chemical and Oil Spills.

- Explosion: Contact Fire Department if potential for additional explosions or fire danger exists.
- Inhalation: Move person to clean air and cover source of chemicals, if possible.
- Accidental Swallowing or Ingestion of Lead-Affected Materials: Contact ambulance service.

9.3 Emergency Phone Numbers

Medical/General Emergency Services

Fire Department	911
Ambulance	911
Police Department	911
Alta Bates Hospital (510) 204-1303 Intersection of Ashby Avenue and Colby Street Berkeley, California	

Figure 1 shows the route to the hospital and includes written directions.

Hazardous Materials Release Response/Reporting

National Response Center	1-800-424-8802
California Office of Emergency Services	1-800-852-7550

Toxics Information

Poison Control Center	1-415-476-6600

9.4 Accident Reporting Procedures

Immediately contact the following:

Dr. Norman Ozaki (SOMA)	1-510-654-3900
Mr. Glenn Leong (SOMA)	1-510-654-3900

10.0 TRAINING PROGRAM

1. The SOMA OHSC shall have fulfilled all appropriate training requirements indicated by 29 CFR 1910.120 (e), including the 40-hour training requirement and required supervisory and refresher courses.

2. A tailgate session will be held prior to commencing field activities to discuss this HSP. All SOMA personnel and contractor/subcontractor employees shall receive, at a minimum, the following information:

   - The names of personnel and alternates responsible for site safety and health.
   - Safety, health, and other hazards at the Site.
   - All components of this HSP.
   - Instruction for use of personal protective equipment.
   - Action levels.
   - Employee work practices to minimize risks from on-site hazards.
   - Instruction for safe use of engineering controls and equipment on the Site.
   - Site control measures.
   - Emergency plans.

11.0 SIGNATURES

11.1 SOMA Personnel

This HSP for the property at 1421 Park Avenue, Emeryville, California is approved by the following SOMA personnel:

Norman T. Ozaki, Ph.D.
Corporate Health & Safety Officer

7-18-97
Date

11.2 Contractor and Subcontractor Personnel

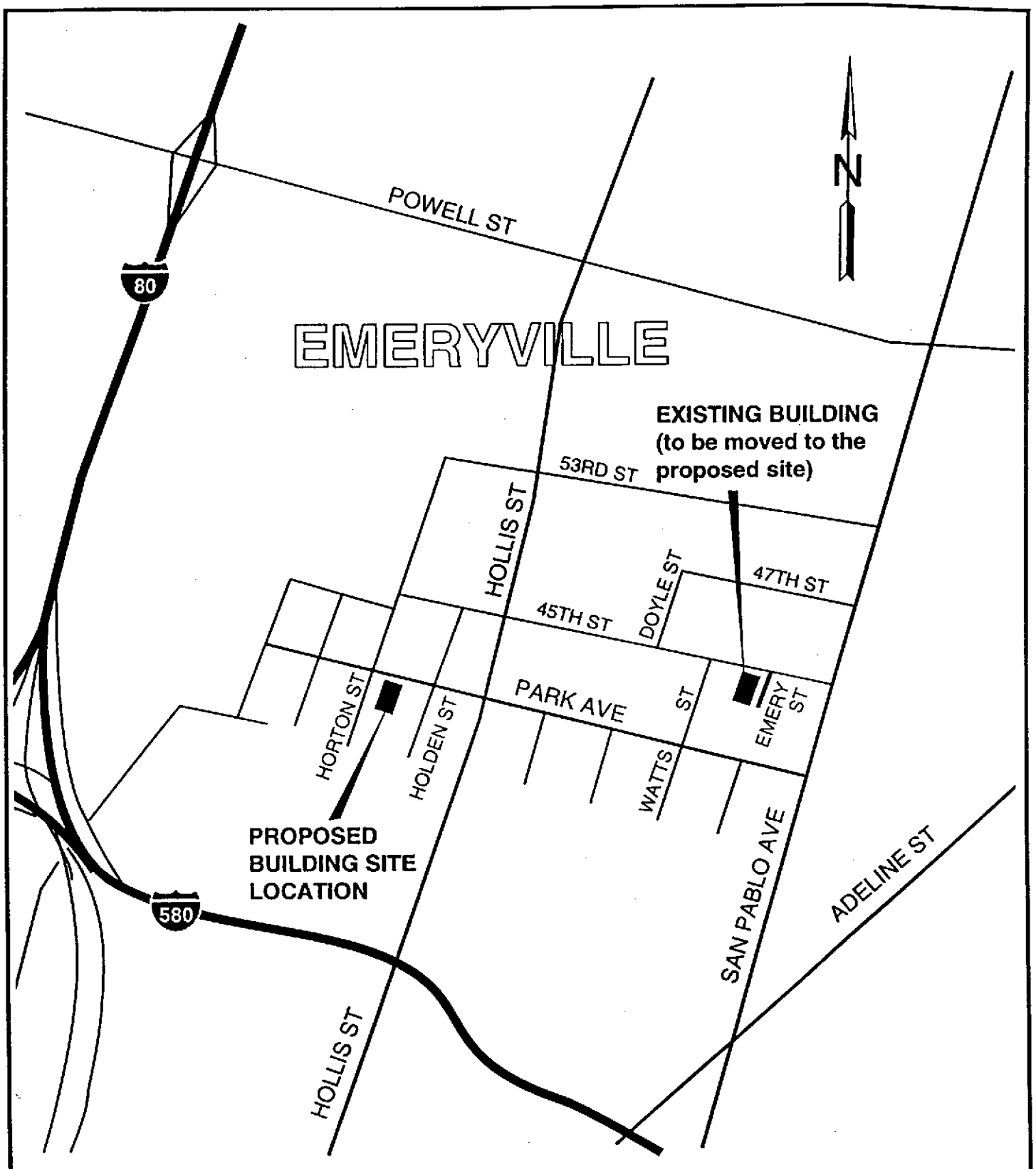
Contractor and Subcontractor Agreements:

1. Contractor certifies that the following personnel to be employed on the project at 1421 park Avenue, Emeryville, California, have met the Training and Protection requirements of the OSHA Hazardous Waste Operator Standard (29 CFR 1910.120) and other applicable standards.

2. Contractor certifies that, in addition to meeting the OSHA requirements, he/she has received a copy of this HSP and will insure that the employees and subcontractors of the Contractor are informed, and will comply with both OSHA requirements and the guidelines in this HSP.

3. Contractor further certifies that he/she has read, understands, and will comply with all provisions of this HSP and will not hold SOMA responsible or liable for any injury or health problems that may occur.

Name	Training/ Certification	Signature	Date

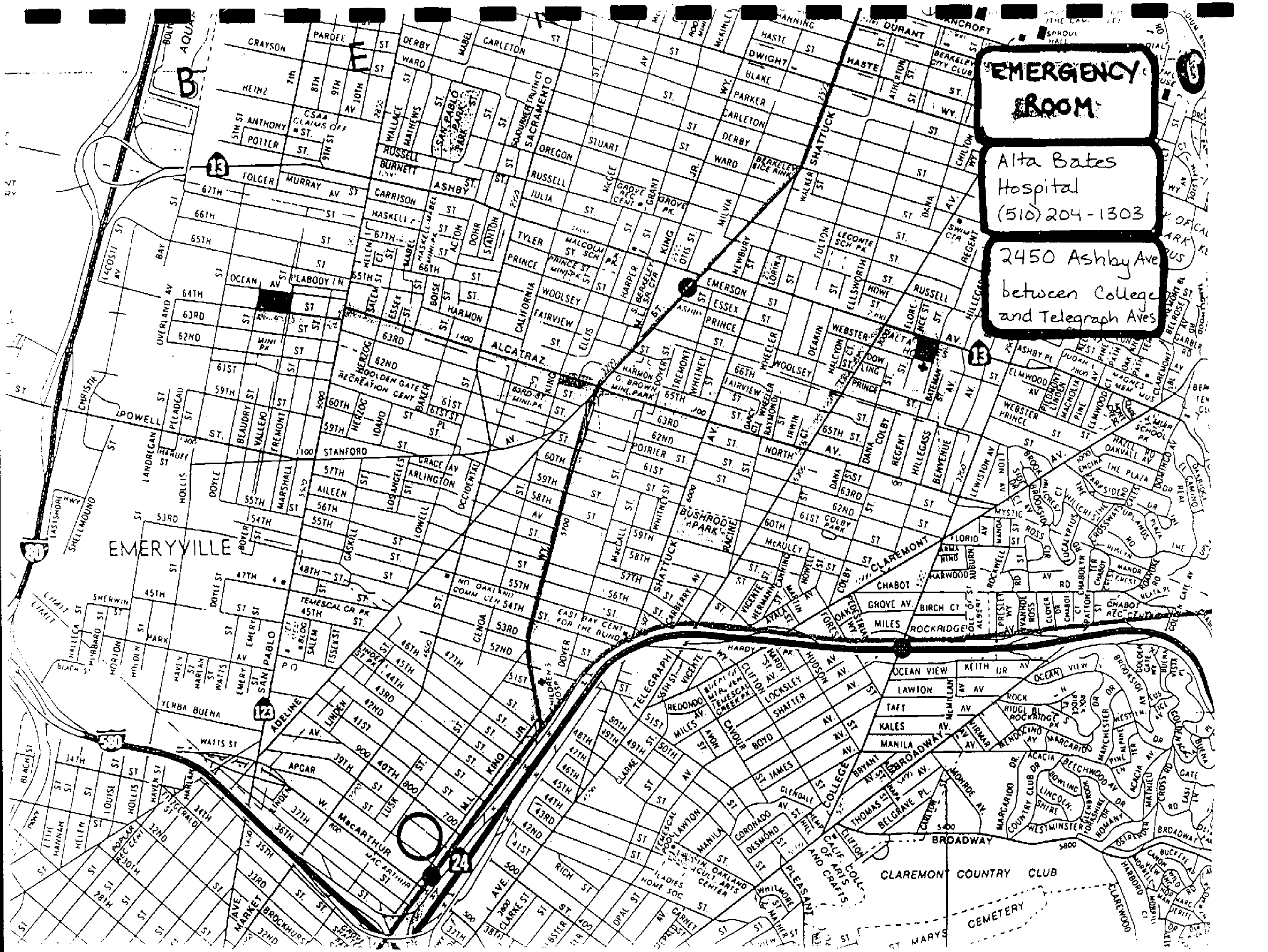


SOMA CORPORATION

Site Location Map

1421 Park Avenue, Emeryville, CA

Proj. No. 96-2099	April 1997	Figure 1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