SITE SAFETY PLAN

EVANS BROTHERS

4650 SHELLMOUND STREET

EMERYVILLE, CALIFORNIA

STID
6639 A

Prepared for:

EVANS BROTHERS

LIVERMORE, CALIFORNIA 92130

Prepared by:

RGA Environmental, Inc.

4701 Doyle Street, Suite 14

Emeryville, CA 94608

(510) 547-7771

November 5, 1998

Robert E. Gils, CIH #1151

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1. INTRODUCTION

1.1 BACKGROUND

In general, the work scope consists of demolition of a recently retired paint plant. Disturbance of existing concrete or asphalt covering will occur only where sampling and analysis has shown that the soil substrate is not contaminated. Demolition will entail the removal of surface structures, abatement of hazardous materials including asbestos and lead, and the removal of caustics and corrosives.

The work site is located south of Powell Street on Shellmound Street in Emeryville, California. An Area Map is attached in Appendix E. A Site Map is attached in Appendix F. The site has been determined by others to contain soils which are expected to be contaminated with various, hydrocarbons, metals and oil and grease. Little to no exposure to these materials is anticipated due to the limited scope of the demolition work being conducted.

In accordance with California Code of Regulations (CCR) Title 8, Section 5192, Hazardous Waste Operations and Emergency Response, Evans Brothers (EBI) contracted RGA Environmental, Inc. (RGA) to develop for the property a Site Safety Plan (SSP) which will provide EBI field personnel and subcontractors with an understanding of the potential chemical/substance and physical hazards that exist or may arise while the tasks of this project are performed. This SSP is applicable to all locations of this Project. The starting and sequence of each location of work will depend on the phasing of the project to be determined by EBI. Soil will only be disturbed in those areas where sampling and analysis has shown it to not be contaminated, with the single exception of two fuel tanks that will be removed and backfilled.

Additional special attention will be made to monitor and control worker and general public exposure to hazardous materials that may be encountered during the work. These materials may include asbestos, heavy metals, acids and corrosives.

Any discovered materials will be sampled and tested prior to handling. The decision to sample will be based on discoverable conditions, i.e.: discoloration, oily residues, odor, etc, and on the need for possible further waste characterization. Sampling results will be reviewed by the Project Manager and the Health and Safety Manager and then included into this SSP. Further action may be required based on the review. Any additional procedures will be documented, included into the SSP, and then reviewed with all workers. Any additional discovered contaminated materials which are found to constitute a hazardous waste will be stockpiled on site pending being loaded and transported off-site to the proper disposal facility.

This SSP describes the procedures to be followed to reduce employee and public exposure to potential health hazards that may be present on the project site. The emergency response procedures necessary to respond to such hazards are also described within this SSP. The SSP is primarily designed to guide project personnel on how to respond to normal and extreme

conditions that may arise during the project execution.

1.2 OBJECTIVE

The primary objective is to ensure the well being of observers, field personnel and the community surrounding the subject property. To do this, project staff, client personnel and approved subcontractors shall acknowledge and adhere to the policies and procedures established herein. Accordingly, all personnel assigned to this project shall read this SSP and sign the Agreements and Acknowledgment Statement (Appendix A) to certify that they have read, understood and agreed to abide by this SSP and its provisions, including the "Evans Brothers Injury and Illness Prevention Program" (Appendix D).

Information contained in the SSP will be presented to all personnel and visitors at a pre-entry safety briefing. Additional safety information that becomes pertinent over the course of the project will be conveyed to EBI and subcontractor personnel through "tool-box safety meetings" and, if necessary, addenda to the SSP will be transmitted to pertinent subcontractors. In addition, project personnel listed in Section 8 will continuously exercise daily supervision and control of site activities as a part of their everyday practice. Safety issues will be addressed immediately and discussed with involved EBI or subcontractor personnel on a one-to-one basis.

EBI personnel have the authority to stop work activities and evacuate the area. The chart in Section 8 showing the "chain of command" shows who has the authority to stop work activities based on safety issues, beginning with the Project Manager.

1.3 AMENDMENTS

Any changes in the scope of work of this project and/or site condition must be amended in writing on the Site Safety Plan Amendment Sheet (Appendix B) and approved by the Health and Safety Manager.

2. HAZARD EVALUATION

2.1 SITE CONDITIONS

The work site is located at the intersection of Powell and Shellmound Streets in Emeryville, California (see Appendices E and F). General site conditions impacted by the work include asbestos, various heavy metals and Oil & Grease, acids and corrosives, polychlorinated biphenyls (PCB's) and poly aromatic hydrocarbon (PAHs). Known subsurface contaminants will not be impacted by the planned work and are not incorporated into this Site Specific Health and Safety Plan. Maximum contaminant levels (in milligrams per kilogram) encountered in abovegrade samples are indicated in the following table.

Contaminant	Maximum Concentration Encountered (mg/kg)

Contaminant	Maximum Concentration Encountered (mg/kg)
Antimony	5.6
Arsenic	29
Asbestos	50%
Barium	350
Cadmium	.93
Chromium	540 – in concrete
Cobalt	9.4
Copper	200
Lead	430 – in concrete, 98,000 – in paints
Mercury	75.5
Molybdenum	4.3
Nickel	200
PAH	5,100 – in brick and concrete
PCB	850
Selenium	30
Silver	1.2
Thallium	250
Vanadium	46
Zinc	830
Sulfuric Acid	.54
Sodium Hydroxide	10

It is possible that the exposure levels will reach Permissible Exposure. Should a "Change In Conditions" occur, as perceived by project personnel (see section 8), EBI will notify the engineer and await further direction. If the nature of materials changes (i.e. irritating odors, soil discoloration), protective clothing, including gloves, respiratory protective devices and boots, may be needed and will be made available to those persons working in or around these specific areas.

2.2 SITE TASKS

The field tasks at this site may include:

- Demolition of various building structures

- Demolition of piping or tanks containing acid or caustic residue
- Trucking activities
- Sampling for testing purposes if "Change in Conditions" occurs

2.3 PROJECT TASK HAZARDS

All field task hazards are site specific. The following hazards may be encountered:

Contamination: Contact with contaminated surface or surfaces suspected of being contaminated should be avoided. This includes working through, kneeling or placing equipment in puddles, mud, discolored surfaces or on drums and other containers. Eating, smoking, drinking and/or the application of cosmetics is prohibited on this site in the immediate work area.

Falling Objects: Hard-hats must be worn by all project staff and observers whenever construction activity is taking place.

Vehicle Traffic: Project staff and observers will be required to wear a fluorescent safety vest at all times when their work encroaches on active nearby roadways. In addition, use flags, tapes, barricades and cones to designate restricted areas and control traffic flow.

Explosion Protection: Explosion-proof equipment will be used in areas where the Site Safety Manager determines there is a potential for explosion.

Demolition or Other Work in Contaminated Areas: Skin and eye contact with contaminated soil may occur during work. Heavy-duty work gloves or butyl nitrile gloves, as appropriate and approved safety goggles should be worn when contact with chemicals, contaminated soils and/or splash is possible.

2.3.1 Airborne Contaminants

The generation of potentially hazardous atmospheres may occur during this work. Hazard evaluation will be completed by project personnel (See Section 8). Hazard evaluation methods will include the use of a Photo Ionization Detector, Dräger tubes, combustible gas meter and other direct reading instruments to detect and quantify levels of carbon monoxide, petroleum vapors, explosive atmospheres, oxygen content and other gas and vapor levels when deemed necessary by the Health and Safety Manager due to specific activities on the jobsite.

To evaluate dust generation rates, dust suppression effectiveness, hydrocarbon exposure, samples for asbestos, total airborne dust, hydrocarbons and for the metals identified in Section 5 will be conducted. Total dust and heavy metal samples will be collected on pre-weighed poly vinyl chloride (PVC) filters. Analysis of total dust samples will be performed by comparing the filter's gross weight after sampling with its tare weight before sampling. Samples for metals will be collected on 0.8-micron pore size mixed cellulose ester filters (MCE). These samples

will be analyzed by Atomic Absorption methods specific for each metal. Samples for airborne asbestos will be collected on .8 micron MCE filters and analyzed via phase contrast microscopy (PCM) or transmission electron microscopy (TEM) as appropriate. Hydrocarbons will be analyzed using charcoal tubes or a direct reading photo ionization detector.

Samples will be collected in the breathing zone of selected employees to evaluate the necessary respiratory protection as described in Sections 3.3 and 5.2. Additionally, samples will be collected at the perimeter boundaries of the work site to evaluate the suppression of fugitive dusts that leave the work site.

Hazard reduction includes the use of engineering controls (i.e. wetting methods) and personal protection equipment as necessary. For instance, workers may need personal protective equipment including respirators and Tyvek® or impermeable rain suits during work, depending on the severity of hazardous operations.

2.3.2 Decontamination of Equipment

Skin and eye contact with Alconox detergent, methanol or other cleaning substances can occur while cleaning equipment. This hazard can be reduced with the use of butyl nitrile rubber or neoprene gloves and the use of safety goggles.

2.4 GENERAL CONSTRUCTION HAZARDS

General construction hazards, along with ways of identifying, handling, and preventing such hazards, are included in the "EBI Injury and Illness Prevention Program" (Appendix D). It should be noted that the CAL-OSHA construction safety orders are the basis for much of what is in this Injury and Illness Prevention Program, and the CAL-OSHA construction safety orders will be adhered to at all times on this project by EBI and all subcontractors. The following is a list of typical potential hazards and their control. Other controls may be developed as the situation(s) arise and the SSP shall be amended to include updates.

Potential Hazards and Control

2.4.1 Exposure to Metals

- Stand up-wind of dust generating operations whenever possible.
- Wear gloves when in contact with soil or contaminated surfaces.
- Do not eat, drink, smoke and/or apply cosmetics on the construction site.
- Utilize appropriate dust suppression techniques.
- Decontaminate clothing and wash face, hands and exposed skin before leaving the site, eating or drinking.
- If the airborne concentration of any metal exceeds its OSHA Permissible Exposure

Limit (PEL), as identified in Section 5.2, utilize appropriate respiratory protective devices (respirators) to protect against the measured concentrations; alter or increase dust suppression activities; and increase the frequency of airborne dust monitoring.

- If unknown materials are encountered, call the Project Manager or the Health and Safety Officer.

2.4.2 Exposure to Petroleum Products,

- Stand up-wind of petroleum products whenever possible.
- Minimize contact and contact time with petroleum products.
- Avoid walking through discolored areas, puddles, leaning on drums, or contacting anything that is likely to be contaminated.
- Do not eat, drink, smoke, and/or apply cosmetics on the construction site.
- Wear gloves when in contact with contaminated surfaces.
- Safety glasses must be worn at a minimum.
- Splash goggles must be worn when working with liquids.
- >50 PPM organic vapors in breathing zone requires upgrade to Level C.
- >750 PPM organic vapors in breathing zone requires upgrade from Level C to Level B.
- If unknown materials are encountered, call the Project Manager or the Health and Safety Officer.

2.4.3 PCB's and Pesticides

- Stand up-wind of dust generating operations whenever possible.
- Avoid walking through discolored areas, puddles, leaning on drums, or contacting anything that is likely to be contaminated.
- Do not eat, drink, smoke, and/or apply cosmetics on the construction site.
- Wear gloves when in contact with contaminated surfaces. Use protective equipment including gloves and Tyvec where there is a potential for exposure.
- Safety glasses must be worn at a minimum.
- Splash goggles must be worn when working with liquids.
- If unknown materials are encountered, call the Project Manager or the Health and Safety Officer.

2.4.4 Vehicular Traffic

- Wear traffic safety vest when vehicle hazard exists.

- Use cones, flags, barricades, and caution tape to define work area.
- Use vehicle to block work area.
- Engage police detail for high-traffic situations.

2.4.5 Exposure to Corrosive Products (acids and bases)

- Stand up-wind of containers (pipes and tanks) containing suspect acidic or basic products whenever possible.
- Use impermeable rubber or vinyl suits, boots, neoprene gloves, face shield and respiratory protection as appropriate to minimize potential contact with corrosive products.
- Avoid walking through discolored areas, puddles, leaning on drums, or contacting anything that is likely to be contaminated.
- Do not eat, drink, smoke, and/or apply cosmetics on the construction site.
- Wear neoprene gloves when in contact with contaminated surfaces.
- Safety goggles with side shields must be worn at a minimum.
- Splash goggles must be worn when working with liquids.
- If testing shows or if there is a potential to exposure to corrosive vapors or fumes use full-face respiratory protective equipment. Down grade as appropriate and with the approval of the Project Health and Safety Manager.
- If unknown materials are encountered, call the Project Manager or the Health and Safety Officer.

2.2.6 Inclement Weather

- Severe weather conditions are not anticipated, however if encountered, perform the following:
- Stop outdoor work during electrical storms and other extreme weather conditions such as extreme heat or cold temperature.
- Take cover indoors or in vehicles.
- Listen to local forecasts for warnings about specific weather hazards such as tornadoes, hurricanes and flash floods.

2.4.7 Noise

- All field personnel shall be required to wear hearing protective devices having a Noise Reduction Rating (NRR) of 28 or greater when:
- Normal communication cannot be understood when field personnel are within three

feet from one another.

- You need to raise your voice above normal conversational speech due to loud noise sources.
- Equipment such as a drill rig, jackhammer, cut saw, air compressor, blower, or other heavy equipment is operating on site.
- Additionally, noise monitoring shall be performed at the beginning of each phase of the project to assess the actual noise exposure levels of each activity. Such monitoring will include an initial general noise survey with a sound level meter. All employees will wear hearing protective devices unless and until monitoring establishes their typical 8-hour time weighted average noise exposure below 85 decibels.
- Those sections of the City of Emeryville ordinances which cover nuisance noise, noise pollution and vibration will be followed, including Sections 5-13.01, 5-13.02, 5-13.03, 9-4.59.7, and 9-4.59.8 (see Appendix K).

2.4.8 Electric Shock

- In the event that underground or overhead electrical utilities are present during construction activities, perform the following:
- Maintain appropriate distance from overhead utilities; 20-foot minimum clearance from power lines required; 10 feet minimum clearance from shielded power lines.
- Use ground-fault circuit interrupts as required.
- Perform lockout/tagout procedures.
- Use three-pronged plugs and extension cords.
- Contact your local underground utility-locating service prior to conducting subsurface excavation or drilling activities.
- Follow code requirements for electrical installations in hazardous locations.

2.4.9 Physical Injury

- Wear hard hats and safety glasses when on site.
- Maintain visual contact with the equipment operator and wear orange, safety vest when heavy equipment is used on site.
- Avoid loose-fitting clothing or hanging or unfastened straps that may get caught in rotating machinery.
- Prevent slips, trips, and falls; keep work area uncluttered.
- Use the buddy system when lifting heavy or awkward objects.
- Do not twist your body while lifting.

2.4.10 Insects

- Neither excessive numbers of insects nor poisonous insects are expected at the site, however if encountered, perform the following:
- Tuck pants into socks.
- Wear long sleeves.
- Use insect repellent.

2.4.11 Ladders

- Make sure ladder rungs are sturdy and free of cracks.
- Use ladders with secure safety feet.
- Pitch ladders at a 4:1 ratio.
- Secure ladders at the top when possible.
- Do not use ladders for access to air stripper towers.
- Use non-conductive ladders near electrical wires.

2.4.12 Fire Control

- Smoke only in designated areas.
- Keep flammable liquids in closed containers.
- Keep site clean; avoid accumulating combustible debris such as paper.
- Follow Hot Work Safety Procedures when welding or performing other activities requiring an open flame.
- Isolate flammable and combustible materials from ignition sources.
- Ensure fire safety integrity of equipment installations according to Hazard Classification Diagram.

2.4.13 Static Electricity

- Flammable atmospheres are not anticipated at the work site, however if a risk exists of creating or encountering a flammable atmosphere, perform the following:
- Do not create static discharge in flammable atmosphere.
- Electrically bond and ground pumps, transfer vessels, tanks, drums, bailers, and probes when moving liquids.
- Electrically bond and ground vacuum trucks and the tanks they are emptying

3. PERSONAL PROTECTIVE EQUIPMENT

3.1 INTRODUCTION

It is important that personal protective equipment and safety requirements be appropriate to protect against the potential hazards at the site. Protective equipment will be selected based on the contaminant type(s), concentrations(s), and routes of entry. In situations where the type of materials and possibilities of contact are unknown or the hazards are not clearly identifiable, a more subjective determination must be made of the personal protective equipment needed.

Field personnel and visitors are required to wear the following clothing and equipment, as a minimum, while on the project.

- Hard Hat (required)
- Work boots (required)
- Safety Glasses with side shields (required)
- Long Sleeved Shirt (as appropriate)
- Fluorescent vest (as appropriate)
- Hearing protection (as appropriate)

3.2 LEVELS OF PROTECTION - GENERAL

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

- SCBA
- Fully Encapsulating Suit

Level B: Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required.

- Air supplied respirator
- Coated Tyvek® suit, such as Saranex
- Butyl nitrile rubber or neoprene gloves
- Inner latex or vinyl gloves
- Work boots
- Outer boots/chemical resistant
- Hard hat
- Fluorescent vest (as appropriate)

- Hearing protection (as appropriate)
- Inner Disposable Gloves (2 pairs recommended)

Level C: Should be selected when the types of airborne substances are known, the concentration is measured, and the criteria for using air-purifying respirators are met.

- Air purifying respirator, NIOSH approved, with HEPA filter or organic vapor cartridges, as appropriate
- Tyvek® suits (if splash hazard is possible, a coated suit must be worn)
- Butyl nitrile rubber or neoprene gloves
- Splash goggles/safety glasses if potential for splash (as appropriate)
- Work boots
- Outer boots/chemical resistant
- Inner disposable gloves (two pairs recommended)
- Hard hat
- Fluorescent vest (as appropriate)
- Hearing protection (as appropriate)

Level D: General work clothing is applicable for most work on this project. Changes in the nature of materials may require the use of additional protective equipment.

- Hard hat (required)
- Work boots (required)
- Heavy-duty work gloves, butyl nitrile rubber or neoprene gloves (as appropriate)
- Splash goggles/safety glasses if potential for splash (as appropriate)
- Fluorescent vest (as appropriate)
- Tyvek suit (as appropriate)
- Hearing protection (as appropriate)
- Fall protection (as appropriate)

3.3 REQUIRED PROTECTION

Workers involved in the cutting of piping or handing of corrosives will use level C protection. It is not anticipated that the majority of worker will require protective equipment beyond level C. Each work operation will be performed in Level C until air monitoring shows contaminant levels are consistently below the PEL, at which time the required PPE will be downgraded to Level D.

In situations where specific corrosive hazards do not exist, including typical wrecking of structures such as offices and warehouses where lead and asbestos has been abated prior to demolition level D protection shall be used.

The level of protection required throughout the job will be based upon observations and measurements as determined necessary by the Project Personnel (see Section 8). Should a change in the nature of material be detected, EBI will perform additional analyses. Section 5.2 provides the OSHA PELs to be used to determine the appropriate respiratory protection level. The presence of an airborne concentration of a contaminant which exceeds its PEL will necessitate upgrading the required PPE to Level C. If the measured concentrations exceed the maximum use concentration (MUC) for the respirators employed for a given task, the PPE will be upgraded to Level B.

EBI will provide its employees with appropriate personal protective equipment as required. If respirators are deemed necessary, only NIOSH certified respiratory protective equipment will be utilized.

3.3.1 Fit Testing Respirators

OSHA requires that respirators be fit-tested at least once every six months and that they be fit-tested properly for the facepiece-to-face seal. There are currently two methods acceptable for conducting these test, Qualitative and Quantitative Fit-Testing. The Qualitative method is a fast, easily conducted test that can be performed almost anywhere, while the quantitative method requires the use of bulky test chambers and very expensive electronic equipment. Refer to 29 CFR 1910.134 for exact instructions on fit testing protocol and requirements.

Fit-testing must be repeated immediately if the employee has (a) an obvious change in body weight, (b) significant facial scaring in the area of the facepiece seal, (c) significant dental changes, or (d) reconstructive or cosmetic surgery.

Qualitative fit-testing is based on the wearer's subjective response to the test agent or chemical, of which the three most popular test are the irritant smoke test, the odorous vapor test, and the taste test. The following represents a brief summary of how to conduct each of these tests.

IRRITANT SMOKE TEST: The irritant smoke test is performed by directing an irritant smoke, usually either stannic oxy-chloride or titanium tetrachloride, from a smoke tube towards the respirator being worn. If the wearer cannot detect the irritant smoke, a satisfactory fit is assumed to be achieved.

The respirator wearer will react involuntarily, usually by coughing or sneezing, to a leakage around or through the respirator. Since this type of test provokes an involuntary response from the employee, it is the preferred testing method when available. In this type of qualitative test, the person administering the test should be interested in any response to the smoke and not necessarily to the degree of response.

When an air-purifying respirator is being tested in this method, it has to be equipped with a high efficiency filter cartridge.

NOTE: The test substances are irritant to the eyes, skin and mucous membranes. Therefore, the respirator wearer should keep his/her eyes closed during testing. Per OSHA regulations, this type of test must not be performed inside a test chamber, but must be performed in an open area to allow the test subject to rapidly escape the irritant smoke in the event of a reaction.

ODOROUS VAPOR TEST: The odorous vapor test relies on the respirator wearer's ability to detect an odorous material, usually isoamyl acetate (banana oil) inside the respirator. The test is performed by passing an odorant-saturated material around the outside of the respirator. If the wearer is unable to smell the chemical, then a satisfactory fit is assumed to be achieved. When an air-purifying respirator is tested by this method, it should be equipped with an organic cartridge that removes the test vapor from the air.

NOTE: This test is solely dependent upon the employee's honest response, since there is no involuntary reaction. For that reason, it is not to be preferred.

TASTE TEST: The taste test relies upon the wearer's ability to detect a chemical substance, either sodium saccharin or Bitrex®, by tasting it inside the respirator. The test is performed by placing an enclosure over the respirator wearer's head and shoulders and spraying the test agent into the enclosure with a nebulizer. If the wearer is unable to taste the chemical, then a satisfactory fit is assumed to be achieved.

NOTE: This test is totally dependent on the wearer's honest indication of taste. There is no involuntary response, and therefore is not preferred as a method of testing. When conducting this type of test, the person being tested must not be allowed to eat, drink, or chew gum or tobacco for at least 15 minutes prior to taking the test.

3.3.2 Donning the Respirator

Once the type of respirator has been selected that is applicable and suitable for the purpose intended, the fit of the respirator should be adjusted. The employee should be given the opportunity to select a respirator that provides the most comfortable fit. The employee will be shown how to don and assess the device and should eliminate those that are obviously ill fitting. The employee should first inspect the respirator to ensure that it is not cracked or deformed, that all required valves and gaskets are present and in good condition, that any attached visor is intact and clear, and that the head straps are secure and have not lost their elasticity. The employee will first fasten the lower straps around the neck and then slip the upper straps over the top to the crown of the head. Next, while holding the respirator securely, adjust both the lower and upper straps until the facepiece fits snug against the skin without being uncomfortably tight.

An assessment of comfort should include the following points:

- Chin properly placed.
- Fit across nose bridge.
- Positioning of mask on nose.
- Strap Tension.
- Room for safety glasses.
- Room to talk.
- Distance from nose to bridge.
- Tendency to slip.
- Cheeks filled out.
- Hindrance to movement.

3.4 REQUIRED PERSONAL HYGIENE

As a minimum, all job site personnel will be instructed to and be required to perform the following tasks before leaving the work site or eating and drinking. For more detail see Appendix E.

- Clean work clothes and boots of native material;
- Remove and/or discard protective equipment as necessary and in a safe manner.
- Perform more extensive cleaning of, or remove, general work clothes if necessary.
- Thoroughly wash hands, face, and other exposed skin;
- On-site facilities will be made available for these tasks to take place.

4. WORK ZONES AND SECURITY MEASURES

4.1 GENERAL

The work site will be controlled to reduce the possibility of exposure to any contaminants present and their transport by personnel or equipment from the site.

The possibility of exposure or translocation of contaminants can be reduced or eliminated utilizing the following control methods:

- Setting up security or physical barriers to exclude unnecessary personnel from areas of suspected contaminated soils.
- Minimizing the number of personnel and equipment on-site consistent with effective

operations.

- Establishing work zones, decontamination and storage areas within the site.
- Establishing control points to regulate access to work zones.
- Minimizing the airborne dispersion of contaminants offsite.
- Implementing the appropriate personnel and equipment decontamination procedures.

A detailed map with designated areas will be developed by the Project Manager and the Health and Safety Manager to encompass the entire work zone.

Specific site preparations to best ensure the safety of the public may change depending on the actual environmental conditions and the work procedures to be performed. These specific procedures are to be described in detail, on a daily basis if necessary, by the Project Manager and the Health and Safety Manager and included into the SSP as addenda. These changes will be reviewed with all affected personnel as they occur.

4.2 DUST SUPPRESSION

The appearance of visible dust provides an advanced warning that the dust suppression methods being employed may not be performing as intended. If visible clouds of dust are observed near any activity on the site, the dust control procedures being applied to that activity will be modified to afford greater protection. EBI shall use dust suppression methods that include water misting of all building demolition, structure demolition, excavation and soil handling areas to control airborne dusts. If normal water misting is not effective, the frequency of water spraying will be increased, or the activity will be modified to reduce soil or structure agitation. Storage for potentially hazardous materials will be covered by polyethylene sheeting. Sheeting will be secured to control dislocation by wind.

5. CHEMICALS OF CONCERN

5.1 HEALTH EFFECTS

Potential health effects from an exposure to hazardous substances are dependent on several exposure factors such as toxicity of substances, duration of exposure, concentration during exposure and the overall health of the person exposed.

The potentially hazardous substances found at this site are carbon monoxide (mechanical equipment), metals (building components and dusts), PCB's and pesticides (building components), asbestos-containing piping (abated by Sterling Environmental and corrosives. The only known hazardous substances that have been identified are corrosives in existing piping and storage tanks and in-situ heavy metals painted on building components and accumulated as dusts. Stratified paints and dusts shall be abated by Sterling Environmental prior beginning any demolition. See Appendix L for a summary of known contaminants. Maps

showing the associated sample collection locations are included in Appendix L.

The following Sections constitute a health analysis of potential hazardous substances that may be encountered on the work site. The routes of exposure for these contaminants are dermal, ingestion and inhalation, as noted.

5.1.1 Aldrin

Aldrin has had extensive use as an insecticide. Its toxicity is considered the same as dieldrin since it is metabolized to and stored as that substance by animals and man. Its use has been curtailed partially on the basis of persistence in the environment and bioconcentration in the food chain, since it is highly soluble in fat compared to water. It is no longer registered for use as a pesticide in the United States.

Aldrin appears to be absorbed through the skin in significant amounts and great enough to cause toxic effects, particularly on a chronic basis; however, quantitative-data are not available. Some authors consider dermal contact to be of more practical significance than inhalation.

In humans, early symptoms of intoxication may include headache, dizziness, nausea, vomiting, malaise, and myoclonic jerks of the limbs; clonic and tonic. A TWA of 0.25 mg/m3 is suggested to prevent liver injury, but this recommendation has only limited supporting data. A skin notation is recommended based on the data associated with absorption and deposition in subcutaneous fat and hepatotoxic effects. There is limited evidence of carcinogenicity in experimental animals and inadequate evidence of carcinogenicity to humans.

5.1.2 Petroleum Related compounds

Petroleum constituents can be divided into five major groups: alkanes, alkenes, cycloalkanes, aromatics and additives. The aromatics are the constituents generally regarded to be of the greatest toxic concern. The major aromatics in gasoline are benzene, toluene, ethyl benzene and xylene. Of these, benzene is considered the most toxic. One characteristic effect of petroleum and its aromatic constituents is their ability to irritate the skin when repeated or prolonged exposure occurs. Exposure routes: inhalation, dermal.

5.1.3 Antimony

Antimony has been identified at low concentrations in the soil at this site. Antimony is a brittle, silver-white metallic element. The metal is used chiefly in alloys with lead, notably in storage batteries and type metal. Antimony is also used in textiles, plastics, pigments, ceramics, rubber, matches, and camouflage paints. Signs of acute antimony poisoning include marked weight loss, loss of hair, dry, scaly appearance of the skin, and acute congestion of the heart, liver, and kidneys. Exposure routes: inhalation, ingestion.

5.1.4 Arsenic

Arsenic has been identified at low concentrations in the soil at this site. Arsenic metal is found widely in nature. Arsenic is utilized in alloys to increase metal hardness and heat resistance. Arsenic has a toxic effect on the nervous system. Occupational exposure to inorganic arsenic compounds is usually through inhalation, ingestion or skin contact. Acute effects at the point of entry may occur if exposure is excessive. Dermatitis may occur as an acute symptom but is more often the result of sensitization. Exposure routes: inhalation, ingestion.

5.1.5 Carbon Monoxide

Carbon monoxide is formed as the result of the combustion of fuels. The gas-powered vehicles to be used in this project will create carbon monoxide. Symptoms of exposure include headache, nausea and vomiting. Exposure route: inhalation. Do not operate equipment and tools powered by combustion engines inside buildings or other partially enclosed spaces unless the engine can be placed outdoors and away from air intakes. "Immediately Hazardous to Life and Health" (IDLH) concentrations of carbon monoxide can build up in a short time even with significant ventilation rates. Refer to NIOSH Publication 96-118, "Preventing Carbon Monoxide Poisoning from Small Gasoline-Powered Engines and Tools" for guidance.

5.1.6 Chromium

Chromium has been identified at low concentrations in the soil at this site. Occupational exposure to chromium has been found to cause skin and mucus membrane irritation and corrosion. Chrome has also been related to an increase in lung cancer. Exposure routes: inhalation, ingestion, dermal.

5.1.7 Copper

Copper has been identified at low concentrations in the soil at this site. Exposure to excessive amounts of copper fumes can result in fever, muscle ache, irritation of the eyes, cough upper respiratory tract irritation. Exposure routes: inhalation, ingestion.

5.1.8 Barium

Barium has been identified at low concentrations in the soil at this site. Barium is a dense alkaline-earth metal. This element occurs naturally in ore deposits and makes up 0.05% of the earth's crust. Barium and its compounds may be found in nature and are produced industrially for various uses such as in automotive paints, stabilizers for plastics, case hardening steels, bricks, tiles, lubricating oils, jet fuel and various types of pesticides. The barium ion is a muscle poison causing stimulation and then paralysis. Initial symptoms are gastrointestinal, including nausea, vomiting, colic, and diarrhea, followed by myocardial and general muscular stimulation with tingling in the extremities. Severe cases continue to include loss of tendon reflexes, general muscular paralysis, and death from respiratory arrest or ventricular fibrillation.

Exposure routes: inhalation, ingestion.

5.1.9 Beryllium

One soil sample from this site contained trace concentrations of beryllium. Beryllium is a hard, brittle, gray-white metal. Beryllium is employed as a structural material in space technology; as a moderator and reflector of neutrons in nuclear reactors; as X-ray tube windows; in computer parts; and as an additive in solid propellant rocket fuels. Early animal studies indicated that beryllium was not a highly toxic element. When the commercial production of beryllium and its compounds expanded, however, workers engaged in the extraction of the element from its ores suffered from a number of ailments, including dermatitis, tracheobronchitis, and pneumonitis. Most of these workers were exposed to soluble beryllium salts, but some cases of acute pneumonitis resulted from handling beryllium oxide. Exposure routes: inhalation, ingestion, dermal.

5.1.10 Cadmium

Cadmium has been identified at low concentrations in the soil at this site. Cadmium is a soft, blue-white, malleable metal. Cadmium is used as a coating for other metals, in bearings, in brazing and low-melting alloys, in nickel-cadmium storage batteries, welding rods, and reactor control rods. Chronic exposure to cadmium has been associated with gastrointestinal symptoms, anemia, eosinophilia, anosmia, rhinitis, discoloration of teeth, microfractures, pulmonary emphysema, and kidney disease. Exposure routes: inhalation, ingestion.

5.1.11 Cobalt

Cobalt has been identified at low concentrations in the soil at this site. Cobalt is a silver-white metal with a bluish-gray cast. It is hard, magnetic, ductile, and somewhat malleable. Cobalt is an essential element for humans. It forms part of the molecule cyanocobalamin (vitamin B12). The absence of cyanocobalamin is associated with a variety of deficiency-disease states notably dealing with proper erythropoiesis. Chronic overexposure to cobalt has been observed to cause bronchitis, and impaired ventilatory function among cobalt production workers. Exposure routes: inhalation, ingestion.

5.1.12 Lead

Lead has been identified at moderate concentrations below hazardous waste levels in the soil at this site. Lead is a heavy, ductile, soft gray metal. Intake of excessive amounts of lead into the body can result in adverse blood effects, including central nervous system depression, abdominal pain, cholic and anemia. Exposure routes: inhalation, ingestion.

5.1.13 Nickel

Nickel has been identified at low concentrations in the soil at this site. Nickel is a lustrous silvery solid. Symptoms of exposure include headache, vertigo, nausea, gastrointestinal pain

and general weakness. Target organs include the lungs, paranasal sinus and central nervous system. Exposure routes: inhalation, ingestion.

5.1.14 Molybdenum

Molybdenum has been identified at low concentrations in the soil at this site. Molybdenum is a silver-white metal or a dark-gray or black powder. Metallic molybdenum is used in high-temperature and tool steel alloys, in missile and aircraft parts, and in reactor vessels and metal-ceramic composites. Molybdenum is an essential mineral in human nutrition where it functions in xanthine oxidase and aldehyde oxidase. Chronic overexposure to molybdenum compounds has been shown to cause weakness, fatigue, headache, anorexia, eye, nose, and skin irritation and joint and muscle pains among mining and metallurgy workers. Exposure routes: inhalation, ingestion, dermal.

5.1.15 Oil and Grease

Oil and grease has been identified in the soil at this site. Oil and greases typically have a low order of toxicity. However, additives are frequently found in oils and greases which are significantly more toxic than the base oil itself. Prolonged skin contact with oil and grease can lead to skin disorders, the most common of which is dermatitis. In areas of elevated concentrations of oil and grease personal protection including respirators, chemical resistant suits and gloves, and protective glasses should be worn. Exposure routes: inhalation, dermal.

5.1.16 Polychlorinated biphenyls

PCB transformers, PCB contaminated transformers and non-PCB transformers will be handled during this project. A pale yellow, viscous liquid, 54% chlorodiphenyl (PCB) has a mild hydrocarbon odor. 42% chlorodiphenyl is a colorless to dark brown liquid with a mild hydrocarbon odor. PCBs may be present in transformer insulating liquids. PCBs exhibit chemical stability, resistance to biodegradation, and lipid solubility. Exposure to the vapor and fume of PCB may result in acne, irritation of respiratory passages, and injury to the liver. The material may also be absorbed through the skin causing fatty degeneration of the liver. Fever, hearing difficulties, limb spasms, headache, vomiting, and diarrhea have been reported. In PCB work areas, personal protection including respirators, chemical resistant suits and gloves, and protective glasses should be worn. Exposure routes: inhalation, dermal. Chlorodiphenyl is a nonflammable liquid, but exposure in a fire results in the formation of black soot containing PCBs, polychlorinated dibenzofurans and chlorinated dibenzo-p-dioxins. Level A protective equipment should be worn when responding to a fire involving confirmed or potential PCB-contaminated transformer oil.

5.1.17 Phthalates Di (2-ethylheyl) Phthalates

Phthalates are used chiefly as a solvents and plasticizer for cellulose acetate and cellulose acetate-butyrate compositions and as an insect repellant for personal protection against biting

insects. Exposures typically occur from spray or mist, rather than from the vapor, unless heat is applied. Phthalates were used as an insect repellant in World War II, with no reported skin irritation or sensitization; some skin absorption has been reported. Ingestion of phthalates can cause central nervous system (CNS) depression.

Russian investigators found the most frequent complaints were pain, numbness, and spasms in the upper and lower extremities. These complaints were related to the duration of exposure and usually began after the 6th to 7th year of work.

5.1.18 Vanadium

Vanadium has been identified at low concentrations in the soil at this site. Vanadium pentoxide is a yellow to rust-brown, noncombustible crystalline compound. Vanadium pentoxide is used as a catalyst in the oxidation of sulfur dioxide, oxides of nitrogen, and other substances. It is also used in the manufacture of yellow glass, as a photographic developer, and as a coating for welding electrodes. In addition, vanadium is found in fuel oils at 250 to 400 PPM. Vanadium compounds act chiefly as irritants to the conjunctivae and respiratory tract. Prolonged exposures may lead to pulmonary involvement. Responses are acute, never chronic. Exposure routes: inhalation, ingestion.

5.1.19 Zinc

Zinc has been identified at low concentrations in the soil at this site. Zinc oxide is an odorless, nonflammable, white or yellowish-white powder. Zinc oxide is widely used in pigments, rubber, cosmetics and ointments, and electronic devices. The toxicity of zinc compounds by mouth is low. Metal fume fever (zinc chills, brass founder's ague, etc.) may result from the inhalation of zinc oxide fume. The symptoms include cough, dyspnea, fever, chills, substernal chest pain, nausea, and vomiting. Exposure routes: inhalation, ingestion.

5.1.20 Corrosives

Acidic and basic materials are know to exist in piping. These materials will be flushed from existing piping and neutralized prior to cutting of piping. These materials can cause severe skin burns as well as respiratory irritation or in extreme case injury to the throat and lungs. Exposure routes: direct contact, inhalation and ingestion.

5.2 CAL-OSHA PERMISSIBLE EXPOSURE LIMITS

The following table presents the Cal-OSHA permissible exposure limits. These concentrations represent the maximum allowable concentrations to which workers may be exposed during the work shift, expressed as an 8-hour time weighted average.

Contaminant	Cal-OSHA PEL Concentration

Contaminant	Cal-OSHA PEL Concentration
Aldrin	0.5 milligrams per cubic meter (mg/M3)
Antimony	.25 mg/M3
Arsenic	0.01 mg/M3
Barium	0.5 mg/M3
Beryllium	0.002 mg/M3
Cadmium	0.005 mg/M3
Carbon Monoxide	25 parts per million (PPM)
Chromium	0.5 mg/M3
Cobalt	0.05 mg/M3
Copper	1.0 mg/M3
Dust, Total	10.0 mg/M3
Dust, Respirable	5.0 mg/M3
Gasoline Constituents Benzene Toluene Ethylbenzene Xylene	 1.0 PPM 50 PPM 100 PPM 100 PPM
Lead	0.05 mg/M3
Molybdenum	10.0 mg/M3
Nickel	1.0 mg/M3
Oil (particulate or mist)	5.0 mg/M3
Bis(2-ethylhexyl)phthalate	5 mg/M3
Polynuclear Aromatic Hydrocarbons	0.2 ug/M3
Vanadium (respirable)	0.05 mg/M3
Zinc	10.0 mg/M3
Dust, Total	10.0 mg/M3
PCB's 42% 54%	 1 mg/M3 .5 mg/M3
Corrosives – Sulfuric Acid	1 mg/M3
Corrosives – Sodium hydroxide	2 mg/M3

6. MONITORING PROCEDURES

6.1 INITIAL AND PERIODIC MONITORING

The greatest potential hazards to safety and health caused by chemical exposure at this site are:

- Exposure to potentially hazardous substances through inhalation.
- Exposure to potentially hazardous substances through skin contact and ingestion.

Air monitoring (photoionization detector, Dräger tubes, CO meter, combustible gas meter, O2 meter, personal sampling pump, as appropriate) will be performed or arranged by the Health and Safety Manager. Representative sampling of personnel exposure to potentially hazardous substances shall be conducted on individuals working in contaminated areas. Personal sampling will continue until a pattern develops that characterizes the exposure. If exposures are less than the OSHA action levels (or PELs, where applicable) for these contaminants, sampling will be reduced to once a week. When new operations or phases begin, additional sampling will resume and recharacterization will begin. New operations or phases include breaking new ground, initiating new types of activities, and encountering unexpected conditions. Personnel to be sampled will include those with the highest potential for exposure. The Health and Safety Manager will provide data to ensure that dust and vapor concentrations and gas levels are within acceptable ranges and will provide selection criteria for increased levels of protection if needed.

Respirator cartridges will be changed twice per day at a minimum. This can be done at a scheduled time or during respirator decontamination. If odor breakthrough is detected while wearing the respirator or breathing becomes difficult, change cartridges immediately. Filter cartridges will be changed whenever filter loading causes an unacceptable increase in breathing resistance, as determined by the worker.

Should a "change" in conditions occur, as compared to the baseline conditions and as determined by project personnel (listed in Section 8) (i.e., pungent odors, visible discoloration of soil, visibly contaminated ground water), increased monitoring will be performed at the direction of the Health and Safety Manager. The Project Manager will be notified immediately so that he can take any necessary precautions to protect the general public.

6.2 TASKS PERFORMED WITHIN A CONFINED SPACE

The scope of work for this project does not include confined space entry such as tanks, but may entail work within excavated areas (greater than 4'), which for the purposes of this plan, are considered confined areas. Confined space entry will be limited to personnel who have been requested to perform such entry and who have completed the OSHA prescribed confined space entry training prior to being assigned to any task requiring confined space entry. Prior to worker entry into a confined area all appropriate testing must be conducted by EBI. Air quality in confined spaces will be monitored for oxygen level, lower explosive limit (LEL), hydrogen sulfide, and petroleum hydrocarbons prior to allowing entry into such a space. All monitoring equipment must be calibrated and maintained in accordance with the manufacturer's

recommendations. The level of protective equipment needed will be determined on the basis of this testing and applicable regulations, including 8 CCR 5156 (see Appendix M). See Section 7.4, Confined Spaces in the Evans Brothers Demolition Corporation's Safety Manual, located in Appendix D of this Site Safety Plan for additional information on confined space entry procedures at this jobsite.

7. HEALTH AND SAFETY REQUIREMENTS

7.1 MEDICAL MONITORING PROGRAM

All EBI and subcontract field personnel must have annual medical evaluations in accordance with the company's Health and Safety Program policy. Additional reevaluation will be considered in the event of chemical over-exposure while working on this project.

The corrosives, asbestos and heavy metals known to exist on this project can affect specific organ systems, producing characteristic health effects. The medical evaluation will, therefore, focus on the liver, kidney, nervous system, blood systems, and skin and lung function. Laboratory testing will include complete blood count, and applicable kidney and liver-function tests. Other tests include skin examinations and blood analyses for metal concentrations.

7.2 EBI HAZARD CONTROL PROGRAMS

The following EBI hazard control programs are in effect and covered in the EBI Demolition Corporation Safety Manual in Appendix D. All subcontractors working on this job will comply with all aspects of these programs.

- Excavation and Trenching
- Housekeeping
- Hazard Communications
- Confined Spaces Injury
- Illness Prevention
- Respiratory Programs

7.3 TRAINING

All personnel involved in demolition of surface structures, such as warehouses and offices where hazardous materials have been abated shall not be required to have 40-hour training.

All personnel working in areas where there is a potential for hazardous materials exposure shall receive initial hazardous waste activity instruction and field experience as required under CCR Title-8 and GISO 5192 (Hazardous Waste Operations and Emergency Response). On-site managers and supervisors directly responsible for employees engaged in hazardous waste

operations shall have had an additional eight hours of supervisory training as required under 29 CFR 1910.120, CCR Title-8 and GISO 5192.

The initial training and the 8 hour annual refresher training includes specific details on the following:

- Regulatory Requirements
- First Aid/CPR
- Health Hazard Recognition
- Confined Space Entry
- Respiratory Protection
- Air Monitoring
- Decontamination Procedures
- Hazard Communication
- Toxicology

These specifics are then complimented with actual hands-on experience with use of personal protective equipment and air monitoring equipment. Those supervisors and employees with CPR and first aid training will be identified at weekly tailgate safety meetings.

7.4 HAZARD COMMUNICATION

Communication of hazards on the work site will be by distribution of written hazard descriptions, posting of appropriate signage, and verbally at the weekly safety meetings. Section 8, Hazard Communication of the Evans Brothers Demolition Corporation Safety Manual (see Appendix D) will be the controlling document for hazard communication on this jobsite.

7.5 WORK ZONES ACCESS

Access within a 10-foot radius of any on-site operation is prohibited to all but EBI, subcontract field personnel and designated personnel. The work site shall be secured against unauthorized access by the public. The work site will be surrounded with a six-foot high cyclone fence. Areas of excavation within the work site will be surrounded with caution tape and/or a barricade.

7.6 EMERGENCY EQUIPMENT

Vehicles used for site work will be equipped with a first aid kit and safety equipment including:

- fluorescent vests

- cones
- flags (as needed)
- barricades (as needed)
- fire extinguisher-dry chemical ABC-type extinguisher
- flashlight
- water, suitable for drinking
- portable eye wash
- appropriate emergency bandage material

7.7 ELECTRICAL EQUIPMENT AND GROUND-FAULT CIRCUIT INTERRUPTERS

All electrical equipment and power cables in and around wells or structures suspected of containing hazardous substance contamination must be intrinsically safe and equipped with a three-wire ground lead, rated explosion-proof for hazardous atmospheres. According to OSHA 29 CFR 1926.404, approved ground fault circuit interrupters (GFCI) must be used for all 120 volt, single phase, 15 and 20 ampere receptacle outlets on the site that are not in use by employees. Receptacles on the ends of extension cords are not part of the permanent wiring and, therefore, must be protected by GFCIs whether or not the extension cord is plugged into permanent wiring.

The GFCI is a fast-acting circuit breaker that senses small imbalances in the circuit caused by current leakage to ground, and in a fraction of a second shuts off the electricity. However, the GFCI will not protect the employee from line-to-line contact hazards (such as a person holding two "hot" wires or a hot and neutral wire in each hand). The GFCI does provide protection against the most common form of electrical shock hazard, the ground fault. It also provides protection against fires, overheating, and destruction of insulation on wiring.

GFCIs can be used successfully to reduce electrical hazards on construction sites. Tripping of GFCIs - interruption of current flow - can be caused by wet connectors and tools. It is good practice to limit exposure of connectors and tools to excessive moisture by using watertight or sealable connectors. Providing more GFCIs or shorter circuits can prevent tripping caused by the cumulative leakage from several tools or by leakage from extremely long circuits (Adapted from OSHA 3007; Ground-Fault Protection on Construction Sites, 1987).

7.8 FIRE PREVENTION

During confined space entry or whenever the potential exists for the buildup of a flammable atmosphere, periodic vapor concentration measurements should be taken with an explosimeter or combustimeter. If at any time the vapor concentrations exceed 20% of the Lower Explosive Limit (LEL), then the Site Safety Manager or designated field worker should immediately shut

down all operations.

Only Factory Mutual (FM) approved fire safety cans will be used to transport and store flammable liquids.

All gasoline and diesel-driven engines requiring refueling must be shut down and allowed to cool before filling.

Smoking is not allowed during any operations within the work area.

No open flame or spark is allowed in any area containing petroleum products or other flammable liquids.

7.9 GENERAL HEALTH

Medicine and alcohol can increase the effects of exposure to toxic chemicals. Unless specifically approved by a qualified physician, prescription drugs should not be taken by personnel assigned to operations where the potential for absorption, inhalation, or ingestion of toxic substances exists. No persons are allowed on-site while under the influence of drugs or alcohol or under any diminished capacity, whatsoever.

Drinking alcoholic beverages is prohibited on the work site. Drinking alcoholic beverages and driving is prohibited at any time. Driving at excessive speeds is always prohibited.

Skin abrasions must be thoroughly protected to prevent chemicals from penetrating the abrasion.

It is recommended that contact lenses not be worn by persons working on the site.

7.10 ON-GOING TRAINING

In addition to the initial hazardous waste training, the health hazards posed by the primary contaminants on this project will be discussed over the course of the project at weekly "tool box safety meetings" to serve as a refresher to this instruction.

8. PROJECT PERSONNEL

The Health & Safety Manager will report to the EBI Project Manager relating to hazardous conditions and remedial measures. EBI will oversee conditions and act accordingly during all phases of the project. The following management structure will be instituted to successfully and safely complete this project. In addition, the following personnel including the Site Safety Manager have the authority to stop any construction activity or to modify work practices based on safety requirements. This authority is in effect during working and non-working hours.

The project manager will be responsible for implementing the project and obtaining any necessary personnel or resources for the completion of the project. This will be John Crawford.

8.2 HEALTH & SAFETY MANAGER

The Health and Safety Manager shall be responsible for the coordination and oversight of the following aspects of the Site Safety Plan: vapor, combustion gas, particulate, dermal exposure, and ventilation, and for the implementation of this Site Safety Plan on-site and assuring that all other applicable local, state and federal regulations are complied with.. This will be John Crawford.

8.3 PROJECT ENGINEER, SUPERVISOR & FOREMAN

In the event that the Project Manager and the Site Safety Manager are not on site, the Project Engineer or On-Site Supervisor will assume the responsibilities of the Site Safety Manager. If neither the Engineer nor On-Site Supervisor is available, the Foreman will assume all responsibilities of the Site Safety Manager.

Project Engineer: Will Evans

On-Site Supervisor: Bob Sparks

Foreman Area I: TO BE DETERMINED

Foreman Area II: TO BE DETERMINED

9. EMERGENCY RESPONSE

In the event of an accident or emergency, immediate action must be taken by the first person to recognize the event. First aid equipment is located on site inside all EBI vehicles. Notify (1) the Site Safety Manager and (2) the Project Manager and the Foreman about the situation immediately after emergency procedures are implemented.

Jobsite telephones are located in the contractor's trailer. Nearest public telephones are located at the Emeryville Public Market.

Emergency Equipment is located at the job trailer.

9.1 EMERGENCY TELEPHONE NUMBERS:

Emergency:	Phone
Local Police	911
Fire	911
State Police	911
Ambulance	911
Underground Service Alert (U.S.A.)	(800) 642-2444
Telephone Company	(800) 642-2444

Maps to hospital are also located in the office and in Appendices.

Primary Hospital:
Summit Medical Center
350 Hawthorne Avenue, Oakland
(510) 655-4000

From the site: Shellmound south, Shellmound becomes 40th Street, right onto Telegraph Avenue, left onto 34th Street. Hospital is on the right.

Secondary Hospital:
Alta Bates Hospital
2450 Ashby Avenue, Berkeley
(510) 540-0337

From the site: Shellmound north to Christie Avenue, left onto Christie Avenue, left onto Powell Street, Powell will merge into Adeline Street, continue on Adeline Street to Ashby Avenue, right onto Ashby Avenue, Hospital is on right after Telegraph Avenue.

Emergency Telephone Numbers:

Environmental Emergency:	Phone
Poison Control Center	(800) 523-2222
RGA Environmental, Inc. (Robert Gils)	(510) 547-7771
National Response Center (NRC)	(800) 424-8802
U.S. EPA (24 hour hotline)	(800) 424-9346
Department of Toxic Substances Control:	(510) 540-3840
Regional Water Quality Control	(510) 286-1255
Emergency Services Agency	(510) 820-8468
Project Manager John Crawford	Job Site -
Health and Safety Manager John Crawford	Home – 707 747-6874
	Mobile – 707 322-5062

Environmental Emergency:	Phone

Pager – 707 746-9170

9.2 ENCOUNTERING HAZARDOUS SITUATIONS (REQUIRING EVACUATION)

In the event of an emergency, i.e. fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility, the team member that observes this condition shall give an emergency alarm.

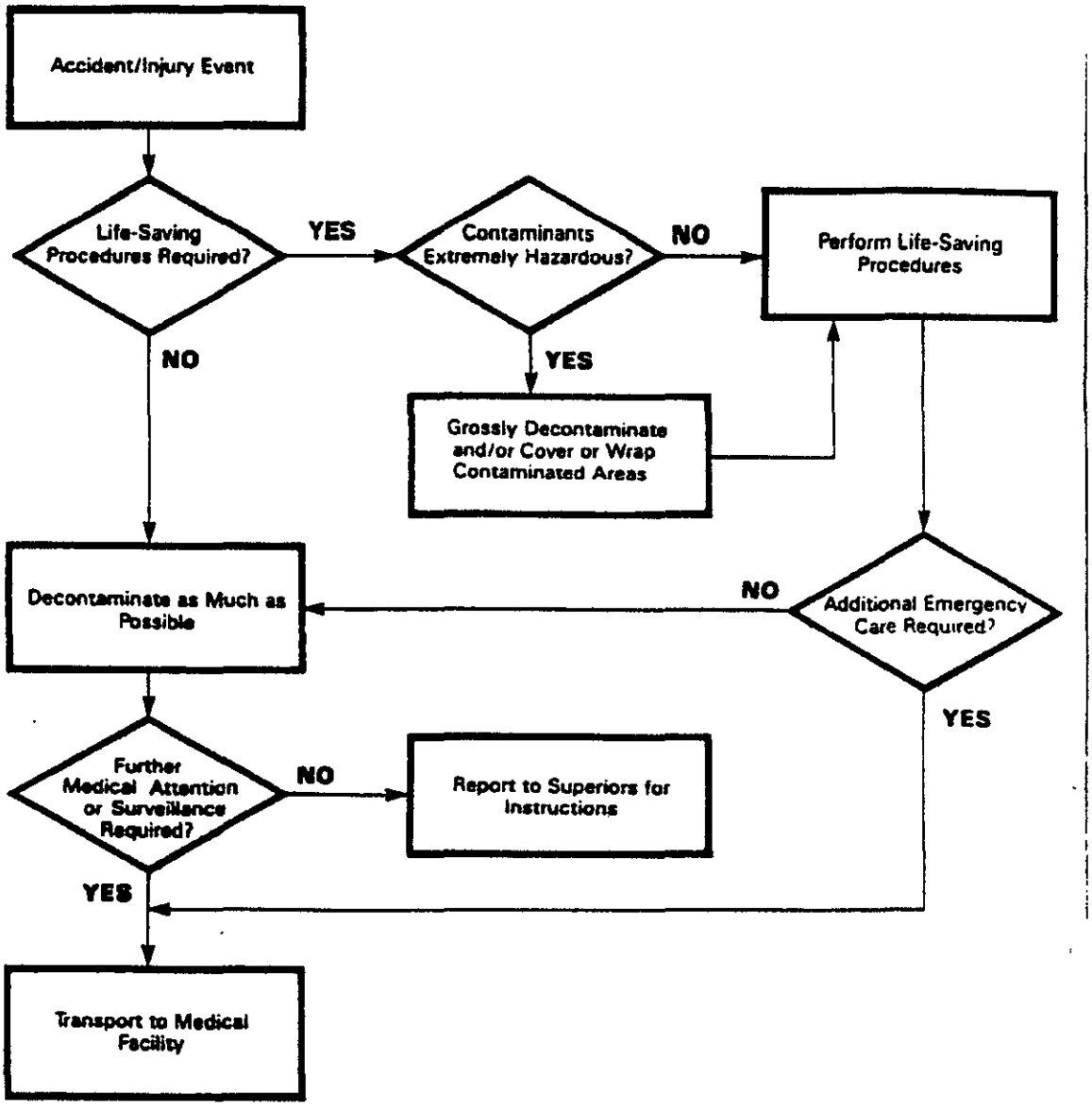
Actions taken will be dictated by the emergency. All appropriate local emergency response agencies shall be notified immediately. The police, fire department, emergency response teams and ambulance may be reached via telephone by dialing 911.

The nearest hospital and additional emergency contacts are listed above.

Personnel encountering a hazardous situation shall instruct others on site to evacuate the vicinity immediately and call the (1) Site Safety Manager, (2) the Project Manager, and (3) the Health & Safety Hygienist for instructions.

The site must not be re-entered until back-up help, monitoring equipment, and personal protective equipment is on hand.

Should an off-site hazardous spill occur, the safety and emergency procedures will be governed by those of the carrier, hauler, etc.



Occupational Safety and Health Guidance Manual for Hazardous Waste site Activities; Prepared by NIOSH, OSHA, USCG, EPA

9.3 USUAL PROCEDURES FOR INJURY

1. If the injury is minor, proceed to administer first aid.

2. Notify the Site Safety Manager, Project Manager, and the Health & Safety Hygienist of all accidents.

3. If the injury requires medical attention, notify the Site Safety Manager, Project Manager.

4. Telephone for ambulance/medical assistance if necessary. Whenever possible, notify the receiving hospital of the nature of physical injury or chemical overexposure. If no phone is available, transport the person to the nearest hospital.

5. Send/take this SSP with the MSDSs to the medical facility with injured person. Worker Compensation Insurance Information Packets are in the site office.

6. Notify the Site Safety Manager, Project Manager, and the Health & Safety Hygienists of all accidents, incidents and near-miss situations.

7. Complete Accident/Incident/Near-Miss Form as needed.

8. Notify and provide necessary information to the engineer for all accidents, incidents, and near-miss situations.

9.4 EMERGENCY TREATMENT

When transporting an injured person to a hospital, bring this Site Safety Plan to assist medical personnel with diagnosis and treatment. In all cases of chemical overexposure, follow standard procedures as outlined below for poison management, first aid, and, if applicable, cardiopulmonary resuscitation. Four different routes of exposure and their respective first aid/poison management procedures are outlined below.

9.4.1 Ingestion

Transport person to nearest hospital immediately.

9.4.2 Inhalation/Confined Space

? Post in the immediate vicinity of the confined space.

DO NOT ENTER A CONFINED SPACE TO RESCUE SOMEONE WHO HAS BEEN OVERCOME UNLESS YOU ARE PROPERLY EQUIPPED WITH A SELF-CONTAINED BREATHING APPARATUS AND HAVE A STANDBY PERSON.

9.4.3 Inhalation/Other

Remove the person from the contaminated environment. Initiate CPR if necessary. Call or have someone call for medical assistance. Refer to MSDS for additional specific information. If necessary, transport the victim to the nearest hospital as soon as possible.

9.4.5 Skin contact/Corrosive Contaminant (Acids, Hydrogen Peroxide, etc.)

Wash off skin with a large amount of water immediately. Remove any contaminated clothing and rewash skin with water. Transport person to a medical facility if necessary.

9.4.6 Eyes

Hold eyelids open and rinse the eyes immediately with large amounts of water for 15 minutes. If possible, have the person remove his/her contact lenses (if worn). Never permit the eyes to be rubbed. Transport person to a medical facility as soon as possible.

APPENDIX A

AGREEMENT AND ACKNOWLEDGMENT STATEMENT

Site Safety Plan Agreement

EBI personnel have the authority to stop work performed by their subcontractors at this site if any work is not performed in accordance with the requirements of this Site Safety Plan.

All project personnel, observers and subcontractor personnel are required to sign the following agreement prior to conducting work at the site.

I have read and fully understand the Site Safety Plan and my individual responsibilities.

I agree to abide by the provisions of the Site Safety Plan.

Name/Company: _____

Signature: _____

Date: _____

RGA Environmental, Inc.
4701 Doyle Street, Suite 14
Emeryville, CA 94608

APPENDIX B

SITE SAFETY PLAN AMENDMENT SHEET

Project Name: _____

Project Number: _____

Location: _____

Changes in field activities or hazards: _____

Proposed Amendment:

Proposed By: _____

Date: _____

Approved By (Project Manager): _____

Date: _____

Approved By (Health & Safety Manager): _____

Date: _____

Declined By: _____

Date: _____

Amendment Number: _____

Amendment Effective Date: _____

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APPENDIX C

DEFINITION OF HAZARD EVALUATION GUIDELINES

Hazard: Airborne Contaminants

Guideline	Explanation
Threshold Limit Value Time-Weighted Average (TLV-TWA)	The time weighted average concentration for a normal eight-hour workday and a forty-hour workweek, to which nearly all workers may be repeatedly exposed without adverse effect.
Permissible Exposure Limit (PEL)	Time weighted average concentrations similar to (and in many cases derived from) the Threshold Limit Values.
Immediately Dangerous to Life and Health (IDLH)	"IDLH" or "Immediately dangerous to life or health" means any atmospheric condition that poses an immediate threat to life, or that is likely to result in acute or immediate severe health effects. This includes oxygen deficiency conditions.

Guideline	Explanation
Lower Explosive Limit (LEL)	The minimum concentration of vapor in air below which propagation of a flame will not occur in the presence of an ignition source.
Upper Explosive Limit (UEL)	Upper Explosive Limit (UEL) The maximum concentration of vapor in air above which propagation of a flame will not occur in the presence of an ignition source.

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Emeryville, CA 94608

Appendix d

EVANS BROTHERS

INJURY AND ILLNESS PREVENTION PROGRAM

Attached

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Emeryville, CA 94608

APPENDIX E

AREA MAP

RGA Environmental, Inc.
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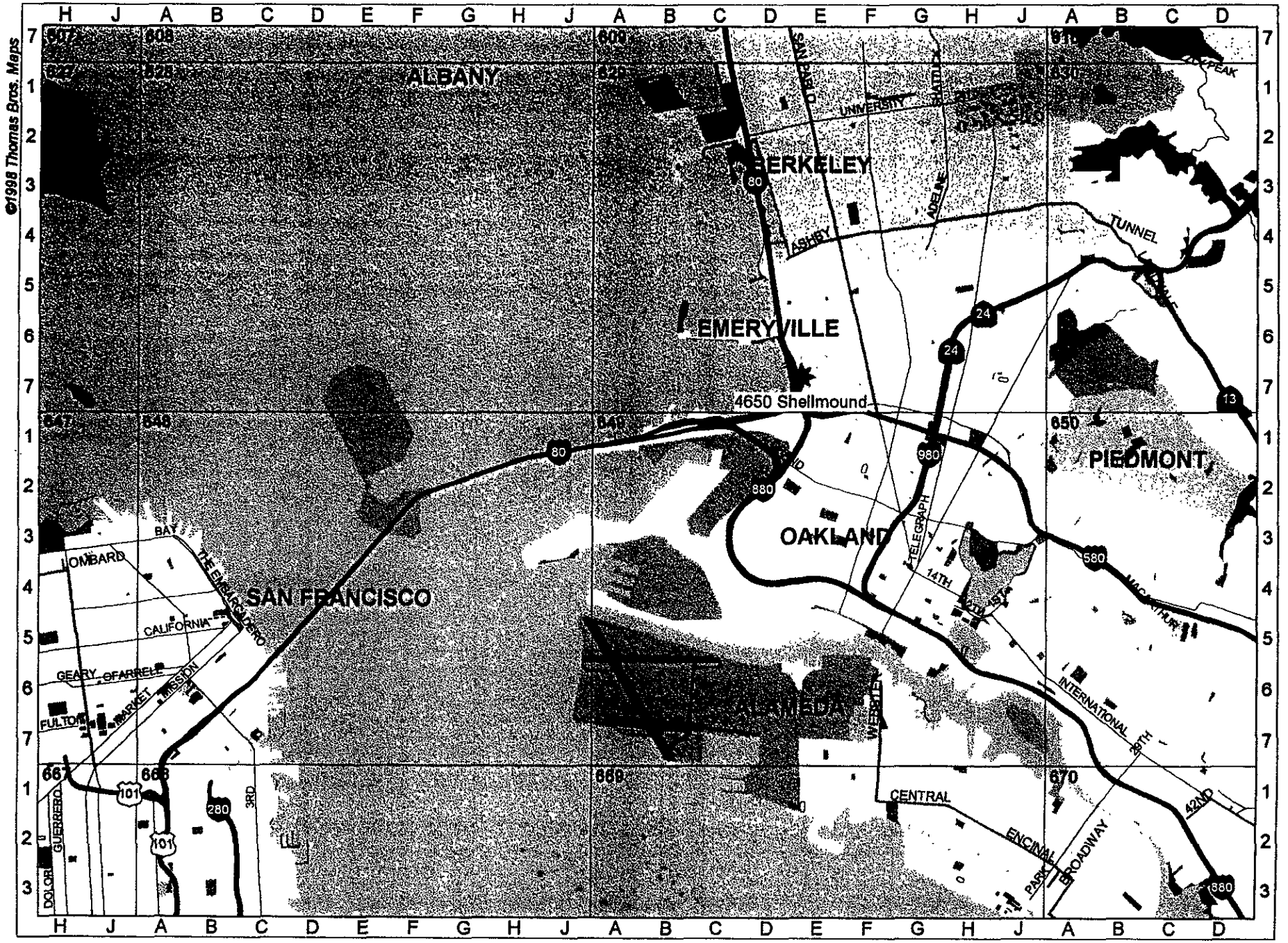
Emeryville, CA 94608

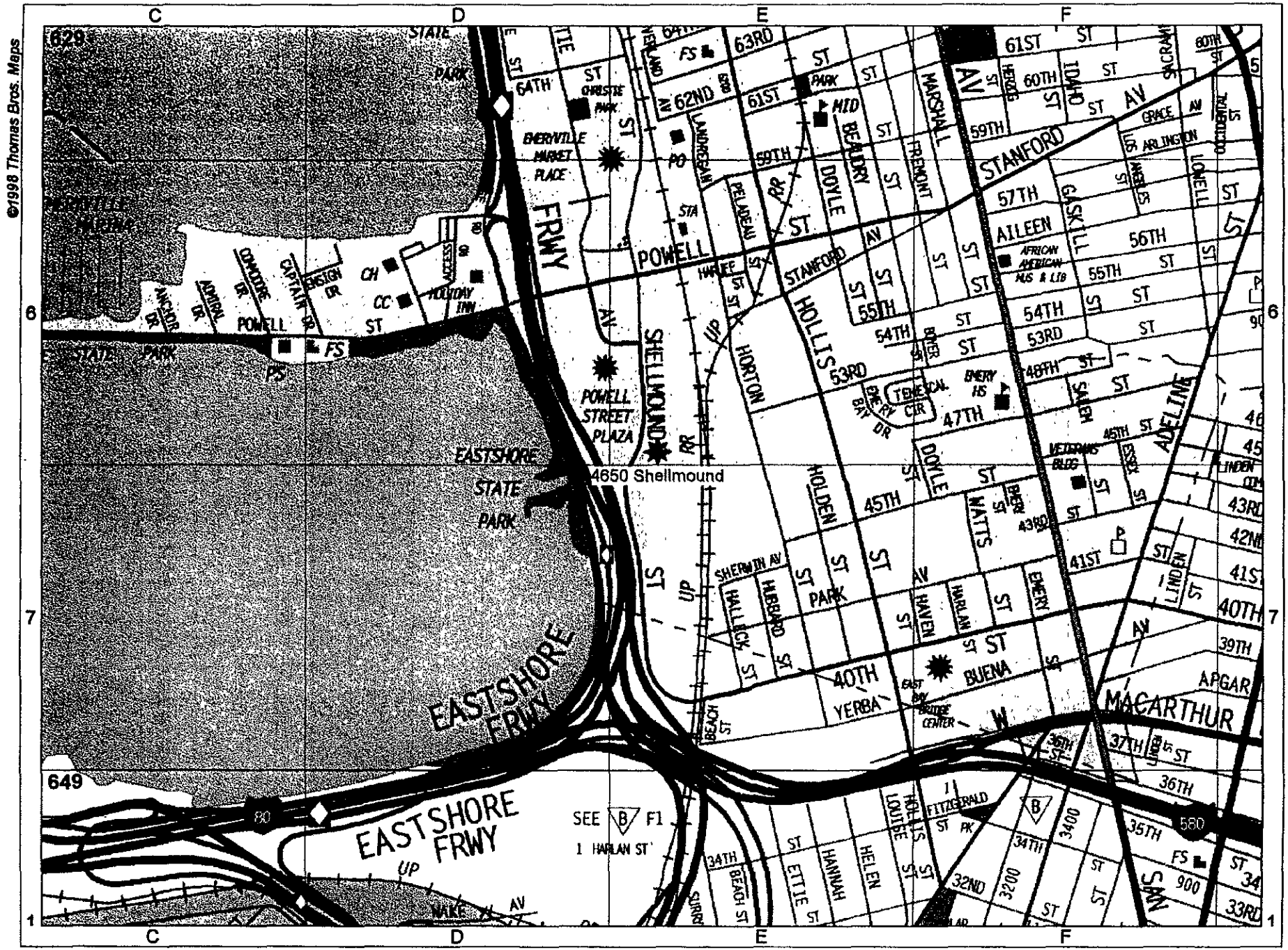


✸ *4650 Shellmound: 4650 Shellmound St, Emeryville, 94608, Page & Grid 629 E7*

APPENDIX F

SITE MAP

RGA Environmental, Inc.
4701 Doyle Street, Suite 14
Emeryville, CA 94608



✸ *4650 Shellmound: Page & Grid 629 E6*

Site Map – 4650 Shellmound Ave

APPENDIX G

HOSPITAL MAP

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Emeryville, CA 94608

Hospital 1 – Hawthorne & Webster
Hospital 2 – 280 W. Mac Arthur

APPENDIX G

PREVIOUS SAMPLING DATA

RGA Environmental, Inc.
4701 Doyle Street, Suite 14
Emeryville, CA 94608

ATTACHMENT A

Erler & Kalinowski, Inc.'s, *Data Report, Above Grade Environmental Investigations, South Bayfront Project, Emeryville, California*, dated December 1997

Please note: The units for the analytical results summarized in Tables 5, 6, and 7 are incorrectly listed as mg/kg. The units for these results should be listed as ug/kg. The units are correct on the laboratory data sheets (attached).

Data Report
Abovegrade Environmental Investigations
South Bayfront Project
Emeryville, California

Prepared for
The City of Emeryville Redevelopment Agency

Prepared by
Erler & Kalinowski, Inc.

December 1997

(EKI 970003.05)

Erler & Kalinowski, Inc.
Consulting Engineers and Scientists
1730 So. Amphlett Blvd., Suite 320
San Mateo, California 94402
(415) 578-1172
Fax (415) 578-9131

12 December 1997

Mr. Ron Gerber
City of Emeryville Redevelopment Agency
2200 Powell Street, 12th Floor
Suite 1200
Emeryville, California 94608-1806

Subject: Abovegrade Investigation Report
Sepulveda, McKinley, and Harcros Properties
South Bayfront Project
Emeryville, California
(EKI 970003.05)

Dear Mr. Gerber:

Erler & Kalinowski, Inc. ("EKI") has prepared the Abovegrade Investigation Report in accordance with Work Authorization Number 2 between EKI and The City of Emeryville Redevelopment Agency, dated 5 May 1997. The report describes the results of investigations conducted to provide information regarding the presence of chemicals and compounds of concern in building materials and abovegrade structures which may affect demolition and offsite disposal of demolition debris.

This document has been prepared for the sole use of our client, the City of Emeryville Redevelopment Agency. EKI makes no representations as to this document's adequacy or completeness for the purposes of others. The information presented in the report is not intended to satisfy any required evaluations or assessments of compliance with any Federal OSHA, Cal OSHA, or similar laws, statues or regulations regarding current use and occupancy or structures or facilities.

Please call if you have any questions regarding the report.

Very truly yours,

ERLER & KALINOWSKI, INC.

Steven A. Tarantino, P.E.
Project Engineer

Earl D. James, R.G.
Project Manager

Data Report
Abovegrade Environmental Investigations

Emeryville Redevelopment Agency
South Bayfront Project, Emeryville, California
December 1997
(EKI 970003.05)

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1. EXECUTIVE SUMMARY

This document presents the results of the initial characterization of building materials and potential hazardous materials and wastes in abovegrade areas on the properties of the South Bayfront Project in Emeryville, California.

The "subject properties" within the South Bayfront Project at which abovegrade investigations were conducted are:

- the Sepulveda Property located at 5600 Shellmound Street (Assessor's Parcel No. 49-1038-007; 0.42 acres; a.k.a. A & J Trucking Site),
- the McKinley Property located at 5500 Shellmound Street (Assessor's Parcel No. 49-1038-008; 1.62 acres; a.k.a. the Bayside Business Center),
- the Harcros Property located at 4650 Shellmound Street (Assessor's Parcel No. 49-1038-001, Parcel No. 49-1038-002, and Parcel No. 49-1038-004; total of 12.45 acres; a.k.a. Pfizer/Harcros Pigments Site).

In this document, the results of the initial sampling and analysis of building materials, wastes, and debris identified at the Sepulveda, McKinley, and Harcros Properties are presented. The objective of the data presented herein is to provide information to the City of Emeryville Redevelopment Agency to be utilized in its preparation of cost estimates and plans and specifications for demolition of the existing structures on the subject properties. The information presented in the report is not intended to satisfy any required evaluations or assessments of compliance with any Federal OSHA, Cal OSHA, or similar laws, statues or regulations regarding current use and occupancy or structures or facilities.

1.1 Background

Available historical background information concerning the subject properties was reviewed by EKI and described in the *Workplan for Abovegrade Sampling* (EKI, 31 March 1997). The objective of the workplan was to document past activities that may have resulted in chemical impacts to existing abovegrade structures and to identify building materials which may require special handling during demolition activities. Chemical contamination of building materials and equipment and the presence of materials of concern could increase the cost of demolition of abovegrade structures and equipment at the subject properties by requiring special protocols, fees, and taxes for handling, transportation, recycling, and disposal of the impacted materials.

Inspection and sampling for the presence of accessible lead-containing materials ("LCM") and accessible asbestos-containing materials ("ACM") was conducted by a subcontractor to EKI,

Environmental Health Consultants ("EHC"). The results of the EHC investigations are summarized in this report. The LCM sampling conducted by EHC was limited to accessible surfaces with visibly deteriorating paint and to items likely to result in flaking, peeling, or significant dust or vapor generation during demolition. Accessible ACM is defined by EHC as material that does not require demolition, disassembly, or destructive procedures in order to access it for sampling and evaluation. Both potentially friable and non-friable suspect ACM were sampled by EHC.

On the Harcros Property, EKI conducted sampling and laboratory analyses of water and solids contained in abovegrade tanks and below grade sumps. The objective of the sampling was to determine if these materials would require special handling or disposal at the time of demolition of the existing structures due to the presence of chemicals of concern. No similar samples were collected by EKI for the abovegrade investigation of the Sepulveda and McKinley properties.

Demolition of the abovegrade structures on the Warburton Property was performed in the summer of 1997 as part of the implementation of the Final Remedial Action Plan, Myer's Container Corporation Former Drum Reconditioning Facility (TRC Environmental Solutions Inc., 21 June 1996). Thus, this document does not present additional information for the Warburton Property.

1.2 Results of Investigations for the Sepulveda Property

On 15 June 1997, investigations on the Sepulveda Property were conducted for ACM and LCM in building materials by EHC (Appendix A). The buildings on the Property consist of a small wooden building and a trailer. Suspect materials sampled for ACM included floor tile and roofing materials. Two bulk samples were collected for analysis for ACM. The results of the investigations indicate that ACMs are present in floor tile in a portion of the building on the Property. There is also a small area of deteriorated red paint on the west side of building from which a sample was collected for LCM. The results of laboratory analyses indicate that the red paint in the area sampled contains 1.2 percent lead. Both the ACM and LCM materials would require special handling during demolition activities.

1.3 Results of Investigations for the McKinley Property

On 23 July 1997, investigations on the McKinley Property were conducted for ACM and LCM in building materials by EHC (Appendix B). The facilities on the Property include a refurbished warehouse and adjacent two story brick building (both of which have been converted to office uses), portable storage trailers, and three railcars. Investigations were not conducted on the portable storage trailers or the rail cars as it is assumed these will be removed intact from the Property prior to demolition activities.

Suspect materials sampled for ACM included floor tile, ceiling tile, ceiling tile adhesive, wall system materials, and roofing products. A total of thirteen bulk samples were collected for laboratory analyses. The results of the laboratory analyses indicated that there are no ACMs present in the building materials.

Samples for LCM were collected only from a fence post in the storage yard. The paint was found to contain lead at a concentration of 1,388 parts per million ("ppm"). Although flaking or peeling lead paint does not appear to be present on the Property, cutting of metal coated with lead paint with a hot torch would require appropriate worker protection precautions.

1.4 Results of Investigations for the Harcros Property

On 13 through 15 June 1997, investigations on the Harcros Property included ACM and LCM inspection and sampling conducted by EHC and collection of samples from abovegrade tanks, sumps, and storage areas by EKI (Appendix C). The Harcros Property includes seven production related buildings, two warehouses, a boiler plant with associated steam distribution system, two office buildings, a supervisor building, three separate areas of abovegrade tanks, and an abovegrade water treatment system with several tanks.

ACM were detected in many locations on the Harcros Property in the 78 bulk samples collected and analyzed by EHC. Materials which contain friable or non-friable asbestos include floor tiles, roofing materials, stucco materials on the outside of buildings, heat shields, insulation in the boiler room and on steam piping, roof and wall materials, and cement. Given the complex nature of piping in the facility it is possible that insulation materials are present in the plant which contain asbestos but which were not accessible or otherwise identified. The ACM will require special handling during demolition.

LCM were detected in many areas of damaged paint around the facility in the 20 samples collected and analyzed by EHC. The areas of damaged LCM include paint on the exterior surfaces of buildings, paint on tanks, paint on walkways, and paint on interior surfaces of buildings. The LCM will require special handling during demolition.

Abovegrade samples collected by EKI include brick, concrete, stockpiled soils, soils in the vicinity of transformers (for the presence of polychlorinated biphenyls – "PCBs"), sludge from tanks, and waste water in tanks. The results of laboratory analyses indicated the presence of metals and petroleum hydrocarbons in sludges, PCBs in concrete, and low pH in concrete. The presence of these compounds may affect the handling of materials during demolition and disposal activities.

2. INTRODUCTION

This document presents the results of investigations conducted as part of the initial characterization of building materials and potential hazardous materials and wastes remaining on the properties of the South Bayfront Project in Emeryville, California. This work was performed in accordance with Task 3 of Work Authorization Number 2 between Erler & Kalinowski, Inc. (EKI) and the City of Emeryville Redevelopment Agency ("City" or "Agency"), dated 5 May 1997, and with the *Workplan for Abovegrade Sampling* dated 31 March 1997 (the "Workplan"). This document has been prepared for the use of our client, the City of Emeryville Redevelopment Agency. EKI makes no representations as to this document's adequacy or completeness for the purposes of others.

The "subject properties" within the South Bayfront Project include the following:

- the Sepulveda Property located at 5600 Shellmound Street (Assessor's Parcel No. 49-1038-007; 0.42 acres; a.k.a. A & J Trucking Site),
- the McKinley Property located at 5500 Shellmound Street (Assessor's Parcel No. 49-1038-008; 1.62 acres; a.k.a. the Bayside Business Center),
- the Harcros Property located at 4650 Shellmound Street (Assessor's Parcel No. 49-1038-001, Parcel No. 49-1038-002, and Parcel No. 49-1038-004; total of 12.45 acres; a.k.a. Pfizer/Harcros Pigments Site), and
- the Warburton Property located at 4500 Shellmound Street (Assessor's Parcel No. 49-1038-003; 1.62 acres; a.k.a. Myer's Drum Site).

The location of the 16.1 acre area encompassed by the South Bayfront Project is shown on Figure 1. Within this document, the parcels listed above collectively are referred to as the "subject properties" and individual properties are referred to as the "Property".

Available historical background information concerning the subject properties was reviewed by EKI to document past activities that may have resulted in chemical impacts to existing abovegrade structures. The results of this review were summarized in the Workplan. Potential chemical contamination of building materials and equipment could increase the cost of demolition of abovegrade structures and equipment at the subject properties by requiring special protocols, fees, and taxes for handling, transportation, recycling, and disposal of the impacted materials. The sources of background information reviewed by EKI for each subject property included:

- historical Sanborn insurance maps,
- historical aerial photographs,

- files maintained by the State of California Department of Toxic Substances Control (DTSC), Alameda County Department of Environmental Health Services (ACDEHS), and the City of Emeryville,
- reports and information supplied by the Agency regarding the subject properties and intended land uses, including the Phase I Environmental Site Assessment for the South Bayfront Project (Geo/Resource Consultants, Inc., February 1996), and
- visual observations of current conditions during a site walk-through.

Most of this information was documented in the Background Review and Work Plan for Subsurface Environmental Investigation, South Bayfront Project by EKI dated 24 March 1997 ("Subsurface Work Plan"). Information specific to abovegrade structures was summarized in the Workplan and provided a basis for recommendations for investigations.

The results of the investigative activities conducted in accordance with the recommendations in the Workplan are described in this document.

Demolition of the existing abovegrade structures on the Warburton Property was performed in the summer of 1997 as part of the implementation of the Final Remedial Action Plan, Myer's Container Corporation Former Drum Reconditioning Facility (TRC Environmental Solutions Inc., 21 June 1996). Thus, this document does not present information regarding the Warburton Property.

2.1 Report Organization

This document is comprised of five chapters and five appendices:

- Chapter 1 -Executive Summary
- Chapter 2 - Introduction
- Chapter 3 - Sepulveda Property
- Chapter 4 - McKinley Property
- Chapter 5 - Harcros Property
- Appendix A - EHC Asbestos and Lead Survey Report for the Sepulveda Property
- Appendix B - EHC Asbestos and Lead Survey Report for the McKinley Property
- Appendix C - EHC Asbestos and Lead Survey Report for the Harcros Property
- Appendix D - EKI Field Notes for the Harcros Property
- Appendix E - Laboratory Analytical Reports for Samples Collected On the Harcros Property

2.2 Objectives of Investigations

The objective of the data presented herein is to provide information to be utilized by the Agency in its preparation of cost estimates and plans and specifications for demolition of the existing structures on the subject properties. Sampling and analysis of the above-ground construction

materials, debris, and waste described in the following chapters were performed to assess potential incremental costs that may be incurred for removal and disposal of hazardous materials and wastes that may be present within existing structures on the subject properties.

Inspection and sampling for the presence of accessible lead-containing materials ("LCM") and accessible asbestos-containing materials ("ACM") was conducted by a subcontractor to EKI, Environmental Health Consultants ("EHC"). The results of the EHC investigations are appended and summarized in this report.

The LCM sampling conducted by EHC was limited to surfaces with deteriorating paint and to materials likely to result in flaking, peeling, or significant dust or vapor generation during demolition.

Accessible ACM and LCM are defined by EHC as material that does not require demolition, disassembly, or destructive procedures in order to access it for sampling and evaluation. Inspections were conducted by EHC to identify both friable and non-friable ACM. Friable ACM is defined as material that can easily be crumbled or pulverized under hand pressure. Friable ACM may pose a greater hazard than non-friable ACM because of its higher fiber release potential. Non-friable ACM can become friable during building demolition.

On the Harcros Property, EKI conducted limited sampling and laboratory analyses of water and solids contained in abovegrade tanks and below grade sumps. The objective of the sampling was to determine if these materials would require special handling or disposal at the time of demolition of the existing structures due to the presence of chemicals of concern. EKI did not collect similar samples of abovegrade materials on the Sepulveda or McKinley properties.

3. SEPULVEDA PROPERTY

The Sepulveda Property (Assessor's Parcel No. 049-1038-007) forms the northwestern corner of the South Bayfront Project and is located at 5600 Shellmound Street, Emeryville, California (see Figures 2-2 and 3-1). The Sepulveda Property has an area of approximately 0.42 acres and is owned by Mr. Arthur M. Sepulveda.

The Sepulveda Property is currently occupied by the offices and parking area of the A & J Trucking Co., Inc. The offices are two small rectangular buildings (including a mobile trailer) located along the northern property boundary. Approximately ninety percent of the property is covered with a concrete slab and the property is surrounded by a chain-link fence. The primary use of the property appears to be temporary parking and storage of truck tractors, truck trailers, and automobiles. There is some storage of batteries, tires, lubricants, and other supplies for minor repairs in the middle of the eastern building. There were no visible piles of soils or debris on the Property at the time of the walkthrough conducted on 18 March 1997.

3.1 Field Investigations

Investigations on the Sepulveda Property were conducted for ACM and LCM in building materials by EHC. EHC sampling locations are shown on Figure 2. A detailed description of the sampling methodology and the results of the investigations conducted by EHC on the Sepulveda Property is presented in Appendix A.

Suspect materials sampled for ACM by EHC included floor tile and roofing materials. Two bulk samples were collected.

Deteriorated red paint was collected for LCM analyses by EHC from a small area on the west side of building.

No abovegrade samples were collected by EKI on the Sepulveda Property.

3.2 Results of Investigations

The results of the investigations indicate that ACM are present in floor tile in a portion of the building on the Property. ACM were not detected in the roofing materials.

The results of laboratory analyses indicate that the paint contains 1.2 percent lead. Both the ACM and LCM materials would require special handling during demolition activities.

4. MCKINLEY PROPERTY

The McKinley Property (Assessor's Parcel No. 049-1038-008) forms the northeastern corner of the South Bayfront Project and is located at 5500 Shellmound Street, Emeryville, California (see Figures 2-2 and 4-1). The McKinley Property has an area of approximately 1.62 acres.

The current primary use of the McKinley Property at 5500 Shellmound Street is office space and parking for small businesses (Figure 1). The McKinley Property is occupied by a single, permanent structure that appears to be a portion of the former Sherwin-Williams Co. plant that existed at this location at least as early as 1929. This office building is presently called the Bayside Business Center and its tenants include Weiss Associates, SGRO Promo Associates, and Advanced Software Technology. Fenced areas at the western and northern portions of the McKinley Property are used for equipment storage and maintenance activities by Weiss Associates, an engineering firm. These areas also include a steam cleaning area connected to a drain feeding the sanitary sewer, vehicle or equipment maintenance area with used oil storage, and a storage area for miscellaneous chemicals related to equipment cleaning.

Observations of the Bayside Business Center at the McKinley Property during the walk-through on 18 March 1997 indicated that the interior and exterior surfaces that comprise the building were cleaned by sand-blasting, steam cleaning or other processes before the building was converted to use as office space. The scope of abovegrade investigations at the McKinley Property were limited based upon the following assumptions:

- Chemicals of concern that may have been released to the surfaces of building materials in the main building at the subject property during the operation of the former Sherwin-Williams Co. plant and the former machine shop were removed when the building was converted to use as office space.
- The rail cars and all materials stored at the subject property (inside and outside) by current tenants, including the portable storage sheds, will be removed from the property prior to demolition.
- Miscellaneous chemicals and used oil stored at the Property will be removed.

4.1 Field Investigations

Investigations on the McKinley Property were conducted by EHC for ACM and LCM in building materials. EHC sampling locations are shown on Figure 2. A detailed description of the sampling methodology and the results of the investigations conducted by EHC on the McKinley Property is presented in Appendix B.

Suspect materials sampled for ACM included floor tile, ceiling tile, ceiling tile adhesive, wall system materials, and roofing products. A total of thirteen bulk samples were collected for laboratory analyses.

Samples for LCM were collected only from a fence post in the storage yard.

No samples were collected by EKI for characterization of abovegrade materials.

4.2 Results of Investigations

The results of the laboratory analyses indicated that there are no ACMs present in the building materials in the areas sampled.

The sample of paint collected from the post in the yard was found to contain lead at a concentration of 1,388 parts per million ("ppm"). Although flaking or peeling lead paint does not appear to be present on the Property, according to EHC, cutting of metal coated with lead paint with a hot torch would require appropriate worker protection precautions.

5. HARCROS PROPERTY

The Harcros Property (Assessor's Parcel No. 049-1038-001-004, Parcel No. 049-1038-001-001, and Parcel No. 049-1038-002) forms the central portion of the South Bayfront Project and is located at 4650 Shellmound Street, Emeryville, California. The Harcros Property has an area of approximately 12.42 acres and comprises about 77 percent of the total area of the South Bayfront Project.

The current primary uses of the Harcros property are for blending of custom pigments and warehousing. The Harcros Property includes seven production related buildings, two warehouses, a boiler plant with associated steam distribution system, two office buildings, a supervisor building, three separate areas of abovegrade tanks (only one area is in active use), and an abovegrade water treatment system with several tanks which is utilized to contain storm runoff from the bermed areas of the Property.

5.1 Field Investigations

Investigations on the Harcros Property included ACM and LCM inspection and sampling conducted by EHC and collection of samples from abovegrade tanks, sumps, concrete, brick, and storage areas by EKI. EKI and EHC sampling locations are shown on Figure 2. A detailed description of the sampling methodology and the results of the investigations conducted by EHC on the McKinley Property are presented in Appendix C. EKI field notes are included in Appendix D. Laboratory analytical reports for samples collected by EKI are included in Appendix E.

Suspect ACMs at the subject property include floor tiles, pipeline and pipe-fitting insulation, wall system components (sheet rock, joint compound, and tape), ceiling tiles, exterior wall stucco, and roofing systems. EHC collected 78 samples of suspect ACM for analysis by polarized light microscopy (locations labeled "A" on Figure 2).

Suspect LCMs primarily include painted surfaces on pipelines, debris, equipment, and buildings. EHC collected 20 samples of paint for laboratory analyses for the presence of lead (locations labeled "P" on Figure 2).

EKI collected 15 samples of sludge from four above ground tanks, one overflow sump, three runoff sumps, and the settling pond associated with the on-site wastewater treatment system (Table 1, locations labeled "S" on Figure 2). The samples of sludge were collected by lowering a sampler similar to a bailer into the tank or sump. The samples of sludge were analyzed for petroleum hydrocarbon compounds using EPA Method 8015 quantified against a library of compounds from gasoline to crude oil, volatile organic compounds using EPA Method 8240, semi-volatile organic compounds using EPA Method 8270, polychlorinated biphenyls using EPA Method 8080, and CAM 17 Metals using an inductively-coupled plasma (ICP) spectrophotometer.

Core samples of concrete were collected at five locations at the Harcros Property (Table 1, locations labeled "C" on Figure 2). The concrete cores were collected by a subcontractor to EKI using an electric coring machine equipped with a water-cooled diamond bit. The concrete cores were four inches in diameter with a length that corresponds to the thickness of the concrete slab. The laboratory pulverized the concrete core prior to performing chemical analyses. The samples were analyzed for petroleum hydrocarbon compounds using EPA Method 8015 quantified against a library of compounds from gasoline to crude oil, volatile organic compounds using EPA Method 8240, semi-volatile organic compounds using EPA Method 8270, polychlorinated biphenyls using EPA Method 8080, and CAM 17 Metals using an inductively-coupled plasma (ICP) spectrophotometer.

EKI collected samples of brick from the two brick-lined tanks (tanks 402 and 405) at the Harcros Property (Table 1, locations labeled "B" on Figure 2). These tanks were used to react scrap metal with pickle liquor or waste sulfuric acid as part of the process of manufacturing iron oxide pigments. The samples of brick were collected by EKI using a hammer and chisel. The samples of brick were pulverized at the laboratory prior to performing chemical analyses. The pulverized brick was analyzed for CAM 17 Metals using an inductively-coupled plasma (ICP) spectrophotometer.

A sample of soil/dust was collected from an area of the Harcros plant where a pile of debris was observed during the site walk-through on 10 March 1997 (Table 1, location labeled "S/D" Figure 2). The samples of soil/dust were collected by the EKI geologist using a stainless steel spoon. The samples of dust/dirt were analyzed CAM 17 Metals using an inductively-coupled plasma (ICP) spectrophotometer.

Samples of surface water were collected from the clarifier and wastewater treatment tanks (Table 1, locations labeled "W" on Figure 2). The samples of surface water were collected by EKI using pre-cleaned disposable bailers. The samples of surface water were analyzed for petroleum hydrocarbon compounds using EPA Method 8015 quantified against a library of compounds from gasoline to crude oil, polychlorinated biphenyls (PCBs) using EPA Method 8080, volatile organic compounds using EPA Method 8010, semi-volatile organic compounds using EPA Method 8270, CAM 17 Metals using an inductively-coupled plasma (ICP) spectrophotometer, and Chromium VI using EPA Method 7196.

5.2 Results of Investigations

ACM were detected in many locations on the Harcros Property (Appendix E, EHC report). Materials which contain friable or non-friable asbestos include floor tiles, roofing materials, stucco materials on the outside of buildings, heat shields, insulation in the boiler room and on steam piping, roof and wall materials, and cement. Given the complex nature of piping in the facility it is possible that insulation materials are present in the plant which contain asbestos but which were not accessible. The ACM will require special handling during demolition.

LCM were detected in many areas of damaged paint around the facility (Appendix E, EHC report). The areas of damaged LCM include paint on the exterior surfaces of buildings, paint on tanks, paint on walkways, and paint on interior surfaces of buildings. The LCM will require special handling during demolition.

The results of laboratory analyses for abovegrade samples collected by EKI are summarized in Tables 2 through 8. The results indicate the following:

- metals and petroleum hydrocarbons are present in sludges (Tables 2 and 3),
- petroleum hydrocarbons and PCBs are present in concrete (Tables 3 and 4),
- low pH is present in concrete (Table 7),
- extractable hydrocarbons are present in surface waters (Table 8).

These conditions may affect the handling of materials during demolition and disposal activities and should be considered during the planning for such work.

Metals analytical data for sludge and other solids are summarized in Table 2. In general, the concentrations are within a range which will not affect disposal or handling of the materials. Barium concentrations are greatest in sludge samples SL-4, SL-7, and SL-8 (270, 290, and 350 mg/kg, respectively). The peak concentration of barium was detected in the dust sample S/D-1 (400 mg/kg). The peak chromium concentration was detected in concrete sample C-3 (540 mg/kg). The peak copper concentration was 200 mg/kg in concrete sample C-2. The peak lead concentration was 430 mg/kg in concrete sample C-2. The peak thallium concentrations were 230 mg/kg in sample C-2 and 250 mg/kg in sample S/D-1. The peak zinc concentration was 830 mg/kg in concrete sample C-2.

Extractable hydrocarbon concentrations in the sludge samples ranged from 33 mg/kg in SL-12 to 1,700 mg/kg in SL-4 (Table 3).

Polychlorinated biphenyls were detected on concrete samples C-2 and CONCRETE-35-B (Table 4).

Volatile and semivolatile organic compounds were not detected in the sludge or concrete samples (Table 5 and 6). The presence of bis(2-ethylhexyl)pthalate and diethylphthalate in sludge samples (Table 6) is attributed to glue utilized in the construction of the sampling apparatus and is not likely a compound released at the Harcros Property.

The pH of sludge samples were relatively uniform, ranging from 6.4 to 7.8 (Table 7). The pH of concrete samples indicates impacts by acidic compounds at C-3 (pH = 0.54) and C-4 (pH = 3.1).

Samples collected from water in abovegrade tanks and sumps indicated the presence of extractable petroleum hydrocarbons (Table 8).

6. REFERENCES

Erler & Kalinowski, Inc., 31 March 1997, *Workplan for Abovegrade Sampling*, Submitted to City of Emeryville Redevelopment Agency.

Erler & Kalinowski, Inc., 24 March 1997, *Background Review and Work Plan for Subsurface Environmental Investigation, South Bayfront Project*, Submitted to The City of Emeryville Redevelopment Agency.

TRC Environmental Solutions, Inc., 21 June 1996. Final Remedial Action Plan, Myer's Container Corporation, 4500 Shellmound Street, Emeryville, California.

Table 1

Summary of Harcros Abovegrade Samples

Emeryville, California

SAMPLE ID	SAMPLE NAME	DESCRIPTION	DATE SAMPLED
BRICK SAMPLE			
EMY20131#O	B-1	Composite Sample of Brick Lining from Top of Tank #402 and Tank #405	6/16/97
CONCRETE SAMPLES			
EMY20132#L	C-1a	Surface Concrete Core from Location HCPT-6	6/16/97
EMY20133#I	C-1b	Lower Concrete Core from HCPT-6, approx. 4 inches below surface.	6/16/97
EMY20171#8	C-2	Soil/Powder from trench between ferrous sulfate tanks 21 and 26	6/17/97
EMY20170#B	C-3	Corroded concrete next to pump in pump house	6/17/97
EMY20169#P	C-4	Corroded concreate and dust next to tanks 128 and 131, fast tank area.	6/17/97
PCB SAMPLE			
EMY20167#V	PCB-1	Soil from Transformer Pad	6/18/97
SOIL/DUST SAMPLE			
EMY20130#R	S/D-1	Composite Sample from Groundlevel Dust Bin on the North Side of Roaster Building #1	6/16/97
SLUDGE SAMPLES			
EMY20180#7	SL-1	Sludge from Clarifier #408, sludge surface	6/17/97
EMY20182#1	SL-2	Sludge from Clarifier #408, lower	6/18/97
EMY20179#I	SL-3	Sludge from Tank #414, sludge surface	6/17/97
EMY20181#4	SL-4	Sludge from Tank #414, lower	6/18/97
EMY20178#O	SL-5	Sludge from Tank North of #408, sludge surface	6/17/97
EMY20183#Z	SL-6	Sludge from Tank north of #408, lower	6/18/97
EMY20176#U	SL-7	Eastern Settling Pond, sludge surface	6/17/97
EMY20185#T	SL-8	Eastern settling pond, lower	6/18/97
EMY20177#R	SL-9	Western settling pond, sludge surface	6/17/97
EMY20184#W	SL-10	Western settling pond, lower	6/18/97
EMY20175#X	SL-11	Runoff Pump Sump sludge, next to Tank #140	6/17/97
EMY20174##	SL-12	Sludge from sump north of yellow dryer (building #8)	6/17/97
EMY20173#2	SL-13	Sludge from Overflow (Treated Effluent) near Clarifier (Tank #408)	6/17/97
EMY20172#5	SL-14	Sludge from storm water run-off sump to wastewater treatment plant (west of building #3)	6/17/97
EMY20168#S	SL-15	Sludge from Aeration Tank #415	6/18/97
SURFACE WATER SAMPLES			
EMY10025#S	W-1	Water sample from Clarifier Tank #408	6/17/97
EMY10036#L	W-2	Water from Wastewater Treatment Tank North of Clarifier Tank #408	6/18/97

Table 2

Summary of Metals Analytical Data for Abovegrade Solids Collected at the Harcros Property

Emeryville, California

Sample ID	Sample Name	Sample Date	Title 22 Metals (mg/kg) (1)																
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium VI (2)	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Sludge Samples																				
EMY20180#7	SL-1	6/17/97	<5	10	30	<0.5	<0.5	38	<0.5	<2.5	25	7.5	<0.1	<2.5	9.5	7.1	<0.5	110	15	70
EMY20182#1	SL-2	6/18/97	<5	10	28	<0.5	<0.5	39	<0.5	6	49	8.1	<0.1	<2.5	37	<5	<0.5	54	16	30
EMY20179#L	SL-3	6/17/97	<5	18	27	<0.5	<0.5	76	<0.5	8.2	67	17	<0.1	<2.5	41	14	<0.5	57	26	160
EMY20181#4	SL-4	6/18/97	<5	19	270	<0.5	0.93	80	<3.5	11	110	27	<0.1	<2.5	57	<5	<0.5	160	49	150
EMY20178#O	SL-5	6/17/97	<5	13	<5	<0.5	<0.5	34	<0.5	<2.5	20	7.2	<0.1	<2.5	9.6	9.1	<0.5	120	15	71
EMY20183#Z	SL-6	6/18/97	<5	9.2	9.1	<0.5	<0.5	70	<0.5	4.4	48	13	<0.1	<2.5	23	<5	<0.5	<5	28	60
EMY20176#U	SL-7	6/17/97	<5	13	290	<0.5	0.79	88	<0.5	9.4	100	25	<0.1	<2.5	67	<5	<0.5	<5	38	190
EMY20185#T	SL-8	6/18/97	<5	16	350	<0.5	<0.5	100	<0.5	10	110	61	<0.1	<2.5	66	<5	<0.5	56	41	100
EMY20177#R	SL-9	6/17/97	<5	16	19	<0.5	0.6	110	<0.5	10	55	15	<0.1	<2.5	49	<5	<0.5	29	41	180
EMY20184#W	SL-10	6/18/97	<5	20	28	<0.5	0.73	64	<3.5	10	61	19	<0.1	<2.5	64	<5	<0.5	72	42	100
EMY20175#X	SL-11	6/17/97	<5	6.7	<5	<0.5	<0.5	32	<0.05	<2.5	18	6.9	<0.1	<2.5	10	<25	<0.5	64	9.6	22
EMY20174##	SL-12	6/17/97	<5	14	9.7	<0.5	<0.5	46	<0.5	5.2	45	13	<0.1	<2.5	21	21	<0.5	62	25	100
EMY20173#2	SL-13	6/17/97	<5	13	54	<0.5	<0.5	48	<0.5	3.7	45	16	<0.1	<2.5	18	5.3	<0.5	110	17	100
EMY20172#5	SL-14	6/17/97	<5	23	19	<0.5	0.61	94	<0.5	9.5	66	21	<0.1	<2.5	42	21	<0.5	130	29	200
EMY20168#S	SL-15	6/18/97	<5	17	19	<0.5	<0.5	67	<0.5	17	100	130	<0.1	<2.5	100	<5	<0.5	<5	59	51
Other Solids																				
EMY20131#O	B-1	6/17/97	<5	7.9	<5	<0.5	<0.5	25	NA (3)	2.8	27	5.8	<0.1	<2.5	29	<5	<0.5	14	5.1	34
EMY20132#L	C-1a	6/17/97	<5	10	130	<0.5	<0.5	56	NA	19	48	47	<0.1	<2.5	55	10	<0.5	120	46	82
EMY20133#I	C-1b	6/17/97	<5	13	240	<0.5	<0.5	11	NA	5.4	23	9.7	<0.1	<2.5	15	<5	<0.5	17	15	49
EMY20171#8	C-2	6/17/97	<5	29	160	<0.5	1.7	120	<0.05	17	200	430	<0.1	<2.5	110	27	<0.5	230	36	830
EMY20170#B	C-3	6/17/97	5.6	<5	76	<0.5	<0.5	540	<0.05	4.6	7.4	38	<0.1	36	200	<5	1.2	<5	15	38
EMY20169#P	C-4	6/17/97	<5	24	21	<0.5	0.7	200	<0.05	14	110	43	<0.1	16	130	22	<0.5	31	25	160
EMY20130#R	S/D-1	6/17/97	<5	26	400	<0.5	0.91	110	NA	11	170	45	<0.1	<2.5	67	30	<0.5	250	42	240

Table 2

Summary of Metals Analytical Data for Abovegrade Solids Collected at the Harcros Property

Emeryville, California

Notes:

(1) Analyses conducted by ICP.
(2) Chromium VI by EPA Method 7196.
(3) NA = Not Analyzed.

Table 3

Summary of EPA Method 8015 Analytical Data for Abovegrade Solids Collected at the Harcros Property

Emeryville, California

Sample ID	Sample Name	Sample Date	Analyte (mg/kg) by EPA Method 8015			
			Extractable Hydrocarbons	Hydrocarbon Range (1)	Secondary Range (2)	Description
Sludge Samples						
EMY20180#7	SL-1	6/17/97	130	C9-C40	C9-C24	Diesel
EMY20182#1	SL-2	6/18/97	860	C17-C40		W-JET
EMY20179#L	SL-3	6/17/97	230	C9-C40	C9-C24	Diesel
EMY20181#4	SL-4	6/18/97	1,700	C24-C40	C9-C24	Diesel
EMY20178#O	SL-5	6/17/97	330	C9-C40	C9-C24	Diesel
EMY20183#Z	SL-6	6/18/97	760	C17-C40		W-JET
EMY20176#U	SL-7	6/17/97	680	C9-C40	C9-C24	Diesel
EMY20185#T	SL-8	6/18/97	1,300	C9-C40		W-Diesel
EMY20177#R	SL-9	6/17/97	1,000	C9-C40		
EMY20184#W	SL-10	6/18/97	460	C9-C40		
EMY20175#X	SL-11	6/17/97	200	C9-C40		
EMY20174##	SL-12	6/17/97	33	C9-C40	C9-C24	Diesel
EMY20173#2	SL-13	6/17/97	180	C20-C40	C9-C40	Diesel
EMY20172#5	SL-14	6/17/97	290	C20-C40	C9-C40	Diesel
EMY20168#S	SL-15	6/18/97	1,400	C24-C40	C9-C24	Diesel
Other Solids						
EMY20171#8	C-2	6/17/97	480	C9-C40		
EMY20170#B	C-3	6/17/97	72	C9-C40		
EMY20169#P	C-4	6/17/97	690	C20-C40	C9-C24	Diesel

Notes:

(1) Total range of hydrocarbon recovery.
(2) Distinctive hydrocarbon peaks used for identification.

Table 4

Summary of EPA Method 8080 Analytical Data for Abovegrade Solids Collected at the Harcros Property

Emeryville, California ug/Kg

Sample ID	Sample Name	Sample Date	Analyte (mg/kg) by EPA Method 8080 (1)		
			Aldrin	PCB-1242	PCB-1260
Sludge Samples					
EMY20180#7	SL-1	6/17/97	<10	<200	<200
EMY20182#1	SL-2	6/18/97	<50	<1,000	<1,000
EMY20179#L	SL-3	6/17/97	<2	<40	<40
EMY20181#4	SL-4	6/18/97	<10	<200	<200
EMY20178#O	SL-5	6/17/97	<2	<40	<40
EMY20183#Z	SL-6	6/18/97	<50	<1,000	<1,000
EMY20176#U	SL-7	6/17/97	<50	<1,000	<1,000
EMY20185#T	SL-8	6/18/97	<10	<200	<200
EMY20177#R	SL-9	6/17/97	<10	<200	<200
EMY20184#W	SL-10	6/18/97	<10	<200	<200
EMY20175#X	SL-11	6/17/97	<10	<200	<200
EMY20174##	SL-12	6/17/97	<10	<200	<200
EMY20173#2	SL-13	6/17/97	<10	<200	<200
EMY20172#5	SL-14	6/17/97	<10	<200	<200
EMY20168#S	SL-15	6/18/97	<10	<200	<200
Other Solids					
EMY20171#8	C-2	6/17/97	**5.2**	<40	**850**
EMY20170#B	C-3	6/17/97	<1	<20	<20
EMY20169#P	C-4	6/17/97	<2	<40	<40
CONCRETE-35-B	CONCRETE-35-B	6/11/97	NA (2)	**23**	**68**
EMY20167#V	PCB-1	6/18/97	<1	<20	<20

Notes:

(1) Chemicals of concern detected in the Emeryville South Bayfront sampling event. For a full list of analytes see Appendix I.

(2) NA = Not Analyzed

Table 5

Summary of EPA Method 8240 Analytical Data for Abovegrade Solids Collected at the Harcros Property

Emeryville, California

Sample ID	Sample Name	Sample Date	Analyte (mg/kg) by EPA Method 8240							
			Acetone	Benzene	Carbon disulfide	Ethylbenzene	Tetrachloroethene	Toluene	Trichloroethene	Total Xylenes
Sludge Samples										
EMY20180#7	SL-1	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20182#1	SL-2	6/18/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20179#L	SL-3	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20181#4	SL-4	6/18/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20178#O	SL-5	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20183#Z	SL-6	6/18/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20176#U	SL-7	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20185#T	SL-8	6/18/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20177#R	SL-9	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20184#W	SL-10	6/18/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20175#X	SL-11	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20174##	SL-12	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20173#2	SL-13	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20172#5	SL-14	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20168#S	SL-15	6/18/97	<500	<100	<100	<100	<100	<100	<100	<100
Other Solids										
EMY20171#8	C-2	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20170#B	C-3	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100
EMY20169#P	C-4	6/17/97	<500	<100	<100	<100	<100	<100	<100	<100

Note:

(1) Chemicals of concern detected in the Emeryville South Bayfront sampling event. For a full list of analytes see Appendix I.

Table 6

Summary of EPA Method 8270 Analytical Data for Abovegrade Solids Collected at the Harcros Property

Emeryville, California

Sample ID	Sample Name	Sample Date	Analyte (mg/kg) by EPA Method 8270										
			Acenaphthene	Anthracene	Bis(2-ethylhexyl)phthalate	Dibenzofuran	Diethyl phthalate	Fluoranthene	Fluorene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
Sludge Samples													
EMY20180#7	SL-1	6/17/97	<250	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
EMY20182#1	SL-2	6/18/97	<250	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
EMY20179#L	SL-3	6/17/97	<250	<250	**1,000**	<250	<250	<250	<250	<250	<250	<250	<250
EMY20181#4	SL-4	6/18/97	<250	<250	**1,200**	<250	<250	<250	<250	<250	<250	<250	<250
EMY20178#O	SL-5	6/17/97	<250	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
EMY20183#Z	SL-6	6/18/97	<250	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
EMY20176#U	SL-7	6/17/97	<250	<250	**760**	<250	<250	<250	<250	<250	<250	<250	<250
EMY20185#T	SL-8	6/18/97	<1,200	<1,200	<2,500	<1,200	<1,200	<1,200	<1,200	<1,200	<1,200	<1,200	<1,200
EMY20177#R	SL-9	6/17/97	<250	<250	**2,900**	<250	<250	<250	<250	<250	<250	<250	<250
EMY20184#W	SL-10	6/18/97	<250	<250	**1,000**	<250	<250	<250	<250	<250	<250	<250	<250
EMY20175#X	SL-11	6/17/97	<250	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
EMY20174##	SL-12	6/17/97	<250	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
EMY20173#2	SL-13	6/17/97	<250	<250	**740**	<250	<250	<250	<250	<250	<250	<250	<250
EMY20172#5	SL-14	6/17/97	<250	<250	**5,100**	<250	**670**	<250	<250	<250	<250	<250	<250
EMY20168#S	SL-15	6/18/97	<250	<250	**620**	<250	<250	<250	<250	<250	<250	<250	<250
Other Solids													
EMY20171#8	C-2	6/17/97	<250	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
EMY20170#B	C-3	6/17/97	<250	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
EMY20169#P	C-4	6/17/97	<1,200	<1,200	<2,500	<1,200	<1,200	<1,200	<1,200	<1,200	<1,200	<1,200	<1,200

Note:

(1) Chemicals of concern detected in the Emeryville South Bayfront sampling event. For a full list of analytes see Appendix I.

Table 7

Summary of EPA Method 9040 Analytical Data for for Abovegrade Solids Collected at the Harcros Property

Emeryville, California

Sample ID	Sample Name	Sample Date	pH by EPA Method 9040
Sludge Samples			
EMY20180#7	SL-1	6/17/97	7.8
EMY20179#L	SL-3	6/17/97	7.3
EMY20178#O	SL-5	6/17/97	7.5
EMY20176#U	SL-7	6/17/97	7.6
EMY20177#R	SL-9	6/17/97	7.4
EMY20175#X	SL-11	6/17/97	6.4
EMY20174##	SL-12	6/17/97	7.4
EMY20173#2	SL-13	6/17/97	7.6
EMY20172#5	SL-14	6/17/97	7.3
Other Solids			
EMY20171#8	C-2	6/17/97	10
EMY20170#B	C-3	6/17/97	0.54
EMY20169#P	C-4	6/17/97	3.1

Table 8

Summary of Analytical Data for Abovegrade Water Collected at the Harcros Property

Emeryville, California

	Sample ID	EMY10025#S	EMY10036#L
	Sample Name	W-1	W-2
	Sample Date	6/17/97	6/18/97
Analytical Method	**Analyte**	**Results**	
EPA 6020 Metals (ug/L) (1)	Antimony	<5	<5
	Arsenic	<5	15
	Beryllium	<5	<5
	Cadmium	<5	<5
	Chromium	**5.6**	<5
	Copper	<5	<5
	Lead	<5	<5
	Mercury	<0.1	<0.1
	Nickel	**5.9**	<5
	Selenium	<5	<5
	Silver	<5	<5
	Thallium	<5	<5
	Zinc	**150**	16
EPA 8010 (ug/L) (2)	Bromodichloromethane	<0.5	<0.5
	Chloroform	**0.57**	**2.8**
	Dibromochloromethane	<0.5	<0.5
	cis-1,2-Dichloroethene	<0.5	**0.77**
	trans-1,2-Dichloroethene	<0.5	<0.5
	Trichloroethene	<0.5	<0.5
EPA 8015m (mg/L)	Extractable Hydrocarbons	77	**240**
	Hydrocarbon Pattern (3)	C9-C40	C9-C40
EPA 8020 (ug/L) (2)	Benzene	<0.5	<0.5
	Ethyl benzene	<0.5	<0.5
	Toluene	<0.5	<0.5
	Total Xylenes	<0.5	<0.5
EPA 8080 (ug/L) (2)	Aldrin	<0.025	<0.025
	alpha-BHC	<0.025	<0.025
	beta-BHC	<0.025	<0.025
	delta-BHC	<0.025	<0.025
	gamma-BHC (Lindane)	<0.025	<0.025
	Chlordane	<0.5	<0.5
	4,4'-DDD	<0.15	<0.15
	4,4'-DDE	<0.05	<0.05
	4,4'-DDT	<0.15	<0.15
	Dieldrin	<0.05	<0.05
	Endosulfan I	<0.05	<0.05
	Endosulfan II	<0.05	<0.05
	Endosulfan sulfate	<0.15	<0.15
	Endrin	<0.05	<0.05

Table 8

Summary of Analytical Data for Abovegrade Water Collected at the Harcros Property

Emeryville, California

	Sample ID Sample Name Sample Date	EMY10025#S W-1 6/17/97	EMY10036#L W-2 6/18/97
Analytical Method	**Analyte**	**Results**	
EPA 8080 (ug/L) (cont.)	Endrin aldehyde	<0.15	<0.15
	Heptachlor	<0.025	<0.025
	Heptachlor epoxide	<0.025	<0.025
	Methoxychlor	<0.5	<0.5
	Toxaphene	<2	<2
	PCB-1016	<0.5	<0.5
	PCB-1221	<2	<2
	PCB-1232	<0.5	<0.5
	PCB-1242	<0.5	<0.5
	PCB-1248	<0.5	<0.5
	PCB-1254	<0.5	<0.5
	PCB-1260	<0.5	<0.5
EPA 8270 (ug/L) (2)	Benzoic Acid	<10	<10
	2,4-Dimethylphenol	<5	<5
	2-Methylnaphthalene	<5	<5
	4-Methylphenol	<5	<5
	Naphthalene	<5	<5
	Pentachlorophenol	<10	<10
	Phenol	<5	<5
	2,4,5-Trichlorophenol	<10	<10
EPA 7196 (mg/L)	Chromium VI (mg/L)	<0.07	<0.35
EPA 160.1 (mg/L)	Total Dissolved Solids by EPA Method 160.1 (mg/L)	**390**	**420**
EPA 300.0 (mg/L)	Sulfate	**37**	**31**
EPA 150.1	pH	**7.7**	**7.5**

Notes:

(1) Analysis performed by ICP on field filtered samples.
(2) Chemicals of concern detected in the Emeryville South Bayfront sampling event. For a full list of analytes see Appendix I.
(3) Total Range of Hydrocarbon Recovery

ACUMEN

INDUSTRIAL HYGIENE INC

1175 FOLSOM STREET SAN FRANCISCO CA 94103

TEL 415 252 0778 FAX 415 252 1411

ASBESTOS AND LEAD SURVEY REPORT

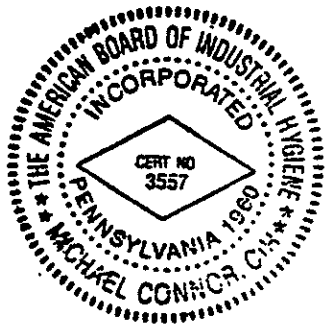
Harcros Property
4650 Shellmound Avenue
Emeryville, CA

July 1997

Project No: EHC 9709

Prepared for:

Ms. Irene Fanelli, CIH
Environmental Health Consultants, Inc.
P. O. Box 117910
Burlingame, CA 94011-7910



Introduction

This report describes the findings and significance of an asbestos and lead survey Environmental Health Consultants, Inc. (EHC) and Acumen Industrial Hygiene, Inc. conducted at the Harcros Property, 4650 Shellmound Avenue, Emeryville, CA. The facility inspected consists of pigment manufacturing plant, two warehouses, two office buildings, a boiler plant and various two tank farms. Mr. Michael Connor, CIH, a Cal-OSHA Certified Asbestos Consultant, conducted this inspection on 13 and 15 June 1997.

There were two objectives to this investigation: One was to determine the presence of accessible asbestos-containing materials (ACM) on the premises. Accessible ACM is defined as material that does not require demolition, disassembly, or destructive procedures in order to access it for sampling and evaluation. This investigation generally excluded production equipment other than associated steam lines.

The second objective was to evaluate the presence of lead containing coatings. The lead survey was limited to surfaces with deteriorating paints and to items likely to result in potentially significant lead exposures during either demolition or renovation.

Summary of Investigation

Asbestos Inspection

Our inspection consisted of a walkthrough of the facility to inspect for the presence of friable and non-friable suspect ACMs. Friable ACM is defined as material that can be easily crumbled or pulverized under hand pressure. Friable ACM may pose a greater hazard than non-friable ACM because of its higher fiber release potential. However, non-friable ACM can become friable during building renovation and demolition. At this time, the California Department of Health Services regulates friable ACM containing wastes as hazardous (22CCR66699).

For each type of suspect ACM noted, we collected two or more bulk samples. AHERA guidelines require that multiple samples of suspect materials be collected and analyzed to establish the absence of asbestos. At the same time, we assessed the condition of the material. Suspect materials sampled included pipe and boiler insulation, flooring and roofing materials, exterior stucco, and sheetrock wall systems. Note that wall system components were sampled as a composite as recommended by the EPA (Federal Register 59, 342). We did not find spray-on insulation or fireproofing in the buildings. A total of 71 samples were collected on the Harcros Property.

The asbestos samples were submitted to MicroAnalytical Laboratories of Emeryville, CA. This laboratory is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP) for selected test methods for asbestos. The laboratory reports and completed sample chain of custody forms are found in Appendix A.

The samples collected were analyzed by polarized light microscopy (PLM), the EPA recommended method of bulk sample analysis. PLM identifies the type(s) of asbestos present in the sample and its percent content(s). EPA regulations define an ACM as a material which contains more than 1% asbestos. As PLM analysis was developed for friable materials, binding agents in some non-friable products, particularly floor tiles, can lead to inaccurate results. Furthermore, asbestos fibers in floor tile may be less easily detected because (if present) they tend to be shorter than asbestos fibers in friable materials, and therefore less easily seen under light microscopy. Point counting or electron microscopy analysis may be used to better characterize the asbestos content of materials not readily

analyzed by PLM. A total of 28 samples were analyzed as two samples because they were observed to contain multiple layers.

The EPA's National Emission Standards for Hazardous Air Pollutants Standard (NESHAPS), which regulates air emissions from building renovation and demolition projects, requires that materials with an asbestos content greater than 1.0% be removed prior to building renovation or demolition activities if such activities will render them friable. Such materials are termed regulated ACM (RACM). They include friable materials and certain forms of non-friable materials such as floor tile, and asbestos cement products. Roof materials have also been included in the past. However, a 1994 EPA issued clarification (originally in Federal Register 59, 31157 *et seq.* now codified in 40CFR61) ruled that the removal of asphalt encapsulated (i.e. non-friable) roofing materials with handtools (including hatchets) did not render these materials friable provided they are not ground up during demolition. Consequently, application of appropriate demolition techniques can preclude the need for separate roof removal provided suitable precautions are taken to prevent visible emissions during roof demolition. This may affect costs of debris disposal, although non-friable asbestos containing wastes are not regulated as hazardous.

Lead Inspection

The lead survey consisted of inspecting surfaces for damaged or deteriorated coatings concurrently with the asbestos inspection. Samples were collected to represent all layers of loose or peeling paints. Samples were limited to predominant colors where more than one color was present. A total of 20 lead samples were collected from the buildings on the property. These samples were also submitted to MicroAnalytical Laboratories, of Emeryville, CA. This laboratory is accredited through the Environmental Lead Laboratory Accreditation Program (ELLAP), and through the American Industrial Hygiene Association (AIHA).

Lead containing materials (LCM) are regulated differently from ACM. Currently, any construction related work where lead containing materials are handled must be conducted in compliance with Cal-OSHA's lead in construction regulations (8CCR1532.1). This rule specifies worker training and protection, biological monitoring, written work practices, and exposure assessment. However, it does not require a specialty contractor at this time.

Unlike ACM, there are no BAAQMD regulations which require the removal of lead containing materials before either renovation or demolition. However, current California Department of Health Service hazardous waste regulations require that wastes be segregated and classified for disposal according to hazard category. Thus loose or deteriorated paints which contain more than the total threshold limit concentration (TTLC) for lead would need to be segregated either before or during demolition for disposal as a hazardous waste. The TTLC for lead is currently 1,000 parts per million (ppm). Materials which contain less than 1,000 ppm of lead but more than 50 need to be subjected to the waste extraction test to determine if they exceed the soluble threshold limit concentration (STLC) in which case they would also be considered hazardous wastes. At this time, building components with intact lead containing paints may be disposed of as construction debris. Note that regulations related to lead containing paints may not only change but may also be enforced inconsistently, in particular with regard to waste disposal of construction debris.

Findings and Discussion

Table 1 summarizes the friable asbestos-containing materials found during this inspection. Table 2 summarizes the non friable asbestos containing materials. Table 3 lists suspect materials which were tested and found not to contain detectable amounts of asbestos. Table 4 lists the lead sample results.

The facility was built approximately 68 years ago. Its most recent current use is an iron oxide based paint pigment facility. The site contains seven production related buildings, two warehouses, a boiler plant with associated steam distribution system, two office buildings one of which also contains an employee restroom, a supervisor building, three production related tank farms, and a water treatment tank farm. There is an extensive pipe distribution system most of which is insulated with fiberglass. This seems surprising for a facility of this age. A probable scenario is that off-gassing from corrosive materials used in plant processes and proximity to the corrosive marine environment led to disintegration of the original asbestos insulation which was later replaced with the metal clad fiberglass insulation. If true, this could also mean that there are asbestos insulated lines not found during this investigation either because of accessibility or because they are metal clad and hence assumed to be fiberglass as noted in more accessible insulation inspected.

Buildings 1, 2 and 3

These buildings are contiguous. They are built of cement with an asphalt based roof. Building 1 is the roaster building. Building 2 is the oxide mill. Building 3 contains product staging areas. Building 3 contains a roof structure added after original construction. All three buildings contain mostly production related equipment and have limited interior build out. There are a six aeration tanks, and two calcium hydroxide tanks immediately to the east of building 2, as well as various production related equipment. South of building 1 are a lime and a carbide tank, and a filter house (filter house 13). This latter building has no exterior walls other than 400 square feet of paneling similar to the construction material of the roof structure.

Except for the roofing materials, the roof structure on building 3, these buildings did not contain suspect ACMs. The aeration and calcium hydroxide tanks were not associated with suspect materials. There is a steam line which leads from building 8 but it was noted to be insulated with fiberglass within sheet metal cladding.

These three buildings and related structures did not contain suspect friable ACMs. However, they contain a number of non-friable ACMs as described below.

Building 1

- Roof parapet, north side; 5% C; Sample EHC 9709-08; approximately 350 square feet.
- Roof patching compound; 2% C; Sample EHC 9709-09: not quantified because of its localized spots. Note that the roof it patches does not contain detectable amounts of asbestos (See samples EHC 9709-07).

Building 2

- Building 2 Roof parapet, west side; 20% C; Sample EHC 9709-06; approximately 300 square feet. Note that a sample of parapet of different appearance on the north side of the roof did not contain detectable amounts of asbestos (See sample EHC 9709-05). The same is true of a sample of the main roofing materials (See sample EHC 9709-07)

Building 3

- Roof upper parapet; 30% C; Sample EHC 9709-01; approximately 750 square feet. This material extended halfway from the horizontal portion of the parapet down to approximately 2 feet from the roof, and is different from the material described next.
- Roof lower parapet; 5% C; Sample EHC 9709-02; approximately 750 square feet.
- Main roof; 20% C; Sample EHC 9709-03; approximately 3,200 square feet
- Siding on roof structure; 30% C Sample EHC 9709-04; approximately 2,000 square feet. This is asbestos cement product is similar material to the heat shield seen in filter house 13. *This shield represents an additional 400 square feet of asbestos cement products.*

The coated surfaces in buildings 1, 2 and 3 are in generally good condition. The flaking paint on the east side of building did not contain detectable amounts of lead (Sample EHC 9709-20 P). The paint on various tanks and equipment on the east side of building is somewhat deteriorated. The lead sample results are as follows:

- East settling tank, east of building 2:, brown and yellow paint; 44,659 ppm lead; Sample EHC 9709-02 P; About 3% flaking.
- Exterior rack support near settling tanks: yellow paint; 98,991 ppm lead: Sample EHC 9709-03 P, miscellaneous large areas of peeling.
- Tank ; black paint: Sample EHC 9709-04 P; 223 ppm lead; About 2% flaking. Note that to determine proper disposal of loose paint, it would be necessary to submit a sample of the paint for extractable lead analysis (WET/TCLP) at a certified laboratory.

Building 5

These buildings are contiguous, and are currently used for production. As such, they have not been built out. The south half of building 5 contains a pigment blend area. The north side of the building houses compressors and blowers, some no longer in use. Most are insulated with fiberglass. The structures are built of cement with an asphalt based roof. There are three roof structures added after original construction on building 5. One is built of stucco, the other two of an assumed asbestos cement product (Same as sample EHC 9709-04). Building 5 also contains a small laboratory on the second floor. The laboratory on the second floor is built out of plaster and lath with red 12x12" floor tile and 2x4 feet suspended ceiling tile. There is an addition on the west side of cinderblock. This houses miscellaneous valve equipment some of which is insulated.

The only friable asbestos containing material in this building consisted of a gray paper like product applied inconsistently on top of the roof parapet at various locations (Sample EHC 9709-10A). There are approximately 400 square feet of this material present on the roof. This type of material was not noted in Building 6. As described below, the main roof did not contain detectable amounts of asbestos but roof patching materials and another parapet material did.

The non friable ACMs in the building were as follows:

- Main parapet; 8% C; Sample EHC 9709-11A; approximately 1,200 square feet.
- Parapet, west side; 6% C; Sample EHC 9709-15A; this material was not quantified separately from the other parapet (Sample EHC 9709-11A).
- Roof sealant; 30% C; Sample EHC 9709-16; not quantified because of its localized use.

- Skim coat on stucco exterior of roof structure over gangway to building 2; 1% C; Sample EHC 9709-52; There are about 600 square feet of this material. Note that the stucco itself does not contain detectable amounts of asbestos.

The following suspect materials were found not to contain detectable amounts of asbestos:

- Main roof; Samples EHC 9709-12A/B.
- 12x12" red floor tile in laboratory; Samples EHC 9709-43A/B/C.
- Drop ceiling tile (2x4) in laboratory; Samples EHC 9709-44A/B/C.
- Fibrous woven pipe wrap on equipment; Sample EHC 9709-45.
- Blower insulation on valve equipment in the compressor room; Sample EHC 9709-42. This material is similar to insulation in the valve room annex, on the expansion chamber, and on insulated lines running 75 feet north from the building.
- Insulation debris on the roof of the compressor building; Sample EHC 9709-51

The coated surfaces in building 5 are in generally good condition except for certain areas described below. The lead sample results are as follows:

- White paint on equipment on northwest corner; 27,457 ppm lead; Sample EHC 9709-13 P. This material has extensive flaking.
- White paint on exterior wall; 8,292 ppm lead; Sample EHC 9709-14 P, Moderate peeling.
- White paint on valve annex exterior wall; 1,210 ppm lead; Sample EHC 9709-15 P; minor peeling.
- Off white paint on west exterior wall as accessed from the roof of the valve annex; 1,530 ppm lead; Sample EHC 9709-17 P; extensive flaking.
- Interior wall in production area; less than 127 ppm lead; Sample EHC 9709-19 P. Note that to determine proper disposal of loose paint, it would be necessary to submit a sample of the paint for extractable lead analysis (WET/TCLP) at a certified laboratory.

Building 6

Building 6 contains a maintenance and repair shop and an employee lunch room. The maintenance and repair shop includes a small storage room and office built of wood. The lunch room contains suspended ceiling tile as seen in the lab in Building 5. Hot water is provided to the restrooms from a gas fired heater. Hot water lines were not observed to be insulated. The maintenance shop contains a small office area with 12x12" red floor tile as seen in Building 5 lab. The roof, flooring materials and ceiling tiles were assumed to be the same as in Building 5. Thus, building 6 contains a non-friable asbestos containing parapet.

Painted surfaces in this building were in relatively good condition. No samples were collected.

Building 7

This single story building currently serves as an office with a small lab at the rear. Inspection indicated that there is an original building with a later addition to accommodate extra offices and the lab at the rear. The exterior of both buildings is stucco. The interior of the original building consists of plaster and lath. The addition contains a sheetrock wall system. The flooring is red 12x12" floor tile. Ceilings consist of 2x4 feet suspended tile which are over wallboard ceiling tiles in the original (i.e. west side of the building). Hot water is provided by a conventional gas fired boiler. Insulation was not noted on either the water line or on the heating ducts.

This building did not contain friable ACMs. However, it did contain the following non-friable materials:

- 12x12" orange floor tile; Tile 2% C, Mastic ND; Sample EHC 9709-47A; approximately 4,560 square feet.
- Exterior paint/skim coat on exterior stucco of original structure; 1% C, Sample EHC 9709-46B; approximately 3,200 square feet. Note that the stucco itself did not contain asbestos.
- Exterior paint/skim coat on exterior stucco of newer structure; 2% C; Sample EHC 9709-46C; approximately 3,200 square feet. Note that the stucco itself did not contain asbestos.

The following suspect materials were found not to contain detectable amounts of asbestos.

- Drop ceiling tile (2x4); Samples EHC 9709-48A/B.
- Original plaster; Samples EHC 9709-49A/B.
- Sheetrock wall system; Samples EHC 9709-50A/B/C.
- Main roof, newer building; Samples EHC 9709-13A/B.
- Main roof, older building; Samples EHC 9709-14A/B.

Painted surfaces in this building were in relatively good condition. No samples were collected.

Buildings 8 and 9

These buildings are contiguous. They are of cinderblock construction with a sheet metal roof. They contain production equipment inside and on the roof of the building. Three small structures were added to the west side of building 8 after original construction. These are also built of cinderblock but have an asphalt based roofing materials. These are referred to as roof 1, 2 and 3. Roof 3 is northernmost

The only suspect ACMs on the building were woven insulation noted to on the northwest corner of building 8 and roofing materials on the structures added to the east of the same building.

No friable asbestos containing materials were found. However, the following non-friable ACMs were found:

- Building 8 Roof 1 roofing material; 50% C: Sample EHC 9709-18; approximately 400 square feet. Asbestos in felt only. Other layers did not contain detectable amounts of asbestos.
- Building 8 Roof 1 parapet; 50% C; Sample EHC 9709-19; approximately 100 square feet. Asbestos in felt only. Other layers did not contain asbestos.
- Building 8 Roof 2 roofing material; Tar 5% C, paint 2 % C; Sample EHC 9709-20; approximately 400 square feet.

The following suspect materials were found not to contain detectable amounts of asbestos.

- Fibrous woven pipe wrap on equipment; Sample EHC 9709-23. This material is similar to sample EHC 9709-45, which also did not contain detectable amounts of asbestos.
- Main roofing materials of Roof 3; Sample EHC 9709-21.

Painted surfaces in this building were in relatively good condition. Some flaking and deterioration was noted on roof mounted equipment. A sample of the yellow walkway toe rail paint showed it to contain 38,307 ppm of lead (Sample EHC 9709-01 P).

Building 10

This two story building is built of cinderblock with a stucco front on the east side. It contains offices on the ground floor and employee locker rooms, bathrooms and showers on the second floor. The building is not currently in use. Interior office build out consists of sheetrock wall system over wood frames. The flooring is of two types of red 12x12" floor tile. Ceilings consist of 2x4 feet suspended tile. The interior of the employee locker room is of ceramic over cinderblock. Hot water supply lines run in pipe chases at the corners of the building. Hot water lines were not noted to be insulated although the elbows were insulated with fiberglass.

The only friable ACM found in this investigation consisted of the joint compound as part of the sheetrock wall system. The joint compound contained 2% chrysotile asbestos (Sample EHC 9709-41C). The sheetrock itself contained no detectable asbestos. Hence, the wall system would contain less than 1% asbestos as a composite.

The following non friable ACMs were found in this building:

- 12x12" orange floor tile; Tile 2% C, mastic 5% C: Sample EHC 9709-38A; approximately 1,320 square feet.
- 12x12" red floor tile: Tile 3% C, Sample EHC 9709-39A; approximately 840 square feet

The following suspect materials were found not to contain detectable amounts of asbestos.

- Drop ceiling tile (2x4); Samples EHC 9709-40A/B/C
- Exterior stucco; Sample EHC 9709-54

Painted surfaces in this building were in relatively good condition. No samples were collected.

Building 11

These buildings is also known as warehouse number 1. It is built of cast concrete with an asphalt based roof supported by steel girders. There is no build out. The only suspect ACM in this building was the non friable roofing material. The felt contained 50% C (Sample EHC 9709-17A). Other layers did not contain detectable amounts of asbestos. There are approximately 15,000 square feet of this material on the roof.

Painted surfaces in this building were in relatively good condition. No samples were collected.

Building 12

These buildings is also known as warehouse number 2. It is built of cast concrete with an asphalt based roof supported by steel girders. It is newer is than warehouse 1. Its roof is consist of asphalt saturated sheets which were not considered suspect. The interior contains a small office built of wood with 12x12" red floor tile.

No friable ACMs were found in this building. However, the red floor tile contained 2% C although the mastic did not contain detectable amounts of asbestos (Sample EHC 9709-22). There are about 270 square feet of this material.

Painted surfaces in this building were in relatively good condition. No samples were collected.

Boiler house

This structure actually of three buildings each added as a new boiler was brought into line. There are three boilers on site: the original Wickes boiler, a second Union boiler and a newer Babcock Wilcox boiler. The buildings consist of either cinderblock (older) or concrete (newer). There are two blower stacks (one on the east and one on the south) outside the boiler house. The steam distribution system begins on the east side of the building. There were no suspect materials other than insulated products.

The following friable ACMs were found in the boiler house:

- Debris on floor next to Union boiler; 7% A, 5% C; Sample EHC 9709-33; approximately 25 square feet. Debris originates from boiler. Boiler has approximately 500 square feet additional insulation.
- Black insulation on water line on exterior north side of building; 65% C; Sample EHC 9709-35; approximately 10 linear feet.
- Gray insulation with wire mesh support on outside stack blower on south side; 40% C; sample EHC 9709-36A; 1,200 square feet on two stacks
- Outer wrap on fiberglass insulation; 50% C. Sample EHC 9709-37; approximately 15 square feet at the sampled location. It is possible there could be substantially more within metal clad insulation throughout the plant.
- Insulation on Wickes boiler; 1% C in silver paint only. Insulation did not contain detectable amounts of asbestos; not quantified
- Insulation on 8" line near Wickes boiler; Assumed based on aircell-like appearance; approximately 50 linear feet.

Additionally, it is possible that the interior of all three boilers could contain asbestos based refractory. This was not evaluated because of accessibility issues.

The following suspect material was found not to contain detectable amounts of asbestos.

- Metal clad (6") line insulation near Wickes boiler; Sample EHC 9709-34

Painted surfaces in this building were in relatively good condition. Two samples were collected with the following results

- Exterior wall, east side; 230 ppm lead; Sample EHC 9709-16 P
- Union boiler paint; 1,184 ppm lead; Sample EHC 9709-18 P; Minor peeling

Filter buildings

There are four filter houses in three simple structures. Filter houses 3 and 4 are in one building which consists of corrugated metal walls and contained no suspect materials. Filter house 2 consisted of a four foot cinderblock wall with an additional 15 feet of corrugated asbestos cement (similar to Sample EHC 9709-04 and EHC 9709-28) walls up to the roof. Filter house 1 consisted of asbestos cement walls and roof. The interior of all three buildings did not contain suspect ACMs.

A sample of the roof on filter house 1 showed this non friable material to contain 30% chrysotile asbestos. (Sample EHC 9709-31). There are approximately 4,000 square feet of this material in addition to the walls of filter house 2 of which there are an additional 2,000 square feet.

Painted surfaces on the filter houses were in relatively good condition. No samples were collected.

Supervisor building

This building is to the west of building 5 and north of the boiler house. It is built of cinderblock. The north side of the building is used for parts storage. The west side of the building is a disused lab. The building contains a small supervisors office which has red 12x12" floor tile. This tile was also noted in the disused lab.

No friable ACMs were found in this building. However, it did contain approximately 500 square feet of floor tile (2% chrysotile) and mastic (15% chrysotile) in the supervisor's office (Sample EHC 9709-32). There are an additional 400 square feet in the disused lab

Painted surfaces in this building were in relatively good condition. No samples were collected.

Water treatment area tank farm

This area of the plant is on the north east corner, north of Building 1. It contains a four large uninsulated tanks, the two largest of which are wooden settling tanks. The other two are a surge tank (tank 414) and a settling tank (Tank 407). There are also a number of small tanks in this area (Tanks 200-203, 402–405, 412 and 413, and small ferrous sulfate and caustic soda tanks. These smaller uninsulated tanks are either steel or fiberglass. For purposes of this report, this area ends at the scrap bin on the west side. This tank farm contains a piperack which serves various tanks. Most of the steam lines on the pipe rack are insulated with fiberglass within a sheet metal jacket as noted from areas where the jacketing had deteriorated. However, there were lines insulated with suspect materials which were not found to contain detectable amounts of asbestos as described below. No other suspect ACMs were noted in this area of the property.

The following suspect materials were found not to contain detectable amounts of asbestos.

- Clarifier 408 line insulation (4"); Sample EHC 9709-27.
- East of scrap bin line insulation (4"); Sample EHC 9709-26.
- Tank 403 valve insulation; Sample EHC 9709-24.
- Tank 403 line insulation; Sample EHC 9709-25.

Painted surfaces in this area were in relatively good condition. The samples of deteriorated paint yielded the following results:

- Tank 404 red and black paint also on conveyor belt housing; 314 ppm lead; Sample EHC 9709-05 P.
- Scrap bin yellow paint, west side wall; 471 ppm lead; Sample EHC 9709-06 P.
- Walkway near clarifier areas; 24,519 ppm lead; Sample EHC 9709-08 P; extensive damage

West tank farm

This area is on the northwest corner of the property. It is shown as the fast tank and centerwell tank areas. It contains 32 tanks insulated with a foam like material. These process vessels have a series of supply lines which run approximately 15 feet above ground below the catwalk. Many vessels area also associated with various insulated fittings similar in appearance to those seen in the water treatment tank farm. In some areas, damage to the exterior metal cladding on steam lines showed fiberglass insulation. Most of this area is either painted yellow or discolored with yellow pigments.

The following suspect materials were found not to contain detectable amounts of asbestos.

- Tank 127 line insulation (4"); Sample EHC 9709-29. Other fittings were assumed to be similarly insulated.

This area has more extensive deterioration to painted surface. The samples of deteriorated paint yielded the following findings:

- Yellow paint on foam insulation on east side; 126 ppm lead; Sample EHC 9709-07 P.
- West tank farm, west side structural beams; 3,037 ppm lead; Sample EHC 9709-09 P. Extensive flaking

Ferrous sulfate tank farm

The ferrous sulfate tank farm is just south of the west tank farm, and north of building 5. It contains a number of wooden open top tanks, a small building (caustic soda building) next to two caustic soda tanks, a small operator's shack on the second story, and various insulated lines. This area is discolored with red iron oxide pigment.

The only friable ACM in this area of the tank consisted of metal clad insulation on a 4 inch riser above the caustic tanks on the second level. This material contained 10% A and 5% C (Sample EHC 9709-30). There are approximately 40 linear feet of this material. This line is not insulated below the second level.

The only non friable ACM found in this area consisted of the wall material on the caustic soda building. This material contained 30% C (Sample EHC 9709-28). There are approximately 1,720 square feet of this asbestos cement product. This material is similar to that seen on the roof of Buildings 3, 5, and filter houses 1 and 2.

Summary of Asbestos Findings

Table 5 provides a list of regulated ACM which will need to be removed before demolition work to comply with BAAQMD regulations. Note that this list does not include roofing materials since they are not regulated as explained in 40CFR61. It is also possible there may be additional asbestos containing wrapping over fiberglass as noted east of the boiler house. The presence of this material would require a more extensive investigation of all metal clad lines.

Summary of Lead Related Findings

As shown on Table 4, 13 of the 20 lead samples (65%) collected contained more than 1,000 ppm of lead. Five samples (25%) contained detectable amounts of lead but less than 1,000 ppm. Only two samples (10%) did not contain detectable amounts of this metal. The highest concentrations were noted on exterior paints on metal susbtrates. This is of significance since hot cutting to remove the equipment could lead to significant worker exposures to lead.

All loose paint will have to be segregated from other building materials either before or during demolition of the building so that it can be disposed of as required by CAl-EPA regulations. The cleanup work would need to be done in a manner consistent with Cal-OSHA's lead in construction regulations (8CCR1532.1).Debris which contains more than 1,000 ppm will be considered hazardous waste since it exceeds the Total Threshold Limit Concentration (TTLC) for lead. Materials which contain more than 50 ppm but less than 1,000 ppm of lead will need re-testing to determine waste classification .

Although the lead inspection focused on deteriorated or damaged paints, it should be noted that they do not currently represent a significant lead hazard as defined in Cal-OSHA regulations. Lastly, it is likely that intact and untested surfaces may also be coated with lead containing paints.

It is difficult to quantify all damaged paint on this facility because of irregular surfaces on equipment (e.g. expanded metal grates on catwalks) and because of localized smaller spots of damage (e.g. on catwalks over building 9). Nevertheless, the total surface area of damaged paint at this time probably does not extend to more than 25,000 square feet.

Recommendations

There are six recommendations associated with the findings of this investigation:

1 The building owner should notify building occupants and employees of the presence of ACM as required under California Health & Safety Code 259359.7 (Connelly Bill) and the Cal-OSHA asbestos regulation (8 CCR 5208). This could be a summary of Tables 1 and 2 with an explanatory note that the materials are in good condition, have low fiber release potential and should not be disturbed without the proper precautions. It is also advisable to notify any contractors or other appropriate personnel who may damage ACMs that improper handling may result in exposure to asbestos, and that any work on these materials is subject to Cal-OSHA rules. These notifications should be made in writing.

2 Consider additional sampling and analysis of materials such as the stucco skim coat and boiler paint. It is possible that point counting may show them to contain less than 1% asbestos in which case they would not have to be removed before demolition. However, the demolition contractor would have to comply with Cal-OSHA asbestos regulations if these materials contain more than 0.1% asbestos as they likely do.

3 The removal of the identified regulated ACM should be conducted in accordance with applicable federal, state and local regulations. Cal-OSHA regulations require that only licensed and registered abatement contractors be used. A work plan to specify acceptable removal methods, replacement materials, clearance air sampling and asbestos disposal procedures is also recommended. At this time, only friable materials (as shown on Table 1) would be classified as a hazardous waste. A qualified, Cal-OSHA licensed asbestos consultant should be retained to ensure that the work is conducted in accordance with applicable regulations.

4 Notify site employees and contractors who may contact surfaces with lead containing paints of the presence of lead, and of the importance to comply with Cal-OSHA's lead in construction regulations to minimize lead exposures in particular if hot work is involved. Either a Certified Industrial Hygienist or Cal-OSHA Consultation should be consulted for guidance on this issue. Note that at this time, the paint does not represent a significant health hazard as defined by Cal-OSHA regulations.

5 Segregate all damaged and deteriorated paints form building components before or during building renovation or demolition as required to comply with DHS waste characterization and disposal requirements.

6 The removal of any damaged or deteriorated lead paint will require that those which contain more than 1,000 ppm lead be disposed of as hazardous wastes. Paints which contain between 50 ppm and 1,000 ppm will require further analysis to determine waste disposal (e.g. WET and TCLP tests).

Conclusions

This inspection found a number of asbestos containing building materials which would need to be removed before demolition to meet BAAQMD requirements. These items are listed in Table 5. Given the apparent history of repair and replacement of pipe insulation in the plant, it is possible there could be additional asbestos containing pipe insulation.

Most of the deteriorated paint tested contained detectable amounts of lead. These materials need to be segregated and disposed of separately to comply with DHS regulations.

Table 1

Friable
Asbestos Containing Materials
Harcros Property
4650 Shellmound Avenue
Emeryville, CA

June 1997

Sample No.	Sample Location	Description	Result[1]	Est. Amount[2]	Comments
EHC 9709-33	Boiler house	Debris on floor next to Union boiler	7% A 5% C	25 sf	Debris is from boiler. Boiler has approx. 500 sf additional insulation.
Assumed	Boiler house	Insulation on 8" line	Assumed	50 lf	Aircell-like appearance
EHC 9709-35	Boiler house, outside	Black insulation on water line	65% C	10 lf	
EHC 9709-36A	Boiler house, outside	Insulation on blower on south side	40% C	1,200 sf	
EHC 9709-37	Boiler house, outside	Outer wrap on F/G insulation	50% C	15 sf	More could be concealed under metal cladding in plant.
EHC 9709-10A	Building 5 Roof	Parapet lining	30% C	400 sf	Paper like material. Inconsistent use. Found in limited areas
EHC 9709-41C	Building 10	Wall system	Joint Cmpd 2% C Sheetrock ND	NQ	Composite wall system contains less than 1% asbestos.
EHC 9709-30	Caustic tanks, 2nd level	Insulation on riser	10% A 5% C	40 lf	

1. C indicates chrysotile asbestos as determined by polarized light microscopy (PLM). A indicates amosite asbestos. ND indicates no asbestos detected.
2. sf indicates square feet, lf indicates linear feet.

Table 2

Non Friable
Asbestos Containing Materials
Harcros Property
4650 Shellmound Avenue
Emeryville, CA

June 1997

Sample No.	Sample Location	Description	Result[1]	Est. Amount[2]	Comments
EHC 9709A-53	Boiler house	Insulation on boiler	Insulation ND Paint 1% C	NQ	Boiler interior may contain asbestos
EHC 9709-08	Building 1 Roof	Roof parapet, north side	5% C	350 sf	
EHC 9709-09	Building 1 Roof	Roof patching compound	2% C	NQ	Found in localized spots. Main roof is not ACM
EHC 9709-06	Building 2 Roof	Roof parapet, west side	20% C	300 sf	
EHC 9709-01	Building 3 Roof	Roof upper parapet	30% C	750 sf	
EHC 9709-02	Building 3 Roof	Roof lower parapet	5% C	750 sf	
EHC 9709-03	Building 3 Roof	Main roof	20% C	3,200 sf	
EHC 9709-04	Building 3 Roof	Siding on roof structure	30% C	2,000 sf	Also on roof structure Bldg 5. Additional 700 sf.
EHC 9709-11A	Building 5 Roof	Main parapet	8% C	1,200 sf	
EHC 9709-15A	Building 5 Roof	Parapet, west side	6% C	NQ	See
EHC 9709-16	Building 5 Roof	Roof sealant	30% C	NQ	Found in localized spots
EHC 9709-52	Building 5 Roof	Stucco	Stucco ND Paint/skim coat 1% C	600 sf	

1. C indicates chrysotile asbestos as determined by polarized light microscopy (PLM). ND indicates no asbestos detected.

2. sf indicates square feet, lf indicates linear feet. NQ means not quantified.

Table 2 (Cont'd)

Non Friable
Asbestos Containing Materials
Harcros Property
4650 Shellmound Avenue
Emeryville, CA

June 1997

Sample No.	Sample Location	Description	Result[1]	Est. Amount[2]	Comments
EHC 9709-47A	Building 7	12x12" orange floor tile	Tile 2% C Mastic ND	4,560 sf	
EHC 9709-46B	Building 7 original	Exterior stucco	Stucco ND Paint/skim coat 1% C	3,200 sf	
EHC 9709-46C	Building 7 newer	Exterior stucco	Stucco ND Paint/skim coat 2% C	See -46 B	Samples EHC 9709-47A did not contain asbestos.
EHC 9709-18	Building 8 Roof 1	Roofing material	50% C	400 sf	Asbestos in felt only
EHC 9709-19	Building 8 Roof 1	Parapet	50% C	100 sf	Asbestos in felt only
EHC 9709-20	Building 8 Roof 2	Roofing material	Tar 5% C Paint 2 % C	400 sf	
EHC 9709-38A	Building 10	12x12" orange floor tile	Tile 2% C Mastic 5% C	1,320 sf	
EHC 9709-39A	Building 10	12x12" red floor tile	Tile 3% C	840 sf	
EHC 9709-17A	Building 11	Main roof	50% C	15,000 sf	Asbestos in felt only

1. C indicates chrysotile asbestos as determined by polarized light microscopy (PLM). ND indicates no asbestos detected.

2. sf indicates square feet, lf indicates linear feet. NQ means not quantified.

Table 2 (Cont'd)

Non Friable
Asbestos Containing Materials
Harcros Property
4650 Shellmound Avenue
Emeryville, CA

June 1997

Sample No.	Sample Location	Description	Result[1]	Est. Amount[2]	Comments
EHC 9709-22	Building 12 office	12x12" red floor tile	Tile 2% C Mastic: ND	272 sf	
EHC 9709-28	Caustic soda building	Walls	30% C	1,720 sf	Asbestos cement product. Also heat shield at rear of dumpier area. Additional 400 sf.
EHC 9709-31	Filter house 1	Roof	30% C	4,000 sf	Walls of filter house 2 similar. Additional 2,000 sf.
EHC 9709-32	Supervisors office	12x12" red floor tile	Tile 2% C Mastic 15% C	500 sf	Additional 400 sf in lab next door.

1. C indicates chrysotile asbestos as determined by polarized light microscopy (PLM). ND indicates no asbestos detected.

2. sf indicates square feet, lf indicates linear feet. NQ means not quantified.

Table 3

Non-Asbestos Containing Materials
Harcros Property
4650 Shellmound Avenue
Emeryville, CA

June 1997

Sample No.	Description	Location
EHC 9709-34	Line insulation, metal clad (6")	Boiler house
EHC 9709-05	Parapet, north side	Building 2 roof
EHC 9709-07	Main roof	Building 2 roof
EHC 9709-43A/B/C	12x12" red floor tile	Building 5
EHC 9709-44A/B/C	Drop ceiling tile (2x4)	Building 5
EHC 9709-45	Fibrous woven pipe wrap	Building 5
EHC 9709-42	Blower insulation	Building 5 annex compressor room
EHC 9709-51	insulation debris	Building 5 annex compressor room roof
EHC 9709-12A/B	Main roof	Building 5 roof
EHC 9709-48A/B	Drop ceiling tile (2x4)	Building 7
EHC 9709-49A/B	Original plaster	Building 7
EHC 9709-50A/B/C	Sheetrock wall system	Building 7
EHC 9709-13A/B	Main roof, east	Building 7 roof
EHC 9709-14A/B	Main roof, west	Building 7 roof
EHC 9709-23	Fibrous woven pipe wrap	Building 8
EHC 9709-21	Main roof	Building 8 roof 3
EHC 9709-40A/B/C	Drop ceiling tile (2x4)	Building 10
EHC 9709-54	Exterior stucco	Building 10
EHC 9709-27	Line insulation (4")	Clarifier 408
EHC 9709-26	Line insulation (4")	East of scrap bin
EHC 9709-29	Line insulation (4")	Tank 127
EHC 9709-24	Valve insulation	Tank 403
EHC 9709-25	Line insulation	Tank 403

All samples analyzed by polarized light microscopy (PLM).

Table 4
Lead Containing Materials
Harcros Property
4650 Shellmound Avenue
Emeryville, CA

June 1997

Sample No.	Description	Location	Result[1]	Comments
EHC 9709-01 P	Yellow roof toe rail	Building 9	38,307	Minor flaking
EHC 9709-02 P	East settling tank	Building 3, east side	44,659	About 3% flaking
EHC 9709-03 P	Exterior rack support	Building 3, east side	98,991	
EHC 9709-04 P	Tank	Building 3, east side	223	About 2% flaking
EHC 9709-05 P	Conveyor belt housing	Tank 404	314	
EHC 9709-06 P	Wall	Scrap bin, west side	471	
EHC 9709-07 P	Paint on foam insulation	West tank farm, east side	126	
EHC 9709-08 P	Walkway	Clarifier	24,519	Extensive flaking
EHC 9709-09 P	Structural beams	West tank farm, west side	3,037	Extensive flaking
EHC 9709-10 P	Walkway	FeSO4 tank	57,214	Flaking in localized areas
EHC 9709-11 P	Supports behind tanks	NaOH tank area	1,353	Extensive flaking
EHC 9709-12 P	NaOH tank	NaOH tank area	5,081	Minor flaking
EHC 9709-13 P	Equipment	Building 5, west side	27,457	Extensive flaking
EHC 9709-14 P	Exterior wall, northwest corner	Building 5 wall	8,292	Moderate flaking
EHC 9709-15 P	Exterior wall	Building 5 equipment room	1,210	Moderate flaking
EHC 9709-16 P	Exterior wall, east side	Boiler building	230	
EHC 9709-17 P	Exterior wall, west side	Building 5	1,530	Extensive flaking
EHC 9709-18 P	Union boiler paint	Boiler building	1,184	Minor peeling
EHC 9709-19 P	Interior wall	Building 5 production area	< 127	Minor peeling
EHC 9709-20 P	Exterior paint	Building 2	< 122	Moderate flaking

1. Results expressed in parts per million (ppm).

Damaged paints which contain more than 1,000 ppm lead need to be segregated for appropriate disposal before or during building demolition.

Table 5

Summary of Regulated ACMs
Harcros Property
4650 Shellmound Avenue
Emeryville, CA

July 1997

	Building	Regulated ACM Findings	Est. Amount
1	Building 3	Siding on roof structure	2,000 sf
2	Filter House 13	Heat shield (asbestos cement)	400 sf
3	Building 5	Paper on roof parapet	400 sf
4	Building 5	Exterior skim coat on stucco on roof structure	600 sf
5	Building 7	12x12" floor tile	4,560 sf
6	Building 7	Exterior skim coat on stucco	3,200 sf
7	Building 10	12x12" floor tile	2,160 sf
8	Building 11	12x12" floor tile	270 sf
9	Boiler house	Union boiler and debris	525 sf
10	Boiler house	Water line insulation, north side	10 lf
11	Boiler house	Stack blower insulation	1,200 sf
12	Boiler house	Outer layer on fiberglass insulation	15 lf
13	Boiler house	Wickes boiler paint	600 sf
14	Boiler house	8" line near Wickes boiler (assumed)	50 lf
15	Filter house 1	Roof and walls (asbestos cement)	4,000 sf
16	Filter house 2	Walls (asbestos cement)	2,000 sf
17	Ferrous sulfate tank farm	4" riser on second level	40 lf
18	Ferrous sulfate tank farm	Caustic soda building (asbestos cement)	1,720 sf

Please see text of report for further details.

STATE COMPENSATION INSURANCE FUND

P.O. BOX 420807, SAN FRANCISCO, CA 94142-0807

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

NOVEMBER 6, 1998

POLICY NUMBER: 430-98 UNIT 0000039
CERTIFICATE EXPIRES: 10-1-99

REDEVELOPMENT AGENCY
ATTN: LYNN NERLAND
2200 POWELL STREET #1200
EMERYVILLE CA 94608

JOB: DEMOLITION OF THE FORMER
ELEMENTS PIGMENTS PLANT
CONTRACT #MB-025

This is to certify that we have issued a valid Workers' Compensation insurance policy in a form approved by the California Insurance Commissioner to the employer named below for the policy period indicated.

This policy is not subject to cancellation by the Fund except upon ~~ten~~ 30 days' advance written notice to the employer.

We will also give you ~~TEN~~ 30 days' advance notice should this policy be cancelled prior to its normal expiration.

This certificate of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

Thom Hansen
AUTHORIZED REPRESENTATIVE

K C Bollier
PRESIDENT

EMPLOYER'S LIABILITY LIMIT INCLUDING DEFENSE COSTS: $1,000,000 PER OCCURRENCE.

ENDORSEMENT #2065 ENTITLED CERTIFICATE HOLDERS' NOTICE EFFECTIVE 10/01/98 IS ATTACHED TO AND FORMS A PART OF THIS POLICY.

ENDORSEMENT #2570 ENTITLED WAIVER OF SUBROGATION EFFECTIVE 11/06/98 IS ATTACHED TO AND FORMS A PART OF THIS POLICY.
THIRD PARTY NAME: REDEVELOPMENT AGENCY

EMPLOYER

EVANS BROTHERS
7589 NATIONAL DRIVE
LIVERMORE CA 94550

Department of Consumer Affairs

State of California
CONTRACTORS STATE LICENSE BOARD
ACTIVE LICENSE

License Number **443018** Entity **CORP**

Business Name **EVANS BROTHERS INC**

Classification(s) **A ASB C21 B HAZ**

Expiration Date **07/31/1999**