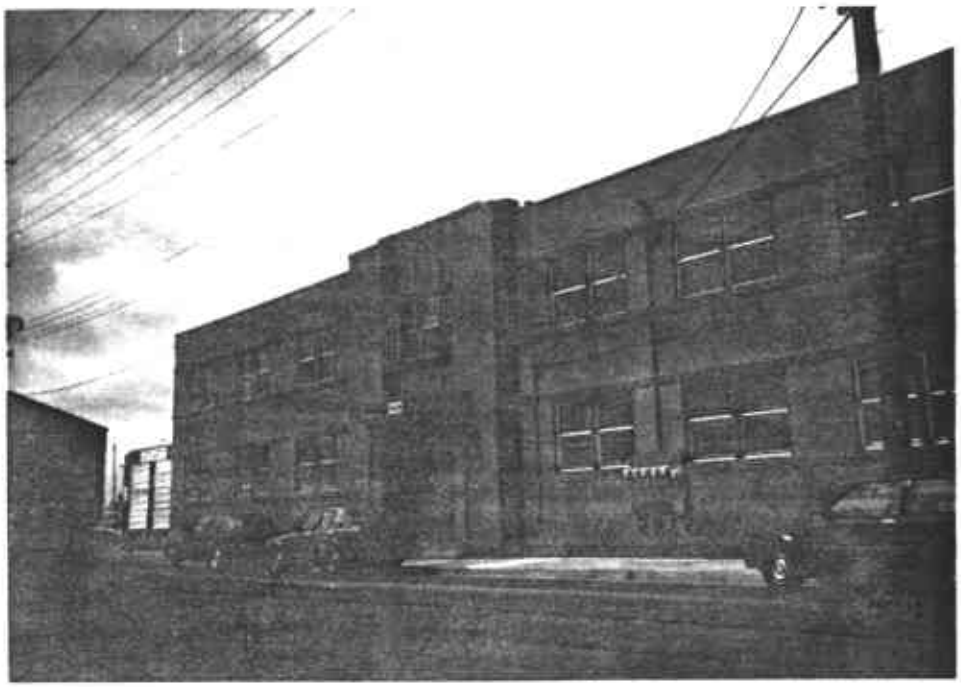
ENFORCEMENT CONFIDENTIAL

PRELIMINARY ENDANGERMENT ASSESSMENT

KEM MIL CO., ALAMEDA, CA.



Dick Jones
Toxic Substances Control Program
Region 2, Berkeley, CA.
June, 1990
September, 1990 (revised)

PRELIMINARY ENDANGERMENT ASSESSMENT

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Preliminary Endangerment Assessment
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INTRODUCTION

The Preliminary Endangerment Assessment (PEA) is part of the Department of Health Services' (DHS) Toxic Substances Control Program's (TSCP) hazardous waste site cleanup process, effective July 1, 1989 (1). The PEA is an initial step in the overall process to abate health or environmental threats posed by a site. The PEA is defined in Section 25319.5, Chapter 6.8, Division 20 of the California Health and Safety Code as follows:

The PEA is performed to determine whether current or past waste management practices have resulted in the release or threatened release of hazardous substances at the site which pose a threat to public health or the environment.

The objective of this PEA is to establish the environmental risk associated with existing conditions at the former Kem Mil Co. facility in Alameda, California. Much of the information in this PEA originated from documents from Alameda County's Environmental Health Department and the East Bay Municipal Utility District (EBMUD). The assistance of Ariu Levy of Alameda County Health and Barbara Hagen of EBMUD is gratefully appreciated.

Preliminary Endangerment Assessment
Kem Mil Co., Alameda, CA.

A. Site History and Description

Site Location

1. Former Site occupant: Kem Mil Co., property owner: Pacific Shop

2. Site Address: 1829 Clement Ave., Alameda, CA 94501

3. Mailing address - Kem Mil Co. now at 3527 Magnolia Dr., Hayward 94501
property owner: Pacific Shop at 1815 Clement Ave. Alameda

4. Kem Mil contact - M. Lane Hill
property owner: Pacific Shop, John Bentzen, President
Phone No.: (415) 521-1133

5. AKA: Graphic Services; also Kem Manufacturing, when in S. San Francisco

6. EPA ID # HAHQ 36-005820

7. ASPIS # 01 28 ----

8. Assessor's Parcel No.-- none listed for 1829 Clement
1801 Clement, Pacific Shops: APN 71-288-1-2

9. Township, Range, Section--2 S, 4 W, 12 B

10. Maps of region, location, and site are on the following pages:

SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET CHANGING
TO 25 FEET ON YERBA BUENA ISLAND

DATUM IS MEAN SEA LEVEL

SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER

THE AVERAGE RANGE OF TIDE IS APPROXIMATELY 5 FEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

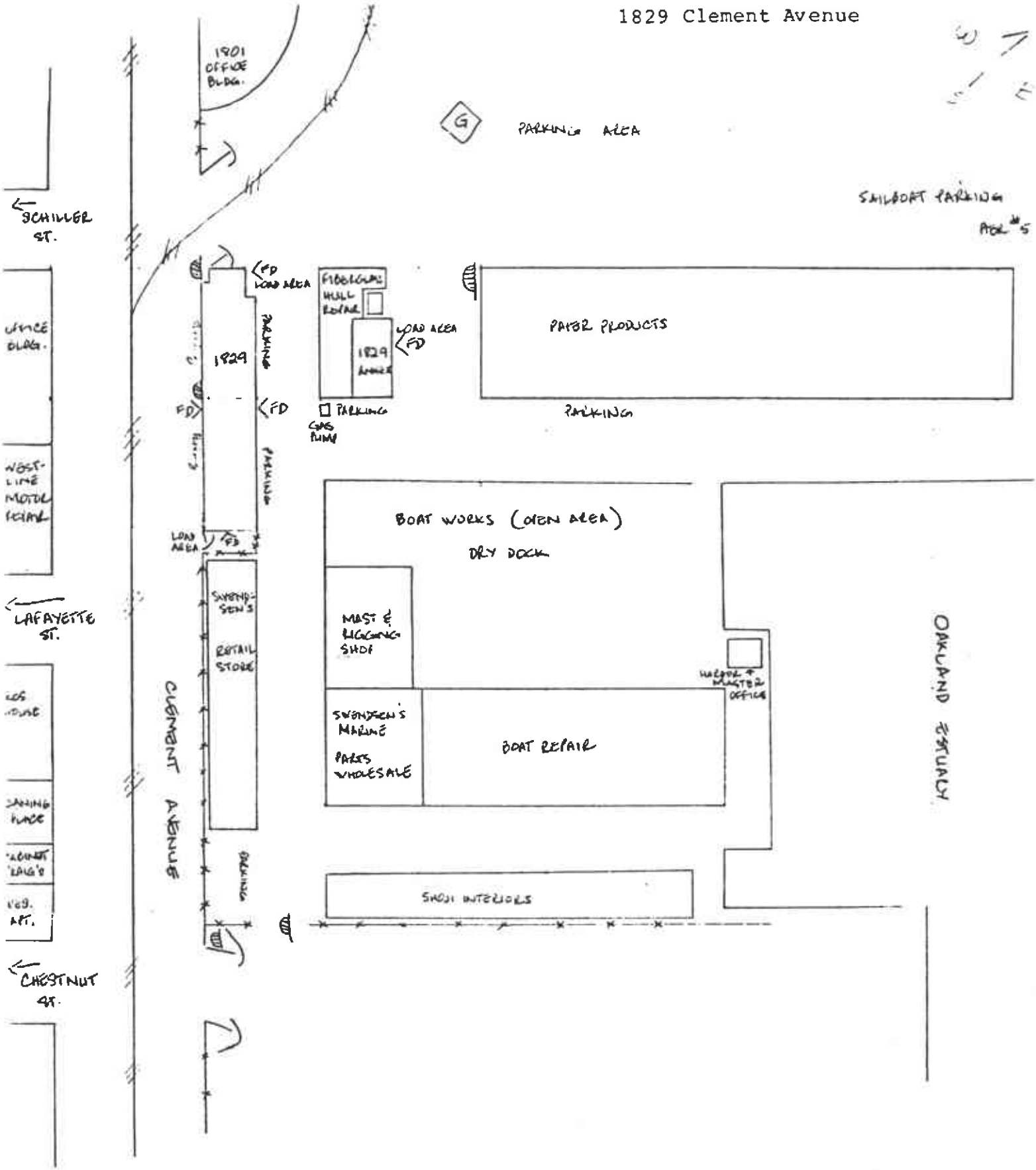
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO OR WASHINGTON 25, D. C.

Figure 1

Regional Map

Site Layout Diagram : KEM-MIL-CO

1829 Clement Avenue



SCALE 1" = 78'

Figure 2

Local Map

11-23-88 KemMil to Cnty.

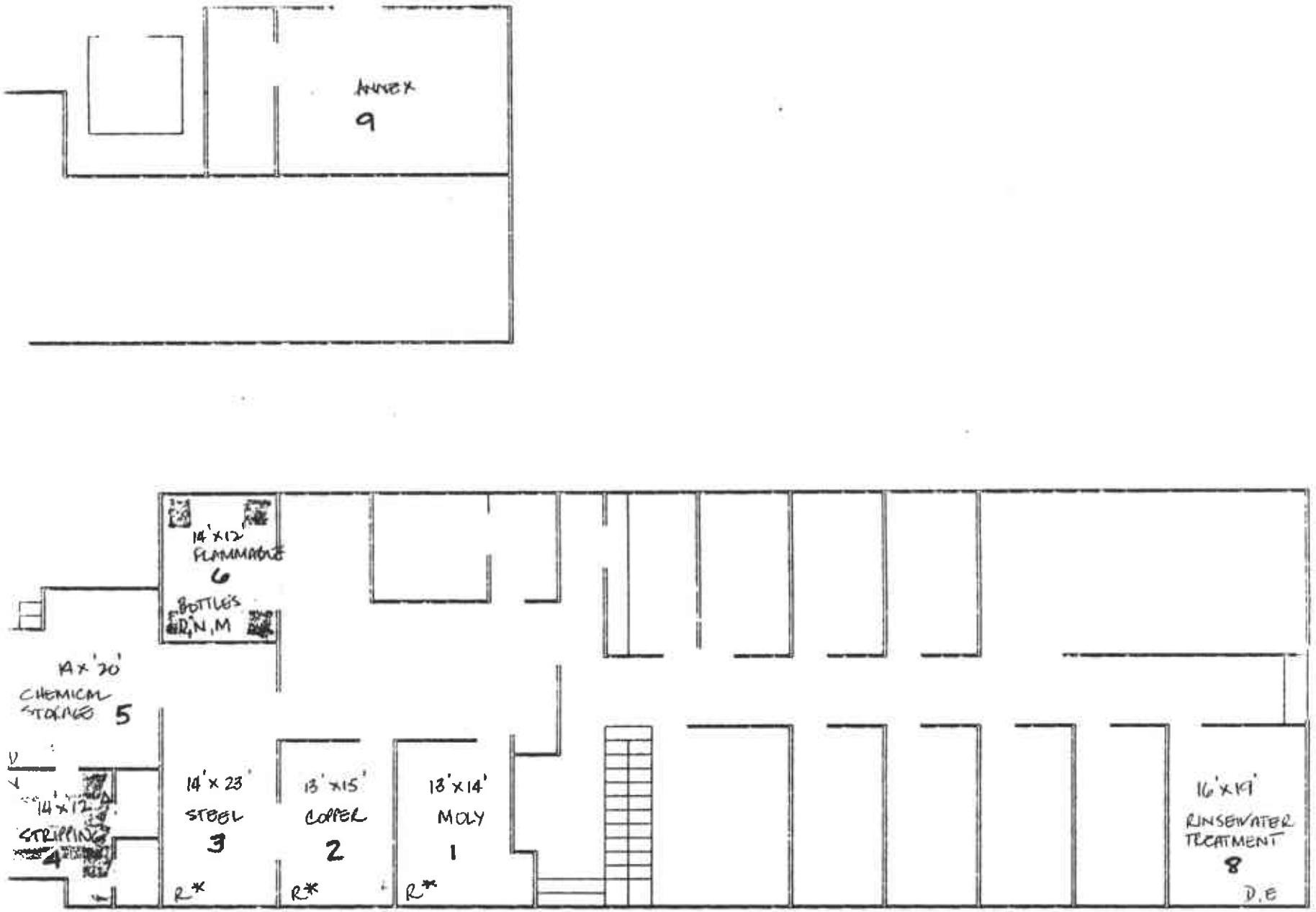


Figure 3
Site Map

Past and Current Site Activities

1. From 1967 to 1986, the site was used as a photochemical machining shop (9). The Kem Mil Co. (Kem Mil) performed photodeveloping and etching at the property from 1986 to March, 1990 (7). They produced photo-reduced miniature electronic devices.

   In March, 1990, Kem Mil moved to 3527 Magnolia Dr. in Alameda and finally to Hayward, their present location.

   A Kem Manufacturing Co. operated in S. San Francisco on Linden Ave. until 1984. EPA's contractor investigated the site for a dioxin study but little information was found. The parent company of the same name was based in Tucker, Georgia (7a).

2. M. Lane Hill was the president of Graphic Services when they operated as Kem Mil Co. at the site. According to a subsequent Kem Mil attorney, the contamination occurred during Mr. Hill's tenure. Mr. Hill now operates a successor company in Hayward and represents Kem Mil (5).

3. Property Owner: Pacific Shop, 1815 Clement Ave., Alameda, (415) 521-1133, John Bentzen, President, was the site owner during Kem Mil's tenure at the site, and remains owner.

4. Process Description
   KemMil Co. operated a photo-chemical machining job shop at the property. They produced small photo-reduced electronic parts using batch chemical processes. A simplified process flow diagram is shown on the following page (Figure 4).

   a. Type and quantity of products:
      Kem Mil produced small parts for electronic and electrical devices; it was a small operation with limited production quantity; exact output numbers are unknown. Chemical use/output is detailed in the Hazardous Substance/Waste Management section, pg. 5.
   b. Primary materials/chemicals:
      Metals including molybdenum, stainless steel, and copper were cleaned with sodium hydroxide and hydrochloric acid and etched with dilute forms of ferric chloride, sodium hydroxide, potassium ferricyanide, and hydrochloric acid which were then discharged to the sewer (3).
   c. Major physical/chemical processes:
      In short, metals were cleaned, coated, and etched. The process flows shown below include acid and alkaline cleaning of the metal, chromate conversion coating, resist application and removal, batch etching, and waste removal/discharge.
   d. Map of site features: Kem Mil's EBMUD permit maps follow:

EBMUD

KEM-MIL CO.
BUSINESS NAME

Part C - Schematic Flow Diagram

Wastewater Discharge Permit

Purpose — The Schematic Flow Diagram shows the flow pattern of products through the facility and the various sources of wastewater. This information will enable EBMUD to assess the quality, volume and peak flows of the discharge.

EBMUD USE:
Permit No. _____

Schematic Flow Diagram — For each major activity in which wastewater is generated, draw a diagram of the flow of materials and water from start to completed product, showing all unit processes generating wastewater. Number each unit process having wastewater discharges to the community sewer. Use these numbers when showing this unit process in the building layout in Part D.

ACTIVITY: ...chemical milling

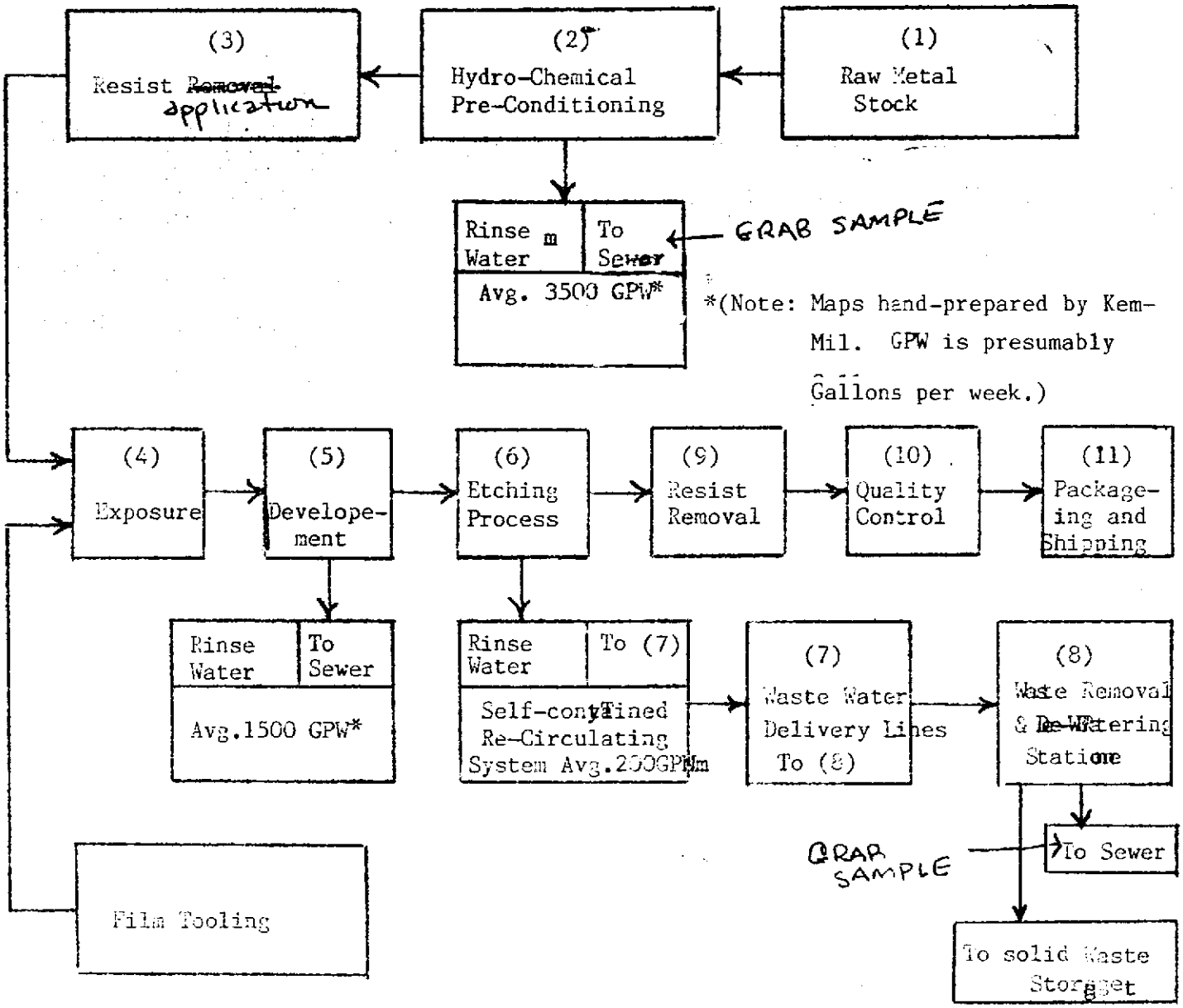


Figure 4 Flow Diagram

INSTRUCTIONS — SEE ON BACK

EBMUD

BUSINESS NAME

Part D - Building Layout

Wastewater Discharge Permit

Purpose – The **Building Layout** shows the wastewater generating operations which contribute to each side sewer. Ths building layout will also enable EBMUD and the applicant to select suitable sampling locations for determining and verifying wastewater strength.

EBMUD USE:
Permit No.

Building Layout – Draw to scale the location of each building on the premises. Show location of all water meters, storm drains numbered unit processes (from Part C), community sewers and each side sewer connected to the community sewers. Number each side sewer and show possible sampling locations.

An attached blue print or drawing of the facilities showing the above items may be substituted for a drawing on this sheet.

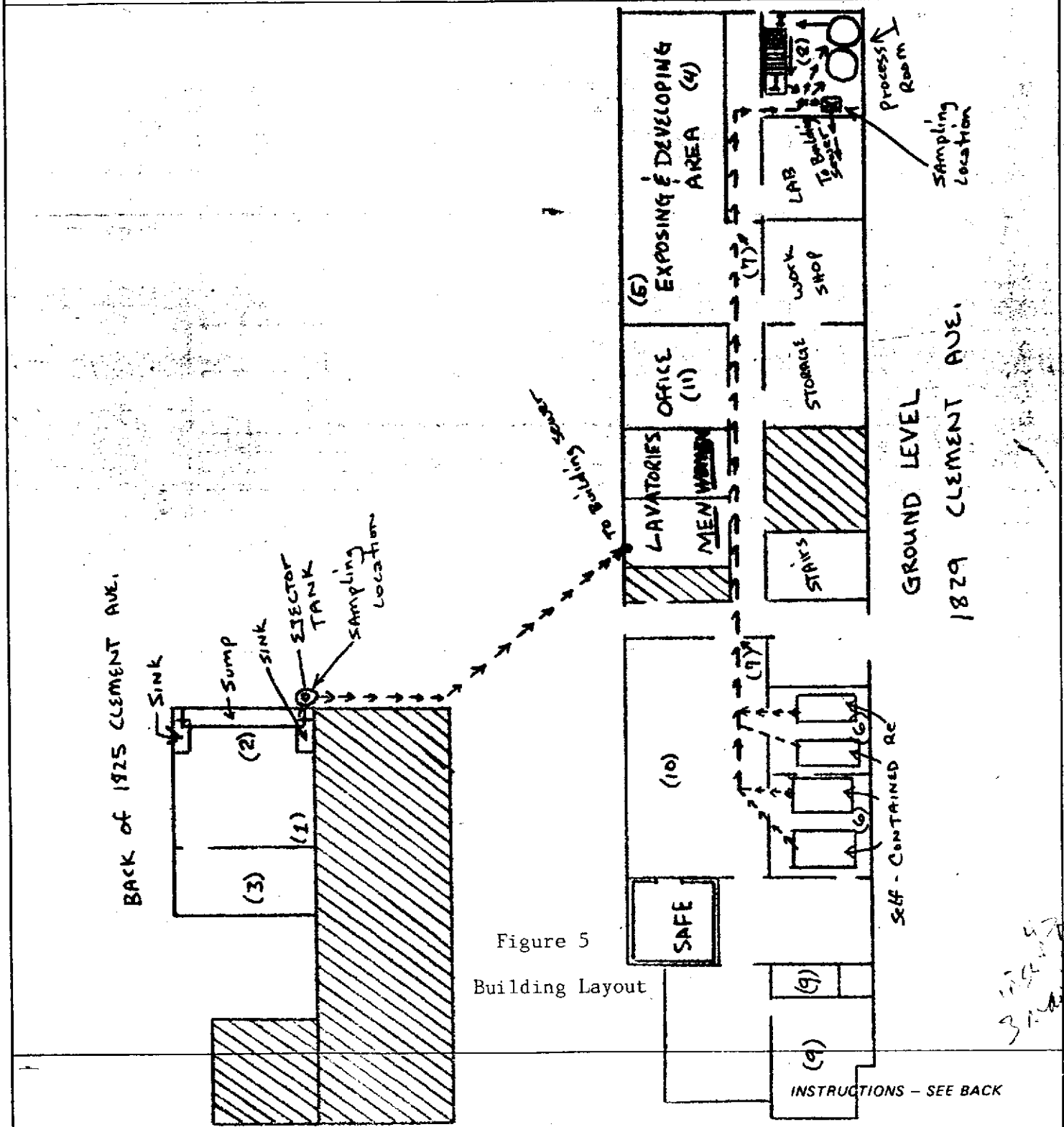


Figure 5

Building Layout

INSTRUCTIONS – SEE BACK

Hazardous Substance/Waste Management

1. Waste Stream Identification and Waste Quantities:

As noted, dilute forms of ferric chloride, sodium hydroxide, potassium ferricyanide, and hydrochloric acid were discharged by Kem Mil to the sewer (3). A total of 1900 gallons per day (gpd) of water were used and discharged in the following processes: Sanitary - 530 gpd, Processes - 600 gpd, Etching - 70 gpd, and Hydrochem. Preconditioning Rinse - 700 gpd (3b).

Acidic, low pH, and caustic, high pH wastewater flowed twice weekly to the treatment area tanks in separate PVC pipes. The high pH stream contained the acidic ferric chloride and cyanide mentioned above. The low pH stream consisted of etching rinse waters with FeCl3 and Cu, Fe, Zn, and Cr (4).

As of 9-89 Kem Mil had the following wastes on site: hot stripper (probably acid) - 50 gal., solvent (probably acetone) - 5 drums, spent FeCL - 2 drums, dilute FeCl rinse water - 2 drums, moly etchant and rinse water awaiting approval to treat - 15 drums, contaminated paper towels - 2.5 drums, filter cake - 1/2 drum, FeNO - 2 drums (3a). Inadequate ventilation of acetone and xylene and improper labeling of hydrofluoric acid were also reported (5a).

Kem Mil had the following manifested wastes hauled off every couple months in 1988: filter cakes (2-400 gal), acetone (1-200 gal.), spent ferric chloride solution (600 gal.)(6).

2. On Site Storage, Treatment, or Disposal:

a. On site storage units - drums of wastes onsite are listed in 1. above. A number of small tanks were located on the first floor. (see Appendix B - County Health photos).
b. Former waste treatment facilities - all treatment is done in weekly batches of 300 gallons in a tank of that size.
c. On site disposal practices - Dilute forms of ferric chloride, sodium hydroxide, potassium ferricyanide, and hydrochloric acid were discharged to the East Bay Municipal Utility District (EBMUD) sewer. Sloppy housekeeping around the storage tanks is evident in the County's photographs (see Photographs). As noted, low

and high pH wastewaters flowed to the treatment area tanks in separate PVC pipes. The high pH stream contained the acidic ferric chloride and cyanide mentioned above. The low pH stream consisted of etching rinse waters with FeCl3 and Cu, Fe, Zn, and Cr (4).

Excessive cyanide, chromium, and iron were measured in the facility's wastewater streams (3). Soil sampling by Kem Mil on 9-9-88 showed Arsenic at 120 ppm, Chromium 1000 ppm, Copper at 6400 ppm, Molybdenum at 1800 ppm, Lead at 28 ppm, and Zinc at 680 ppm (2). Primary areas of contamination are in the subbasements of the etch process room (north end) and the treatment room (south end) (9).

d. Containment of treatment, storage, or disposal units on site - Kem Mil was cited by the County for inadequate containment. Sampling has shown that leaks of chemicals into the subfloor soil occurred. Thus, insufficient controls over such spills, such as berms, etc., were in place (5).

e. Waste recovery or recycling, volumes and types of wastes--Kem Mil did treat and recover some of their plating chemical streams (see 1). It used a filter press and standard pH adjustment of the wastewater to precipitate out the metals (5a). The waste streams were intermixed with caustic soda to neutralize the discharge (4). As noted, approximately 1,900 gallons per day of water with ferric chloride and potassium ferricyanide and HCl were discharged to the sewer.

f. Treatment of off-site wastes--There is no information to suggest Kem Mil treated any wastes other than its own onsite materials.

3. Regulatory Status

Kem Mil has been the subject of scrutiny by both EBMUD and Alameda County Health (the County). Currently, Kem Mil is the subject of a lawsuit by the property owners, Pacific Shop (3 EBMUD call 5-9), and possible District Attorney prosecution (5). As of this Sept., 1990 writing, the County has just approved the remediation report for the site by Kaldveer consultants. A groundwater sampling plan has also been submitted (5). Several occurrences of excess heavy metals and cyanide have been documented by both EBMUD and the company. Kem Mil also attempted to obtain a treatment variance from DHS in 1988, but withdrew its application upon finding excess cyanide in their wastewater (4).

A 10-6-88 inspection by Alameda County found numerous violations including overflow to the sewer, lack of both a permit and proper containment, improper labeling of drums, hydrofluoric acid, uncovered treatment tanks, and inadequate ventilation of acetone and xylene. The biggest problems were the "gross signs of hazardous waste accumulation" in the subfloor area (5a).

4. Inspection Results

The Department's 5-18-90 drive-by of the site revealed little other than the clean brown building among others near the Inner Harbor. However, Alameda County Health had numerous photos of the contaminated basement subfloor. They showed a sloppy chemical operation with spills from drums and small tanks both on and through the sub-basement floor (photos). The County's inspection history since 1976 is attached (6).

EBMUD permits allow self-monitoring with occasional oversight inspections. Kem Mil had occasional excess wastewater discharges of heavy metals, but most of the time was in compliance with EBMUD's limits (1-2 ppm range for metals) (3).

B. Apparent Problem

Kem Mil Co. had a sloppy chemical operation. Spills of heavy metal-containing liquids as well as acids and bases to the subfloor and sewer have been documented (5a). Soil sampling of the subfloor by Kem Mil on 9-9-88 showed Arsenic at 120 ppm, Chromium at 1000 ppm, Copper at 6400 ppm, Molybdenum at 1800 ppm, Lead at 28 ppm, and Zinc at 680 ppm (2). Acidic soil, pH 2.5-6, is also present (5).

As noted, a 10-6-88 inspection by Alameda County found numerous violations including overflow to the sewer, lack of a permit and containment, improper labeling of drums, hydrofluoric acid, uncovered treatment tanks, and inadequate ventilation of acetone and xylene. Dilute forms of ferric chloride, sodium hydroxide, potassium ferricyanide, and hydrochloric acid were discharged to the East Bay Municipal Utility District (EBMUD) sewer.

The main exposure threat from the contaminated soil would be to occupants of the building. The contaminated soil could impact the shallow groundwater, but this water may be saline and thus, not used (10). As of this Sept., 1990 writing the County has just approved Kalveer's site remediation report. A groundwater sampling plan has also been submitted (5).

C. Sampling Activities

1. Objective - Past sampling has built up a data record for the site; Ongoing sampling will complete that record. Confirmation that the contaminated area is confined to the sub-basement soil and not in shallow groundwater is the goal of such sampling. This sampling should also have delineate the vertical and lateral extent of soil contamination (5).

2. Background - Several rounds of sampling have taken place at the site over the past few years. They have concentrated on the subbasement area of contamination. Recent results presented by Kaldveer Associates remediation report have just (Sept., 1990) been approved by County Health (5). A groundwater sampling plan has been submitted for approval (5).

   In the past, Blymyer Engineers took four soil samples and reported on 9/29/88 up to 1500 mg/kg arsenic, 2000 mg/kg cyanide, and 3,000 mg/kg copper. Complete analyses for Total Petroleum Hydrocarbons, and EPA methods 8100 and 8010 (halogenated volatiles) were performed. Later samples (10/4/88 - Trace Analysis) showed 6400 mg/kg copper, 2900 mg/kg molybdenum, 6400 mg/kg copper and 1500 mg/kg chromium in the subfloor (7). Levine Fricke also proposed well installation and sampling in 10/88 (7), but it is not believed that this work was done.

   Kaldveer Associates proposed soil and groundwater testing per County Health's request on 12-28-89. Cyanide was found in two samples at 200 and 60 mg/kg. The Kaldveer sample plan and results are attached as Reference 8. As noted, a remediation report presented to the County on July 30 has just been approved in early September, 1990.

3. Sampling Rationale was discussed above and in the individual sample plans (8).

4. Implementation - Surface soil sampling

5. Equipment Decontamination - typical decontamination methods including equipment cleaning in wash and rinse tubs and disposable clothing, are briefly described in the Site Safety Plan (9), and the Sampling Plan (8).

6. Quality Assurance/Quality Control were only briefly described in the Sampling Plan, though detailed outlines are probably available at the analyzing labs.

7. Site Safety Plan is attached as Reference (9).

Analysis of Sample Results

As mentioned, past sampling has increasingly, over a few years, characterized the soil contamination at the site. Recent remediation summarized in a July 30th Kaldveer report has just (Sept., 1990) been approved by the County (5). Previously, the subfloor region was the primary area of contamination, mainly with heavy metals. Kaldveer Associates had concluded that the metals were predominantly in the top 6 inches of soil in two locations: below the etch process room (cyanide) and the eastern asphalt sediment (9).

It is believed the data are representative of the site due to the sampling by various consultants over the years and the County's oversight. Further sampling of groundwater is needed to document that the wastes have not migrated.

D. Factors Related to Known or Potential Site Contamination

Hazardous Substances/Waste Released or Potentially Released at the Site

Soil sampling by Kem Mil on 9-9-88 showed the following heavy metals in the sub-basement: Arsenic at 120 ppm, Chromium 1000 ppm, Copper at 6400 ppm, Molybdenum at 1800 ppm, Lead at 28 ppm, and Zinc at 680 ppm (2). The concrete floor was also impregnated with Ferric cyanide (5).

Physical and Chemical Characteristics of the Hazardous Substances/Wastes

Most of the physical and chemical characteristics of the heavy metals at Kem Mil Co. are on DHS Chemical Data Sheets or EPA Fate and Transport Profiles enclosed in Reference (2a). Exceptions include Henry's Law Constant (not applicable for metals), Compatible/NFPA reactivity (Ref. 2b), and pH (the site pH is 2.5-2.6) (5).

A sample data sheet for copper, the only metal above the TTLC, is on the next page; the others are in Reference (2a).

Data sheets were unavailable for Iron and Molybdenum; their properties are listed below:

	Iron	Molybdenum
1. Phys. State/Color	silver white malleable metal	gray metal/black metal
2. Molecular Weight	aw 55.8	aw 95.94
3. Spec. Gravity	7.87	10.2
4. Solubility/Wtr. other	insol, but sol. in nonoxidz acids	insol. insol in acid sol:sulfric,nitrc
5. Boil. or Melt Pt. Freezing Pt.	bp3000C mp1536C	bp 5560C mp 2610C
6. Vapor Press.	NA(solid,v.low)	NA(:solid,v.low)
7. Henrys Cnstnt.	NA	NA
8. Flashpoint	NA	NA(oxidizes>1000F)
9. UExplos.Limit LEL		
10. Ignitablty.	dust flammable	dust/powder flammable
	Iron	**Manganese**
11. Reactivty.	oxidizes readily in moist air	oxidizes >1000F
12. Compatible		
13. pH (site pH is 2.5)	NA	NA
14. Tox./persistnc.	TLV 5 mg/m3 salts: 1 " persistent	TLV 10 mg/m3 insol 5 mg/m3 sol persistent

NA - not applicable

CHEMICAL DATA SHEET

NAME: COPPER
SYN.: Copper dusts & mists

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: Cu
MOLECULAR WEIGHT: 63.5
MELTING POINT: 1083°C
BOILING POINT: 2595°C
SOLUBILITY: varies by compound
VAPOR PRESSURE: N/A
FLAMMABLE LIMITS: LEL ? UEL ?
FLASH POINT: combustible as powder
ODOR THRESHOLD & DESCRIPTION: odorless
APPEARANCE (Pure compound): reddish metal (green if oxidized)

STANDARDS

TLV (1985-86): 1 mg/M3
PEL (Cal/OSHA): 1 mg/M3
SKIN HAZARD: Yes [x] No [_]
IDLH: N/A

SOURCES OF CONTAMINATION

Refining of copper ores
Plating operations; Antifouling paints; Electrical equipment
Wood preservatives; Catalyst
Corrosion-resistant piping and reactor vessels

HEALTH EFFECTS

ACUTE: Skin effects from discoloration to irritation; severe irritation to eyes; GI tract distress; respiratory system irritation; anemia
CHRONIC: Ulceration to perforation of nasal septum; persons with Wilson's disease predisposed to poisoning (hepatolenticular degeneration)
LD50 TD-Lo: 120 microg/kg (human)
LC** not available

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [_] PETyvek [x] Saranex [_] PVC [_]

GLOVES: Neoprene [x] Nitrile [_] PVC [_]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [_]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMC-S [x]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMD-H [_]
(ammonia/amines/high efficiency filter)

. Data not available on flammability limits

7 [illegible]
12 incompatibles
11 NFPA reactivity
L? pH

H.A.R.P. CHEMICAL DATA SHEET

NAME: ARSENIC *
SYN.: Inorganic arsenic compounds; arsenic trioxide; arsenicals

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: As
MOLECULAR WEIGHT: 75
MELTING POINT: N/A
BOILING POINT: sublimes at 612°C
ODOR THRESHOLD & DESCRIPTION: odorless
APPEARANCE (Pure compound): silver-gray, brittle, crystalline solid

SOLUBILITY: insoluble
VAPOR PRESSURE: N/A
FLAMMABLE LIMITS: LEL N/A UEL N/A
FLASH POINT: not combustible

STANDARDS

TLV (1985-86): 0.2 mg/M3
PEL (Cal/OSHA): 0.01 mg/M3

SKIN HAZARD: Yes [x] No [_]
IDLH: carcinogen

SOURCES OF CONTAMINATION

Copper & lead smelters
Alloying additive
Semiconductor industry
Medicinal uses
Special solders; Pigments
Wood & hide preservative; Pesticide

HEALTH EFFECTS

ACUTE: Irritant to skin, eyes & mucous membranes; GI tract distress; Poison

CHRONIC: Dermatitis, keratoses, skin cancer; polyneuritis; chronic hepatitis & cirrhosis; GI tract distress; perforation of nasal septum

LD50 LD-Lo: 10 - 300 mg/Kg
LC** not available

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [_] PETyvek [_] Saranex [_] PVC [x]

GLOVES: Neoprene [_] Nitrile [_] PVC [x]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [x]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMC-S [_]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMD-H [x]
(ammonia/amines/high efficiency filter)

* trivalent arsenic

insert after table of iron & moly physprop.

H.A.R.P. CHEMICAL DATA SHEET

NAME: CADMIUM
SYN.: Cadmium dust, salts, oxide

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: Cd
MOLECULAR WEIGHT: 112
MELTING POINT: 321°C
BOILING POINT: 767°C
SOLUBILITY: N/A
VAPOR PRESSURE: N/A
FLAMMABLE LIMITS: LEL ? UEL ?
FLASH POINT: combustible as powder
ODOR THRESHOLD & DESCRIPTION: odorless
APPEARANCE (Pure compound): blue-white malleable metal; grayish-white powder

STANDARDS

TLV (1985-86): 0.05 mg/M3 ceiling
PEL (Cal/OSHA): 0.05 mg/M3
SKIN HAZARD: Yes [_] No [x]
IDLH: 40 mg/M3

SOURCES OF CONTAMINATION

Zinc-containing ores
Metal coatings & alloys; Pigments
Ni-cad batteries
Electrical equipment
Fire-protection systems
Brazing alloys

HEALTH EFFECTS

ACUTE: Irritant to respiratory tract progressing to pulmonary edema

CHRONIC: Anosmia; stains on teeth; emphysema; kidney damage; hypochromic anemia; animal carcinogen

LD50 3 - 712 mg/Kg
LCLo 39 mg/M3 (human)

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [x] PETyvek [_] Saranex [_] PVC [_]

GLOVES: Neoprene [_] Nitrile [_] PVC [_]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [x]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMC-S [_]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMD-H [x]
(ammonia/amines/high efficiency filter)

: Data on flammability limits not available

H.A.R.P. CHEMICAL DATA SHEET

NAME: CHROMATES
SYN.: Chromium compounds with hexavalent Cr

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: will vary
MOLECULAR WEIGHT: will vary
MELTING POINT: will vary
BOILING POINT: will vary
SOLUBILITY: insoluble
VAPOR PRESSURE: N/A
FLAMMABLE LIMITS: LEL N/A UEL N/A
FLASH POINT: not combustible
ODOR THRESHOLD & DESCRIPTION: will vary
APPEARANCE (Pure compound): will vary

STANDARDS

TLV (1985-86): 0.05 mg/M3
PEL (Cal/OSHA): 0.05 mg/M3
SKIN HAZARD: Yes [x] No [_]
IDLH: 30 mg/M3

SOURCES OF CONTAMINATION

Pigments in industrial paints, rubber, plastics, ceramic coatings

HEALTH EFFECTS

ACUTE: Skin irritation

CHRONIC: Fibrosis of lungs; cancer of lungs, nasal cavity, paranasal sinus

LD50 TD-Lo: 150 mg/Kg(lead chromate) LC** N/A

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [_] PETyvek [x] Saranex [_] PVC [_]

GLOVES: Neoprene [x] Nitrile [_] PVC [_]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [x]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMC-S [_]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMD-H [x]
(ammonia/amines/high efficiency filter)

H.A.R.P. CHEMICAL DATA SHEET

NAME: COPPER
SYN.: Copper dusts & mists

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: Cu
MOLECULAR WEIGHT: 63.5
MELTING POINT: 1083°C
BOILING POINT: 2595°C
SOLUBILITY: varies by compound
VAPOR PRESSURE: N/A
FLAMMABLE LIMITS: LEL ? UEL ?
FLASH POINT: combustible as powder
ODOR THRESHOLD & DESCRIPTION: odorless
APPEARANCE (Pure compound): reddish metal (green if oxidized)

STANDARDS

TLV (1985-86): 1 mg/M3
PEL (Cal/OSHA): 1 mg/M3
SKIN HAZARD: Yes [x] No [_]
IDLH: N/A

SOURCES OF CONTAMINATION

Refining of copper ores
Plating operations; Antifouling paints; Electrical equipment
Wood preservatives; Catalyst
Corrosion-resistant piping and reactor vessels

HEALTH EFFECTS

ACUTE: Skin effects from discoloration to irritation; severe irritation to eyes; GI tract distress; respiratory system irritation; anemia
CHRONIC: Ulceration to perforation of nasal septum; persons with Wilson's disease predisposed to poisoning (hepatolenticular degeneration)
LD50 TD-Lo: 120 microg/kg (human)
LC** not available

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [_] PETyvek [x] Saranex [_] PVC [_]

GLOVES: Neoprene [x] Nitrile [_] PVC [_]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [_]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMC-S [x]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMD-H [_]
(ammonia/amines/high efficiency filter)

. Data not available on flammability limits

H.A.R.P. CHEMICAL DATA SHEET

NAME: LEAD
SYN.: Inorganic lead fumes and dusts

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: Pb
MOLECULAR WEIGHT: 207
MELTING POINT: 327°F
BOILING POINT: 1740°F
ODOR THRESHOLD & DESCRIPTION: odorless
APPEARANCE (Pure compound): bluish gray soft metal

SOLUBILITY: slight, some conditions
VAPOR PRESSURE: 1 mmHg at 973°C
FLAMMABLE LIMITS: LEL N/A UEL N/A
FLASH POINT: not combustible

STANDARDS

TLV (1985-86): 0.15 mg/M3
PEL (Cal/OSHA): 0.05 mg/M3

SKIN HAZARD: Yes [_] No [x]
IDLH: not available

SOURCES OF CONTAMINATION

Manufacture of paints, storage batteries, tetraethyl lead, glass
Vibration damping in construction

Welding, soldering, spray coating operations; Chemical reaction vessels; Mining, smelting, refining

HEALTH EFFECTS

ACUTE: Fatigue, headache, aching muscles & bones, gastrointestinal disturbances, sleep disturbance, abdominal pain, decreased appetite
CHRONIC: Reproductive system & fetotoxicity; lead colic; anemia, pallor; CNS effects; peripheral neuropathy; lead line on gums; kidney damage
LD50 LD-Lo: 160 - 1000 mg/Kg
LC** not available

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [x] PETyvek [_] Saranex [_] PVC [_]

GLOVES: Neoprene [_] Nitrile [_] PVC [_]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [x]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMC-S [_]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMD-H [x]
(ammonia/amines/high efficiency filter)

H.A.R.P. CHEMICAL DATA SHEET

NAME: ZINC
SYN.: Zinc oxide fume; calamine; zinc white; chinese white

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: Zn O
MOLECULAR WEIGHT: 81
MELTING POINT: 1975°C
BOILING POINT: sublimes
ODOR THRESHOLD & DESCRIPTION: odorless
APPEARANCE (Pure compound): white fume or powder

SOLUBILITY: insoluble
VAPOR PRESSURE: N/A
FLAMMABLE LIMITS: LEL N/A UEL N/A
FLASH POINT: not combustible

STANDARDS

TLV (1985-86): 5 mg/M3
PEL (Cal/OSHA): 5 mg/M3

SKIN HAZARD: Yes [_] No [x]
IDLH: N/A

SOURCES OF CONTAMINATION

Welding operations
Rubber & paint manufacturing
Ointments & cosmetics

Mold growth inhibitor
Piezoelectric devices
Photoconductor; Semiconductor

HEALTH EFFECTS

ACUTE: Metal fume fever - chills, fever, cough, malaise, pain in joints & muscles, elevated leukocyte count
CHRONIC: none

LD50 not available

LC** TC-Lo: 600 mg/M3 (human)

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [x] PETyvek [_] Saranex [_] PVC [_]

GLOVES: Neoprene [_] Nitrile [_] PVC [_]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [_]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMC-S [x]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMD-H [_]
(ammonia/amines/high efficiency filter)

H.A.R.P. CHEMICAL DATA SHEET

NAME: HYDROGEN CYANIDE
SYN.: Hydrocyanic acid; Prussic acid

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: H C N
MOLECULAR WEIGHT: 27
MELTING POINT: 3 to 7°F
BOILING POINT: 25.6°C (79¾F)
SOLUBILITY: miscible
VAPOR PRESSURE: 620 mmHg
FLAMMABLE LIMITS: LEL 5.6% UEL 40%
FLASH POINT: 0°F
ODOR THRESHOLD & DESCRIPTION: 0.00027 - 5 ppm; bitter almonds; fatique *
APPEARANCE (Pure compound): colorless gas; colorless to whitish liquid

STANDARDS

TLV (1985-86): 10 ppm ceiling
PEL (Cal/OSHA): 10 ppm
SKIN HAZARD: Yes [x] No [_]
IDLH: 60 mg/M3

SOURCES OF CONTAMINATION

Plating operations & wastes
Fumigant
Gold & silver extraction
Manufacture of nitriles & acrylates, cyanide salts, dyes

HEALTH EFFECTS

ACUTE: Chemical asphyxiation; weakness, headache, confusion, nausea, vomiting; respiratory system irritation
CHRONIC: none

LD50 0.8 - 3.7 mg/Kg
LCLo 120 - 200 mg/M3 (human)

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [_] PETyvek [_] Saranex [_] PVC [x]

GLOVES: Neoprene [_] Nitrile [_] PVC [x]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [_]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMC-S [_]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMD-H [_]
(ammonia/amines/high efficiency filter)

There are no air-purifying respirators approved for hydrogen cyanide.
* Olfactory fatigue - loose the ability to smell the compound.

H.A.R.P. CHEMICAL DATA SHEET

NAME: MERCURY
SYN.: Inorganic mercury; quicksilver; hydrargyrum

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: Hg
MOLECULAR WEIGHT: 201
MELTING POINT: -38°F
BOILING POINT: 674°F
SOLUBILITY: 0.002%
VAPOR PRESSURE: 0.0012 mmHg
FLAMMABLE LIMITS: LEL N/A UEL N/A
FLASH POINT: not combustible
ODOR THRESHOLD & DESCRIPTION: odorless
APPEARANCE (Pure compound): silvery mobile liquid

STANDARDS

TLV (1985-86): 0.05 mg/M3
PEL (Cal/OSHA): 0.05 mg/M3
SKIN HAZARD: Yes [x] No [_]
IDLH: 28 mg/M3

SOURCES OF CONTAMINATION

Electrical apparatus & instruments
Textiles; Catalyst; Amalgams; Gold & silver extraction; Pigment;
Nuclear power plant coolant & neutron absorber; Mirrors; Lamps; Pharmaceuticals *

HEALTH EFFECTS

ACUTE: Irritant to skin & mucous membranes; respiratory effects - bronchitis pneumonitis, bronchiolitis
CHRONIC: Skin sensitizer; psychoses; salivation & gingivitis; tremors - face & hands
LD50 TD-Lo: 400 mg/Kg
LCLo 29 mg/M3 (rabbit)

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [_] PETyvek [x] Saranex [_] PVC [_]

GLOVES: Neoprene [x] Nitrile [_] PVC [_]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [_]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMC-S [_]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMD-H [_]
(ammonia/amines/high efficiency filter)

There are no A/P respirators approved for mercury (organic or inorganic).
* Cathodes for production of chlorine, acetic acid, & caustic soda.

H.A.R.P. CHEMICAL DATA SHEET

NAME: NICKEL
SYN.:

PHYSICAL/CHEMICAL CHARACTERISTICS

FORMULA: Ni
MOLECULAR WEIGHT: 58.7
MELTING POINT: 1455°C
BOILING POINT: 2900°C
SOLUBILITY: not soluble
VAPOR PRESSURE: N/A
FLAMMABLE LIMITS: LEL N/A UEL N/A
FLASH POINT: not combustible
ODOR THRESHOLD & DESCRIPTION: as nickel compounds will vary
APPEARANCE (Pure compound): malleable, silvery metal

STANDARDS

TLV (1985-86): 1 mg/M3 (metal)
PEL (Cal/OSHA): 1 mg/M3 (metal)
SKIN HAZARD: Yes [x] No [_]
IDLH: none available

SOURCES OF CONTAMINATION

Metal alloys
Alkaline storage batteries
Plating operations
Catalyst

HEALTH EFFECTS

ACUTE: Pneumonitis; skin irritation

CHRONIC: Sensitizer to skin & respiratory system
Suspect carcinogen
LD50 None available
LC** None available

PROTECTIVE CLOTHING SELECTION

The choice from those listed below will depend on the contaminant present, type of work activity, and concentration of contaminant.

SUIT: Tyvek [x] PETyvek [_] Saranex [_] PVC [_]

GLOVES: Neoprene [_] Nitrile [_] PVC [_]
Liners [x] Viton [_] Rubber (latex) [_]

AIR-PURIFYING RESPIRATOR CARTRIDGE SELECTION

Ultra-Twin GMC-H [x]
(organic vapors/acid gas/ high-efficiency filter)

Ultra-Twin GMP [_]
(pesticides)

Ultra-Twin GMC-S [_]
(organic vapors/acid gas/ particulate filter)

Ultra-Twin GMD-H [x]
(ammonia/amines/high efficiency filter)

Exposure Routes and Toxicity

The Chemical Data Sheets above and in Reference (2a) include the standards and health effects of the heavy metals found at the Kem Mil Co. site. Site specific exposure routes are the focus of this discussion.

1. Most of the heavy metals found at Kem Mil Co. are in the sub-basement soils. The inaccessibility of this area to people means little risk of direct contact. Although heavy metals are generally insoluble and thus, immobile at neutral pH (2a), acidic conditions at the site could make them a mobile threat. Groundwater at 8 feet could possibly provide a transport pathway for the metals. Nonetheless there is little potential for contact outside of the building and the current investigation of the contamination should result in their remediation. However, if contaminants are left in place, a deed restriction should be instituted.

Factors Related to Soil/Direct Contact Pathways

The soil is contaminated with heavy metals as outlined above and established via soil sampling over the past 4-6 years. This has been documented with soil sampling data and photos of Kem Mil Co.'s sloppy operations in the sub-basement (5a, Appendix B). Thus, there is a documented release to soil.

1. Topography--The drive-by showed the site and surrounding areas to be flat island terrain near Alameda's eastern channel (1, photos).

2. Land use and zoning--The surrounding area is used for ship building and repair as well as other semi industrial purposes. This is a result of the site's location 1-200 yards from the water channel bordering Alameda's eastern edge (1).

3. Visible evidence of environmental impacts--There are no significant visible environmental impacts. There is visible contaminated soil, but it is in the sub basement, inaccessible to most people (1,5).

4. Hydrologic Soil Group--Regionally, the subsurface hydrology is generally defined by the strata.

The upper artificial fill and alluvial deposits represent the first shallow groundwater from approximately 5-10 ft below sea level (bsl). The site's soil testing report says, "The surficial soils at the eastern end of the building consist of 1.5 inches of asphalt on top of 3.5 feet of silty sand, underlain by about 1.5 feet of clayey sand, followed by more silty sand to a depth of about 7.5 feet. Soils beneath the western portion of the building consist of about five feet of silty sand underlain by clayey sand to the total depth explored of about 7 feet."(9)

Bay Muds of dark, plastic clay extend from about 25-100 ft. bsl and tend to act as an aquiclude. Under this is the first shallow aquifer, the Merritt sand, a fine-grained, loose, well-sorted sand. Next down is an aquitard, the San Antonio Formation, of stiff clay-silty clays. Finally, the Alameda Formation, the probable source for the Base's two 400 foot deep production wells. These are the producing Army well and the nonproducing Pan Am well, which are over 3 miles west of the site.

5. Permeability--The silty sand is the most permeable layer of soil under the site (9); permeability for such soil is approximately 10-3 to 10-4 cm/s.

6. Surface slope--The site is situated on flat terrain 1-200 yards west of Alameda's eastern waterway. Surface runoff will readily drain over the asphalt paving to that water if not to the sewer. There is little chance of runoff from the contaminated sub-basement going to the channel (1).

7. Soil stability--There are several faults in the region including the Hayward fault 4-5 miles to the northeast. Although the site terrain is flat, other sites of similar fill foundations have experienced severe instability due to liquefaction during earthquakes.

8. Accessibility--The site is located inside a building preventing access to it. The building's rear, other neighboring buildings, and the waterway are accessible through a gate on the site building's northern end (1).

9. Contact prevention measures--Although we have no information on such measures, the building on the site does prevent direct contact with the contamination.

10. Distance to residences, schools, etc.--Residences are located several hundred feet west of the site although immediate neighbors are light industrial (1). The nearest schools, Cont and St. Francis High Schools are 1.5 miles to the east and south, respectively; The nearest hospital and nursing home, Oakland Hospital and Home for the Aged are approximately 1.5 miles to the north, across the Inner Harbor (11). The exact distance to a day care center is unknown.

11. There are no critical habitats for endangered species within 1 mile of the site. The nearest semi-critical habitat is the Inner Harbor, which contains fish potentially at risk from contamination. However, existing contamination of the Inner Harbor is probably more significant than potential contamination from the site. 3-4 miles to the southeast is a marsh which could potentially be habitat for the endangered California Clapper Rail or the Salt Marsh Harvest Mouse. However, it is quite unlikely that there would be any impacts that far from the site.

Factors Related to Water Pathways

Metals contamination documented at the site generally does not migrate except under acidic conditions. Although investigation of potential groundwater contamination may be ongoing there is no evidence yet of such contamination. Nonetheless, the following information on the Water Pathways will help distill any final conclusion.

1. Net Seasonal (Nov.-April) Precipitation--7.05 in. (13).

2. Hydrogeology--Shallow groundwater at 8 feet (8) is probably saline and tidally influenced (10). Bay Muds of dark, plastic clay extend from about 25-100 ft. bsl and tend to act as an aquiclude. Under this is the first shallow aquifer, the Merritt sand, a fine grained, loose, well-sorted sand. Next down is an aquitard, the San Antonio Formation, of stiff clay-silty clays. Finally, the Alameda Formation, the probable source for the Base's two 400 foot deep production wells. These are the producing Army well and the nonproducing Pan Am well, which are over 3 miles west of the site. (more soil details in Hydrologic Soil Group above.)

3,4. Hydrological Interconnection--The upper and lower aquifers are probably not interconnected. The nearest potential point of interconnection is where the Hayward fault and hillside streambeds intersect 4-5 miles to the north.

The nearest wells to the site are at the Encinal Marina at Grand St. and Fortman Way, a few hundred yards north (15). There are 45 wells within 3 miles of the site in Alameda; there are another 63 wells on the Base beyond 3 miles. The population or acres of food crops served by the wells are unknown.

5. Most drinking water for Alameda is imported from the Sierra Nevada by the East Bay Municipal Utility District (10). Thus the wells on Alameda within 3 miles of the site are not used for drinking water although some may be used for crop irrigation. The nearby wells potentially effected by the site are probably unusable due to salinity and tidal influence.

6. One year, 24 hour rainfall--2 to 3 inches (13).

7. Nearest surface water--The Inner Harbor estuary is 1-200 yards northeast of the site. There are no known freshwater basins within 3 miles of the site. Lake Merritt, 3 miles to the north is a saltwater basin connected to the estuary (11).

8. Runoff direction/distance to Surface Water--As noted, the only surface water potentially affected by the site is the saline Inner Harbor. Runoff from the site that flows northeast across the asphalt would enter this estuary 1-200 yards from the site (1, 11). An experiment with water at the site showed runoff to pond at the eastern end of the building. Thus, runoff to the Inner Harbor would be insignificant especially compared to the existing discharge points already on the north side of the estuary.

9. Runoff Mitigation--Although the site reportedly had berms to contain any runoff, they have deteriorated. Nonetheless as noted above, runoff to the Inner Harbor is believed to be insignificant.

10. Flood Plain--The site is in the 100 year floodplain due to proximity to the Inner Harbor (16).

11. Migration Routes--As noted, runoff to the Inner Harbor is expected to be insignificant. The contaminants are in the building sub-basement and should not migrate unless extraordinary flooding throughout the building took place.

12. Wetlands--The nearest surface water or wetland is the Inner Harbor, 1-200 yards east of the site. There are no sensitive wetlands within two miles of the site, although there is a bird refuge four to five miles to the southeast.

13. There are no known surface water intakes from the saline Inner Harbor. There are no known potable water intakes within 3 miles of the site (11).

Factors Related to Air Pathways

The contaminants currently left at the site are in the subbasement soil under the building. There was once the possibility of a cyanide reaction when the plating chemicals were onsite, but they have been removed. Thus, there is little chance of an air release except indoors.

E. Analysis of Pathways for Hazard Potential Determination

This is an informal assessment of the hazards posed by the site. It is believed that the hazards are minimized by the contamination location in the subbasement of the building and do not warrant a quantitative risk assessment. This is subject to amendment if water contamination is documented in the ongoing investigation.

Known Hazard

There is not at present a known hazard from the contaminants at the site, because contact with contaminated soils is unlikely. Although some of the heavy metal contaminants in the sub-basement are hazardous, they are confined under the building. The only target populations that could directly contact the contaminants are workers. If the building was demolished, direct contact with the acids and metals would be possible. However, at present, the migration of contamination offsite is not believed to be likely.

Potential Hazard

1,2. Copper is at 2 1/2 times its Total Threshold Limit Concentration of 2500 mg/l, the only contaminant technically at hazardous waste levels. However, the other heavy metals present, including arsenic, chromium, ferric cyanide, etc., are potentially hazardous if leachable. Acid in the soil at 2.5-2.6 pH could enhance leachability.

3. There are few receptors for the contaminants in the building sub-basement. If contamination did migrate to the Inner Harbor they would probably still be unnoticed amongst the other potential pollutants of that estuary. However, if contact was made, these metals could cause the health effects documented in Physical and Chemical Characteristics of the Hazardous Substances/Wastes. Also if the building was demolished, the contaminated subfloor could be exposed, and thus a deed restriction is needed.

4. The major uncertainties involve the limited contaminants found and the potential for water migration. If contaminants other than the heavy metals are found, particularly in the groundwater, the site's potential hazard would be greater. However, the sampling rounds so far should have limited the contamination to the compounds found. Current water investigation might also confirm that contamination is only in soil or concrete.

No Potential Hazard?

1. Although the hazard is limited inside the building, it would be difficult to say there is no potential hazard. If the contamination is limited to soil and the subbasement floor, and is removed, it could be possible to reach this conclusion. However, removal is unlikely.

F. Community Assessment

Several local news articles in the Alameda Star Times have been written on the site (5). However, it is not known whether there is significant community interest.

The bulk of this PEA has been prepared based on the files of the agencies directly involved in the site. The Alameda County Health Agency - Division of Hazardous Materials has been the primary agency on this site and the main source of information. The County had referred this case to the Alameda County District Attorney for prosecution. However, a report on the remediation of the site has just (Sept., 1990) been approved by the County. A large amount of information was also provided by the East Bay Municipal Utility District.

G. Conclusions

The past handling of hazardous substances at the site have resulted in release of heavy metals and acids to soil only. It is unknown whether migration of this contamination has followed surface or groundwater pathways. Although groundwater sampling results are needed to confirm this, there is no reason at this time to conclude that there is a threat to human health or the environment. However, if future demolition of the building occurs, a threat would be present. Thus, a deed restriction is recommended if contaminants are left in place.

The County Health staff have been pursuing the cleanup of this site for some time. Thus, the Department's recommendation is that the site continue to be handled by the County.

References

1. R.Jones Driveby of the site, 5/18/90

2. Kem Mil Co. Sample Report, 10-11-90
2a. DHS Chemical Data Sheets/EPA Fate and Transport Profiles, South Bay, Clement Associates, 4-3-89.
2b. Fire Protection Guide on Hazardous Materials, 6th Edition, National Fire Protection Association, 1975

3. EBMUD Kem Mil Co. File, copied 5/9/90

4. Kem Mil Co. Letter to DHS, 3-16-89

5. Contact Log - Alameda County Health Department Ariu Levi
a. Kem Mil wastewater treatment procedures

6. Alameda County Health Department, Ariu Levi, Site Inspection History

7. Levine Fricke sampling proposal to Kem Mil Co., 10/28/88
7a. Kem Manufacturing, S. San Francisco, tracking sheet, 12/19/86

8. Kaldveer Assoc. sample plan and Kaldveer/Med Tox letter on cyanide results, 2/26/90

9. Kaldveer Soil Testing Report/Health and Safety Plan, 4-90

10. Sea Water Intrusion in California, Calif. Department of Water Resources, 10-75

11. USGS Oakland West Quadrangle; Thomas Brothers Map, Alameda

12. Contact Report, Mark Malinowski, DHS, 6-9-90

13. Precipitation Calculation based on Climatic Atlas of the United States, 1983 reprint

14. Proposed RI/FS Sampling Plan, 2/90

15. Alameda County East Bay Plain Well List, 6/90 printout.

16. Calif. Floodplain Maps, Calif. Department of Water Resources,

Appendices - Photographs

EBMUD - East Bay Municipal Utility District

Contact Log

Date: 6-25-90, 9-6-90

Name: Ariu Levy, Senior Hazardous Materials Apecialist, Kem Mil Co. Project Officer

Firm: Alameda County Health Services, Dept. of Environmental Health

Address/phone: 80 Swan Way, Oakland, CA 94621 (415) 271-4320

6-25-90

Subject: Comments on Kem Mil Co. PEA

Mr. Levy reviewed and commented briefly on the draft PEA. He noted that the groundwater was not yet confirmed as being saline and thus not having a beneficial use. His other comments are as follows:
Lane Hill is still the contact for Kem Mil.
The site had been referred to the District Attorney for enforcement.
The drums were stored on the first floor, not the basement.
The current sampling will also delineate the vertical and lateral extent of soil contamination.
EPA sample analysis nos. are TPH: 8015, BTXE: 8020, CHC: 8010
Several local news articles in the Alameda Star Times have been written on the site.
The future use of the site needs to be considered if the building is demolished; the concrete foundation is impregnated with Ferric Cyanide.

9-6-90

Subject: Cleanup report approval

I called Mr. Levy to ask if there was anything new since the final draft of the PEA was being prepared. He said, "Quite a lot". A cleanup report had been prepared and he had written an April 14th letter criticising it. Since then, on July 19th, Kaldveer had submitted a Cleanup Report describing the cleanup of the site soil. Mr. Levy was drafting a letter for the County stating that the cleanup described was acceptable and approved. A July 30 workplan for groundwater sampling had also been submitted and was under consideration.

References

1. R.Jones Driveby of the site, 5/18/90
2. Kem Mil Co. Sample Report, 10-11-90
3. EBMUD Kem Mil Co. File, copied 5/9/90
4. Kem Mil Co. Letter to DHS, 3-16-89
5. Alameda County Health Department Ariu Levi
   c. Kem Mil wastewater treatment procedures
6. Alameda County Health Department, Ariu Levi, Site Inspection History
7. Levine Fricke sampling proposal to Kem Mil Co., 10/28/88
8. Kaldveer Assoc. sample plan and Kaldveer/Med Tox letter on cyanide results, 2/26/90
9. Kaldveer Soil Testing Report, 4-90
10. Sea Water Intrusion in California, Calif. Department of Water Resources, 10-75
11. USGS Oakland West Quadrangle, Thomas Brothers Map, Alameda
12. Contact Report, Mark Malinowski, DHS, 6-9-90
13. Precipitation Calculation based on Climatic Atlas of the United States
14. Proposed RI/FS Sampling Plan, 2/90
15. Alameda County East Bay Plain Well List, 6/90 printout.
16. Calif. Floodplain Maps, Calif. Department of Water Resources,

Contact Log

Date: 6-9-90

Name: Mark Malinowski, DHS Project Officer, Alameda Naval Air Station

Firm: DHS

Address/phone: 700 Heinz Ave., Berkeley, CA 540-3816

Subject: Groundwater and wells in Alameda

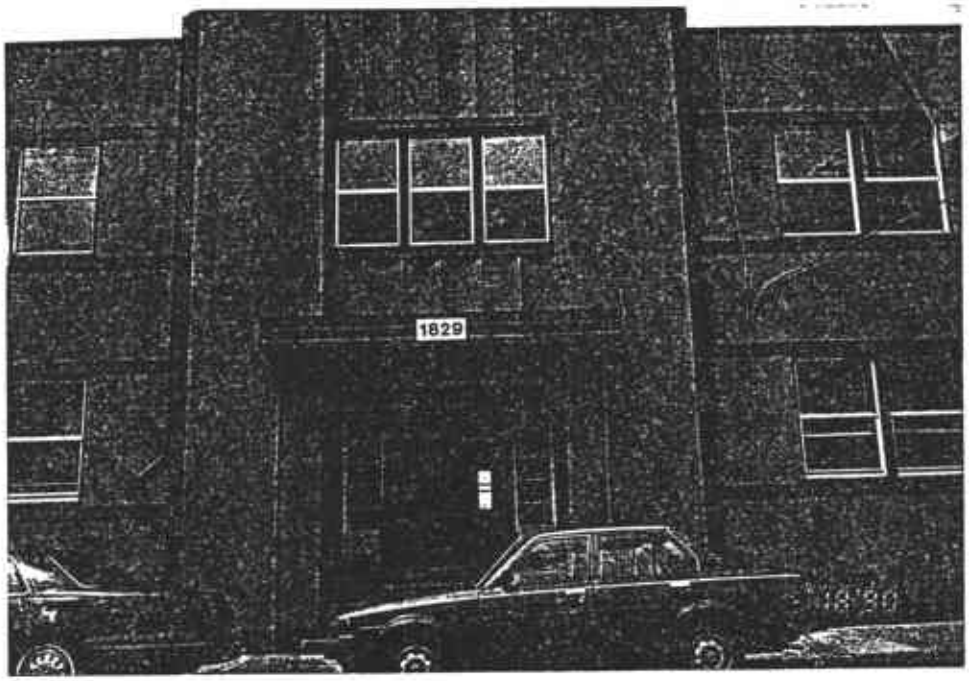
There are two deep wells at the Alameda Naval Air Station (the "Base"), the "Army" well which produces significant water, and another that does not. The shallow aquifer is at 30 feet, but these Base wells draw from the deeper aquifer at 400 feet. In between is a thick clay layer. The Army well is one of a number of wells at the eastern edge of the Base. Numerous wells at individual residences nearby are used mostly for irrigation, but on rare occasions for domestic water supplies.

The subsurface hydrogeology is generally defined by the strata. The sandy Merritt formation is the first shallow groundwater at about 30 feet. Then a thick clay layer acts as an aquiclude. The Base wells are in a deep aquifer at 400 feet which must be permeable sand based on their generous production rates.

PHOTOGRAPHS Kem Mil Co., 1829 Clement St., Alameda, CA.
5/19/90
Dick Jones, DHS
Weather: overcast, windy

Photo Description:

Direction:



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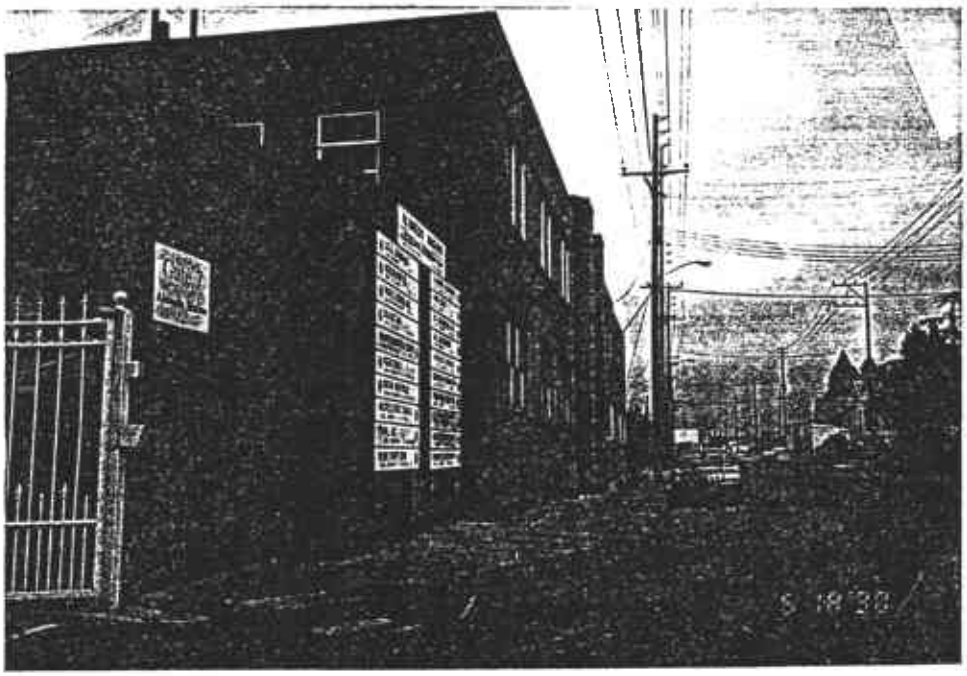
Direction:



PHOTOGRAPHS Kem Mil Co., 1829 Clement St., Alameda, CA.
5/19/90
Dick Jones, DHS
Weather: overcast, windy

Photo Description:

Direction:

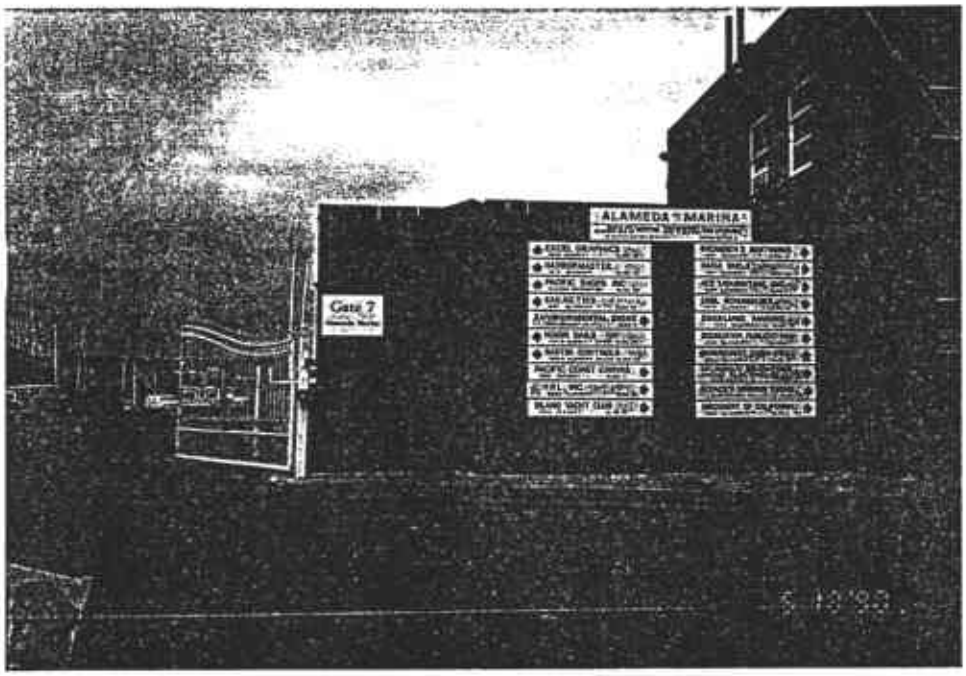


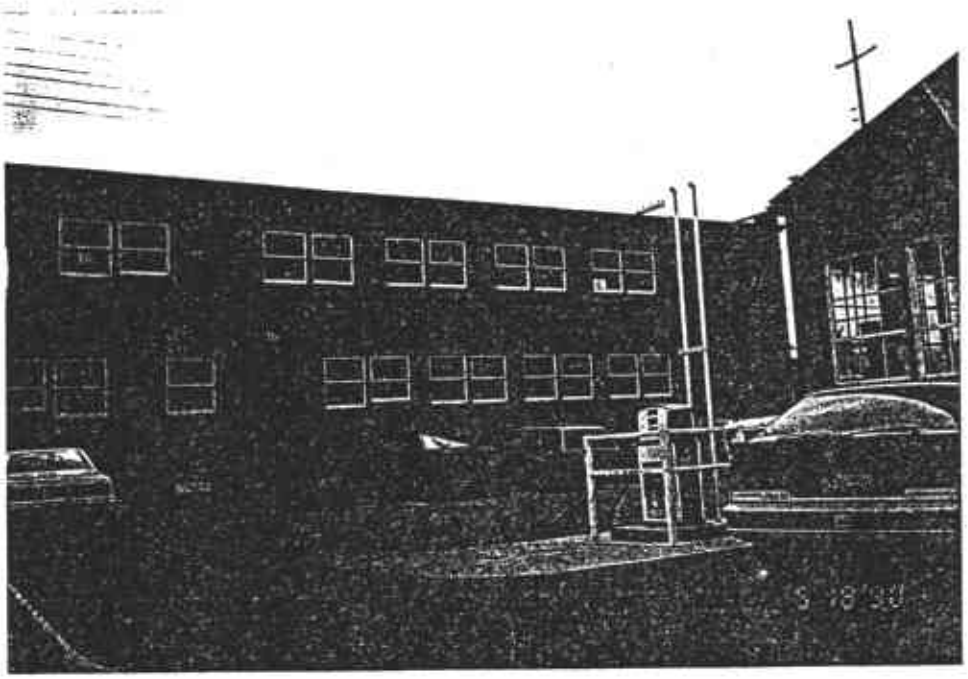
Photo Description:

Direction:

PHOTOGRAPHS Ram Mil Co., 1329 Clement St., Alameda, CA.
5/19/90
Dick Jones, DES
Weather: overcast, windy

Photo Description:

Direction:



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