

# Erler & Kalinowski, Inc.

Consulting Engineers and Scientists

1730 So. Amphlett Blvd., Suite 320  
San Mateo, California 94402  
(415) 578-1172  
Fax (415) 578-9131

4 May 1995

Mr. Barney Chan  
Alameda County Health Agency  
Department of Environmental Health  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, California 94502

Mr. Sum Arigala  
Regional Water Quality  
Control Board  
2101 Webster Street, Suite 500  
Oakland, California 94612

Subject: Work Plan for Preliminary Soil and Groundwater  
Investigation at Former Ekotek Site,  
4200 Alameda Avenue, Oakland, California 94601  
(EKI 930040.00)

Dear Mr. Chan and Mr. Arigala:

Erler & Kalinowski, Inc. ("EKI") is pleased to submit to the Alameda County Health Agency and the Regional Water Quality Control Board the enclosed Work Plan, dated 4 May 1995, to perform a preliminary soil and groundwater investigation at the former Ekotek site in Oakland, California.

We look forward to our meeting on 8 May 1995, at Mr. Gilbert Jensen's office.

Very truly yours,

ERLER & KALINOWSKI, INC.

  
Theodore G. Erler, P.E. for  
President

attachment

cc: Mr. Gilbert A. Jensen, Alameda County District  
Attorneys Office

**WORK PLAN  
FOR**

**PRELIMINARY SOIL AND  
GROUNDWATER INVESTIGATION  
AT FORMER EKOTEK SITE,  
4200 ALAMEDA AVENUE  
OAKLAND, CALIFORNIA**

**EKI 930040.00  
4 MAY 1995**

## 1. INTRODUCTION

This Work Plan presents a scope of work to perform a soil and groundwater investigation at the former Ekotek facility ("the Site") located at 4200 Alameda Avenue in Oakland, California. The objectives of this phase of the proposed investigation are to identify the nature of chemicals in soil and groundwater on the Site and confirm groundwater flow direction at the Site.

This Work Plan is based on:

- historical site use and chemical inventory information provided by a former site employee;
- a review of historical aerial photographs for the Site; recent walk-throughs of the Site; and a review of technical reports prepared by Dames & Moore (1989 reports) and by Dunn Geosciences Corporation ("Dunn reports" 1990 through 1993)) for the adjacent American National Can Company ("ANCC") site; and
- a review of regulatory agency files for the ANCC site and surrounding sites.

## 2. LOCATION OF SITE

The Site is located at 4200 Alameda Avenue in Oakland, California (see Figure 1). The Site is bounded to the north and west by the former ANCC site, to the east by an access road, and to the south by Alameda Avenue.

## 3. SITE USE HISTORY

Information on historical use of the Site was obtained primarily from the review of historical aerial photographs and an interview with a former employee at the Ekotek facility.

EKI reviewed historical aerial photographs of the Site and surrounding areas for the years listed below:

- |                 |                  |
|-----------------|------------------|
| - February 1938 | - September 1979 |
| - March 1947    | - June 1981      |
| - April 1950    | - October 1985   |
| - July 1959     | - April 1992     |
| - May 1971      |                  |
| - July 1977     |                  |

Information on site use history was also obtained from an interview with a former employee of the Ekotek facility. The employee reportedly worked at the Ekotek <sup>site</sup> facility from approximately 1944 to 1978.

### Waste Materials Received By Facility

The Site was used as an oil recycling facility from prior to 1940 until 1981. From the 1940s through the 1960s, waste oil received at the facility consisted primarily of train engine and aircraft engine oils, transformer oils, and engine oils from numerous service stations, garages, and other companies throughout the Bay Area. In addition, stoddard solvent was received at the Site until approximately 1978.

### Site Setting Prior to 1950s

As shown on Figure 2, a rail spur existed along the northern property boundary. Waste oils were transferred from rail tankers to aboveground tanks in the center portion of the Site. A second rail spur existed in the eastern portion of the Site (see Figure 2). At the southern end of this spur, near Alameda Avenue, waste oils were transferred from rail tankers, as well as truck tankers, to site tanks via a pump and pipelines. A large building existed to the immediate north of the northern rail spur (see Figure 2). Waste oil drums from a military facility were stored in this building and adjacent to the building for processing. The building reportedly was destroyed by fire in 1945.

### Site Setting After 1950s

In the 1950s, use of the northern rail spur was discontinued. A number of aboveground oil and solvent storage tanks were constructed along the northern facility boundary (see Figure 3). Waste oil was received at the facility from tanker trucks at the three large tanks near the office and garage. Waste oil was also received at the eastern rail spur at Alameda Avenue from rail and truck tankers.

### Areas of Ground Surface Staining

Based on the review of historical aerial photographs, areas of the ground surface of the Site were stained or discolored. These areas consisted primarily of the northern rail spur/driveway area and the eastern rail spur area (see Figure 4). Reportedly, the ground surface of the northern driveway continually became saturated with oil and required periodic re-surfacing with imported gravel. The ground surface of the main tank farm area, near the garage, was not observable in the aerial photographs due to shadows.

*who says this*

### Site Paving and Construction of Storm Water Collection System

Reportedly, around 1979, the Site was paved and a storm water collection system installed. Prior to the 1970s, storm water on the site was directed off-site toward Alameda Avenue. The storm water collection system was comprised of a series of storm drain inlets located throughout the site (see Figure 3). These storm drain inlets



were connected to sumps which eventually drained to an oil/water separator. The oils were skimmed off the surface and returned to an on-site tank, and the remaining water was disposed of to the off-site storm drain system. The sumps are reportedly constructed of concrete and some extend approximately eight feet below the ground surface.

#### **Underground Fuel Storage Tank**

At least one underground fuel storage tank is reported to exist on the Site. This tank, reportedly a 3,000-gallon light-end hydrocarbon tank, is located in the northeastern portion of the site (see Figure 3). During operation of the facility, light-end hydrocarbons were removed from oil during a "flashing" process. These hydrocarbons were transferred to the underground storage tank for eventual use as fuel for on-site boilers. Current tank contents are unknown.

#### **4. INVESTIGATIONS AT FORMER AMERICAN NATIONAL CAN COMPANY ("ANCC") SITE**

Based on the review of historical aerial photographs, the portion of the ANCC facility adjacent to the Site (the Lithography Building) was constructed between 1950 and 1959. The ANCC facility manufactured steel beverage and food cans from the early 1900s to approximately 1988. The structures on the ANCC site were recently demolished; the ANCC site is currently vacant.

Subsurface investigations were initiated at the ANCC site around 1989 by Dames & Moore. Monitoring wells were installed on the ANCC site near the Site in 1989 and in 1991.

EKI reviewed soil and groundwater data collected from the ANCC site between 1989 and 1993. A brief discussion of the data acquired is presented below.

#### **August 1989 ANCC Soil and Groundwater Investigation**

In August 1989, six groundwater wells were installed on the ANCC site. Two wells (GW-1 and GW-2) were installed adjacent to the Ekotek site (see Figure 6). Depth to water measured in the two wells was approximately 10 feet below ground surface. Groundwater flow direction in October 1989, was measured to the south towards Alameda Avenue.



### Results of Soil Samples

Soil samples collected from the unsaturated zone in borings GW-1 and GW-2 contained petroleum hydrocarbons at concentrations up to 289 milligrams per kilogram ("mg/kg"). TCE was detected in a soil sample collected from the 5.25 foot depth in boring GW-1 at a concentration of 0.11 mg/kg.

PCBs were detected in soil samples from borings GW-1 and GW-2 at the 5.25-foot depth at concentrations of 0.43 mg/kg and 0.38 mg/kg, respectively.

### Results of Groundwater Samples

Groundwater sample analytical results for TPH and PCBs from the 1989 sampling event are shown in Figure 6.

In well GW-1, elevated concentrations of arsenic, barium, cadmium, chromium, copper and nickel were detected in groundwater, as well as benzene, toluene, vinyl chloride, xylenes, 2,4-dimethylphenol, and 4-methylphenol. Petroleum hydrocarbons as diesel fuel were reported in groundwater from well GW-1 at a concentration of 40,000 micrograms per liter ("ug/L").

In well GW-2, elevated concentrations of barium and copper were detected in groundwater, as well as benzene, 1,1-DCA, and vinyl chloride. Petroleum hydrocarbons as diesel fuel were reported in well GW-2 at a concentration of 11,000 ug/L.

In December 1990, a 0.47-foot thick layer of free product was observed on the groundwater's surface in well GW-1.

### March 1991 ANCC Soil and Groundwater Investigation

In March 1991, six additional wells were installed in the area between the ANCC Lithography Building and the Ekotek site (in the vicinity of wells GW-1 and GW-2). The purpose of the wells was to further define the extent of chemicals in soil and groundwater on the ANCC site near the Ekotek site.

The six additional wells installed are labeled (MW-1 through MW-6) (see Figure 6). Wells MW-2 and MW-3 are located nearest the Site. Well MW-5 is located closer to the Lithography Building. Original wells GW-1 and GW-2, located near the Site, were also sampled as part of the investigation. The results are discussed below.

### **Soil Sample Results**

PCBs were detected in soil samples collected from the 13.75 foot depth in well borings MW-1 and MW-4 at concentrations of 0.2 mg/kg and 0.37 mg/kg, respectively. PCBs were not detected in soil samples collected from the shallower depths in either boring. No soil samples were analyzed for TPH.

### **Groundwater Sample Results**

Groundwater sample analytical results for TPH and PCBs from the 1989 and 1991 sampling events are shown in Figure 6.

Well MW-2 was reported to contain benzene, toluene, ethyl benzene, xylenes, chlorobenzene, 1,2-DCB, and 1,1-DCA at concentrations totaling 2,522 ug/L. Well MW-2 was also reported to contain 1,300 ug/L 2,4-dimethylphenol. TPH was detected in well MW-2 at 48,000 ug/L, and PCBs were detected at 6 ug/L. Arsenic and lead were detected at 41.2 and 33.3 ug/L, respectively, in field filtered samples.

Well MW-3 had similar VOC compounds but at lower concentrations. TPH was detected in well MW-3 at 29,000 ug/L; PCBs were not detected. In well MW-5, located further from the Site (see Figure 6), TPH was detected at 650,000 ug/L, and PCBs were detected at 10 ug/L.

In well GW-1, 2,4-dimethylphenol was detected at a concentration of 8,900 ug/L. TPH was detected in well GW-1 at 43,000 ug/L; and PCBs were detected at 33 ug/L. In well GW-2, TPH was detected at 2,500 ug/L, and PCBs were not detected.

### **October 1991 ANCC Groundwater Sampling**

In October 1991, wells GW-2, MW-1, MW-3, MW-4 and MW-6 were sampled by Dunn Corporation (Dunn correspondence dated 25 November 1991). Wells GW-1, MW-2, and MW-5 were not sampled due to the presence of floating product on the water's surface in the wells.

As shown in Figure 6, TPH was detected in wells GW-2, MW-1, MW-3 and MW-4 at concentrations ranging from 1,000 ug/L to 7,000 ug/L. PCBs were detected in groundwater from well MW-1 only at 3.3 ug/L.

### **January 1992 ANCC Groundwater Sampling**

In January 1992, groundwater wells MW-1, MW-3, MW-4, MW-6 and GW-2 were sampled. TPH was detected in wells MW-1, MW-3, MW-4, and GW-2 at 2,600 ug/L, 5,900 ug/L, 7,100 ug/L, and 6,300 ug/L, respectively. PCBs were detected in well MW-1 at 3.5 ug/L (see Figure 6)

### **May 1992 ANCC Groundwater Sampling**

In May 1992, groundwater wells MW-1 and MW-6 were sampled. In addition, a newly installed well, MW-19, was sampled (see Figure 6). TPH was detected in wells MW-1, MW-6, and MW-19 at 3,600 ug/L, 73 ug/L, and 39,000 ug/L, respectively. PCBs were not detected in wells MW-1 or MW-6; however, PCBs were detected in well MW-19 at 55 ug/L (see Figure 6).

### **December 1993 and October 1994 Groundwater Sampling**

In 1994, wells MW-1 and MW-19 were abandoned. Wells GW-1 and GW-2 were abandoned and new wells installed adjacent to the former locations. Groundwater gradient information for the area nearest the Ekotek site for December 1993 and October 1994, indicates that local groundwater gradient has not changed significantly over the last four years (see Figure 5).

### **Summary of ANCC Investigations**

Between 1989 and 1993, soil and groundwater investigations were conducted on the ANCC site nearest the Ekotek site by Dunn Geoscience Corporation. According to the Dunn reports, soil and groundwater on the ANCC site within several hundred feet of the Site are impacted by TPH, VOCs, semi-VOCs, PCBs, and selected heavy metals. The sources of these chemicals in soil and groundwater were not identified. Groundwater gradient direction measured between 1991 and 1994, indicates that mounding of groundwater is apparently occurring beneath the Ekotek site, and that groundwater apparently flows in a radial pattern from the Ekotek site toward the ANCC site (see Figure 5). Depth to groundwater measured in October 1994 was approximately 10 feet below ground surface.



## 5. PROPOSED WORK PLAN ELEMENTS

The objective of this phase of the proposed soil and groundwater investigation is to identify the nature of impacts, if any, to the Site. The Work Plan elements presented below are based on the historical information acquired by EKI as well as information from prior subsurface investigations at the adjacent ANCC site, as discussed in the previous sections.

### **Task 1 - Acquire Permits, Perform Underground Utility Survey, and Prepare Site Health & Safety Plan**

Prior to the initiation of the field work, all applicable permits to install the groundwater monitoring wells will be obtained from the Alameda County Flood Control and Water Conservation District, Zone 7. All drilling locations will be cleared of underground utilities by a private underground utility locating company and through contact with Underground Services Alert (USA). Any additional site drawings provided by the current property owner showing locations of underground utilities will also be utilized.

Specific health and safety procedures will be defined in a project specific Health and Safety Plan which will be prepared by EKI prior to the initiation of field work.

### **Task 2 - Installation of Monitoring Wells**

A total of four monitoring wells will be installed on the Site (see Figure 7). Two wells will be installed on the inferred upgradient side of the Site and two wells will be installed on the inferred downgradient side of the Site, with respect to regional groundwater flow direction. The purposes of the wells are to:

- identify the nature of chemicals in groundwater and concentrations;
- provide repeatable groundwater data collection points; and
- calculate local groundwater flow directions and gradient, and allow for future monitoring, if necessary.

The wells will be completed to a total depth of approximately 20 feet below ground surface. According to the ANCC data, depth to first groundwater in the vicinity of the Site is approximately 10 feet below ground surface. The ANCC data indicates the presence of sand and gravel layers (water bearing zones) beginning at approximately the 10 to 15 foot depths near the Site.

Three soil samples from the unsaturated zone in each of the monitoring well borings will be collected to characterize soil conditions at the well location. The soil samples



will be collected from approximately the one-foot, three-foot and eight-foot depths. Sample depths may change based on conditions encountered in the field at the time of drilling.

### Task 3 - Installation of Soil Borings

A total of six soil borings will be drilled on the Site in the areas of reported historical chemical use and storage (see Figure 7). Given access constraints (i.e., overhead obstructions, concrete walls around oil tanks, maneuvering space), not all chemical use and storage areas will be sampled as part of this investigation. The rationale for the placement of the soil borings is presented below:

Soil Boring ID	Rationale
B-1 and B-2	Located along former rail spur and gravel driveway. Significant ground surface staining noted on historical aerial photographs. Area known to be continually "oily" according to former site employee.
B-3	Placed adjacent to below-grade oil/water separator, and adjacent to existing underground light-end hydrocarbon storage tank. <i>- must remove tank</i>
B-4	Placed in the area of existing below-grade concrete oil/water collection sumps.
B-5	Placed adjacent to rail spur and in area of significant staining as noted on historical aerial photographs.
B-6	Placed adjacent to aboveground tanks which reportedly contained transformer oils.

The borings will each be drilled to a total depth of approximately 13 feet below ground surface, or to a depth several feet below the groundwater table. Three soil samples will be collected from each boring at approximately the one-foot, three-foot, and eight-foot depths. Sample depths may change based on conditions encountered in the field at the time of drilling.

Upon completion of drilling, a grab groundwater sample for laboratory analysis will be collected from each borehole through the augers.

#### Task 4 - Analyses of Samples at Laboratory

Soil Samples. A total of 30 soil samples (three from each well boring and soil boring) will be collected for laboratory analysis. The numbers of samples and sample depths will be determined in the field based on conditions encountered at the time of sampling. Each of the 30 discrete soil samples will be analyzed for the following chemical constituents:

- total purgeable hydrocarbons as gasoline, and benzene, toluene, ethyl benzene, and xylenes (BTEX) by EPA Method 8010/8020;
- extractable hydrocarbons (fuel fingerprint) by EPA Method 8015m;
- halogenated volatile organic compounds by EPA Method 8010;
- polychlorinated biphenyls (PCBs) by EPA Method 8080; and
- arsenic, total lead and chromium.

In addition, EKI will select five soil samples for analysis for extractable organic compounds by EPA Method 8270. *\* at least from MWs/borings near ANC wells which detected Semivol.*

Additional analyses for chemical constituents not listed above may be performed on selected samples based on conditions encountered in the field (i.e., odor, soil coloration, OVM response).

Groundwater Samples. A total of 10 groundwater samples (four from monitoring wells and six from soil borings) will be submitted for laboratory analysis. The groundwater samples will be analyzed for the following chemical constituents:

- total purgeable hydrocarbons as gasoline, and benzene, toluene, ethyl benzene, and xylenes (BTEX) by EPA Method 8010/8020;
- extractable hydrocarbons (fuel fingerprint) by EPA Method 8015m;
- halogenated volatile organic compounds by EPA Method 8010; and
- arsenic, total lead and chromium (samples will be filtered in the field)

In addition, EKI will select five groundwater samples for analysis for:

- PCBs by EPA Method 8080 (field filtered); and *near Arc wells + near transformer oil storage*
- extractable organic compounds by EPA Method 8270.

Quality assurance/quality control ("QA/QC") samples will also be collected and analyzed.

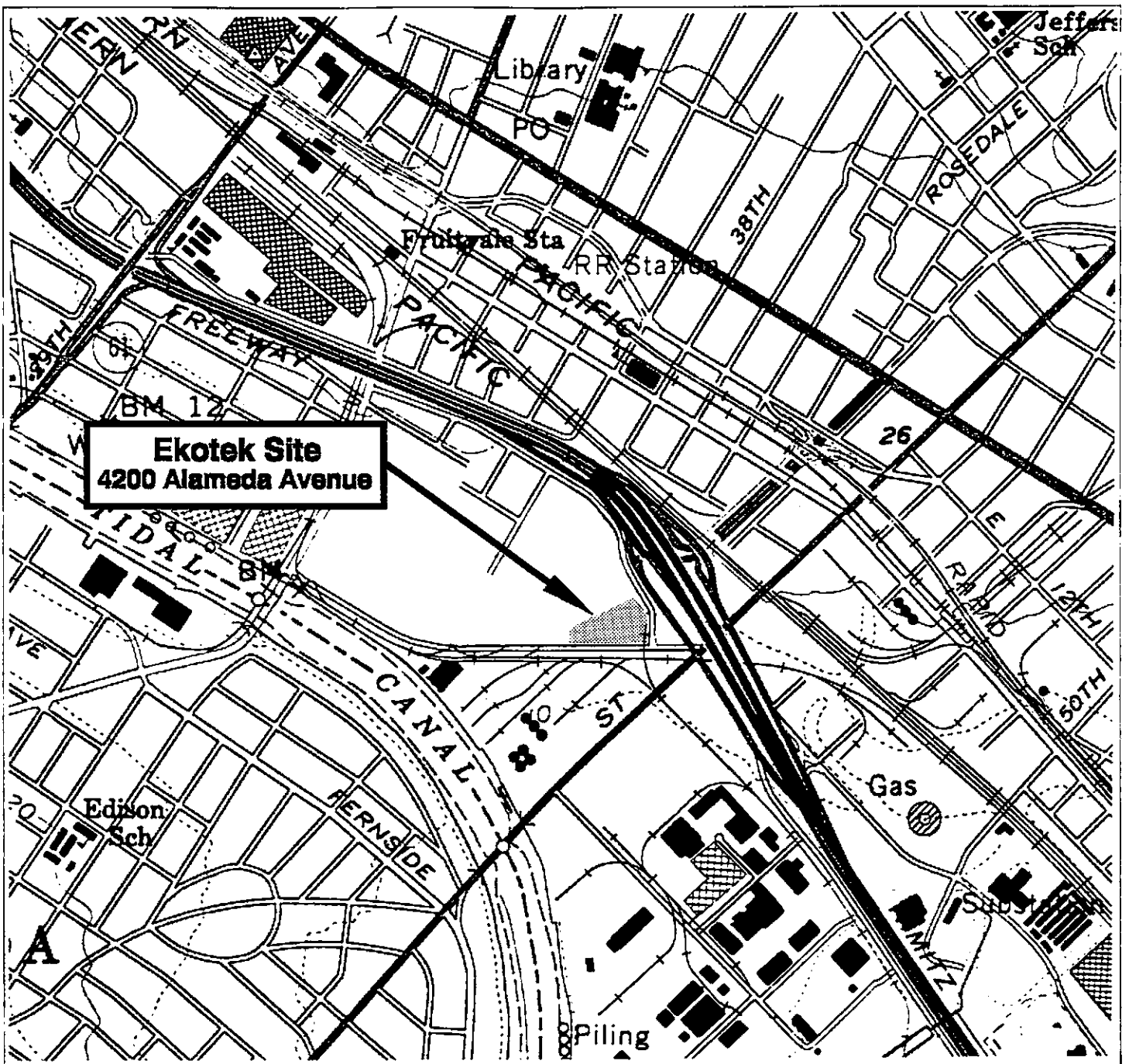
### **Task 5 - Well Surveying**

In each of the four wells, the depth to first encountered groundwater below ground surface will be measured by EKI prior to purging and sampling. The elevations of the tops of the well casings and well as horizontal spacing between the wells installed by EKI will be measured by a licensed land surveyor. The relative elevations of the groundwater surfaces in each of the wells will be measured to determine the local groundwater gradient and direction at the Site.

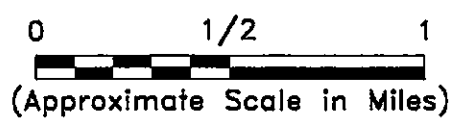
### **Task 6 - Report Preparation**

Following completion of the above tasks, a written report will be prepared by EKI. The report will present the field sampling procedures, boring logs and monitoring well construction details, soil and groundwater sample analytical procedures, and analytical results.





**Ekotek Site**  
4200 Alameda Avenue



**Erler &  
Kalinowski, Inc.**

Location of Ekotek Site

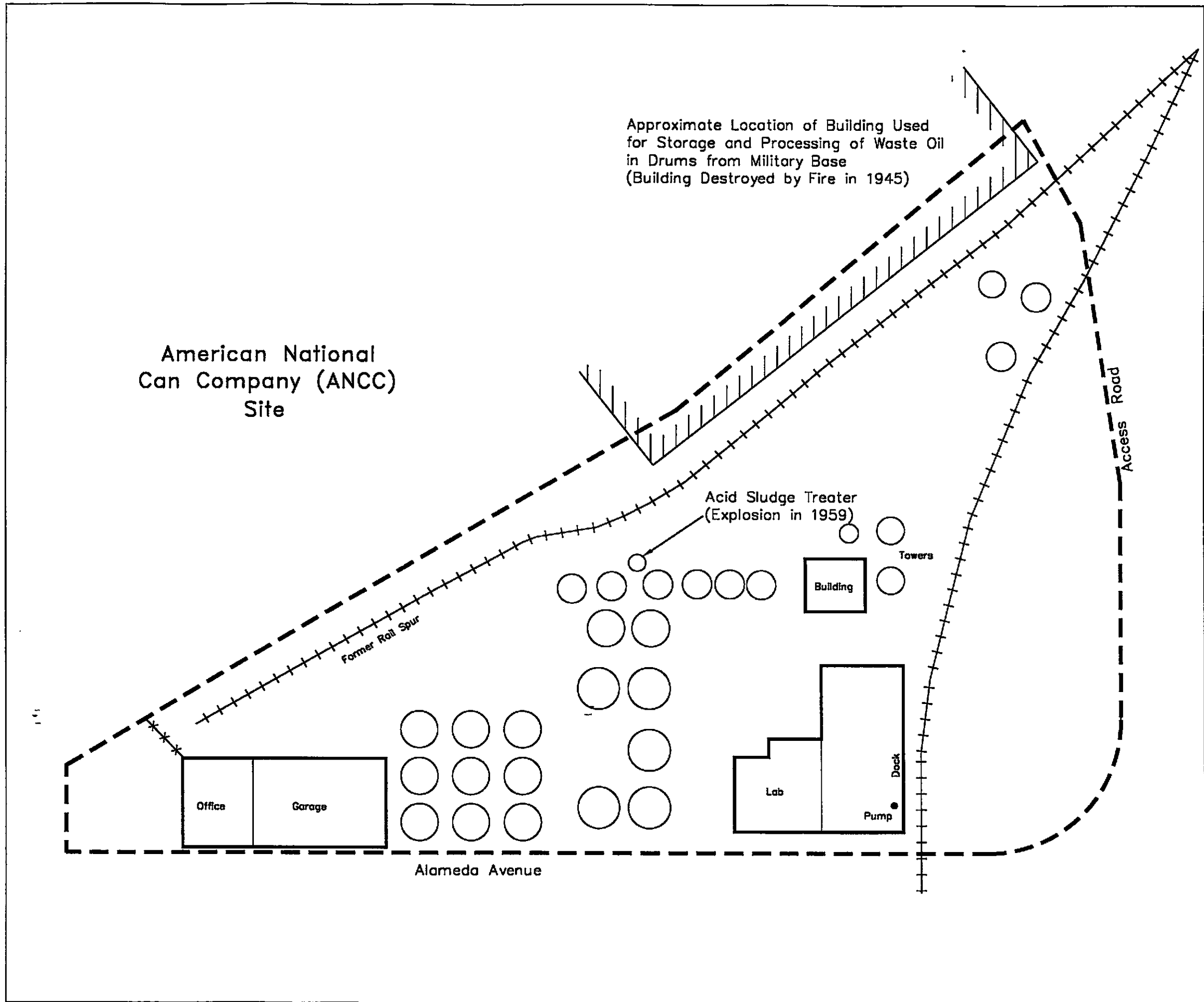
4200 Alameda Avenue  
Oakland, CA

May 1995  
EKI 930040.00

Figure 1

**Notes:**

- 1. All locations are approximate.



American National  
Can Company (ANCC)  
Site

Approximate Location of Building Used  
for Storage and Processing of Waste Oil  
in Drums from Military Base  
(Building Destroyed by Fire in 1945)

Acid Sludge Treater  
(Explosion in 1959)

Building

Towers

Lab

Pump

Dock

Office

Garage

Alameda Avenue

Access Road

Former Rail Spur



(Approximate Scale in Feet)

**LEGEND**

- Ekotek Site Boundary
- Above Ground Storage Tank
- + + + Rail Spur

**Notes:**

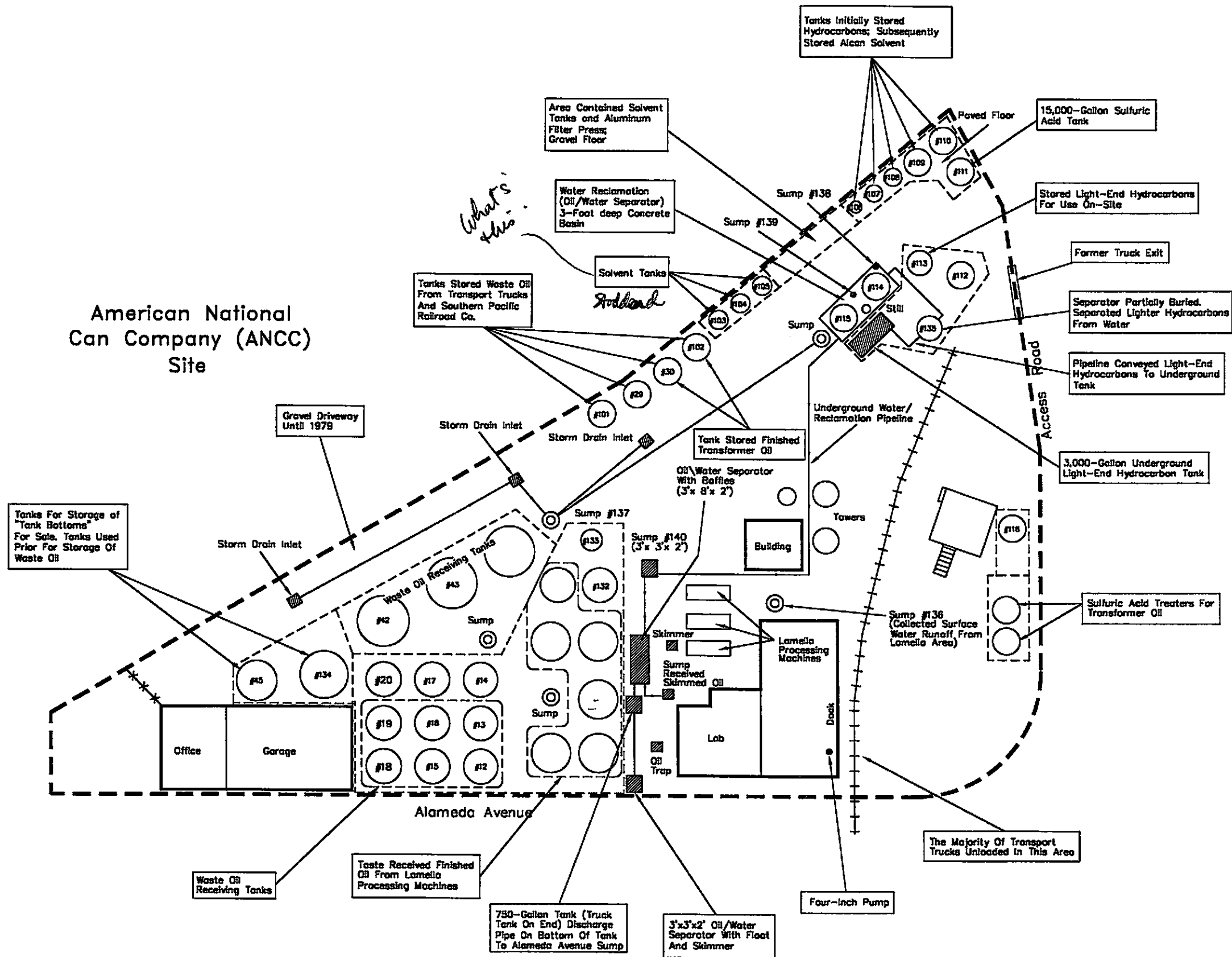
1. All locations are approximate.

**Erler &  
Kalinowski, Inc.**

Ekotek Site Plan and Historic  
Site Setting (Pre-1950s)

4200 Alameda Avenue  
Oakland, CA  
May 1995  
EKI 930040.00  
Figure 2

American National  
Can Company (ANCC)  
Site



LEGEND

- - - Ekotek Site Boundary
- Above Ground Storage Tank
- ⊙ Below Ground Sump
- Below Ground Concrete Sump/Tank
- - - Concrete Wall/Berm

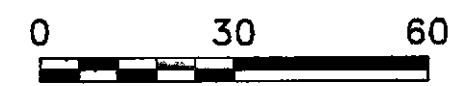
Notes:

1. All locations are approximate.

**Erlor &  
Kalinowski, Inc.**

Ekotek Site Plan and Historic  
Site Setting (Post 1950s)

4200 Alameda Avenue  
Oakland, CA  
May 1995  
EKI 930040.00  
Figure 3



(Approximate Scale in Feet)

**LEGEND**

- Ekotek Site Boundary
- Above Ground Storage Tank
- ⊙ Below Ground Sump
- ▨ Below Ground Concrete Sump/Tank
- Concrete Wall/Berm
- ▤ Approximate Area of Ground Surface Staining Observed on Historical Aerial Photographs

**Notes:**

1. All locations are approximate.

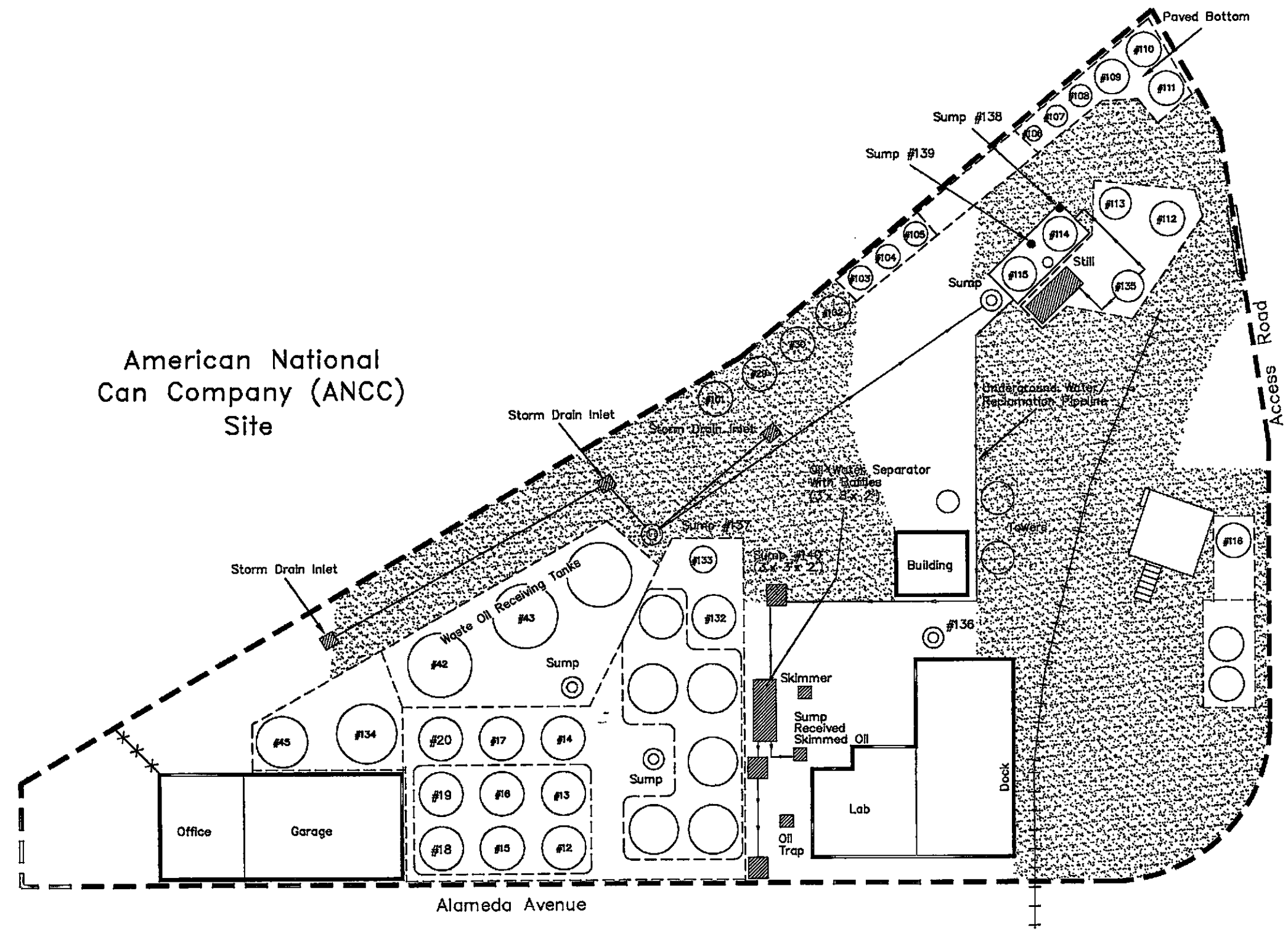
**Erlor & Kalinowski, Inc.**

Approximate Areas of Ground Surface Staining Observed on Historical Aerial Photographs

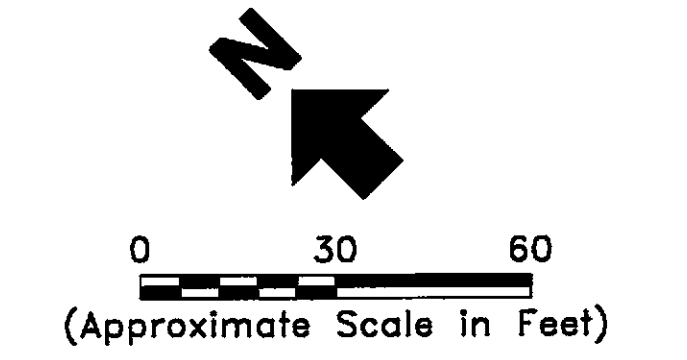
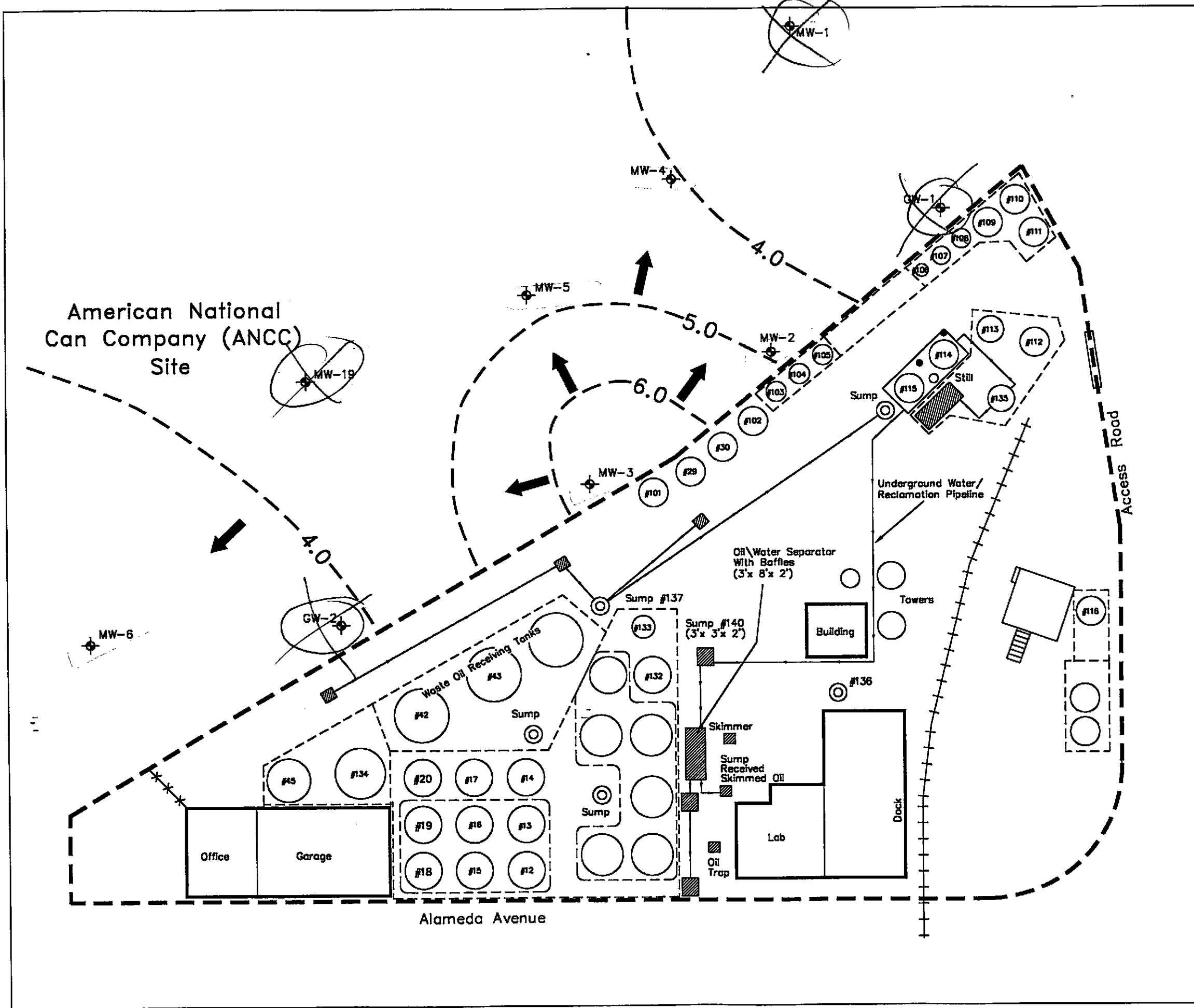
4200 Alameda Avenue  
Oakland, CA  
May 1995  
EKI 930040.00

Figure 4

**American National Can Company (ANCC) Site**







**LEGEND**

- Ekotek Site Boundary
- Above Ground Storage Tank
- ⊙ Below Ground Sump
- Below Ground Concrete Sump/Tank
- - - Concrete Wall/Berm
- ⊕ Approximate ANCC Monitoring Well Location
- 6.0- Groundwater Elevation Contour in Feet (October 1993)
- ➔ Inferred Groundwater Flow Direction Based on Contours

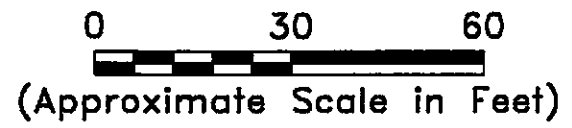
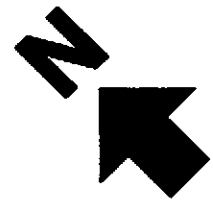
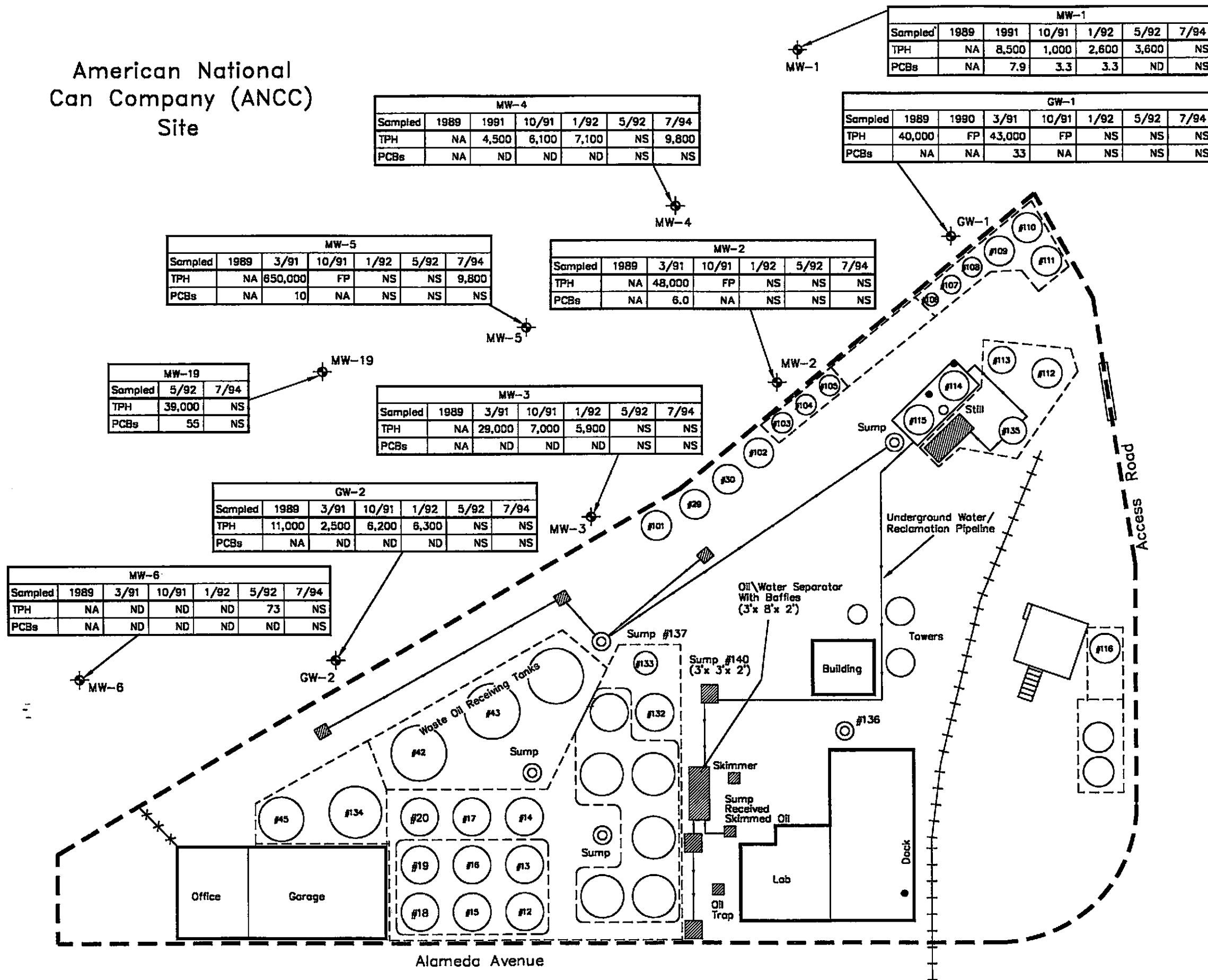
**Notes:**

1. All locations are approximate.
2. Figure based on RUST Environment and Infrastructure (October 1994).

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Groundwater Gradient Direction  
 Measured 12 October 1994  
 Based on ANCC Monitoring Wells  
 4200 Alameda Avenue  
 Oakland, CA  
 May 1995  
 EKI 930040.00  
 Figure 5

American National  
Can Company (ANCC)  
Site



**LEGEND**

- Ekotek Site Boundary
- Above Ground Storage Tank
- ⊙ Below Ground Sump
- Below Ground Concrete Sump/Tank
- Concrete Wall/Berm
- ⊕ ANCC Monitoring Well Locations
- NA Not Analyzed
- ND Not Detected
- NS Not Sampled
- FP Floating Product Observed in Well, thus Not Sampled

**Notes:**

1. All locations are approximate.
2. All concentrations are listed as ug/L.

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Groundwater Sample Analytical  
Results for TPH and PCBs in  $\mu\text{g/L}$   
ANCC Monitoring Wells  
4200 Alameda Avenue  
Oakland, CA  
May 1995  
EKI 930040.00  
Figure 6

\* FROM DTC  
 EKOTEK USE, PASI AND MAP

MW-1

MW-4

MW-5

MW-19

American National  
 Can Company (ANCC)  
 Site

MW-6

Storm Drain Inlet  
 MW-3

Storm Drain Inlet  
 MW-2

Storm Drain Inlet  
 GW-2

Waste Oil Receiving Tanks  
 B-2

Sump #137  
 MW-2

Sump #140  
 (3' x 3' x 2')

Oil/Water Separator  
 With Baffles  
 (3' x 8' x 2')

Transformer

Building

Oil Spills  
 Towers

Skimmer

Sump  
 Received  
 Skimmed Oil

Oil Trap

Lab

Deck

MW-3

Alameda Avenue

MW-4

Paved Bottom  
 GW-1

Sump #138

Sump #139

MW-2

B-1

Sump

B-3

Underground Water/  
 Reclamation Pipeline

Access Road

**LEGEND**

- Ekotek Site Boundary
- Above Ground Storage Tank
- ⊙ Below Ground Sump
- ▣ Below Ground Concrete Sump/Tank
- Concrete Wall/Berm
- ⊕ Proposed Monitoring Well
- ⊙ Proposed Soil Boring
- ⊕ ANCC Monitoring Well

**Notes:**

1. All locations are approximate.

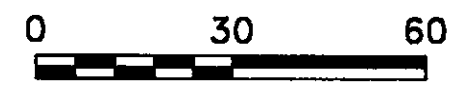
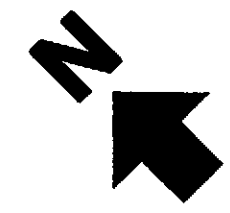
**Erler &  
 Kalinowski, Inc.**

Proposed Soil Boring and  
 Monitoring Well Locations

4200 Alameda Avenue  
 Oakland, CA

May 1995  
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Figure 7



(Approximate Scale in Feet)